Link NCA Final Report

NUTRITION CAUSAL ANALYSIS

January 2015 – February 2016

Dari-Suf-Bala District, Samangan Province

Afghanistan

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Acknowledgments

The Link NCA survey in DSB is the result of many collaborations. During the different phases of the process, the ACF office in Kabul, the ACF Mazar el Sharif Base and Paris worked together from January to June, 2015.

We are firstly grateful to all families (530) that welcomed data collectors into their homes and all villagers (mothers and fathers) of Sarwalang Miana in the district of DSB, Samangan province in Afghanistan.

The NCA survey was conducted under difficult conditions. It has been made possible through the support of the ACF team in Mazar. We are grateful to Mr. Brian Hansen, field coordinator of ACF-Mazar for his support in ensuring proper security measures for the fieldwork teams, and to all Afghan administrative and logistic managers that were always concerned about our organizational needs throughout the duration of the NCA work, in particular during the two months of data collection in the district of DSB. In the field, at the Bazar Stocka base, we wish to express our gratitude to twenty-eight data collectors who visited families in 30 villages in the DSB district. We cannot name them all but we thank in particular Mr. Jalil Ahmad, who held very seriously his role of assistant and allowed us to have access to the population of the village of Sarwalang Miana throughout the qualitative survey, the two translators who were also very good focus group sessions facilitators, Fatima Shinwari and Amanullah Shams . The teams received valuable support from the district Governor and all CDC members in the villages of DSB, who should be thanked for their hospitality and patience.

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Foreword

The Link NCA report for the District DSB of Samangan Province - Afghanistan is presented in two parts: the first part presents the Link NCA process and its implementation in the district of DSB. The second part presents the findings of data collection in DSB and a preliminary rating of hypothesized risk factors.

Part I, presents the analysis of secondary data, the work of the first workshop held in Kabul in February 2015, all conceptual preparations (pathway and hypothesized risk factors) and technical tools (sample data management) in view of conducting three surveys: SMART, RFS (household questionnaire) and qualitative investigation. The limitations of the survey are presented in this section. In an annex to part I, we present the causal model of the workshop in February 2015, and a copy of the household questionnaire for the SMART and the RFS survey.

Part II focuses on the analysis of quantitative and qualitative data and a proposal on hypotheses that were discussed in the context of this survey. In an annex to Part II, the reader can find the list of all results (mean or proportion) for all indicators measured in the chapter discussing the findings of the investigation.

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Glossary

ACF:	Action against Hunger (Action Contre la Faim)
ANC:	Ante-Natal Care
AOR:	Adjusted Odds ratio
ARI:	Acute Respiratory Infection
BF:	Breast Feeding
BMI:	Body Mass Index
CCIS:	Child-Caregiver Interaction Scale
CDC:	Community Development Committee
CF:	Complementary Feeding
CI:	Confidence Interval
CP:	Care Practices
CSI:	Coping Strategies Index
DFID:	Department for International Development (British)
DHS:	Demographic and Health Survey
DPT3:	Diphtheria, Pertussis and Tetanus third vaccine
DSB :	Dari Suf Bala District Samangan Province
DSP :	Dari Suf Payen District Samangan Province
ENA:	Emergency Nutrition Assessment
FANTA:	Food and Nutrition technical Assistance
FAO:	Food and Agriculture Organization
FCG:	Food Consumption Groups
FCS:	Food Consumption Score
FGD:	Focus Group Discussion
FSL:	Food Security and Livelihoods
GAM:	Global Acute Malnutrition
HACCP:	Hazard Analysis Critical Control Point
HDDS:	Household Dietary Diversity Score
HEA:	Household economy approach
HFIAS:	Household Food Insecurity Access Scale
HHS:	Household Hunger Scale
ICF:	Infant and Child Feeding
IDDS:	Individual Dietary Diversity Score
IFPRI:	International Food Policy Research Institute
IRS:	Interactions Rating Scale
IYCF:	Infant and Young Child Feeding
KAP:	Knowledge Attitude and Practices survey
LCD:	Liters per Capita per Day
M&E:	Monitoring and Evaluation
MAHFP:	Months of Adequate Household Food Provisioning
MAM:	Moderate Acute Malnutrition
MAHRAM:	For Muslim woman's mahrams form the group of allowable escorts when she travels
MDI:	Major Depression Inventory
MICS:	Multiple Indicator Cluster Survey
MRRD:	Ministry of Rural Rehabilitation and Development
MUAC:	Mid-Upper Arm Circumference
NCA:	Nutrition Causal Analysis
NGO:	Non-Governmental Organization
NNS:	National Nutrition Survey Afghanistan
NRVA:	National Risk and Vulnerability Assessment, Central Statistics Organization
NSP:	National Solidarity Program, Afghanistan
SAM:	Severe Acute Malnutrition
SD:	Standard Deviation
SES:	Socio-Economic Status
SFSA	Seasonal Food Security Assessment
SMART:	Specific, Measurable, Attainable, Relevant and Time-bound
SQUAEC:	Semi-Quantitative Evaluation of Access and Coverage

UNICEF:	The United Nations Children's Fund
USAID:	United States Agency for International Development
WASH:	Water, Sanitation and Hygiene
WFP:	World Food Programme
WHO:	World Health Organization
WHO5:	Well-being index in 5 questions developed by the WHO
WHZ:	Weight-for-Height Z-score

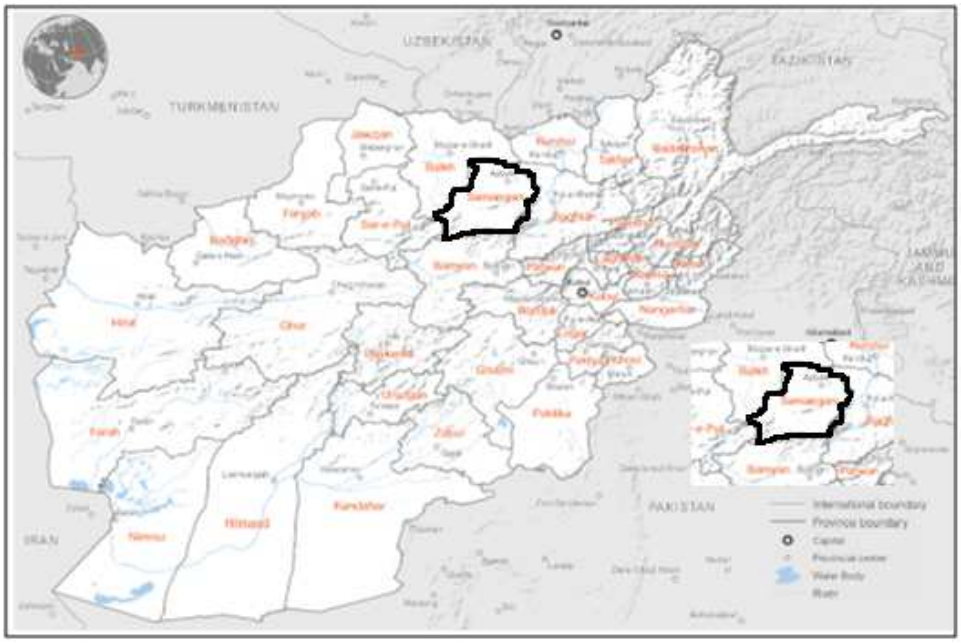
Introduction

This report presents the findings of a *Link Nutrition Causal Analysis* undertaken in the Dari Suf Bala District of the Samangan Province in Afghanistan between April 25th and May 31th 2015. Based on the UNICEF causal framework[1], a Link NCA is a structured, **participatory**, holistic study which builds a case for **under nutrition causality** in a **local context.** To introduce the specificity of this study, we briefly present the three determinants of the conceptualization of a causal analysis of nutrition (Link NCA).

- Local context: Afghanistan- Samangan Province - Dari Suf Bala District

The Dari Suf Bala district is located in the Samangan province in the northern part of Afghanistan (see following map).

MAP 1: Afghanistan by Province



Before addressing the main socio-demographic characteristics of the area, it is useful to explain its administrative status. A "district" is a territorial subdivision used by the Afghan national government. The status of a district is defined in the Afghan constitution of 2004[2]. In Afghanistan, there are 32 provinces (wolayat). Each province contains between a minimum of 3 and a maximum of 27 districts. There are approximately 355 districts (uluswali) in Afghanistan.

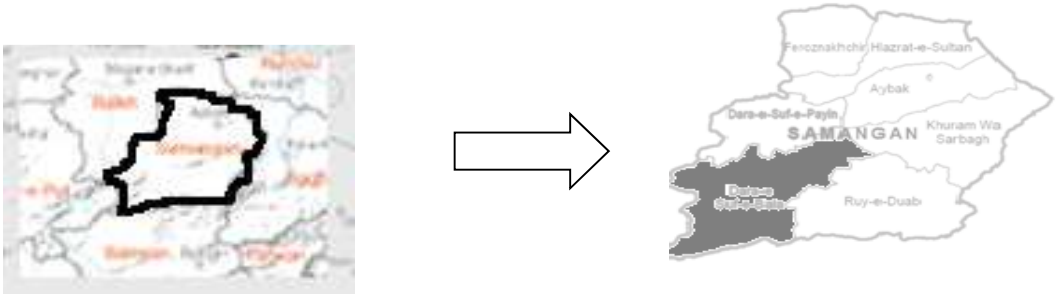
The country's regions, provinces, and districts were headed by governor-generals, governors, commissioners and district governors. The country's districts became its key administrative unit. In

[1]UNICEF (1990) "Strategy for improved nutrition of children and women in developing countries", A UNICEF Policy Review. New York, USA.
[2]Article 3, Chapter 8 of the 2004 Constitution specifies that a provincial council is to be formed in every province, with elected members, and Article 5, Chapter 8 *specifies that district and village councils are to be elected*.

2003, the National Solidarity Program (NSP) dedicated a development fund to electing community development committees (CDCs) in each village of Afghanistan.

Since January 2006, each CDC has the responsibility to implement the Provincial Development Plan, through the government departments. At the community and village level there are 424 Community Development Councils and Committees (CDCs) in the Samangan province to implement the development plans at the district and village level. In each village, the CDC has the basic tasks of creating infrastructure facilities of water supply and sanitation, energy, transport and communications to further economic growth with the involvement of the private sector.

MAP 2: Districts in Samangan Province



Like the other six districts of Samangan province, the Dari Suf Bala district has a local government, and in each of its 146 villages there is a committee and its elected members. Initially Dare-Suf was one district but it has been divided into two districts: Dari Suf Bala and Dari Suf Payeen. The administrative boundaries match the ethnical divisions*: Dari Suf Bala is exclusively Hazara*, while Dari Suf Payeen is Tajik and Uzbek (North-Eastern villages).

The two districts were separated after the fall of Taliban regime in order to offer local governance to the different communities and to overcome underlying tensions between Sunni (Tajik, Uzbek) and Shia (Hazara) communities. The Hazara of Dari Suf Bala and the Tajik of Dari Suf Payeen both have a fierce hostility towards Taliban groups. This is less true in some Uzbek villages prone to Taliban infiltration or development by local commanders, like in Gola (South West Dari Suf Payeen) and in the Jamalak valley (East Dari Suf Payeen)[3].

With Afghanistan's political reconstruction in the 2000s, the administrative division of the district, and the establishment of elected representatives from villages (CDCs) is relevant to the data collection of Link NCA. Firstly, the conceptual approach of Link NCA is to go beyond a generic method on the causes of malnutrition and involves the environmental conditions (political, climatic, social, health-related, and cultural) in a given territory. Secondly, from a methodological viewpoint, this partition by villages can easily be adopted for performing data collection according to ENA[4] methodology; via the sample

[3]In the preparatory phase (February to April 2015) of the Link NCA, the district of Dari Suf Payeen had been selected, but because of significant security problems, it was considered preferable to conduct the study in the district of Dari Suf Bala.
[4]ENA: Software for Emergency Nutrition Assessment

number of children and households in a given number of villages since they provide by definition an excellent representation of the local context.

In addition, the community level data collection like the "village" with an elected Committee council enriches the qualitative enquiry. Indeed, the “village” may be defined for example as far from the main Rural Municipality, as deserted, economically dynamic or inert, with a good or a bad school, etc. This will be in fact a description of the history of the village which will include, , its own internal conflicts. Albeit consistent with the conditions of all other Afghan districts, the Dari Suf Bala district also has very distinctive characteristics since its population is exclusively of Hazara origin and shares a socio-cultural heritage over many centuries. In the next section we will see in more detail the reasons for conducting a Link NCA study in this particular district.

- Under-nutrition causality: Qualitative inquiry, Risk factors Survey, and Smart Nutrition Survey in Dari Suf Bala District, Samangan Province, Afghanistan

Three types of surveys exist in the Link NCA repertory (see following table).

Table 1. Type of Link NCA Survey

1. Four communities in a local context	2. Field study in local context	3. Field study in a local context to estimate the prevalence of under nutrition
Qualitative enquiry (4 communities)	Qualitative enquiry (4 communities) Risk Factor Survey (400-600 Hoh, 600-800 children<5) Team for field Survey: 15	Qualitative enquiry (4 communities) Risk Factor Survey (400-600 Hoh, 600-800 children<5) SMART Nutrition Survey (anthropometric measurements only) Team for field Survey: 20

All three stages above require a preparatory phase and a phase in which the hypotheses will be identified to study in the field. For the investigation of types 2 and 3, the preparatory phase is denser since the relevance of each of the identified risk factors is to be shown by an additional secondary data analysis. These fieldwork preparations are completed by training sessions for researchers on the data collection methodology of anthropometric measurements among children less than five years old. Type 3 combines cross-sectional surveys (SMART Nutrition survey and Risk Factor Survey) with a qualitative enquiry to estimate the prevalence of under-nutrition and hypothesized risk factors. The inclusion of a Smart Survey (see template 3) enriches the congruence of the causal schema of malnutrition in a local context.

With a SMART Survey, the Link NCA (type 3) process becomes more difficult during data collection. Its inclusion requires substantial additional human and logistical resources. The implementation of the type 3 Link NCA also requires that conditions related to data collection in the field be favorable and that teams of researchers be sufficiently experienced for administering household questionnaires involving mothers and children aged less than five years.

The ACF-Afghanistan office opted for the type 3 model in the DSB district. In retrospect, that choice, albeit judicious, put the Smart Survey in the center of the Link NCA process to the detriment of the qualitative survey and the risk factors questionnaires.

The content of the risk factor questionnaires had to be reduced due to the low level of qualification of researchers recruited. It should be noted that in Afghanistan, the rural youth with an appropriate educational profile to fill a data collection position are rare. To reduce the impact of this constraint, the effort during the training period of the investigators was focused on the quality of anthropometric measures.

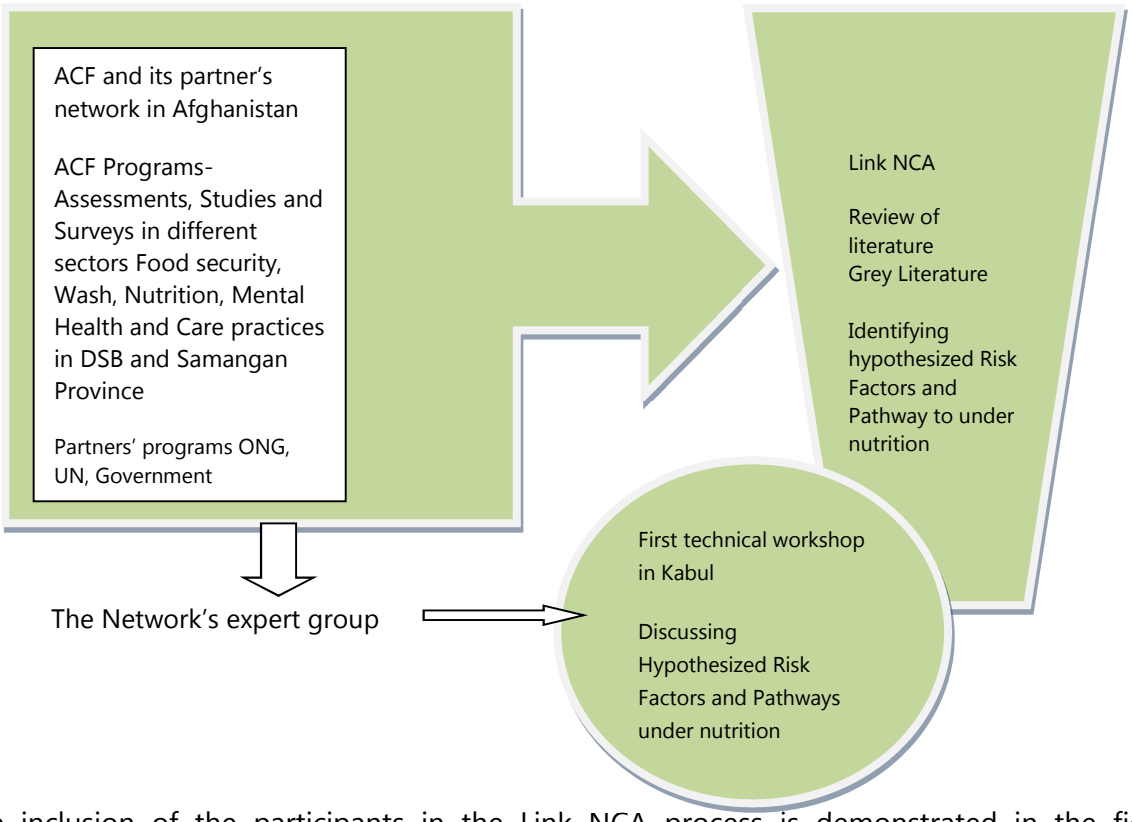
The qualitative survey collected data in a single village in the district, while it takes four villages according to standard methodology. This is a clear consequence of the field conditions, which were unfavorable to the full implementation of the qualitative survey. The main limitations of the Link NCA (type 3) in DSB are discussed in the next section.

- Participatory study: Experts and participants of the Link NCA Survey in DSB and ACF-Afghanistan

The Link NCA Survey "*offers an opportunity to participants - key informants, technical experts as well as a range of other individuals from local communities- to express their opinions and perceptions of the causes of under-nutrition. Participants are given the opportunity to discuss, review and finally validate the conclusions of the study. The places value on 'perceived causes' are as well as on 'evidence-based causes' for the various perspectives that they provide*". (Link NCA Overview, ACF, p.6, 2015).

It is important to emphasize here that this study was possible because of the operational role of ACF in local communities, as well as at the regional and the national level. ACF has been operating in Afghanistan since 1979, alternating with in-country presence and temporary withdrawal due to insecurity (1997). Since 2011, ACF has been working in Samangan province, in the districts of Dari Suf Bala and Dari Suf Payeen, implementing Food Security and Livelihoods (gardening activities), and Water, Sanitation and Hygiene projects (access to safe water), with the aim of tackling the underlying causes of malnutrition. In 2014, ACF was operating in five provinces (Kabul, Ghor, Daykundi, Samangan, Balkh) with integrated Nutrition, FSL, WASH, and Mental Health and Care Practices projects. It is in this favorable operational context, that the Link NCA analyst was able to carryout carry out a more exhaustive review of the literature in order to establish a register of available documents. An analysis of these documents was produced for each of the risk factors in the sectors involved (food security, Wash, and child care practices). This study identifies a list of hypotheses about the causes of malnutrition in the district of DSB. These are discussed at the national workshop with the field teams (see Figure 1). The workshop with the partners took place on February 18, 2015 in Kabul. In the next chapter we will show the hypotheses discussed, validated and added in the context of the DSB district by the partners during this workshop.

Figure 1. Identifying and Discussing Hypothesized Risk factors and Pathways in DSB

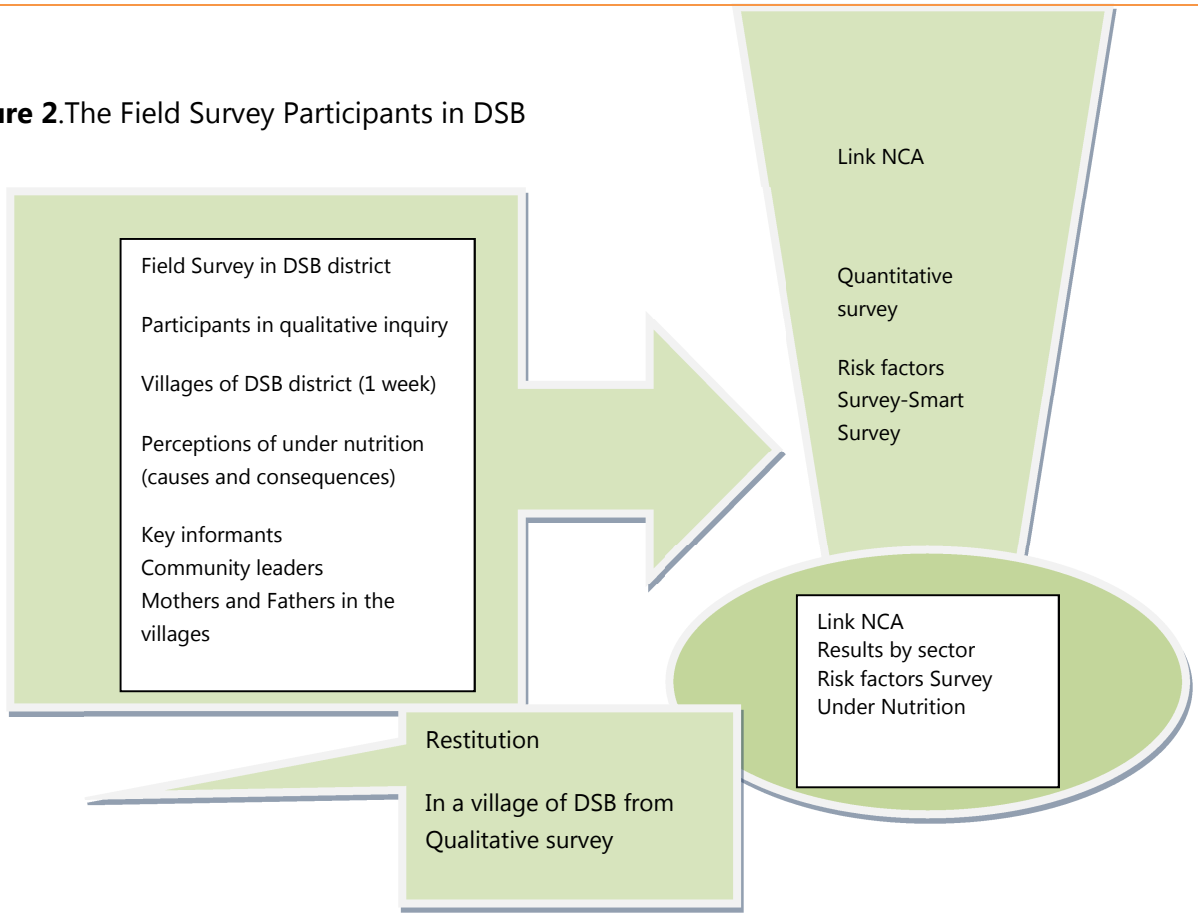


The inclusion of the participants in the Link NCA process is demonstrated in the field with the implementation of the qualitative survey. With different data collection techniques (individual interviews, focus groups), participants followed-up meetings in the framework, described and explored all the "intricacies" of the causes of malnutrition in children under five. The aim was to highlight through their experiences as actors (keys informants community leaders, parents), what they saw in their environment as causes and consequences of malnutrition. The themes were identical to those of the quantitative survey, but they were addressed via oral dialogue and – in the case of focus groups – a final vote produced with a list of risk factors in their local context.

The DSB district is largely rural. In the Afghan rural population, it is useful to know that mothers and fathers have roles clearly enshrined in the organizational tradition of the house, farm work and their respective parenthood. For example, wives do not work outside the domestic sphere. Their husbands manage all economic issues but the education of children is exclusively undertaken by the mothers. Without going into details, the afghan rural family is patriarchal. Within the Link NCA methodology, we were able to explore this cultural dimension by offering fathers in local communities to participate fully and comprehensively in a set of focus groups about their perceptions of the causes of malnutrition among children younger than 5. The qualitative survey was held in the District of Dari Suf Bala during the period from 27th April to 31th May 2015.

Beyond these specific features, the narrative content of the participants about their perceptions of the causes of malnutrition echoes the results of the household survey in the district. When a first analysis of the results was available, a restitution of all the results of the qualitative and quantitative survey was scheduled in one of the villages selected according to the Link NCA methodology (see Figure2).

Figure 2.The Field Survey Participants in DSB



Part I. The Link NCA Process in DSB, Samangan Province

1. Why Conduct a Link NCA in the Dari Suf Bala district?

A Link NCA is a unique assessment method[5] because it specifically addresses the causes of malnutrition via the prevalence of selected risk factors, qualitative data and literature reviews.

In general, it is through the operational ACF teams involved in a local context that begins a first reflection on the pertinence of implementing a Link NCA Survey. For example, if the key objective of the programs in food security sectors, nutrition, hygiene interventions is to reduce the prevalence of malnutrition among children under 5 years old, a Link NCA survey can be used to support future programs on the principal outcomes expected by sector or on activities by sector.

The presence of ACF its partners may be necessary to carry out Link NCA, but it is not sufficient. A Link NCA is only relevant when particular operational actors have both adequate control over the effects of previous programs and the ability to influence future programs on the specific causes of malnutrition in children under five. It should be noted that Link NCA is most relevant when, operational actors have

[5] SQUAEC (Semi-Quantitative Evaluation of Access and Coverage), HEA (Household economy approach), KAP (Knowledge Attitude and Practices survey).

mastered the positive and negative effects of earlier programs, and when these actors can include in future programs activities on the specific causes of malnutrition.

The type of Link NCA to execute depends on several factors in the local context: the quality and quantity of information on the local context, how ACF programs are accepted by the population and its representatives, the directory assessments ACF programs and other NGOs present in the given context, the nature of the structural and cyclical challenges on reducing malnutrition stemming from the recommendations of various studies and evaluations, as well as the national analyses of the prevalence of malnutrition and the positioning of the local context within the larger framework of other districts and provinces.[6]..

In the Afghan context, access to populations for research purposes remains a serious problem. This is true for the Samangan province and its districts. There are two reasons for this regarding the country as a whole, i.e. the frequent threats of armed attacks and the continental climate which reduces access to roads in spring because of floods and in winter because of snowfall. The operational teams are accordingly exposed to difficult and dangerous field conditions.

These constraints cause a direct impact not only on the activities of NGO programs but also on data collection activities, including qualitative surveys. In 2009, BASICS[7]published a literature review on this subject[8]. It was found that in Afghanistan, there were very few qualitative surveys *"It should be noted, however, that the qualitative research are rather limited in scope and coverage"* and on the other hand, that if qualitative surveys were to be conducted, it would be relevant that the issues discussed with the population be about their perception of malnutrition "*What is mostly lacking is information on people's perceptions leading to harmful practices and not seeking health care*".

In this perspective, the originality of the methodology Link NCA which is that it is founded on the collection of qualitative data on the perception of the causes of malnutrition by participants (key informants, community leaders, mothers and fathers).Other methodological prerequisites are necessary however for the implementation of a qualitative Link NCA survey on participants' perceptions of the causes of malnutrition. As we noted earlier, a Link NCA (1-2-3) requires the development of a framework of causal hypotheses that allows local perceptions to be targeted by the survey..

1.1. Contextual Information of Dari Suf Area (Dari Suf Bala and Dari Suf Payeen Districts)

In 2007, UNDP provides a picture of economic activity in Dari Suf Bala District. "*DSB suffers from poverty and a very weak economy due to low level of social services, low level of agricultural and livestock production and lack of access to basic infrastructure. Dara Suf Bala is an agricultural district majority of*

[6]"*Assuming that there is sufficient justification for a study and the decision to conduct it is made, these experts will then determine other key parameters such as the specific objectives, geographic coverage and feasibility of carrying out the study. At this stage they will also determine whether the study should include a SMART nutrition survey and a Risk Factor survey or rely on secondary and qualitative data. For this, they have to estimate if information on under-nutrition prevalence and the magnitude and severity of key risk factors is available and sufficient for their purposes*" Overview Link NCA, ACF, 2015.

[7] BASICS worked with USAID to help country governments ensure the widest-possible access to quality health and nutrition services for newborns and children.

[8]BASICS-USAID: Desk Review of Child Survival Qualitative Researches in Afghanistan, 2009.

the people are busy in agricultural. They suffer from poverty and have a very weak economy due to lack of agricultural mechanization equipment, power systems and factories. Also lack of potable water, destruction of bridges, culverts and roads is another problem of this district" (Islamic Republic of Afghanistan, Ministry of Rural Rehabilitation and Development, National Area Based Development Programme, UNDP, 2007).

Table 2. General information for DSB

General Information	
Population (CSO 2003)	52473 People
Area (AIMS)	2911 sq. km.
Number of villages	146 Villages
Average land ownership	3 jeribs per family
Ethnic diversity	99% Hazara
Sectoral Information	
Education:	
Number of primary schools	29 Primary School
Number of secondary schools	2 Secondary Schools for boys, 1 school for girls
Number of high schools	1 High School for girls and 1 boys
Health:	
Number of health centers/basic clinics	4 health centers, 4 health posts and 2 drugstores
Access to basic healthcare services	70%
Infrastructure and natural resources:	
Access to safe drinking water	10%
Access to public/private electricity	5%
Economic Governance and private sector development:	
Agricultural main products	Wheat, Barley, Pease, Maize and Potato
Main handicrafts	Rug weaving, Glim Weaving, (local carpet) and tailoring,

Source: Islamic Republic of Afghanistan, Ministry of Rural Rehabilitation and Development, National Area Based Development Programme, UNDP, 2007

As noted earlier, the ACF programs on FSL and WASH were implemented in the district of DSB and the DSP in the years 2011- 2014. In November 2013, an internal report foundthat ACF in these districts *"has good acceptance in both community of Dare suf bala and Dare suf payan and in all over the districts of Samangan (Ayback, Feroz Nakhsher, Hazrati Sultan and Ruy Doab districts) where implement projects and authority because ACF could to keep his independency, transparency and follow humanitarian principles* (Dare Suf cultural social analysis and impact to ACF program, ACF).

This prerequisite is very important in a qualitative survey of perceptions. In order to conduct a qualitative Link NCA, respondents should feel confident and also willing to give their time to come to individual and group meetings sessions. When conducting a qualitative survey in a local context, it is necessary according to the guidelines to provide adequate time; for example, in each of the villages visited (4), we allowed six days for meeting our participants.

This favorable assessment of ACF by the population played a significant part in our decision to hold a Link NCA in the District of DSB. This has led us to a secondary data collection on food vulnerability, health vulnerabilities and nutritional vulnerabilities of populations in the District of DSB. An inventory constituted by twenty reports (between the years 2011 and 2014) draws a dark image of the living conditions of the population of the DSB district.

In December 2014, an ACF[9] report presented a statistical description of Food Security, and Water, Sanitation and Hygiene according to the latest national surveys and the results from ACF assessment for the province of Samangan.

Table 3. Food Security, Water, Sanitation and Hygiene in The Province of Samangan

Food security, Livelihoods	**Water Sanitation and Hygiene**
National Surveys: 19.7% of Samangan population is food insecure. (SFSA, July 2014) **High exposure to natural disasters adds to structural vulnerabilities and forms one of the main driving factors of food insecurity in the area**	**National Surveys**: 20% of the population has access to safe water (NRVA, 2012). Compounded with very low sanitation coverage (10.6%), poor access to drinking water is associated with high prevalence of water borne diseases. According to NNS in 2013, 48.5% of children under the age of 5 had episodes of diarrhea in the 15 days preceding the survey (i.e. one of the highest incidences nationwide)
ACF assessment in Samangan	**ACF assessment in Samangan**
The Food Consumption Score of respondents was found rather poor, with the majority of respondents falling into the "borderline" category (41%).	Amongst the 112 water points assessed, 38% were found contaminated with coli and 71% had a turbidity above 5 NTU. PH and conductivity were found within standards. The majority of water points was found in a poor condition, either damaged or destroyed (59%), inducing high risks of contamination. 43% of children under the age of five reportedly had diarrhea during the recall period (last 2 weeks). This relatively high incidence of diarrhea was found during the dry season, when prevalence is normally lower. The prevalence of diarrhea was found to be higher when children are drinking non-safe water: 59% of children U5 affected by diarrhea are drinking water from unprotected sources (rivers, channels, dams, unprotected shallow wells, kandas).

Two years earlier in 2012, an exhaustive ACF report[10] concluded that according to the IPC indicator[11] (Integrated Food Security Phase Classification) in the two districts – Dari Suf Bala, and Dari Suf Payen, about 15% of the surveyed population is in "crisis" and 25% is "stressed"(see table below).

[9]Food Security, Livelihoods and Water, Sanitation and Hygiene Evaluation, Samangan Province, ACF, December 2014.
[10]Food Security & Livelihoods assessment report – 2013, Samangan province - Dara-e Suf Bala & Payeen districts

Table 4. Food Access/ Availability Outcomes in Samangan Province and Dara Suf Area

Phase classification	Food access / availability outcomes	Afghanistan	Samangan province	Dara-e Suf dry areas
Food security and livelihoods (FSL)	Care practices and Mental Health (CPMH)	Health		Unhealthy environment

IPC		IPC	ACF	IPC 2012	IPC 2012	ACF 2012
I	Minimal	> 2100 kcal/day without distress strategies		76.4 %	72 %	60%
II	Stressed	Borderline 2100 kcal	> 2100 kcal/day with debts or assets stripping	19.5 %	23%	25%
III	Crisis	2100 kcal/day via assets stripping	< 2100 kcal/day without assets stripping	4.2 %	5 %	15%
IV	Emergency			0 %	0 %	0%
V	Famine			0 %	0 %	0%

Source: Food Security & Livelihoods assessment – ACF-2013, Samangan province, Afghanistan p. 118

These recent analyses (2012-2014) at the provincial level in both districts show that approximately 40% of the population is vulnerable. Despite establishing a high prevalence of food and health vulnerabilities, we do not have a detailed picture of vulnerable groups experiencing both food and health vulnerability in the DSB district.

Moreover, given that food insecurity is high in the district, it is difficult be sure that programs targeting food insecurity in general would reduce the high prevalence of malnutrition in children. The link between food insecurity and child under-nutrition is not particularly well researched[12]. In the eventuality of future interventions for improving security and reducing under-nutrition of vulnerable groups in the district DSB, program designers need to further reflect on the inclusion of all research areas such as FSL, CPMH, Health, Unhealthy environment as shown in the table below.

Table 5. Concepts and their risk factors, Link NCA indicators-ACF

[11] "*The IPC relies on a bunch of indicators (food access / availability, water access, acute malnutrition, crude mortality rates, coping etc.) which are weighed up with flexibility (no absolute threshold). The following uses only the food access and availability outcomes, interpreted as the household's capacity and means to provide each family member with 2,100 kcal per day.*" In Food Security & Livelihoods assessment report – 2013, Samangan province - Dara-e Suf Bala & Payeen districts, p. 117.

[12] Link NCA, Pathways module, p. 10 ACF. 2015.

Food availability Food access Food utilization Food intake Stability	Breastfeeding and infant feeding practices Care for women Psychosocial care Food preparation Hygiene practices Home health practices	Health status Health services access Health services utilization Health services quality	Water quality Water quantity Water access Sanitation Hygiene

Source: Link NCA Indicators-p. 28. ACF. 2015

In this context, a Link NCA type 2 (both qualitative and quantitative survey) seems highly relevant because it considers all four research areas and all corresponding factors (see Table5), thus allowing to identify in relative terms the extent of vulnerabilities in relation to each other.A survey taking into account these risk factors also facilitates the conceptualization of future programs in the DSB district; such programs aiming to provide a more "integrative" response for the reduction of malnutrition in children.

Another source of information that was prepared by ACF operational actors and partners was the seasonal calendar for the District of DSB.[13]This collection of data is a set of components relating to different research areas (FSL, CMPH, Health, Unhealthy environment) which help to better understand seasonal variability. The establishment of a seasonal calendar is important for carrying out a Link NCA because taking into account the seasonality allows a measurement of the impact of the temporality of certain phenomena such as high prevalence of waterborne diseases, difficulties of access to care during rainy or winter periods, or the impact of farm work in maternal care practices etc.

The seasonal calendar would prove to be of great use during individual and group meetings with qualitative survey participants in the district of DSB[14]. It was necessary to include a SMART survey (NCA type 3). To do this, it is necessary to have the recent results of the major national and provincial surveys on the prevalence of malnutrition among children under the age of five.

1.2. Prevalence of Acute Malnutrition - Wasting- in the Samangan Province

At the national level in **2013**, the GAM- (prevalence of Global malnutrition) (WHZ < -2 z-score) was 9.5% (95% CI 8.73-10.4) compared to 8.7% in 2004 (NNS). For the province of Samangan it has decreased during the same period as it was estimated at 7.9% in **2013** and 10% in **2004** (NNS). In 2011,

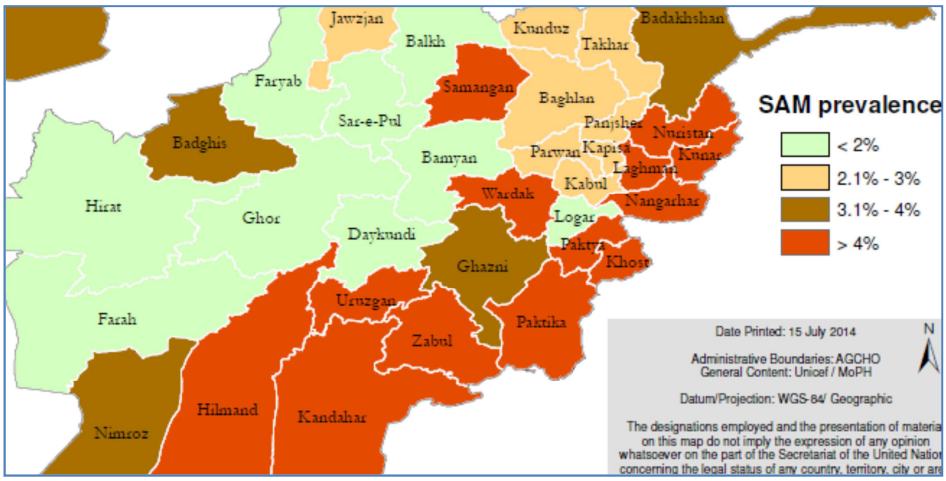
[13]Findings of a Consultative Workshop on Seasonal Livelihood Programming in the Northern Region of Afghanistan (covering mixed crop farmers - Samangan, Sari-Pul and Balkh Provinces), ACF, January 2013. "*The main objective of the workshop : To build seasonal calendars for typical and bad years by participants discussing, identifying, and agreeing on periods of particular livelihood patterns and issues – e.g. seasonal migration / gender roles / peaks of health and malnutrition / water and pasture availability / livestock and agricultural production / market availability and prices / household income and expenditures / labour demand and availability / food availability and stresses / and perceived periods of better and difficult times for men and women, etc.: seasonal migration / gender roles / peaks of health and malnutrition / water and pasture availability / livestock and agricultural production / market availability and prices / household income and expenditures / labour demand and availability / food availability and stresses / and perceived periods of better and difficult times for men and women, etc*".

[14]NCA Guidelines "*A list of the key factors that emerged during the discussion and use this list as the basis for developing a nutrition risk factor calendar The calendar will be used to describe how those factors may or may not change seasonally*" p.78.

according to ACF, the GAM was 7.8% [15](6 districts including DSB). Samangan province recorded acceptable standards according to WHO. This rate is well inferior to the alarm threshold of 15% determined by the WHO Expert Committee classification for wasting (WHO 1995: percentage of children with weight-for-height <-2 z-score >= 15% is critical).

What has been very alarming in Afghanistan, and consequently for the province of Samangan is the rate of severe acute malnutrition (SAM)[16]. In 2013, at the national level, the SAM was 4.0% and 4.4% for the province of Samangan. This is a very high level by international standards as the map below illustrates.

MAP 3. Prevalence of Wasting in Afghanistan, 2014



Source: UNICEF, Prevalence of wasting, NNS, 2013

In 2011, the Smart UNICEF-ACF survey for the 6 districts of Samangan province measured a rate of 1%. This significant difference in percentage could be attributed to the food crisis in 2012 and 2013.

1.3. Prevalence of Chronic Malnutrition –Stunting-

In the Samangan province, a rate of 60.5% was found in NNS 2004, and 47.1% in 2013. These rates exceed international thresholds, and are considered "high".

For Afghanistan, comparing the current nutrition situation with the previous NNS of 2004, there was an apparent reduction in stunting. Stunting in children 0-59 months old decreased from 60.5% as reported in NNS 2004 to 40.5% in NNS 2013. In the 2011 ACF report , "*The rate of chronic malnutrition in Afghanistan has always remained a critical situation due to the fact that Afghanistan has been facing critical conditions for long time including war, drought and natural calamities*"(p.37). According to ACF, the prevalence of stunting was 54.7% in 2011 for 6 districts in Samangan province including DSB.

[15] Anthropometric nutrition survey and Infant and Young Child Feeding Study, Preliminary results Dare sof payen, Dare sof bala, Aybak, Roye doab and Hazrat e sultan - Samangan province – October 2011 – Afghanistan.
[16] UNICEF, Prevalence of wasting, NNS, 2013

Table 6. The Prevalence of Stunting in 6 Districts in Samangan Province

Province	Surveyed districts	Period	Stunting -2 Z-score	95% CI	NGO
Samangan province (N=508)	Dara-I-Sufi Payin, **Dara-I-Sufi Bala**, Ruyi Du Ab, Ayback and Hazrati Sultan	October 2011	**54.7 %**	(46.4 - 62.8 95% C.I.)	ACF

Source: Anthropometric nutrition survey and Infant and Young Child Feeding Study, Preliminary results Dare sof Payen, Dare sof Bala, Aybak, Roye doab, and Hazrat e sultan - Samangan province – October 2011 – Afghanistan

At the same time, it is the prevalence of both acute and chronic malnutrition that is proving very alarming for the province of Samangan.

For some districts (6), including DSB District, according to the ACF inquiry there is a chronic prevalence rate that is more menacing than the acute malnutrition prevalence rate. Given these findings, both prevalence rates must therefore be taken into account in the framework of a Link NCA that includes a SMART. By focusing the analysis on the causes of malnutrition in the DSBdistrict, a collection of data on prevalence will give insights into risk factors and areas (FSL, WASH, CPMH, etc.)

Let us add that the inclusion of a SMART in this district will also allow operational programs to be more consistent while trying to solve the problem of malnutrition among children under five. The results of a SMART may indicate paths for investigations such as SQUEAC, which could be very useful for conceptualizing activities for the integration and health management prevention of malnutrition.

1.4. Objectives of Link NCA Survey in DSB

The main objective of this Link NCA is to identify the main causes of *chronic (stunting) and acute (wasting)* malnutrition more specifically in the district of Dari Suf Bala, thus allowing for greater clarity regarding the possible causes of under-nutrition of children aged 0-59 months.

Specific study objectives of Link Survey in DSB:

- Estimate the prevalence and severity of wasting and/or stunting in the district of DSB

Link NCA	SMART Survey in DSB

- Identifying Hypothesized Risk factors and pathways within a given context and within a given period

The NCA-ACF team aimed to identify a preliminary, hypothesized set of risk factors and pathways that may explain the under-nutrition situation in DSB district. This is done through a systematic literature review and locally available grey literature. The hypotheses are reviewed, discussed, and honed during a technical experts workshop held at national level.

- ¤ Investigating on the community level survey in DSB

Link NCA	Quantitative survey: Household survey in Risk factors Qualitative survey: Perceptions on under-nutrition in communities (villages)

- ¤ Synthesizing results and building a technical consensus

On the data collection will be complete, "*a synthesis of the data will use this evidence to rate the risk factors based on their relative contribution to under-nutrition and to qualitatively describe the dynamic interrelationships among the risk factors and under-nutrition outcomes… During a final workshop, after the presentation of the results, to the technical experts in participatory process are asked to provide confidence notes on each result of the Link NCA which indicate to which consensus has been achieved and document any remaining disagreement*" (Overview Link NCA, p.11)

- ¤ Giving recommendations based on the causal analyst process for improving Nutrition security programming

2. NCA Survey in DSB

The estimated length of a Link NCA (type 3) may vary between 4 and 5 months. During this period, the NCA process is taking place with a preparatory phase estimated at 8 weeks of work aimed primarily conceptualizing the causes of malnutrition in the local context, and secondly the development of field preparations for the three surveys (SMART survey, Qualitative survey, Quantitative survey). For the quantitative analysis, survey teams visit villages sampled during 4-5 weeks. For the qualitative part, the estimated duration is a week per village. Finally, it takes two to three weeks to analyze the data, a week for local restitution and to hold the final workshop and three to four weeks to write the final report.

, The preparatory period has been longer than expected for the Link NCA in the District of DSB beging in mid-January and continuing until 27 Apr. 2015. The field survey timetablehas been respected as the data collection was held from 27 April to May 31 2015.The qualitative data collection remains partial since a single village was visited during this period. The quantitative and qualitative data analysis was conducted over the last two weeks of June. The SMART report was submitted on July 16th 2015. Taking into account Ramadan and the availability of NCA human resources, restitution in a village of DSB and the last workshop with technical experts were postponed to the last week of September 2015.

In order to conduct the Link NCA survey, a team was formed and the NCA analyst took up her duties in January 2015 to incorporate the preparatory phase. In mid-February 2015 the first technical expert workshop was held in Kabul. In March 2015, the SMART program manager started training field investigators (28), finalizing the household questionnaire and sampling the selected villages. In early April 2015, everything stopped for security reasons two days after the establishment of the field survey process in DSP and it was only possible to resume data collection activities as of April 27, 2015. In the previous section, a context assessment of the DSB District outlined the reasons for holding a Link NCA.

This assessment must also be refined for a more accurate description of the situation in the district. This is the first step in producing hypotheses on the risk factors and pathways.

Box 1. Definition of Hypothesized Risk Factor- NCA Guidelines ACF

*A **hypothesized risk factor** refers to a specific risk factor from the UNICEF causal framework that is believed to relate to under-nutrition in the NCA context. Risk factors defined by the community that do not appear in the UNICEF causal framework may also be potential "hypothesized risk factors".*

According to the Link NCA methodology, inventory recent data is assessed, in particular with regard to the availability of measurements calculated using the standard indicators of the three sectors. 27 core indicators identify 18 risk factors in four conceptual environments (see table below).

Table 7. List of Link NCA Core Indicators and Specific Related Risk Factors

CONCEPT RELATED	SPECIFIC RISK FACTOR RELATED	CORE INDICATOR
1-FOOD AND SECURITY LIVELIHOODS FSL FOOD ACCESS	1- HOUSEHOLD FOOD ACCESS AND INTAKE 2- FOOD ACCESS INSTABILITY	1-HDDS (HOUSEHOLD DIETARY DIVERSITY SCORE) 2-HFIAS (HOUSEHOLD FOOD INSECURITY ACCESS SCALE) 3-MAHFP (MONTHS OF ADEQUATE HOUSEHOLD FOOD PROVISIONING)
2-CARE PRACTICES AND MENTAL HEALTH CPMH INFANT AND YOUNG CHILD FEEDING PRACTICES IYCF	3- INITIATION OF BREASTFEEDING 4- BREASTFEEDING PRACTICES 5- COMPLEMENTARY FEEDING PRACTICES 6- RESPONSIVE FEEDING	4-EARLY INITIATION OF BREASTFEEDING 5- EXCLUSIVE BREASTFEEDING UNDER 6MONTHS 6- CONTINUED BREASTFEEDING AT 1 YEAR 7-INTRODUCTION OF SOLID, SEMI-SOLID OR SOFT FOODS 8-MINIMUM DIETARY DIVERSITY OR IDDS (INDIVIDUAL DIETARY DIVERSITY SCORE) 9-MEAL FREQUENCY 10 REPORTED RESPONSIVE
CARE FOR WOMEN	7- MATERNAL NUTRITIONAL STATUS 8- CAREGIVER'S LEVEL OF EDUCATION 9- SOCIAL CAPITAL 10- CAREGIVER'S WORKLOAD 11- MATERNAL WELL-BEING	11- MOTHER'S FOOD INTAKE EVOLUTION DURING PREGNANCY AND/OR LACTATION 12-CAREGIVER'S COMPLETED YEARS OF EDUCATION 13 -PERCEIVED SOCIAL CAPITAL 14- CAREGIVER'S PERCEIVED WORKLOAD 15 -WHO5 WELL-BEING INDEX AND MDI (MAJOR DEPRESSION INVENTORY)

PSYCHOSOCIAL CARE	12- CAREGIVER-CHILD INTERACTIONS	16 -CAREGIVER-CHILD INTERACTIONS SCALE
HEALTH STATUS AND ACCESS TO HEALTH SERVICES	13- CHILD HEALTH STATUS 14- ACCESS TO HEALTH SERVICES	17- ACUTE RESPIRATORY INFECTION IN THE PAST 14 DAYS, 18- DIARRHEA IN THE PAST 14 DAYS 19 - DPT3 IMMUNIZATION COVERAGE, 20 -ANC (ANTE-NATAL CARE) , 21- BARRIERS FROM GOING TO THE HEALTH CENTER
UNHEALTHY ENVIRONMENT WATER	15- DRINKING WATER QUALITY 16- DOMESTIC WATER SUPPLY	22 -ACCESS TO A SAFE WATER SOURCE 23- WATER MANAGEMENT SCORE 24 -QUANTITY OF WATER PER CAPITA PER DAY
SANITATION	17- SANITATION FACILITIES	25 -USE OF HYGIENIC AND SAFE SANITATION FACILITIES
HYGIENE	18- HYGIENE PRACTICES	26 -CAREGIVER/FOOD PREPARER APPROPRIATE HAND-WASHING PRACTICES -27- PRESENCE OF SOAP OR ASHES IN THE HOUSE

For each concept related- FSL, CPMH, Health, and Unhealthy environment with their indicators, it is a table is built detailing the latest data (i.e., Data Collected in the last two years) at the national level, provincial level and for the district of DSB. An analysis of these data is added to each hypothesis formulation relative to the concept and indicator. The collected data, and the questions and hypotheses arising in each sector are presented in the following document. It should be noted that the substantive work was discussed during the first workshop, which brought together technical experts from these sectors in Kabul in February 2015.

2.1. Description of Core Indicators and Hypothesized Risk Factors for Afghanistan, Samangan Province and the DSB district

On food security and livelihoods: according to the analysis of the available data, two main hypotheses emerged with regard to the risk factor relating to household food access and intake: *poor diet diversity and poor food availability in the household*. A third hypothesis, more specific to the socio-

economic situation of households in the district DSB, however, will be measured with the optional indicator[17]*assets, land, livestock and poultry ownership*.

Table 8. Under Nutrition and FSL: Hypothesized Risk Factor for DSB District, Samangan Province, and Afghanistan

7	Under Nutrition and FSL	DATA			Findings	Hypothesised risk factor
1	Under-nutrition Children under five years old Wasting Stunting FSL- Food access Household Dietary Diversity Score Months of Adequate Household Food Provisioning Optional Indicator *Assets, land, livestock and poultry ownership*	National Level Afghanistan 9.5% NNS 2013 40.9% NNS 2013 N/A N/A	Provincial Level Samangan 7.9%NNS, 2013 7.8% ACF 2011 47.% NNS 2013 54.7% ACF 2011 Low: 26% Medium:78.9% High:2.5% ACF 2014 3.25 ACF 2014	District Level Dari Suf Bala N/A N/A Low:28.5% Medium:68.5% High: 3% ACF 2014 3.3 ACF 2014	In Dari-Suf "Food consumption data revealed that majority of the children (63.5%) from 6 to 23 months of age utilized cereals, 23.1% utilized dairy product and then vitamin A rich fruits and vegetables. This shows that food diversity is not properly maintained and children cannot have adequate supply of nutrients from their food they currently eat. This may cause deficiency of one or more nutrients directly or indirectly and any deficiency in the particular nutrient may lead to deficiency of certain other nutrients. Finally this can affect the nutritional status either with clinical symptoms or sub-clinically" (ACF 2011, Afghanistan) According to NRVA 2005, 25% of the population in the province is estimated to receive less than the minimum daily caloric intake necessary to maintain good health. In the whole province more than three quarters of the population (77%) has low dietary diversity and poor or very poor food consumption as shown below. Conducted in Samangan in May 2014, during the pre-harvest period, the SFSA found that 57.8% of respondents had an "acceptable" food consumption score. ACF assessment, conducted post-harvest, at a time of the year when food stocks are supposed to be high, found that only 29% of households had an "acceptable" FCS. Communities' livelihoods follow a seasonal pattern, whereby agriculture provides the main contribution to household revenue during spring (75%) and summer (67%), and daily work becomes the main source of income during fall (63%) and winter (69%) NRVA 2011-12 indicates that 36.5 %t of the Afghan population has a consumption pattern that is below the poverty line.	 Poor diet diversity (1) Poor food access stability leading to a poor food availability in the household (2) Insufficient assets(3)

[17]"*We constructed this priority hierarchy to recommend the use of the core indicators in each and every NCA and the use of optional indicators according to the study objectives, resources and context*" NCA Indicator Guidelines, ACF 2015.

On care practice and mental health: three issues are addressed, i.e. infant and young child feeding practices (IYCP), care of women and psychosocial care. For IYCP four risk factors can be measured with the help of seven core indicators. No data were available on the risk factor "Responsive feeding". The available data for the three levels (national, provincial and local) on three other risk factors were processed and led to three hypotheses.

Table 9. Under-Nutrition and CPMH –Infant and Young Child Feeding Practices for DSB District, Samangan Province and Afghanistan

2	Sector and Indicator CPMH-Infant and young child feeding practices	DATA			Findings	
	Under-nutrition Children under five years old Wasting Stunting CPMH - IYCF Early initiation of Breastfeeding Exclusive breastfeeding under 6months Continued Breastfeeding at 1 year Introduction of solid, semi-solid or soft food Minimum dietary diversity or IDDS (Individual Dietary Diversity Score) **Percentage of children age 6-23 months who received 4 or more food groups** Meal frequency **All children (age 6-23 months)**	National Level Afghanistan 9.5% (NNS) 40.9% (NNS) 69.4% (NNS, Jun-Oct 2013) 58.4% (NNS, 2013) 64.8% (NNS, J2013) 41.3% (NNS, 2013) (WFP) food groups 27.6% (NNS, Jun-Oct 2013) (WFP) food groups 52.1% (NNS, 2013)	Provincial Level Samangan 7.9% (NNS)- 7.8% ACF 47.% (NNS)- 54.7% (ACF) 61.5% (ACF, Oct 2011) 71.4% (ACF, Oct 2011) 87.3% (,ACF, Oct 2011) 86.7% (ACF, Oct 2011) N/A N/A	District Level DSB N/A N/A N/A N/A N/A N/A N/A N/A N/A	*"it has been observed that some of the mothers responded that they did not have enough breast milk to feed their children, which seemingly does not seem good. Keeping this thing in mind the certain children remain deprived from proper breastfeeding and leads to malnutrition"* 89.9% of newborns start breastfeeding within one day after birth. (NNS). *"Early introduction of solid or liquid food in the first three days of life was also high i.e. 34.2% of children had solid or liquid food in their early three days of life. It is obvious that these children can get infected due to poor food safety and hygiene considerations of the mother, if neglected, can lead to several infectious diseases and indirectly deteriorates the nutritional status."* *"Age group of 24 to 35 month is greatly affected by the chronic malnutrition, where the rate is 43.6% of total surveyed for chronic malnutrition. This can be attributed to the improper attention to the nutritional care, from various aspects, below 2 years of age and the chronic malnutrition becomes very obvious above 2nd year of life"*	**Inadequate initiation of breastfeeding (< 1hour) (4)** **Low rate of Exclusive BF under 6 months (5)** **Inadequate complementary feeding practices (6)**

Regarding care of women, five risk factors were identified using 5 core indicators. Moreover, after a literature review of qualitative studies on mental health in Afghanistan, an additional core indicator was added, referring to women's empowerment. The associated risk factor refers to maternal well-being. A hypothesis on this subject was adopted, of five total hypotheses that have emerged on this issue. For

interactions between mothers and their children, an ACF qualitative study on mental health in Afghanistan in 2012 gave sufficiently serious indications to retain a hypothesis on the quality of interactions between mothers and their children.

Table 10. Under-Nutrition (women) and CPMH –Care of Women for DSB District, Samangan Province and Afghanistan

2	Sector and Indicator	DATA			Findings	Hypotheses
	Under-nutrition MUAC (women) CPMH- Care of Women Caregiver's completed years of education Perceived social capital **Women empowerment** WHO5 Well-being Index and MDI (Major Depression Inventory) Caregiver's perceived workload **Psychosocial care: Caregiver-child interactions scale**	National Afghanistan 17% NRVA 2011-2012 Qualitative Research Qualitative research N/A Qualitative research Qualitative research	Provincial Level Samangan Pregnant women / Lactating women Severe risk: 1.75%5.77% Moderate risk: 24.5%25% No Malnutrition:73.6%69.2% ACF, 2011 10% MRRD 2013 N/A	District DSB N/A N/A	*The results for the malnutrition in pregnant and lactating women are not statistically validated due to not following the statistical sampling methodology,* However it can be used as indicative information of malnutrition in pregnant and lactating women. The results show that higher number of pregnant and lactating women is affected by moderate malnutrition, where it is 25% and 24% for pregnant and lactating women respectively. ACF 2011 "*Poor agriculture system and less employment opportunities in the region lead to poor socio economic status and ultimately cause malnutrition. Furthermore, education plays a great role in improving the food security and nutrition situation. Education regarding healthy fruits and vegetable growing needs attention*" ACF 2011 A woman must carry out her assigned household duties or she comes under pressure from the family to do so. She is under the authority of her mother in law and her husband. Complaining about this would mean complaining about her role within the society and within her family[18] "*All the women told us that when they experience a conflict with their husband they couldn't do any housework nor look after their children. They just watch their youngest children wandering about and see that they look lost, asking for food and even falling ill because of the absence of their mother, but the latter can't do anything because they are so sad.*" ACF 2012 Pregnant women should cease performing heavy work during the last two months. However, workload of a pregnant woman is generally not reduced until the last trimester[19]. "*Men said that women do not know how to deal with children because they are not educate and the only way a woman finds to deal with her children is to beat them. For the majority of women what their children need is food, shoes and clothes…According to our observations, mothers demonstrate difficulties when*	**Low maternal nutritional status (7)** **Very low level of women's education (8)** **Weakness of maternal social capital (9)** **Lack of women's empowerment and conflicts in the family (10)** **Women workload (11)** **Weakness of**

[18] Qualitative research on household maternal and newborn care practices, RH department MoPH, UNICEF, Save the Children, 2008.

[19] Qualitative research on household maternal and newborn care practices, RH department MoPH, UNICEF, Save the Children, 2008.

				N/A	*interacting with their babies and children besides the basic care that they have to give them. Few times mothers were seen to interact with their children in a kind way. Their first reaction was to shout or beat them; daily care is very often given in a very abrupt manner without talking to the children looking at them or smiling"*[20]	**mother- child interaction (12)**

Health status and access to health services: Two indicators measure the health status of children: diarrhea and acute respiratory infection. For risk factors related to access to health, there is an indicator that measures the immunization coverage of children, and two others for access to health care for pregnant women and their monitoring after birth. For this concept related domain (Health), the availability of data is quite good at the provincial level, allowing for three hypotheses. The optional indicator "Short Birth Spacing" was added, essentially because of the panorama of Afghan fertility (Afghanistan has one of the highest fertility rates in the world) and the results of various qualitative studies addressing the theme of "reproduction" (risk factor).

Table 11. Health Status and Access to Health Services for DSB district, Samangan Province and Afghanistan

	Sector and Indicator Health	DATA			Findings	Hypotheses
3	**Health status and access to health services** Child Health Status Acute Respiratory Infection (ARI) in the past 14 days Diarrhea in the past 14 days Access to health services DPT3 Immunization coverage ANC (Ante-natal Care)	National Level Afghanistan 8.7% (NNS, 2013) 35.5% (NNS, 2013) 71% (NNS, 2013)	Provincial Level Samangan 24.9% (NNS, 2013 48.4% (NNS, 2013 20.5% (NNS, 2013)	District Level DSB	In Samangan sources mentioned [21]different barriers to access to health services: Weak Knowledge of malnutrition and treatment services in HF by key community figures (as the mullah) and men. Weak level of The Community Health Worker (CHW) activity. Seasonal and geographical barrier (distance and cold weather): physical access is a major constraint, with 66% of the population having to travel long distances (> 10km) to reach the nearest health facility[22].The financial barrier to travel to the HF and unavailability of transport. Bad experience at health center: Behavior of health facility staff and low quality level. "*Compounded with very low sanitation coverage (10.6%5), poor access to drinking water is associated with high prevalence of water borne diseases. According to 2013 NNS, 48.5% of children under the age of 5 had episodes of diarrhea in the 15 days preceding the survey (i.e. one of the highest incidences nationwide).* Overall Needs and Vulnerability Index Samangan 2015. Acute Diarrheal Diseases (score 4/5)" FSL, ACF 2014. At national level, according to MICS 2012, 35% of children age 12-23 months received DPT3 immunization (based on vaccination card seen and mother's report). WHO and UNICEF coverage estimates is 71% in 2013 (national level). However the WHO and UNICEF emphasized estimates of national immunization coverage are based on data and information that are of varying, and, in some instances, unknown quality[23].	**Child health status (Diarrheal and ARI diseases)(13)** **Low access and quality of health services (both health and nutrition)(14)**

[20]Mental Health and child care Practices in the Kabul informal settlements. ACF 2012.
[21] SQUEAC Survey, Oct- Nov 2014, ACF, interviews
[22] Ministry of Rural Rehabilitation and Development, Samangan Provincial Profile, 2013
[23] http://www.who.int/immunization/monitoring_surveillance/data/afg.pdf

	attendance Four or more visits Post natal, check up not done Optional Indicator **Short birth spacing** Reproductive and Health (Risk Factor)	16.4% (NNS, 2013) 55% (NNS, 2013) Fertility	58.7% (NNS, 2013)		In Samangan, most of deliveries (57%) are conducted at home. Only 42.6% of women give birth assisted by a skilled attendant and 58.7% don't have any postnatal visit. Only 26.9% have a postnatal visit within 6 hours. This low uptake rate of maternal health services are mainly due to lack of education, and poor access to health facilities. Different studies conducted in Afghanistan have highlighted the positive correlation between education level and use of health services[24]. And it is not in the tradition to deliver at a hospital and have pre-natal visits, only in case of difficulties[25]. Average family in NNS sample 2013 was 7children. Women have a child every year or every two years. During discussion it appears that women are more willing to have family plan than men. They are tired of the pregnancy that they had, are overload with the number of children that they have to care and worry about their economic situation.[26]	**Maternal well-being and lack of care during pregnancy (15)** **Birth Spacing (16)**

Unhealthy environment: For this concept-related sector, the available data are very good, at least with regard to core indicators at the national and provincial level. There are three hypotheses: quality of drinkable water, sanitation facilities and hygiene practices. For each of these, one can easily have the data for four core-related indicators.. A fourth hypothesis concerns climate vulnerability and its impact on the water supply at certain times of the year in the District of DSB.

Table 12. Unhealthy Environment: Hypothesized Risk factor for DSB district, Samangan Province and Afghanistan

	Sector and Indicator	**DATA**			Findings	Hypothesis Risk Factor
4	Unhealthy environment **Drinking water quality** Access to a safe water source **Local indicator** **Sanitation Facilities** Use of improved sanitation facilities **Unhealthy environment: Hygiene practices** People reportedly washing hands after	**National Level Afghanistan** 62.9% (NNS,2013) 40.4% (NNS, 2013)	**Provincial Level Samangan** 32.7% (NNS,2013) 20% (NRVA 2012) 10.6% (NNS, 2013)	**District** **DSB** N/A N/A	In Samangan - 95.6% of the households consider the drinking water quality and quantity as a first priority. Samangan province is one of the poorest served provinces in terms of access to safe water. Main source of drinking water in Samangan is 47.6% surface water (NNS 2013). In Dari Su f Payen (and Bala) more than 80% of the populations live in a rain-fed zone with the river located in the irrigated areas being their main source of water. In 2011[27], the main challenges reported by the people in the area were the lack of rain affecting their agricultural activities and the lack of safe drinking water leading to disease and death According to NNS results (2013), 58.9% of households in Afghanistan and 89.1% in Samangan do not have access to an improved sanitation facility. As per the results of the NNS, personal hygiene practices seem to be rather good, with the vast majority (over 90%) of	**Lack of access to safe drinking water (17)** **Seasonality of water supply mainly in the mountain (rain fed area) (18)** **Poor Sanitation environment and practices (19)**

[24] ACF Food Security, Livelihoods and Water, Sanitation and Hygiene Evaluation, Samangan province, December 2014

[25] Survey of Mental Health and Child Care practices in the Kabul informal settlements, G. Wrinkler Roncoroni, ACF, 2012

[26] Survey of Mental Health and Child Care practices in the Kabul informal settlements (KIS), G. Wrinkler Roncoroni, ACF, Feb-May 2012

[27] Drought Impact Assessment in Dare-i-Suf Payin (Dar Suf Bala), ACF 2011

	defecation and before eating Presence of soap or ashes in the house	90% (NNS, 2013) 45.1% (NNS, 2013)	98% (NNS, 2013) 30.8% (NNS, 2013)	N/A	people reportedly washing hands after defecation and before eating. Availability of soap is however a major limiting factor to improved hygiene practices, as only 30.8% of respondents had soap available at the hand washing facility.	**Lack of adequate hygiene practices (20)**

Thus, the data analysis covers 16 out of 18 risk factors. These risk factors were examined in the light of 27 core indicators, two optional indicators, and a local indicator. From this analysis, 20 hypotheses have emerged. Of these, 17 will be measured with the core indicators, two with optional indicators and finally one with a local indicator.

As can be observed there are very few data available in the DSB District. Nevertheless, we were able to obtain a fairly comprehensive picture of the situation in the Samangan province. Regarding the four areas of the conceptual framework addressing the causes of malnutrition, it is clear that the problem relating to care for women is less documented compared to core Link NCA indicators. Qualitative studies that address this issue offer pathways which enable us to develop hypotheses about their impact in relation to the malnutrition of children under 5 years. These hypotheses are presented in the following table according to the four areas of conceptual framework.

Table 13. List of 20 Hypotheses Proposed by Analyzing Data (national, provincial, local) by Sector

FSL	CMPH	Health	Unhealthy Environment
1. Poor diet diversity **2. Poor food access stability leading to poor food availability in the household** **3. Insufficient assets**	**4. Inadequate initiation of breastfeeding (< 1hour)** **5. Low rate of Exclusive BF under 6 months** **6. Inadequate complementary feeding practices** **7. Low maternal nutritional status** **8. Very low level of women's education** **9. Weakness of maternal social capital** **10. Women's workload** **11. Lack of women's empowerment and conflicts in the family** 12. **Weakness of mother- child interaction**	**13. Child health status (Diarrheal and ARI diseases)** **14. Low access and quality of health services (both health and nutrition)** **15. Maternal well-being and lack of care during pregnancy** **16. Poor birth spacing**	**17. Lack of access to safe drinking water** **18. Seasonality of water supply mainly in the mountain (rain fed area)** **19. Poor Sanitation environment and practices** **20. Lack of adequate hygiene practices**

2.1.1. Description of Causal Pathway for DSB, Samangan Province, Afghanistan

The mechanism hypothesizing risk factors is believed to affect under-nutrition in a certain context is referred to as "*hypothesized causal pathway*". A hypothesized pathway typically connects several risk factors and represents the mechanism by which a combination of risk factors results in under-nutrition. Based on the Link NCA reference document addressing the pathways to under-nutrition[28], the causal

[28] "*The primary purpose of the module is to support the Nutrition Causal Analysis (Link NCA method) to provide a scientific basis for interpreting quantitative survey results, with the assumption that factors that have been established as "causal" through the*

pathway is initially built by taking into account the identified risk factors of the causal framework of malnutrition which are used in the formulation of hypotheses for each of the four conceptual components (FSL, CPMH, Health, Unhealthy environment). Then the development of the pathway is refined by connecting the primary path with other risk factors from other conceptual components, and it is always completed by comparing the analysis of the data to the developed hypotheses.

Next we show an initial mapping of the interrelationships between risk factors identified by the data analysis. For each concept (4), we refer to the "primary pathway" and the connections to other risk factors proposed by the Link NCA. The hypotheses used in the data analysis is the heart of the process which develops the causal model of nutrition in the DSB District. Note that this is an initial development of the causal pathway that was discussed at the first workshop.

- Primary Pathway of FSL[29] and Context of the DSB District, Samangan Province, Afghanistan

Figure 3. FSL Causal Primary Pathway Link NCA

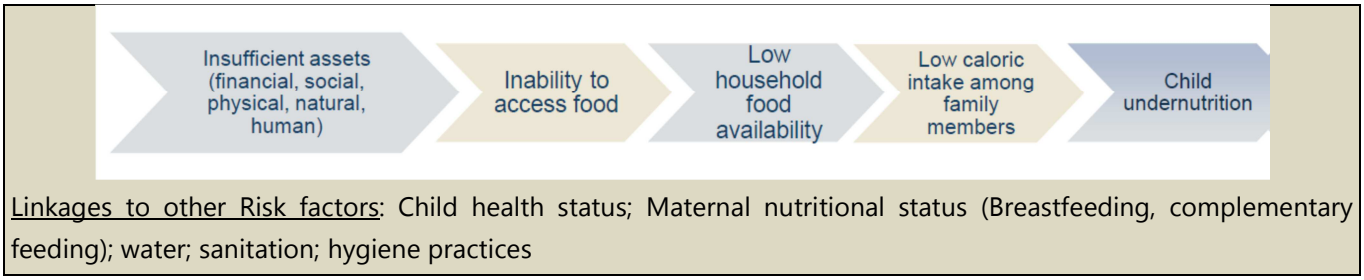
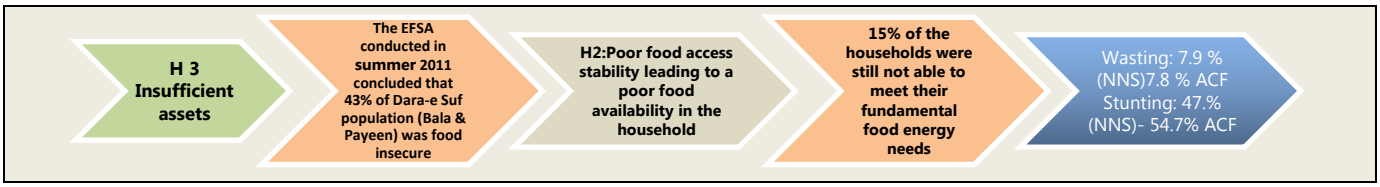


Figure 4. Basic Structure of FSL Causal Pathway in DSB, Samangan Province Afghanistan



scientific literature are also likely to cause malnutrition when detected in the population studied through a Link NCA." Module Pathways Link NCA, ACF. 2015.

[29]"*Literature reveals that the measurement of household food access and intake and child under-nutrition is complicated. A true understanding of the relationship, which is far from being proven as causal, requires us to be cautious of the reliability of the data and how it is gathered and analyzed*"(Module Pathways, p.14)

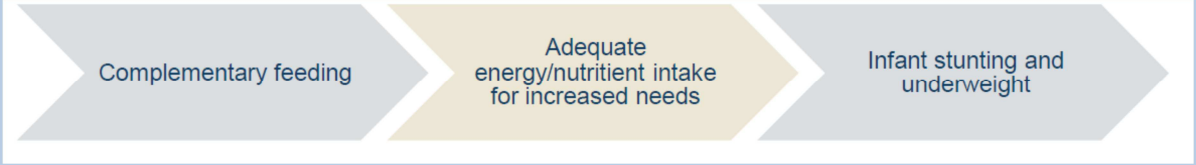
Figure 5. FSL and Under-Nutrition**:** Links With Other Risk factors in DSB, Samangan Province

- Primary Pathway of MHCP and the Context of the District DSB

Figure 6. MHCP Causal Primary Pathways Link NCA, Primary Pathway for Mortality

Linkages to other Risk factors: exclusive breastfeeding, maternal knowledge, resources at delivery

Figure 7. MHCP Causal primary pathways Link NCA Primary pathway for under-nutrition



Linkages to other Risk factors: Breastfeeding practices, Unhealthy environment, Child health status, Maternal education, maternal social capital

Figure 8. Basic Structure of MHCP Causal Pathway in DSB, Samangan Province Afghanistan
Primary Pathway for Mortality[30]

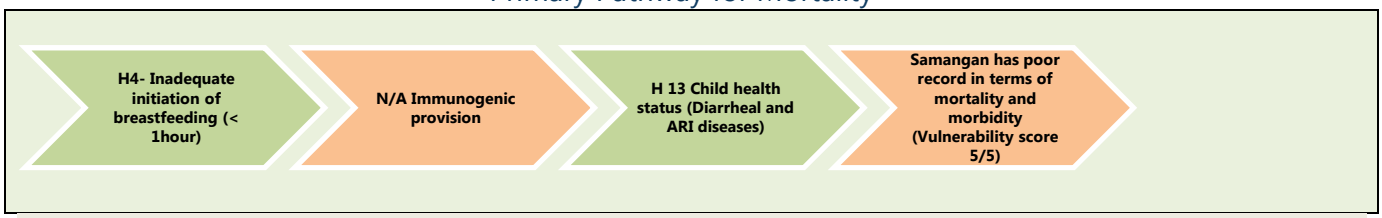
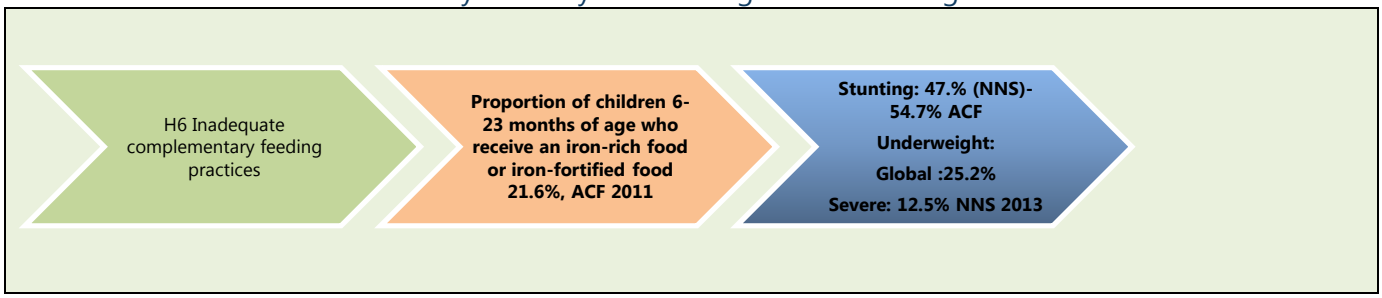


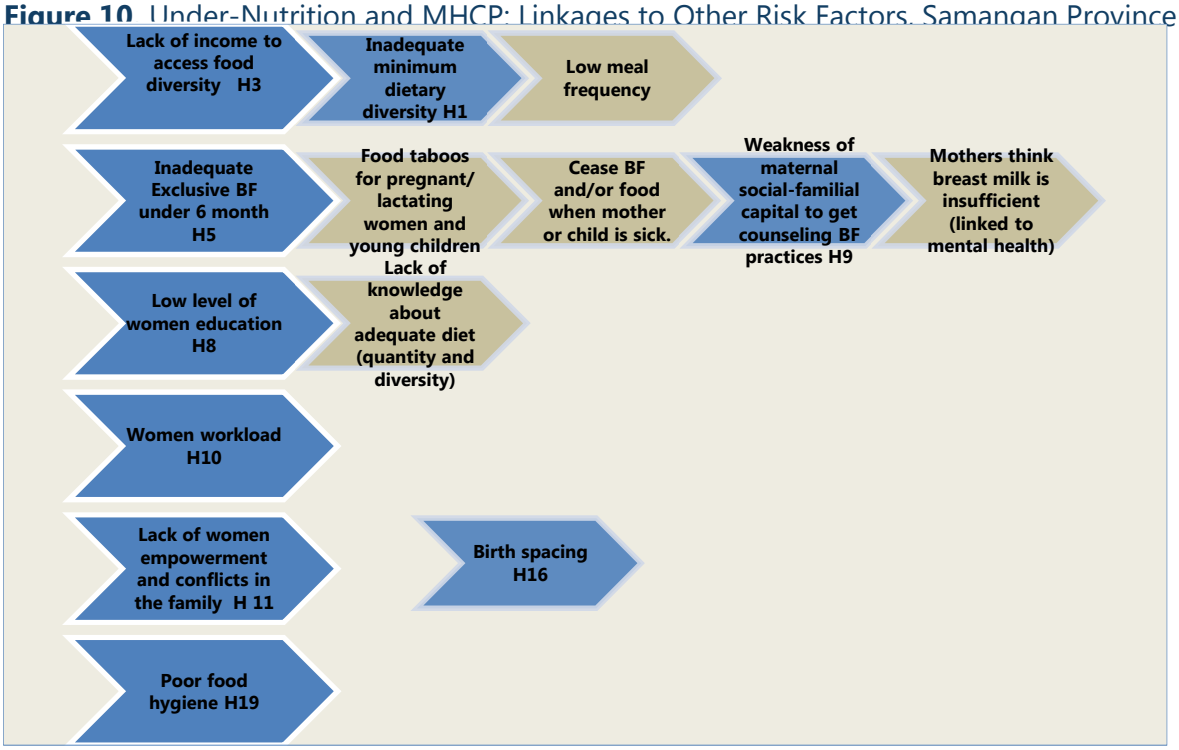
Figure 9. Basic Structure of MHCP Causal Pathway in DSB, Samangan Province Afghanistan
Primary Pathway for Stunting and Underweight[31]



[30]"*The evidence demonstrates overwhelming support for early initiation of breastfeeding, but more research is needed that specifically considers stunting and wasting. Most studies used mortality within the first 28 days as an indicator, perhaps because it is thought that continued breastfeeding has a greater impact on anthropometric indicators*". We have added this pathway due to the high prevalence of diarrhea in the region of Dari Suf. Also, because of the vulnerability on morbidity and mortality indicator in Samangan province that gives a score of 5 of 5 on this subject. NCA Pathways p.28

[31] "*Research supports the fact that proper breastfeeding and complementary feeding practices, the maintenance of a hygienic environment and maternal education all play important roles in maximizing the impact of breastfeeding on child nutritional status*" NCA Pathways, p.35

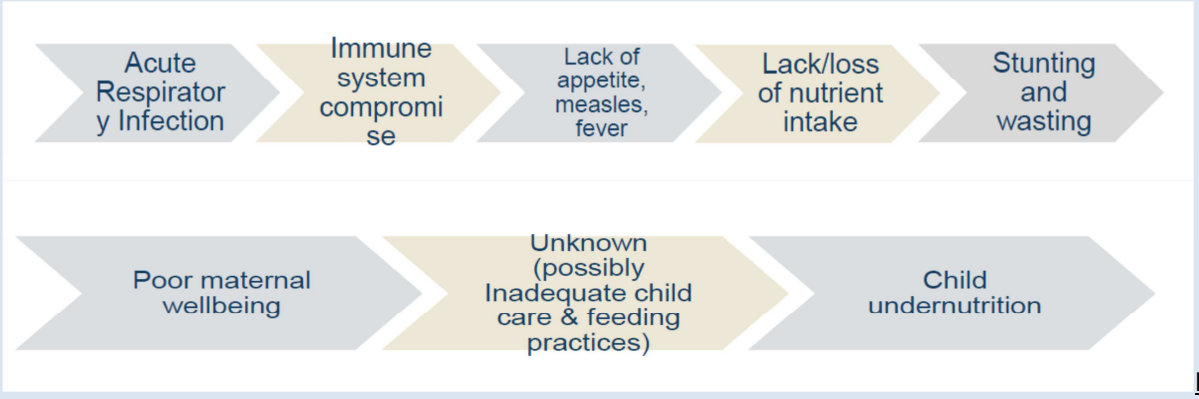
Figure 10. Under-Nutrition and MHCP: Linkages to Other Risk Factors, Samangan Province



- Primary Pathways of Health and the Context of the district of DSB, Samangan Province, Afghanistan

Figure 11. Health Causal Pathways Link NCA

Linkages to other Risk factors Breastfeeding & complementary feeding practices, Household food insecurity, Child health status



Linkages to other Risk factors: Access to health services, Caregiver knowledge, Socio-economic status, healthy environment, Child health status

Figure 12. Basic tructure of Health[32] Causal Pathway in DSB, Samangan Province Afghanistan

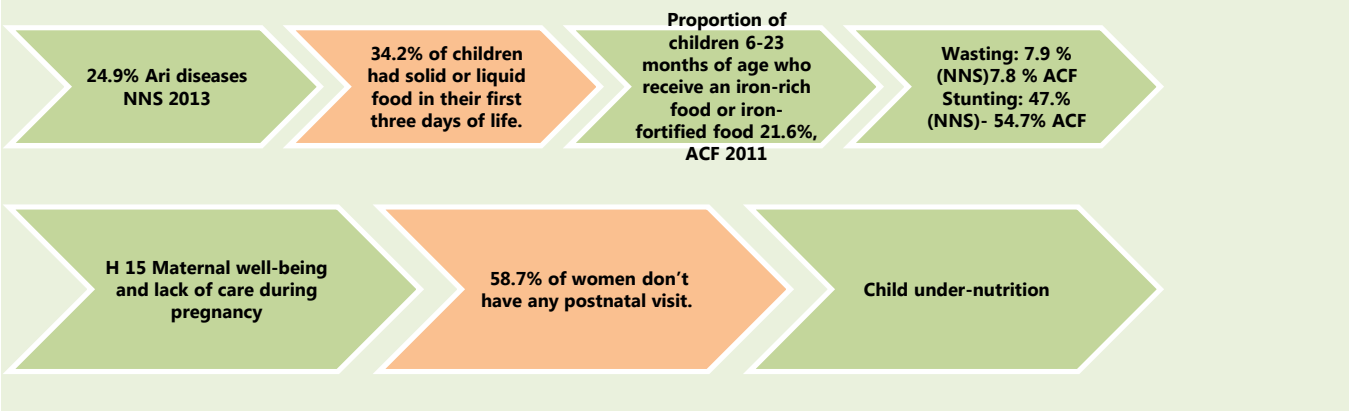
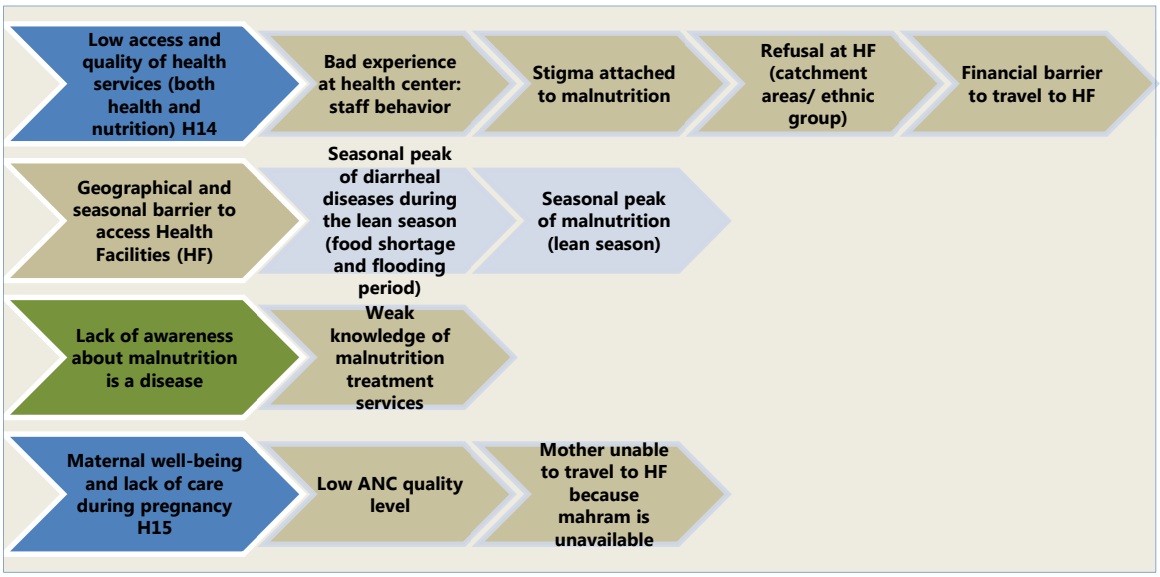


Figure 13. Under-nutrition and Health: Links with other Risk factors

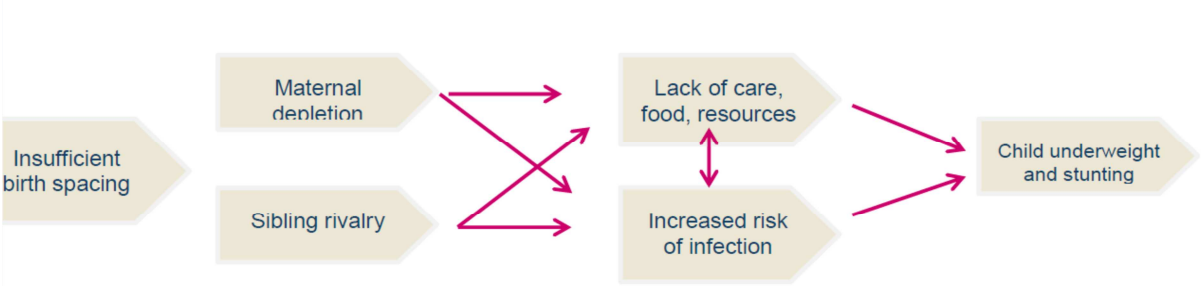


- Low Birth Spacing

According to the available data (qualitative surveys at national level), it is necessary to select this risk factor as a hypothesis. To demonstrate its relevance, we present the analytical framework for defining it as a risk factor. To test the validity of this hypothesis in the DSB district, special attention is given to the risk factors connected to birth spacing.

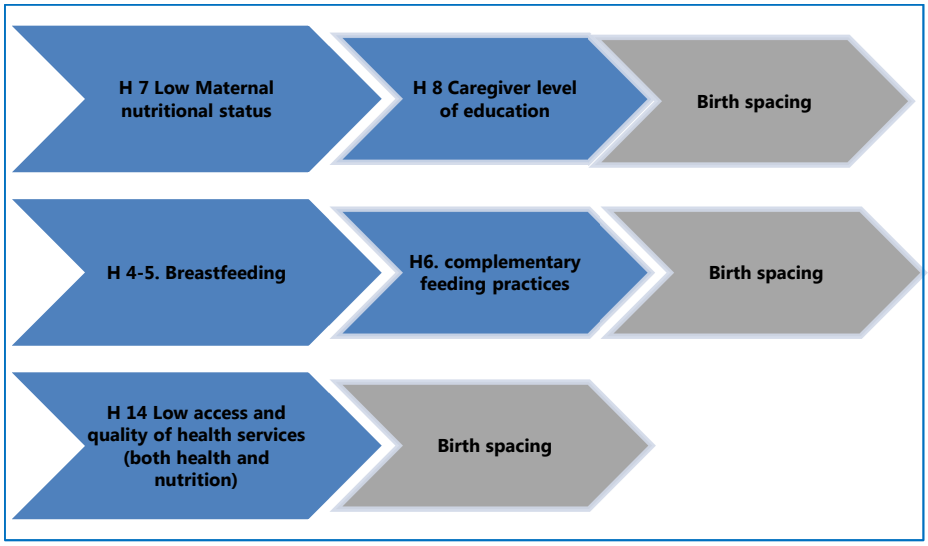
[32] "*While unknown, the proposed pathway through which poor maternal wellbeing—here understood as maternal mental health and especially depression—is sometimes theorized to affect child under-nutrition through poor or improper child-care and feeding practices… The literature reviewed here suggests that the relationship between maternal wellbeing and child nutritional status likely exists, though it appears to be largely contextual*". NCA Pathways p. 80

Figure 14. Birth Spacing Causal Primary Pathway Link NCA



"*The WHO recommends two to three years between pregnancies to reduce infant and child mortality and also benefit maternal health (Marston, 2005). There are three major interconnected mechanisms by which birth spacing may affect nutrition outcomes. The first refers to "maternal depletion," or the fact that short intervals between births limit the amount of time that mothers can recover from the nutritional burden of pregnancy and lactating (T. J. Boerma& G. T. Bicego, 1992). Being pregnant increases energy needs by 13%, protein by 54% as well as mineral needs 0-50%. If a mother's reserves have been depleted, the succeeding child is at risk of foetal malnutrition and a compromised gestational period. However, this model of maternal depletion does not take into account breastfeeding; lactation is an even greater nutritional burden than pregnancy. The second mechanism by which birth spacing may affect child nutrition is through "sibling rivalry" young children born close together might have to compete for food, maternal care, attention or other resources. Short subsequent birth intervals prompts weaning of the first child and reduction in the volume of breast milk consumed for that child. Both factors can make the first-born child more vulnerable to infection and nutritionally disadvantaged (J. T. Boerma & G. T. Bicego, 1992).*" Link NCA Module Pathways to Undernutrition, p.93

Figure 15. Low Birth Spacing in DSB: Links with the Other Factors of Risk



- Primary pathways in unhealthy environment and the context of DSB district- Samangan province, Afghanistan

Figure 16. Unhealthy Environment Causal primary Pathways Link NCA

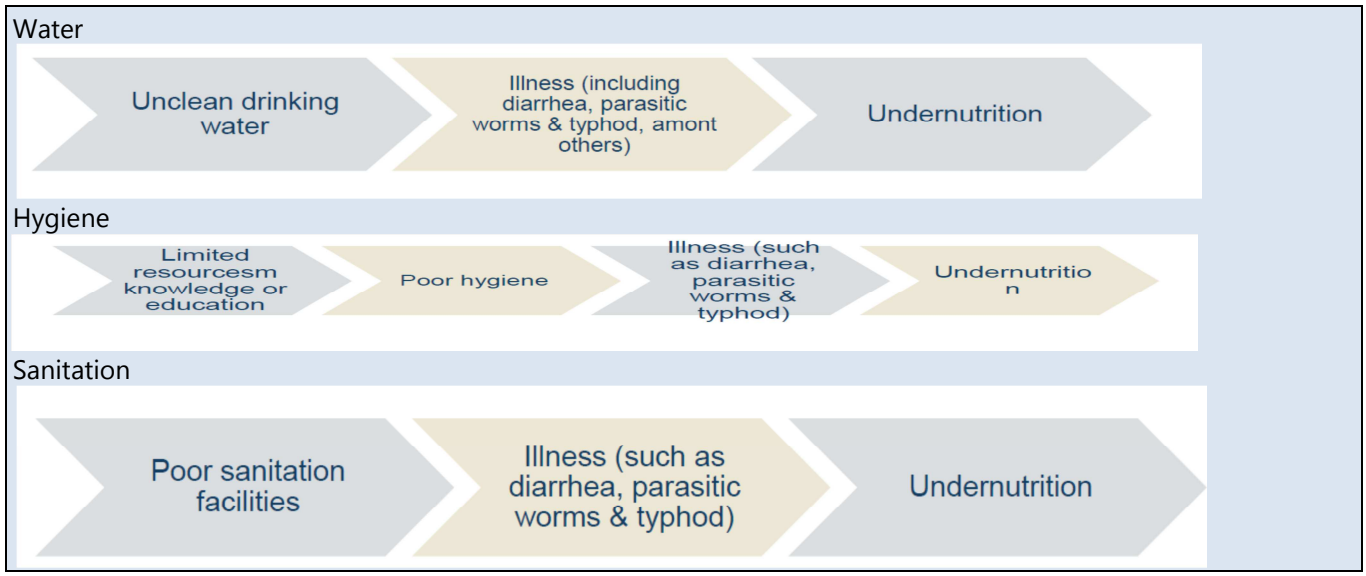
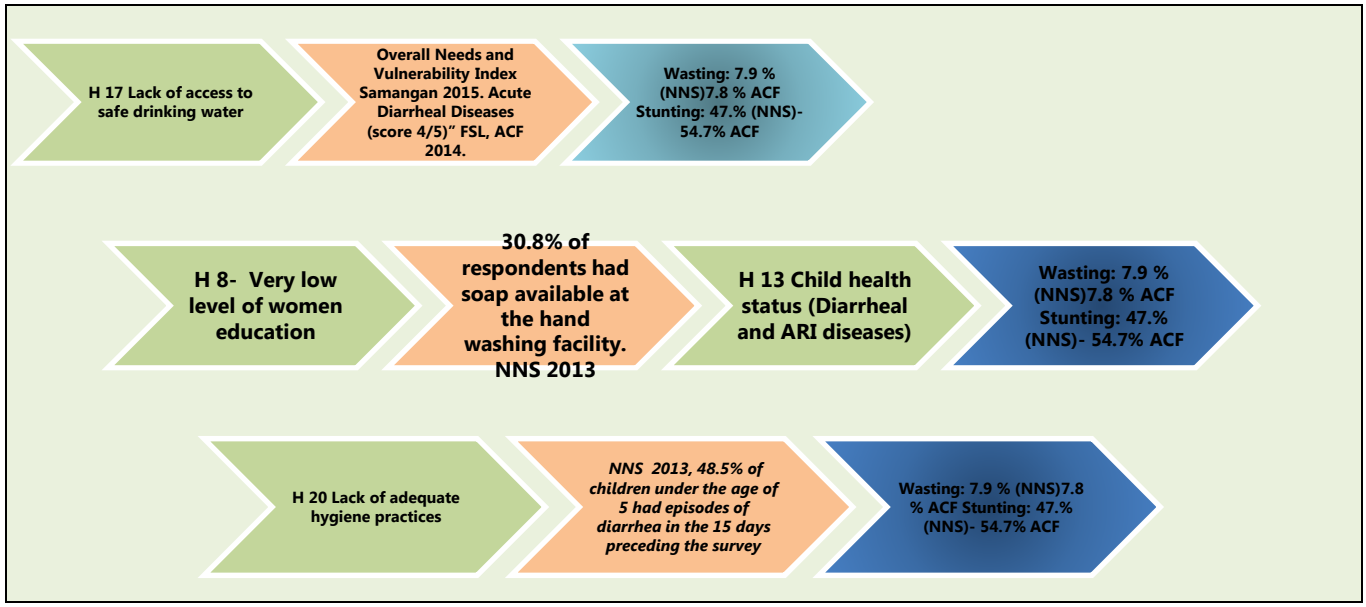
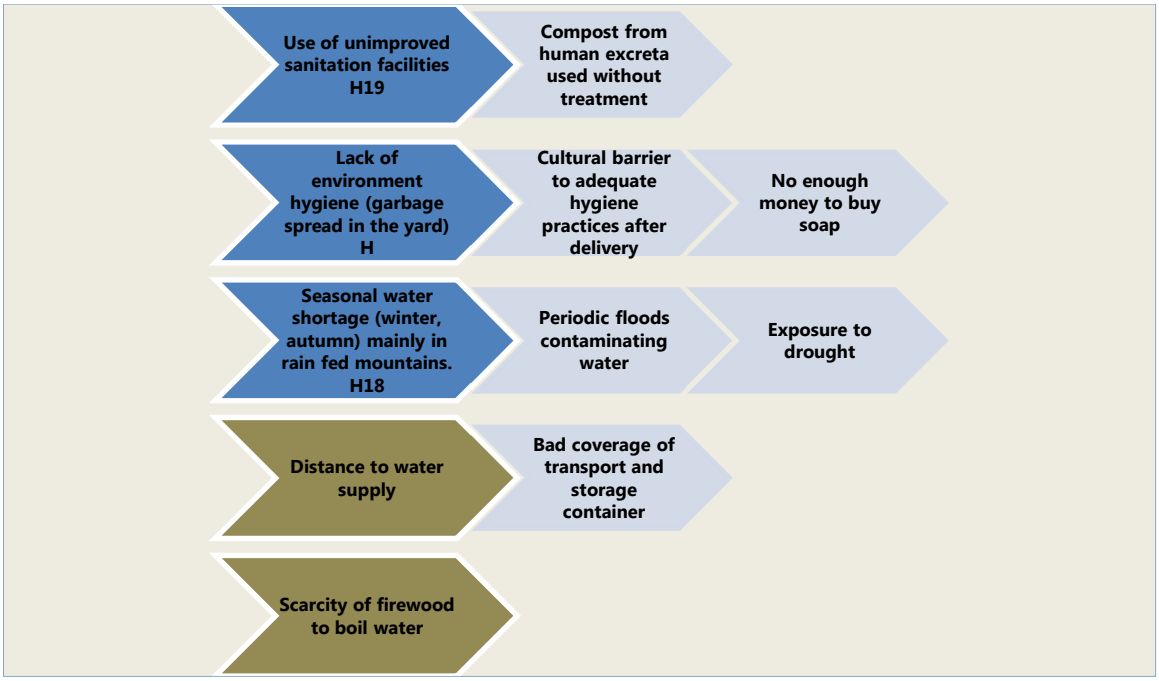


Figure 17. Basic structure of unhealthy environment [33] causal pathway in DSB, Samangan Province, Afghanistan



[33] "*The overriding theme of the literature reviewed is that water, sanitation and hygiene systems and practices are significant determinants in the health and nutritional status of children (stunting but less evidence for wasting), particularly those under 6 years of age*". Link NCA Pathways to Undernutrition module, p. 132.

Figure 18. Unhealthy Environment in DSB: Links with Other Risk Factors



2.1.2. Description of Nutrition Vulnerable Groups in the District of DSB, Samangan Province, Afghanistan

For an overview of nutritional vulnerability in the Samangan Province and the DSB District, it is initially relevant to identify communities at risk of nutritional insecurity[34].

Table 14. Nutrition Insecurity and Vulnerable Households and Communities in Samangan Province

Available resources*In Samangan province, 67% of the population relies on agriculture to generate income and 26% of the population relies on daily work (including off farm and on-farm work), 4% on remittances and 3% on business as main source of cash. Around 90% of households depend on agriculture/ livestock.* *Vulnerable groups**:** households relying only on one source of income (only agriculture).*	**Adjustment to environment** *In 2014, floods impacted the Samangan province ranking it 8th more affected province. Out of 34.22% of households who were not able to meet their food energy requirements without debts in 2012, the household survey points out the chronically food-insecure households, those who will be extremely fragile when a drought will occur.* *Vulnerable groups: Communities living in rain-fed areas more vulnerable to natural disasters.*	***Access to health services*** *In Samangan, there are seasonal and geographical barriers (distance and cold weather): physical access is a major constraint, with 66% of the population having to travel long distances (> 10km) to reach the nearest health facility.* *Vulnerable groups: communities living in remote areas*

Source: Ministry of Rural Rehabilitation and Development, Samangan Provincial Profile, 2013

[34] *"The World Bank defines nutrition security as "the ongoing access to the basic elements of good nutrition, i.e., a balanced diet, safe environment, clean water, and adequate health care (preventive and curative) for all people, and the knowledge needed to care for and ensure a healthy and active life for all household members"* (World Bank, 2013. Improving nutrition through multi sectorial approaches) In other words, nutrition security is an outcome of good health, a healthy environment, and good caring practices as well as household food security; it is achieved when all household members, have physical, social and economic access to sufficient, safe and nutritious food that meet their dietary needs and food preferences, combined with a sanitary environment, access to clean water, adequate health services, and appropriate care and feeding practices to ensure an active and healthy life. Link NCA Guidelines, p. 153. ACF

Within such an environment where socio-economic and climatic difficulties are strong and where much of the population lives in remote areas, it was observed that according to the vulnerability scores[35]:

- Malnutrition is a significant risk for *children aged less than five years*: "*In terms of mortality and morbidity however, Samangan has poor records in almost all indicators, and appears as medium/high priority. According to 2013 National Nutrition Survey (UNICEF-MoPH), prevalence of global acute malnutrition (wasting) is 7.8% (1.03-3.12) - 95% CI, just below the "critical" threshold of 10% GAM. Prevalence of stunting reaches 47.1%, which exceeds international thresholds, and is considered as "high"* (Food Security, Livelihoods and Water, Sanitation and Hygiene Evaluation, Samangan Province, 2014, p. 5, ACF)

Overall Needs and Vulnerability Index Samangan 2015 CHAP	
Indicator	Score
Under-5 mortality	4
Severe Acute Malnutrition	5
Global Acute Malnutrition	3
Acute Diarrheal Diseases	4
Measles	1
Pneumonia	5
Mortality & Morbidity Score	**3.4**
Overall Needs Index	**2.7**

Legend	
Very High	5
High	4
Medium	3
Low	2
Very Low	1

- Malnutrition is an important risk *for pregnant and lactating women*: "*In Samangan province higher numbers pregnant and lactating women is affected by moderate malnutrition, where it is 25% and 24% for pregnant and lactating women respectively. Acute malnutrition among pregnant and lactating women leads to many negative outputs such as miscarriage, low birth weight, maternal and neonatal mortality, stunted children etc. Nutritional support may prevent these negative outputs. Special attention should be paid to women when designing nutrition projects. Caring for the well being of mothers allows them to care for the well being of their children*". Anthropometric Nutrition Survey, Samangan Province, ACF. 2011)

2.2. Stakeholder Workshop in Afghanistan for the Link NCA Study in Samangan Province[36]

At the early stage of the Link NCA study, multi-disciplinary technical experts from different types of organizations are invited to attend a one-day workshop to brainstorm potential (hypothesized) under-nutrition risk factors and pathways to be tested by the Link NCA team.

[35] Humanitarian Needs Overview, Afghanistan

[36] In February 2015, the district Dari Suf Payen (DSP) was chosen for the Link NCA study in Afghanistan. In April 2015, due to security problems in the district DSP, the investigation was then held in the District of DSB. It has been possible to make that change, since the ACF operations were performed in these two neighboring districts in past years, and on the one hand, the collection of Link-NCA secondary data was done at three levels (national, provincial, and local) and on the other hand, government data and data from other sources (other NGOs, ACF surveys, etc.) were available mainly at the provincial level (Samangan).

Table 15. Objectives and Outputs of the Expert Workshop in Kabul

Objectives:	Outputs:
To validate a set of hypotheses about the risk factors that may explain under-nutrition in the study context and the mechanisms, or pathways, through which these risk factors may operate by **reaching** consensus to the hypothesised risk factors and nutrition vulnerable groups will be studied through the Link NCA.	**A list** of carefully formulated hypothesised risk factors and hypothesised pathways; **Identification** of nutrition vulnerable groups; **A preliminary rating** of hypothesis by experts Source: Link NCA Guidelines, Link NCA ACF

Table 16. Organizing the "Link NCA Technical Expert Workshop" in Kabul

Workshop Participants:	Content of workshop:
On 31 Jan. 2015, an invitation was addressed to thirty partners[37] to hold a workshop in Kabul on 18 Feb. 2015. On 18 Feb. 2015, 21 technical partners took part in this workshop. The UN agencies were represented by FAO technical experts (1), WFP (2), UNICEF (3) and WHO (1).There were 8 international and national NGOs, 1 representative of the agency Swedish Committee Afghanistan, and 5 technical experts from ACF.	1) The presentation of Link NCA Methodology (Power point) and a time for questions on methodology, 2) Working groups brainstorm on causes of under-nutrition models. 3) Multi-sectorial working groups identify vulnerable groups 4) Brief presentation of findings from the secondary data review conducted by the Link NCA Analyst 5) Working groups on hypothesised risk factors 6) Feed-back of working groups / debate 7) Consensus reached and ranking exercise

Following a presentation of the methodology Link NCA, participants were divided into three subgroups[38]:

Food Security and Livelihoods	**Health Water and Sanitation and Hygiene**	**Nutrition group: Health and CPMH**
Participants : Samuel Hall, Helvetas, NEI, MEDAIR, ACF	Participants: UNICEF, BRAC, WHO, ACF	Participants: UNICEF, AADA, WFP, Afghanaid, Save the children, ACF

The three subgroups then have constructed a specific causal model in relation to local context in the Dari Suf area of Samangan province, on the basis of their expertise in each of these areas.

2.2.1. Work Group Brainstorming on Causal Under-Nutrition Models

Each of the three groups has initiated a causal model. The FSL group highlighted the geographical, climatic and economic "constraints" of Dari Suf region to explain the vulnerability of the predominantly rural population. The Nutrition Group (Women Care practices, IYCP) adopted an approach centered on the situation of women in rural areas. Finally, the Health-WASH group has developed a model based on

[37]Link NCA Recommendation for the initial workshop: approximately fifteen to twenty-five participants. A larger group is difficult to shepherd through the process.

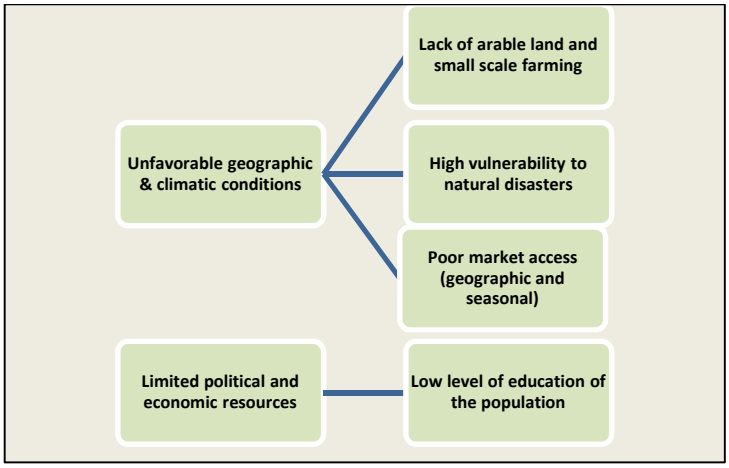
[38] For the Link NCA in Afghanistan, sectorial groups were organized as recommended in previous version of the Link NCA methodology, the final guidelines not being realized at this time. Readers should note that the final guidelines (2015) recommend to organize multi-sectorial groups.

"weaknesses", i.e. economic problems and high exposure to climatic and geological risks of the area Dari Suf.

- Food Security and Livelihoods

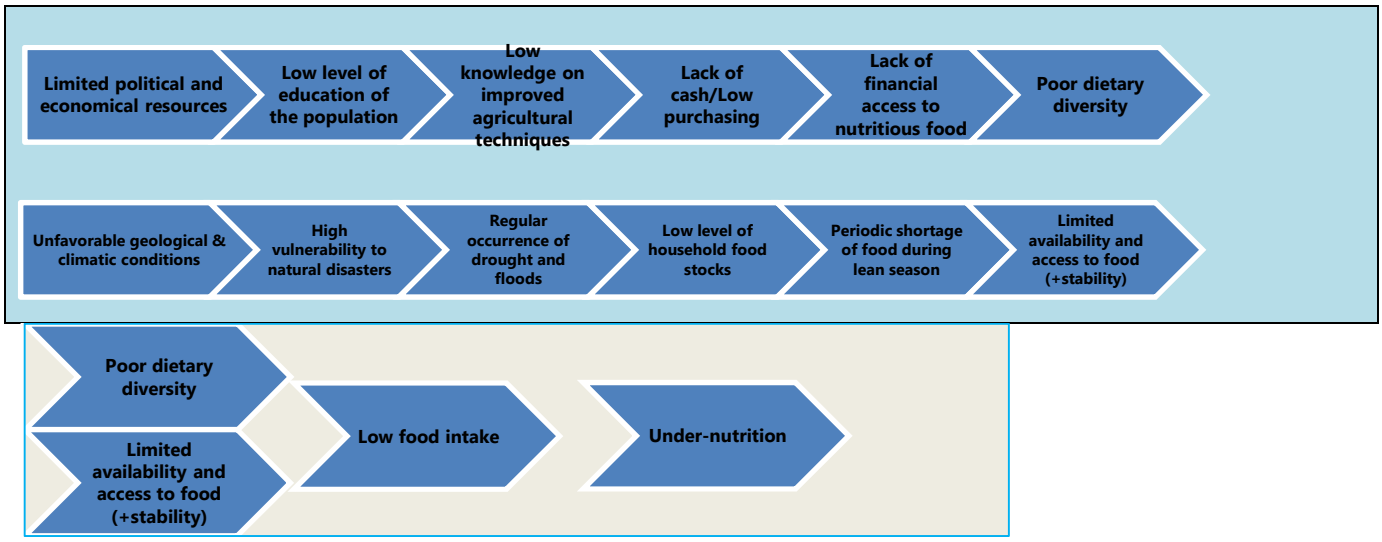
The basic structure of the causal model is built on two findings: economic resources (political model) are limited and the territory is weakened by its environmental conditions. These two determinants characterize the area of Dari Suf. Economic development remains minimal, which leads to low access to education. Moreover, geographical fragility exposes the population to natural disasters, poor access to markets during the seasons exposed to snow and floods and the challenge ofproducing good harvests with limited arable lands.

Figure 19. Subgroup FSL - Basic Causes of Malnutrition in DSB



Two causal pathways stem from these two determinants: one validates the "poor diversity" risk factor and the other the risk factor "limited availability and access to food (+ stability)".

Figure 20: Causal Pathways for Subgroup FSL

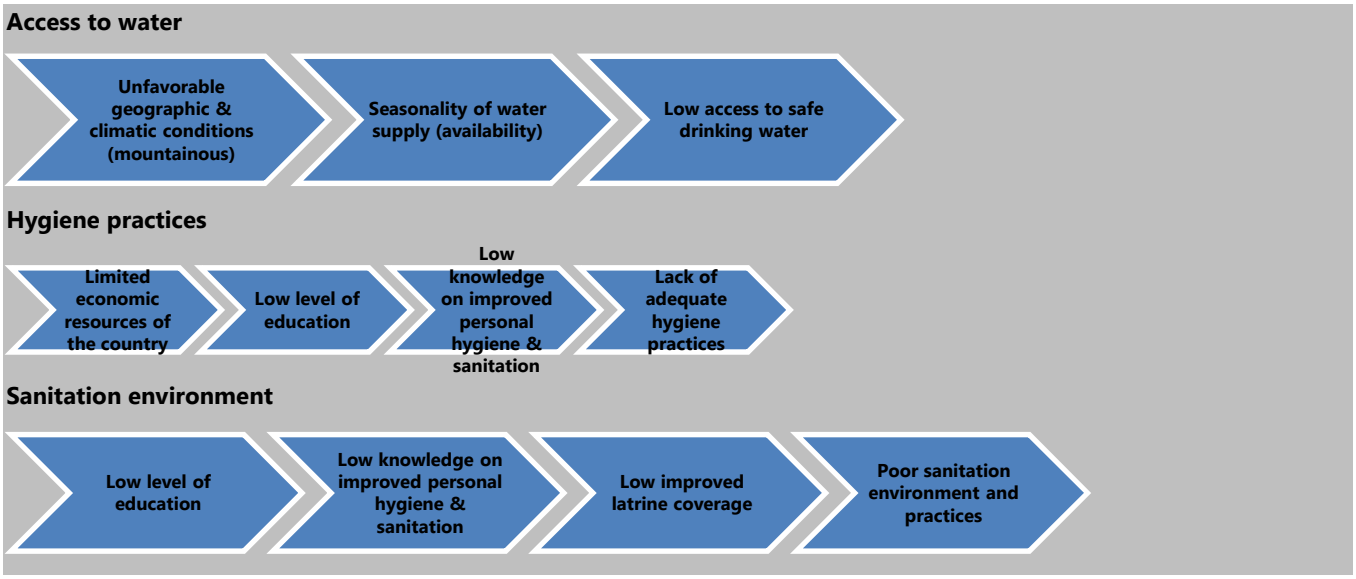


Finally, the experts held that the "food intake" factor explains the incidence of child malnutrition.

- Water and Sanitation and Hygiene - Health

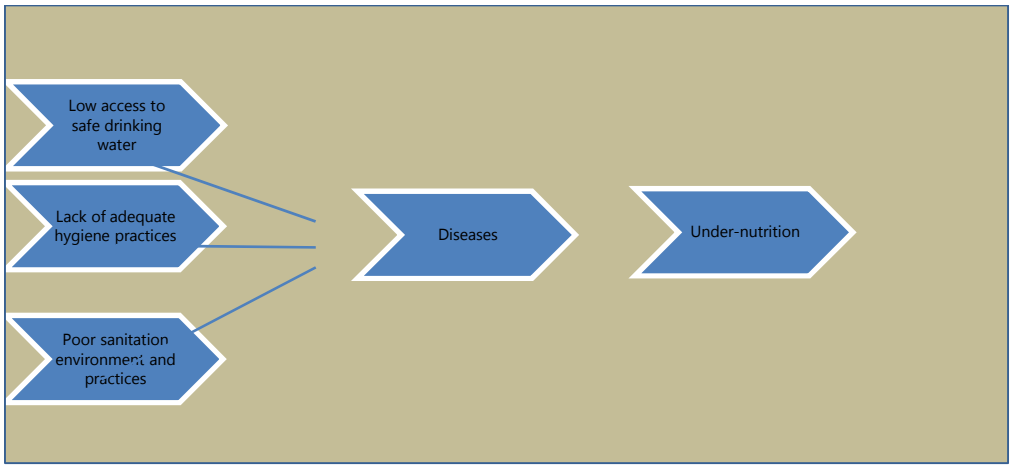
First, to address access to water, the group proposes a causal model based on the specific climatic and geological conditions of this region of Afghanistan. Participants then take into account the chronic shortage of public services due to the lack of economic activity necessary for upgrading hygiene in Afghanistan.

Figure 21. Subgroup WASH-Health, Basic Causes of Malnutrition in DSB



For WASH specialists, the three risk factors (drinking water, hygiene, sanitation) are at the origin of the high prevalence of diseases (e.g. diarrhea), a cause of child malnutrition.

Figure 22. Wash Group: Causal Pathway in DSB



- Nutrition group

This group built a causal model with particular attention to the living conditions of Afghan women as potentially possible causes of infant malnutrition in Dari Suf. Indeed, many reports and studies have shown that it is not easy for Afghan women to have access to education, jobs and healthcare throughout Afghanistan. The base of the causal schema refers therefore to social norms and cultural traditions.

Figure 23. Nutrition subgroup: Basic Causes of Malnutrition in DSB

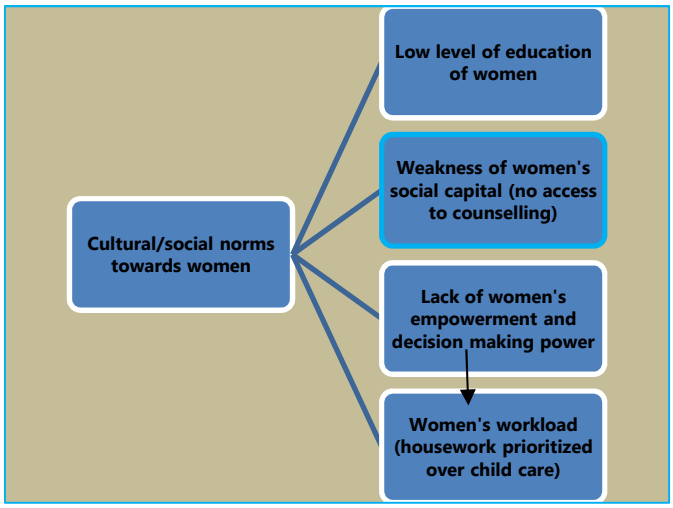
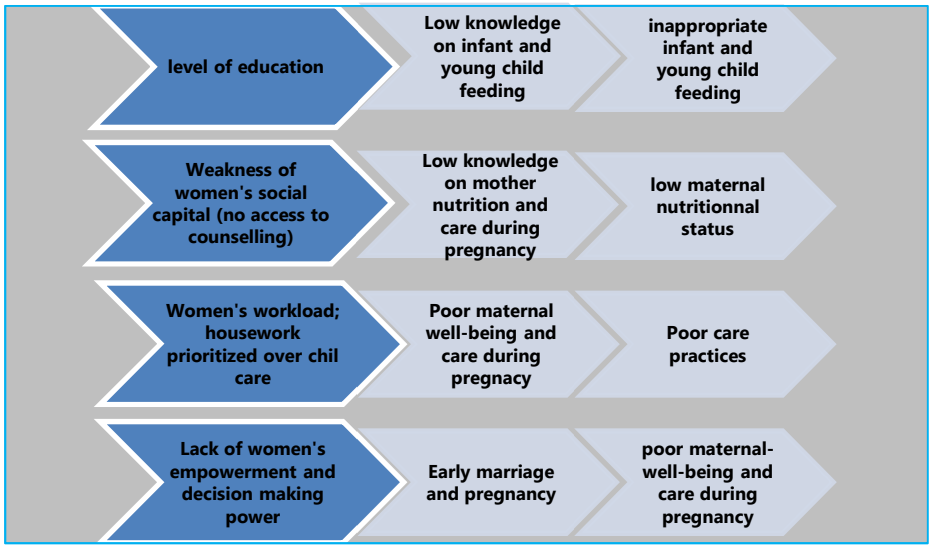


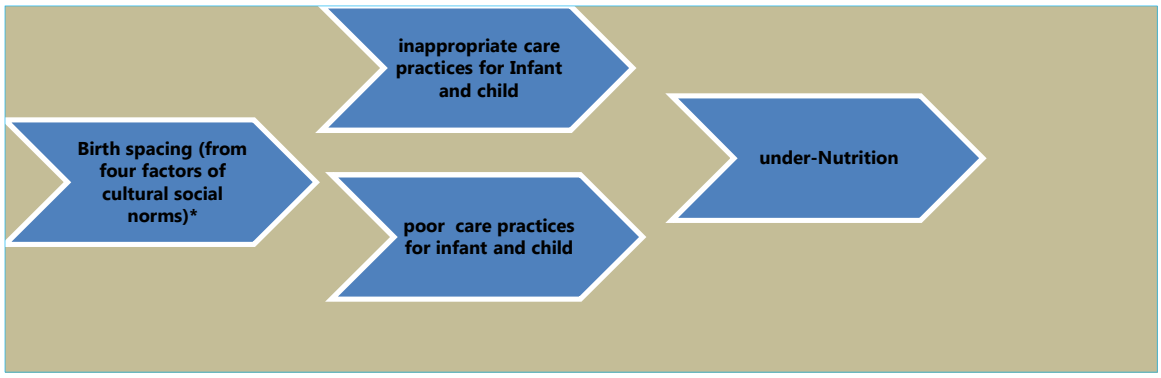
Figure 24. Nutrition Group: Causal Pathway of Palnutrition in DSB



Experts accordingly develop a causal schema that takes into account the specific impacts of these four risk factors, particularly on maternal practices and the well-being of mothers.

Nutrition experts have taken into account the risk factor of "low birth spacing". First, in the causal schema, it is crossed by the effect of four risk factors (low level of education of women, women's weak social status and consequent lack of access to counseling, lack of women's empowerment and decision making power, women's workload (prioritized housework over child care). When mothers are affected, the negative impacts are transferred by "inappropriate infant and child care "and "poor infant and child care practices ", which are risk factors that cause child malnutrition.

Figure 25. Nutrition Group: Causal Pathway for Birth Spacing in DSB



2.2.2. Multi-Sectorial Groups Identify Vulnerable Groups

After examining the proposed ACF vulnerable groups, the experts were assembled in three random groups to identify vulnerable groups in the Dari Suf region. In plenary, participants clarify the selection of vulnerable people and communities in the Dari Suf region proposed by ACF (see table below).

Table 17. Discussion About the Definition of "vulnerable groups" in DSB

ACF	Technical Experts
Households relying only on one source of income (agriculture).	Economically vulnerable households (low assets/low income diversity)
Communities living in rain-fed areas more vulnerable to natural disasters	As above
Communities living in remote areas	Communities living in remote areas where coverage of public services is lower
Children aged less than five years	Children under the age of five (especially children under 2)
Pregnant and lactating women	Women of child bearing age (especially pregnant and lactating women)

2.2.3. Consensus on the Hypotheses (Risk Factors)

13 out of the 20 hypotheses submitted by AFC met with consensus, of these, three have been revised and one was split into two, which results in 15 consensual hypotheses. Participants also produced three new hypotheses bringing the total to 18. They rejected 2 hypotheses, and have made a major modification by only keeping 1 of 3 hypotheses on women's living conditions (work, education level, and social capital). A total of 19 hypotheses were developed from discussions in the working group.

Table 18. Consensus on Hypothesized ACF Factors

1.	Poor diet diversity
2.	Poor food access stability leading to poor food availability in the household
3.	Inadequate initiation of breastfeeding (< 1hour)
4.	Low rate of Exclusive BF under 6 months
5.	Inadequate complementary feeding practices
6.	Poor birth spacing
7.	Maternal well-being and lack of care during pregnancy
8.	Child health status (Diarrheal and ARI diseases)
9.	Lack of access to safe drinking water
10.	Lack of adequate hygiene practices
11.	Poor sanitation environment and practices

Table 19. Consensus with Revisions

Low access and quality of health services (both health and nutrition)	Difference made between access and quality of health services => split into 2 risk factors	12. Low access of health and nutrition services 13. Low quality of health and nutrition services
Low maternal nutritional status	Low maternal nutritional status revised to low maternal health and nutritional status	14. Low maternal health and nutritional status
Weakness of mother-child interaction	Weakness of mother and child interaction rephrased into more generic terms of poor care practices => hypothesis 15 is about "poor psychosocial care"	15. Poor care practices

Table 20. Hypotheses Added

To better capture attitudes towards health services 16. Health-seeking behavior for mother and child added To include causes, symptoms, treatment on malnutrition 17. Low awareness on nutrition To food utilization including food hygiene, food habits and diversity and food sharing 18. Inappropriate food utilization (food hygiene, food habits, food sharing)

Table 21. Hypotheses with Major Substantive Corrections

Very low level of women education	Include in Women's empowerment	
Weakness of maternal social capital	Include in Women's empowerment	
Lack of women's empowerment and conflicts in the family	Not relevant to included conflict in the family	19. Lack of empowerment of women
Women workload	Include in Women's empowerment	

Table 22. Hypotheses Cancelled

Seasonality of water supply mainly in the mountain (rain fed area)	Seasonality of water supply considered as pathway to lack of access to safe water, not risk factor per se
Insufficient assets	Insufficient assets considered as proxy indicator of poverty; considered as basic cause, hence removed

2.2.4. Rating the "expert opinion"[39] of the Working Group Participants

The last step was for the technical experts to add and correct the validated hypotheses. , added, and corrected by technical experts. Each participant evaluated all risk factors on a scale of 1 to 5. The average score given by the experts to distinguish major contributors to undernutrition is 5. As this is an average, the selected interval is between 4 and 5. In this exercise, all 21 participants selected four major risk factors.

Table 23. Hypotheses Believed to be a Major Contribution to Under-Nutrition Causes

1. Child health status (Diarrheal and ARI diseases)
2. Low rate of Exclusive BF under 6 months
3. Inadequate complementary feeding practices

[39] *"A quick rating exercise can be done to generate a source of data on 'expert opinion' that can later be compared and contrasted to community perceptions in the analysis stage. Participants should be requested to indicate which hypothesized risk factors are likely to explain more of the under-nutrition causes in the local context. Each participant should rate individually on a paper with, for each hypothesized risk factor: a score from 1 (indicating "hypothesis believed to contribute marginally to under-nutrition causes") to 5 (indicating "hypothesis believed to be a major contributor to under-nutrition causes"*)". Link NCA Tool kit, ACF 2015.

4. Low awareness on under-nutrition (causes, symptoms, treatment)

For the other 15 selected risk factors, participants gave an average score within a range varying from 3.9 to 3. They have been described as having a "significant contribution to the causes of malnutrition" in the region of Dari suf.

Table 24. Hypotheses Believed to be a Significant Contribution to Under-Nutrition Causes

1. Low access to health and nutrition services
2. Low maternal health and nutritional status
3. Low quality of health and nutrition services
4. Inadequate initiation of breastfeeding (< 1hour)
5. Lack of access to safe drinking water
6. Health-seeking behavior for mother and child
7. Low birth spacing
8. Maternal well-being and lack of care during pregnancy
9. Poor dietary diversity (mother and child)
10. Poor food access stability leading to poor food availability
11. Inappropriate food utilization (food hygiene, food habits, food sharing)
12. Lack of women's empowerment
13. Lack of adequate hygiene practices
14. Poor sanitation environment and practices
15. Inappropriate care practices (mother and child interaction)

2.2.5. Outputs of the Workshop: A List of Hypothesized Risk Factors, and Hypothesized Pathways[40]: A List of Nutrition-Vulnerable Groups, and a Rating of Each Hypothesis by Experts

There are three key tables below: a list identifying hypothesized risk factors, a list of nutrition-vulnerable groups, and a preliminary rating of each hypothesis by experts. Noted no hypothesis had a score under 3.

Table 25. List of Hypothesized Risk Factors

1	Poor dietary diversity (mother and child)
2	Poor food access stability leading to poor food availability
3	Inappropriate food utilization (food hygiene, food habits, food sharing)
4	Inadequate initiation of breastfeeding (< 1hour)
5	Low rate of exclusive BF under 6 month
6	Inadequate complementary feeding practices
7	Lack of women's empowerment
8	Inappropriate care practices (mother and child interaction)
9	Low awareness on under-nutrition (causes, symptoms, treatment)
10	Low access to health and nutrition services
11	Maternal well-being and lack of care during pregnancy
12	Low maternal health and nutritional status

[40] See Annex.

13	Low quality of health and nutrition services
14	Health-seeking behavior for mother and child
15	Low birth spacing
16	Child health status (Diarrheal and ARI diseases)
17	Lack of access to safe drinking water
18	Lack of adequate hygiene practices
19	Poor sanitation environment and practices

Table 26. List of Nutrition-Vulnerable Groups

1	Children under the age of five (especially children under 2)
2	Women of child bearing age (especially pregnant and lactating women)
3	Economically vulnerable households (low assets/low income diversity)
4	Communities living in remote areas where coverage of public services is lower
5	Communities living in rain-fed areas more vulnerable to natural disasters

Table 27. A Rating of Hypotheses Risk Factors

Rating	Hypotheses Risk factor	Score
Hypotheses believed to form a major contribution to under-nutrition causes	Child health status (Diarrheal and ARI diseases)	4.4
	Low rate of Exclusive BF under 6 month	4.3
	Inadequate complementary feeding practices	4.3
	Low awareness on under-nutrition (causes, symptoms, treatment)	4.1
Hypotheses believed to be a significant contribution to under-nutrition causes	Low access to health and nutrition services	3.9
	Low maternal health and nutritional status	3.9
	Low quality of health and nutrition services	3.8
	Inadequate initiation of breastfeeding (< 1hour)	3.8
	Lack of access to safe drinking water	3.7
	Health-seeking behavior for mother and child	3.7
	Poor birth spacing	3.6
	Maternal well-being and lack of care during pregnancy	3.6
	Poor dietary diversity (mother and child)	3.6
	Poor food access stability leading to poor food availability	3.5
	Inappropriate food utilization (food hygiene, food habits, food sharing)	3.3
	Lack of women empowerment	3.3
	Lack of adequate hygiene practices	3.1
	Poor Sanitation environment and practices	3.1
	Inappropriate care practices (mother and child interaction)	3.0

2.3. Field Data Collection

After the workshop held in Kabul on February 18, 2015, a number of preparations for the field survey were made at the ACF office in Mazar el Sharif in the province of Balk, 130 km away from the Dari Suf ACF base in the town of Bazar Stocka in DSB district. Preparations included recruiting and training the investigators, as well as developing the household survey. In March 2015, previous construction was still ongoing at the base which had completely

stopped its activities in June 2014. This reconstruction had no impact on the progress of preparations, at least with respect to recruitment and training of investigators. It was deemed preferable to establish preparatory activities in Mazar, the crossroads of several neighboring provinces, including the province of Samangan.

It is with the ACF Mazar operational team that the logistical and human organization of the NCA survey was started. Note that the ACF staff knows the two districts of Dara Suf Payin and Dara Suf Bala, since many program managers positioned in Mazar had participated in previous WASH and FSL missions in both districts. The NCA team has been enriched by a SMART program manager, in order to support the deployment of the recruitment and training of data collectors (SMART and quantitative data collection). We will address in detail further below the points relating to the methodology (establishing sample questionnaires and conducting the field survey). Between the months of March and April, all preparations for data collection were implemented for the Link NCA in the District of Dari Suf Payin. Field surveys started at the beginning of April, but after two days in DSP, everything stopped due to security problems and the NCA team was forced to evacuate to Mazar.

For 25 days the security situation remained to critical to consider conducting the household survey in DSP. It was clear that it would be difficult to implement the qualitative survey in such conditions. With the precipitated return of the entire team to Mazar, it was therefore necessary to consider alternative scenarios, corresponding to all the preparatory work such as the analysis of secondary data and the technical expert's consensus process for validating hypotheses of the causal pattern of malnutrition by DSP. Supported by the ACF office in Kabul, talks were organized with the governors of the two districts. It was decided to return to the ACF base (Bazar Stocka in DSB) to carry on the NCA investigation in the district of DSB[41]. This change in the field survey resulted in restarting the district village selection, which required an additional work week by the NCA team.

[41]The DSP district had been selected since according to various recent studies associated with the ACF experience in both districts; it appeared that the population of DSP was in a less favorable economic situation that the DSB district. So it was appropriate in the first instance to select the DSP district, which could later help with the preparing the implementation of future programs.

Delays accumulated as reinforced security measures[42] had more of an impact on the qualitative survey data collection. In May 2015, another constraint was added: the roads were regularly flooded. The cumulative effect of these unfavorable circumstances led to an extended timeline of at least three months of intensive field work, to complete the qualitative survey in the four villages selected. In the limitations section of the survey, we will see in more detail the impact of reducing the number of villages for the qualitative data collection.

Going back to the preparations for the quantitative survey, its implementation began in March 2015. Many activities were scheduled during that month: the recruitment of field investigators, the drafting (in English and Persian-Dari) of the questionnaire for data collection, 10 days' training for data collectors (5 days for anthropometric measurements – SMART- and five days for the NCA questionnaire).

2.3.1. Data Collection Methods

The quantitative and qualitative data collection in the Dari Suf Bala district was conducted between April 27 and May 31, 2015. In this section, the household questionnaire components of the collection of quantitative data and the survey methodology for the collection of qualitative data are presented.

- ¤ Sampling procedures for quantitative data collection (Smart and Risk factors survey)

One household sample was pulled taking into account the known parameters on the prevalence rate of malnutrition (GAM) in Samangan province, the NCA indicator "meal frequency" and demographic parameters (number of children under 5 years) relative to the population of DSB district (next table).

Table 28. Parameters for Sampling Procedures for Quantitative Data Collection

Estimated GAM	7.9%
U 5 Population	15.6%
Av. HH size	7.8%
Precision	3%
Non response	6%
Indicator "Meal Frequency", NNS 2013	52.1%

"*Out of a total population of 52,446[43] in DSB district, only 31,934 were sampled due to constrains in access and security. This represents about 61% of the total population. All children from 0 to 59 months old in the selected households were included in the sample*"[44] (Nutrition Causal Analysis (NCA) SMART Nutrition Survey Preliminary Report. ACD, July 2015)

[42]The Link NCA team whose NCA analyst and Smart program manager was to return to Mazar in an unpredicted movement planned to move week by week between Mazar and Bazar Stocka.
[43] CSO Population Estimates for 2014 to 2015 versus 52 273 in 2003.
[44]NCA Guidelines recommend measuring all children aged 6-59 months in the household for anthropometric as well as other child-level indicators.

Sample size children	627
Sample size HHs **The final number of households to be surveyed was of 560, slightly higher than needed for the anthropometry. This was determined based on the Link NCA- guideline for sample calculation. The sample of 560 households was based on the indicator "Meal frequency"* -NNS National Level, 52. % for all children (age 6-23 months).	560*

- Sampling Design: Two Stage Clusters Sampling[45]

In the DSB District, following the security problems experienced in the DSP district, it was decided to appeal to locals[46] to make a list of accessible and secure villages in the DSB district.

First stage: cluster selection: initially, according to available demographic data (population per village, number of villages) out of 106[47]villages (population by sex, number of households and average number of persons per household), then with members of the team, 69 villages were selected with a population of 31, 934 inhabitants for the District of DSB.

"It was a cross-sectional survey with two-stage cluster sampling following SMART methodology. The first stage involved selection of clusters[48]. The villages were considered as the smallest geographical unit (clusters). Emergency Nutrition Assessment (ENA) for SMART software updated version April 2015 was used for sample size calculation". (p.5) Source: Nutrition Causal Analysis (NCA) SMART Nutrition Survey Preliminary Report

The following table shows the sampled villages (31) and clusters [49] (35) connected there with. For some villages (4), there are two clusters. This is due to their larger sizes[50]. In these villages, 4 villages were taken for the collection of qualitative data.

[45]"This is the most commonly selected sampling method and will likely be most appropriate in NCA contexts. Cluster sampling proceeds in two or more stages (which is why it is sometimes termed "two-stage cluster sampling", "three-stage cluster sampling", and so on). In a classical two-stage design, a list of clusters –the primary sampling units (PSU) -- (e.g., villages) is randomly selected from an exhaustive list of clusters existing in the area. Then, in a second stage, a certain number of secondary sampling units (e.g., households) are randomly selected from each PSU." NCA Guidelines ACF. 2015.

[46]The local people solicited for this exercise were members of the team of investigators recruited as an enumerator, or team leader or supervisor residing in the District of DSB.

[47]According to official data from 2003, there are 146 villages in the district of DSB. In 2015, the list obtained from the District Governor reports 136 villages (52,446 inhab.). Also, on 136 villages, 30 were not accessible by road or not secure.

[48] "Thirty clusters offer a good compromise between the need to have enough clusters to maintain a high degree of precision but not so many that the survey becomes infeasible. However, there is no definite rule and the choice of number of clusters depends on the characteristics of the study area. For example, in urban settings, there is no reason to limit the sample to the "traditional" thirty clusters since it is actually quite easy to have forty, fifty, or even sixty clusters (and fewer households in each of them) which will yield more precise estimates. In rural settings, it is often more logistically difficult to have numerous clusters but, generally speaking, one should try not to select fewer than thirty clusters. Cluster selection using ENA software is straightforward. Users are required to input the list of villages and their estimated population size and to indicate the number of households and number of clusters necessary. ENA will then randomly select the villages to survey. The SMART guidelines should be referred to for more detailed instructions". NCA Guidelines, ACF

[49] "The identification of clusters (from which a cluster for the survey's sample will ultimately be chosen) must be conducted so that the chance of any particular cluster being selected is proportional to the population of the section. This is called probability proportional to size (PPS) sampling. Thus, if one cluster has a population of 4,000

Table 29. Clusters and Villages Selected in DSB: Risk Factor Survey, Smart Survey

Cluster	Village DSB	Pop,	Cluster	Village DSB	Pop,	Cluster	Village DSB	Pop,
1	KACHKAK	759	13	SAR SHORAB	868	27	DAWOOD	217
2,3	SARWALANG MIANA Qualitative survey	1043	14,15	ROOM	1257	28	DARWAZA	882
4	DAHAN-E-SHORAB	353	16,17	WAY BALAQ Qualitative Survey	1723	29	DAHAN JAR DARWAZA QOURIQ	325
5	PAI KOTAL	471	18	KARDAN	189	30	RAIG YALAQ	281
6	KHOWAL CHAHARMAGHZ	722	19	HASSANI BURJ	455	31	QALAI BALA TOUR Qualitative Survey	882
7	TAQCHI KHANA	717	20,21	TAGAB HASSANI	1645	32	DAHAN NAWER	113
8	QALA	753	22	BARNAGAR	584	33	BANI MANG	1119
9	CHAKAB	263	23	TOUR	541	34	RASHK	588
10	ZERAKI GHAZNI CHAI	532	24	TA SANG	339	35	LAILIA	804
11	BAHSODI ZERAKI	714	25	SAR ASIAB	432		31 villages for 35 clusters Smart Survey, RFS 4 villages for 5 clusters, Qualitative Survey	
12	SAR KOTAL	71	26	DAHAN-E-CHANGAB	714		Smart Survey, RFS Pop. Total 26356 Qualitative Survey Pop. Total 3622	

Second stage selection: "households" selection for NCA SMART and Risk factors survey, and qualitative survey

For SMART Survey and RFS in the second stage of sampling, *household* was considered as the basic sampling unit. One then obtains the number of households per cluster as follows:

For the quantitative component: the estimated number of households is a number varying from 14 to 15 per cluster.

Cluster	Sample size Number of household	Household by cluster
35	560 (512 Smart Survey)	14-15

For the qualitative study, we include 15 households in each village[51].

The map below shows that most villages are fairly far from Bazar Stocka, (ACF base). For the sampled villages, among them, 12 villages are situated an average distance of 44 kilometers from the base ACF - Bazar Stocka, 11 villages at 26 km, and 8 villages at 7.5 kilometers. In an

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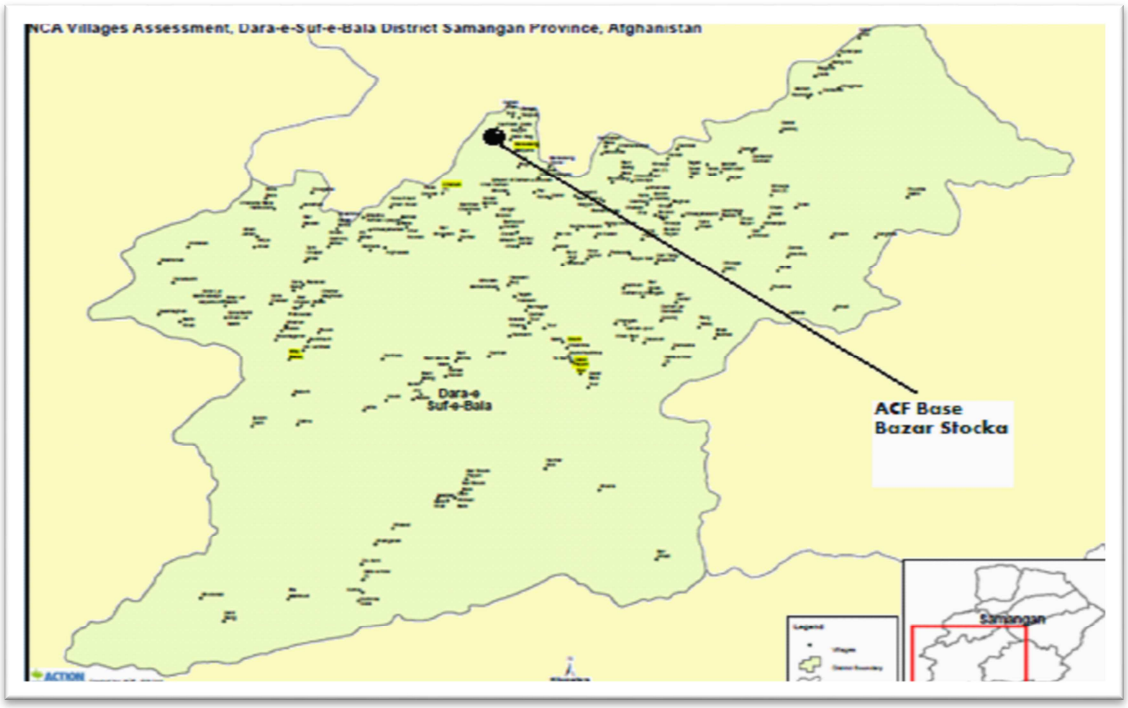
and another 1,000, then the first cluster has four times the chance of being chosen compared to the second cluster. This is the main reason why (approximate) population data are required". NCA Guidelines, ACF

[50] "There are several methods of choosing the households from the cluster. The best way is to treat each cluster as if it is a "small population" and to select the houses using the simple or systematic random sampling methods described above. If the cluster is to be taken from a larger population, the first step of stage two is to subdivide the population into segments of roughly the same number of people. One of these segments is then chosen from the random number table. In this way the "village" is reduced to an area containing up to 250 households. These households are then listed, and the required households selected from the list by simple or—if they are arranged in some logical order—systematic random sampling" (pg. 56) in the SMART Guidelines (2006).

[51]We discussed in more detail our specific methodology for the qualitative survey. Note that the family (mothers and father) is the fundamental basis for the Afghan social structure.

environment where security measures are heightened and roads are flooded, distances are important to the daily organization of survey teams in the villages sampled.



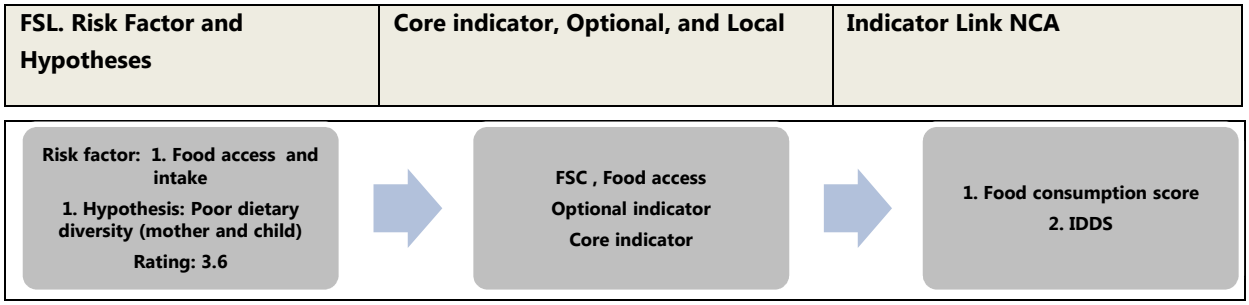
2.3.2. Quantitative Survey (RFS & SMART)

This section describes the three parts that compose the implementation of the RFS and SMART surveys. In the first part we describe the indicators needed in order to test the hypotheses (20) developed at the workshop in Kabul. The second part describes how the paper questionnaire used for households (head of family, mother, and children) was made and the measures based on observations in different sectors (Wash, CPMH). The third section outlines issues pertaining to the organization of the survey (recruitment and training of investigators, schedule, description of teams and team training).

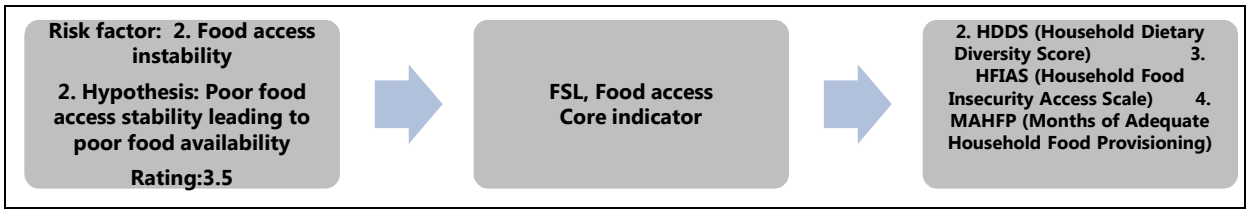
¤ *Selecting indicators*: using the Link NCA methodology, the selection of indicators was carried out in two stages[52]. In addition we also selected specific measurements including anthropometric measurements for certain groups (pregnant or lactating women, standards by age for children under five.) A brief summary of the selected indicators is presented in the following figures mixing the two steps outlined in the Link NCA methodology. The indicators have been included in the administered paper questionnaire as follows: questions for calculating scores, questions to estimate the prevalence, or to have information on the behavior of members in relation to different practices (nursery, health or other) by direct observation from households.

▪ Food security and livelihood: in the FSL sector, as can be seen in Figure 26, two hypotheses and four indicators were formulated for the study. These indicators were measured as score. Three are "core indicators" and one indicator belongs to the list of optional indicators.

Figure 26. Hypotheses and Indicators for FSL (RFS) in DSB



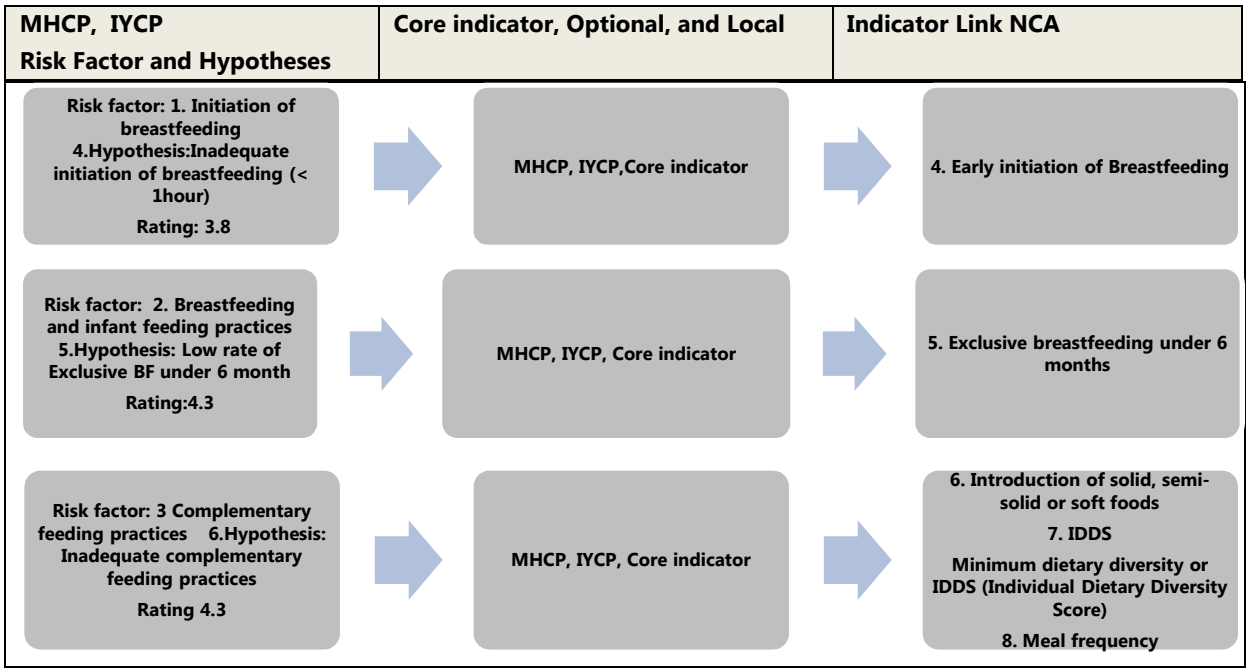
[52]"The selection of indicators for the questionnaire is a two-step process. Step 1 of the indicator selection process involves selecting relevant indicators from the list of Link NCA core indicators. Step 2 of the indicator selection process involves selecting relevant indicators to measure the hypothesised risk factors identified during the workshop. The focus of Step 2 is therefore on the remaining risk factors that will be measured, if feasible, by the optional indicators. Optional indicators are distinguished from core indicators in that their relevance to under-nutrition varies from context to context". NCA Guidelines ACF. 2015



- MHCP: Three themes: IYCP - Care of Women – Psycho Social Care.

Regarding *the IYCP* as shown in the following figure (Figure 27), the three hypotheses on maternal practices among children aged 0-23 months (vulnerable group) are very important, taking into account the relevant scores attributed to them during the Kabul workshop.

Figure 27. Hypotheses and Indicators for MHCP-IYCP in DSB



Note that the indicator "early initiation of breast feeding" refers to children born in the last 24 months.

In the second section, *Care of women*, three hypotheses were tested with the core indicators. The hypothesis on the "low birth spacing" is included in the questionnaire with an optional indicator (sibling) developed in the Link NCA guidelines (see figure 28).

In the third section, Psycho social care, (see figure 29) it is provided for investigators to observe the relationship between the mother and her children aged under 5 years when visiting the home of the child, the rating of this observation must be made at the last moment before investigators leave the household that accepted to be surveyed.

It should be reminded that out of the 19 hypotheses selected for study, it is in this sector that we find the largest number (8).

Figure 28. Hypotheses and Indicators for MHCP-Care of Women in DSB

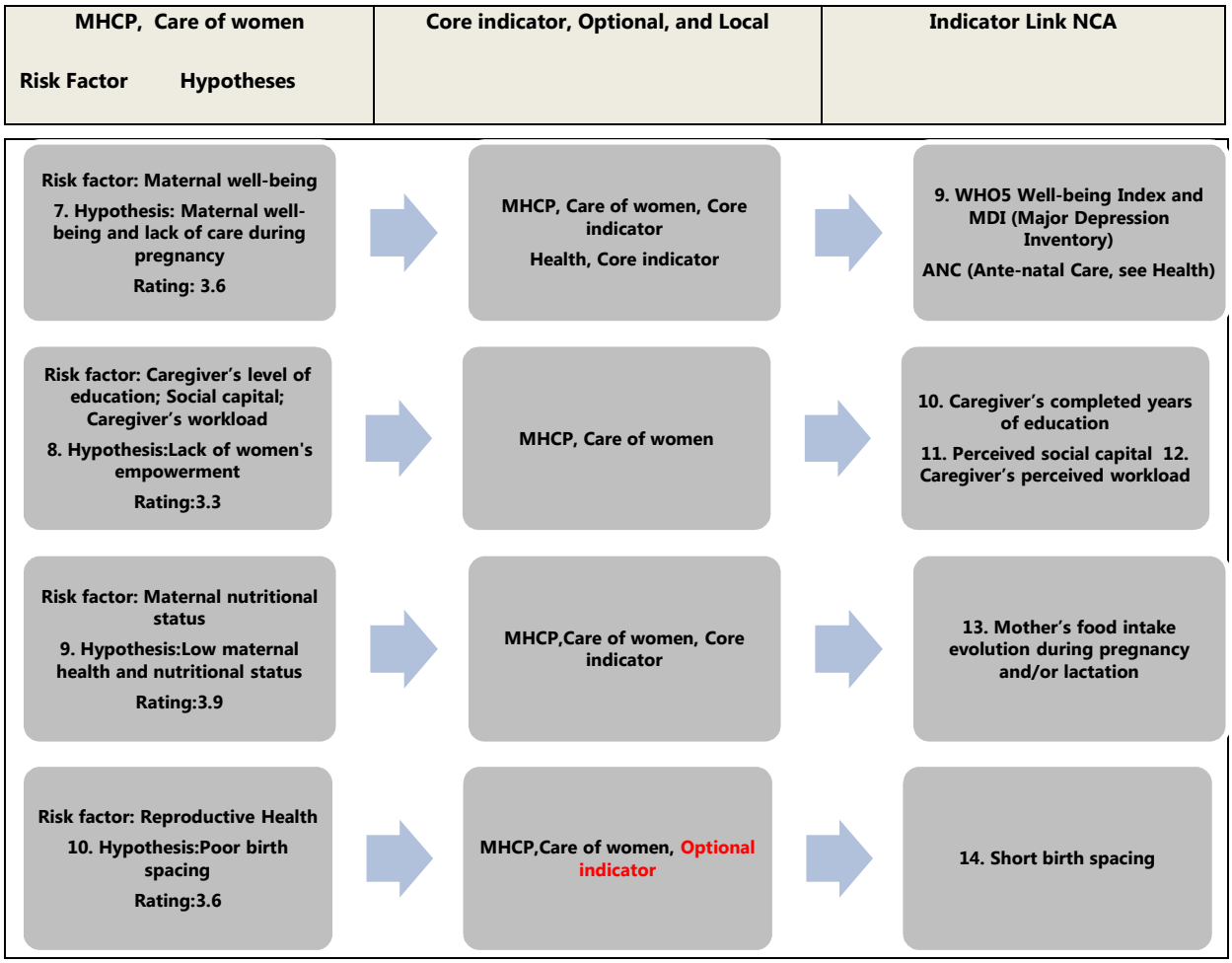
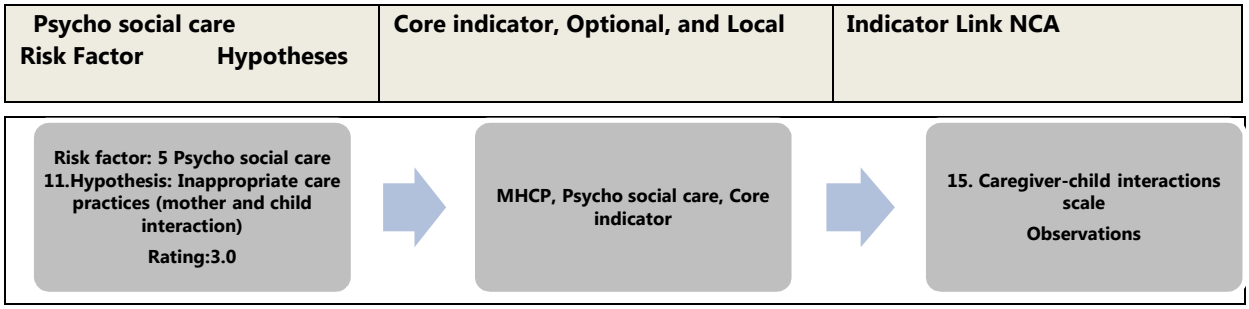


Figure29. Hypotheses and Indicators for MHCP-Psycho Social Care in DSB

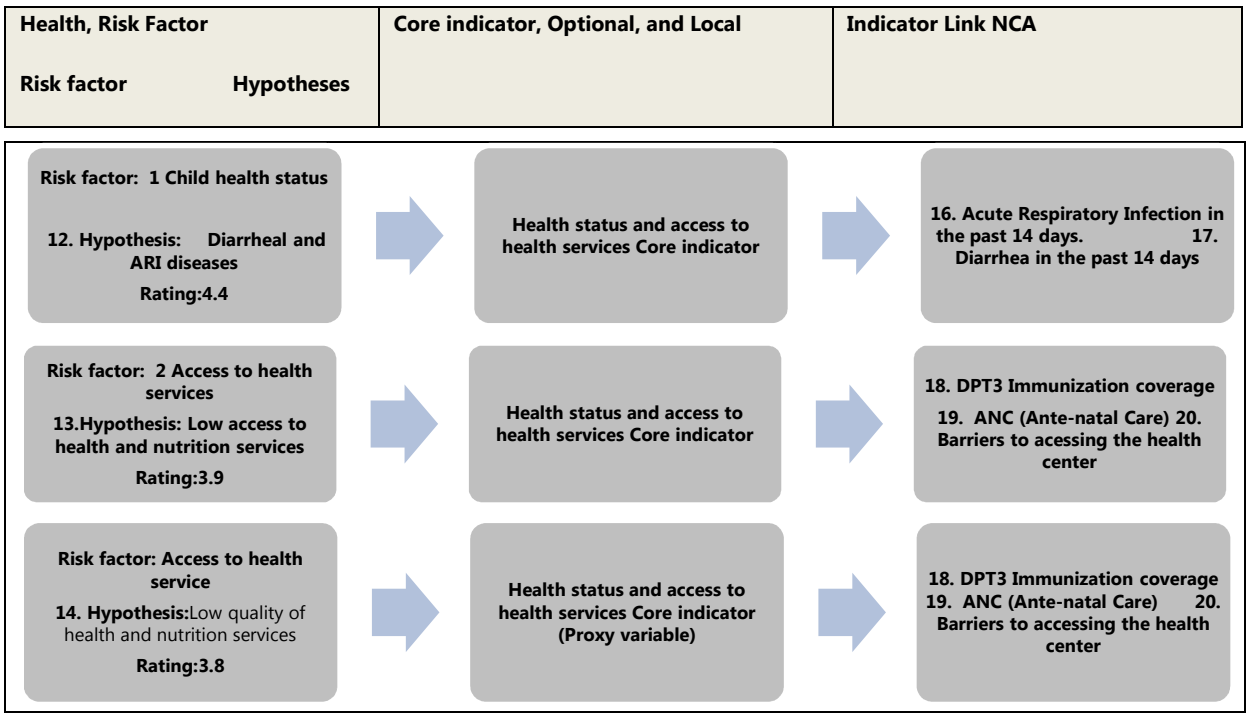


- Health: For the section on health, the assumption "Diarrheal diseases and ARI"[53] is clear due to its score (4.4) which ranks first at the Kabul workshop. In the second hypothesis related to access to care, we can study using three indicators. Finally, the hypothesis that addresses the poor quality of care, can be studied via the same indicators, especially via the indicator on the barriers to health care access reported by mothers, for example if for the

[53]This indicator (diarrhea in the past 14 days) is used by WHO because of its strong link with under-nutrition, and because it is collected in a great number of types of surveys, which allows comparability with previous sets of data. NCA Indicator Guidelines, ACF 2015.

item 6t he response "the quality is not good enough" emerges as a result of the non-utilization of health centers.

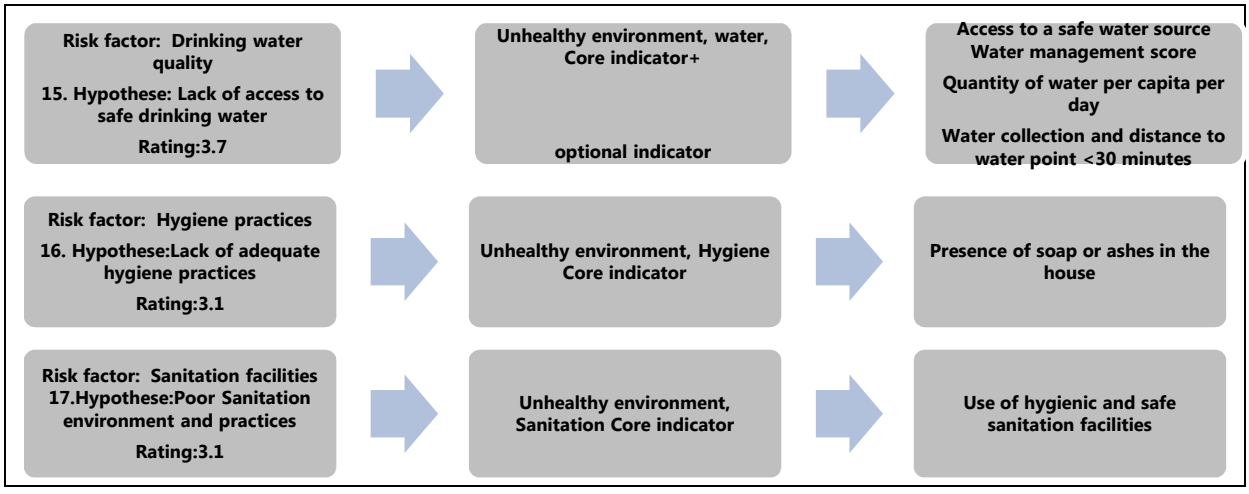
Figure 30. Hypotheses and Indicators for Health in DSB

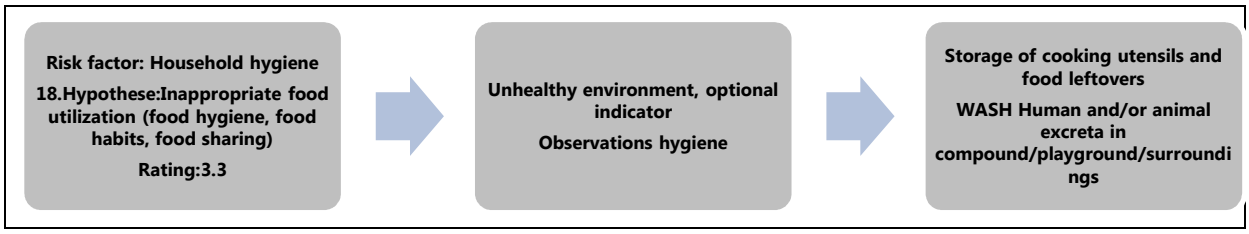


- Unhealthy Environment

As it can be seen in Figure31, this part deals with the investigators asking questions to the head of the household, for example, regarding access to drinking water and determining the quantity required for the purposes of family. The investigators then would also need to make a careful assessment of the home environment of the respondents (water points and latrines). Finally, the survey required the respondents to show the investigator show they use soap, and also to show the amount of soap available to household members.

Figure 31. Hypotheses and Indicators for Unhealthy Environment in DSB





Of the 19 hypotheses, 18 can be measured using indicators (core and optional). Two hypotheses, which also stemmed from the workshop, are difficult to measure with the Link NCA indicators. Nevertheless during the triangulation with data analysis of the qualitative survey, we can look more closely at what can be learned. Firstly, the hypothesis 'Low awareness on under-nutrition' (causes, symptoms, treatment) which is a strong hypothesis (rating 4.1) may pertain to the risk factor "Nutrition knowledge"[54]. It should be noted that the first step polarizes the qualitative survey on actor's perceptions (key informants, community leaders, fathers and mothers) and includes the definition of malnutrition that they will develop during individual interviews or focus groups. This is also the case with the hypothesis "Health-seeking behavior for mother and child" (rating 3.7) which highlights one hand maternal practices (IYCP) and, secondly, the awareness of the mothers to introduce their practical knowledge of preventive measures themselves when initiated by health professionals in health facilities. With health sector indicators, it is possible to connect the indicator "Diarrhea in the past 14 days" in focus groups with mothers that perceive this symptom compared to their experiences.

- Building the RFS Questionnaire

Considering the indicators (core and optional), the questionnaire (RFS and SMART) was developed after the Kabul workshop. On paper, it is presented in eight parts (see annex). For data collection, filling was done directly and answers noted on a paper questionnaire by data collectors:

1. Identification (with the consent form)
2. Introduction: size of the household, Child (yes/no) from 0 to 59 months present, presence of the head of household, presence of the mother or the care giver
3. FSL
4. WASH
5. Child questionnaire: Part A- child 0-23 months, Part B- child 0-59 months
6. Main Caregiver questionnaire:
7. Water point observation
8. Hygiene and sanitation observations

[54]"Nutrition knowledge: this aspect seeks to provide information on the people's knowledge of nutrition issues, including malnutrition in general. It is more efficient to collect this type of information in focus group discussions, around questions on symptoms, causes and treatment practices of malnutrition" NCA Guidelines, ACF, 2015.

The filling of responses is exclusive to two respondents: the head of the family and the mother (main caregiver):
For the head of household: Part 1, 2, 3, 4, 7, 8. (10 pages)
For the mother: Part 6. (3 pages)

Of course, for children aged between 0 and 59 months, specific questions about their health status were asked to the mother. That is also when the investigators took anthropometric measurements of all children present at the time of their visit in the household:
For the children: Part 5. (5 pages)

In order to identify measures for all indicators input codes were used[55] in relation to referring answers to scores and to various observations made in the household settings (water, sanitation, and hygiene).

The paper questionnaire was originally written in English. It was then translated into "Dari" (Persian language spoken in Afghanistan). A first version was produced by a member of the ACF Mazar team nutrition program. Subsequently, the questionnaire was improved through the experience of data collectors during the test phase. The translation of a household questionnaire is time-consuming and a first version is rarely sufficient; oral factors must also be taken into account so that respondents understand the questions well enough and data collectors do not need to reformulate them during the field survey.

- ¤ Organizing the RFS Survey

All activities relating to the organization of the study in the Dar I Suf region were held at the ACF office in Mazar whether it be recruitment and training, data collection planning or, finally, piloting the questionnaire translated into Dari.

- Length of RFS Survey

In March 2015, the first assessment of the duration concluded that for each visited cluster, 15 households would be visited. As a result it was estimated that between 15 and 16 days of fieldwork were needed, since there were at least eight pairs of data collectors who visited the cluster households (530-560).

The assessment did not take into account field conditions and security regulations (see page 55). In fact, 21 days were required for the data collection for the quantitative survey. The investigators were not always in the villages, as it took a significant amount time to get there

[55]For example, a code: ID or code: IN or Code: HoH for general information about the household, specific codes for scores (Code: HDDS) and a code for unhealthy environment (code: UE), as well as a code regarding anthropometrics measurements (Code: ANT.).

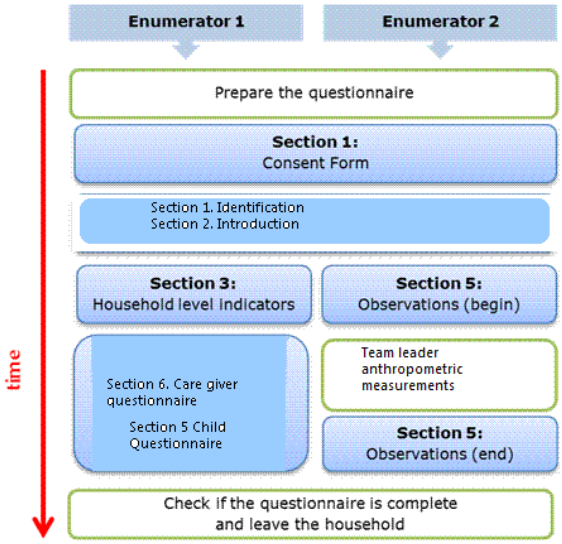
and back. More time was also required in order to meet with all CDC villages to get their support and to sample households in the clusters and to ensure the presence of the families in their homes at the time of the survey etc. It is useful to report that for security reasons, the data collectors were informed of the cluster teams (village) the morning of.

- Team Description for the Quantitative Survey in DSB

According to the Link NCA guidelines a team is composed of six positions: one NCA Analyst, one Field Survey Coordinator, two data clerks, eight teams of two enumerators each, four supervisors (one per four enumerators) and drivers.

Minor modifications were made due to the difficult field conditions and the difficulty of recruiting enumerators with a good level of experience[56]. The SMART program manager in charge of data collection training for anthropometric measurements agreed to act as Field Survey Coordinator. To support him, an intermediate position was added, that of "team leaders". Two team leaders were included, thus a team was composed of a supervisor, 2 pairs of enumerators (4), and one driver.

In the field, the team responsible for filling the paper questionnaire proceeded as follows:



- Training and Questionnaire Piloting

[56]In Afghanistan, NGOs are required to publish all job vacancies in administrative offices known to job seekers. Subsequently, there is an internal procedure (ACF office Mazar) that analyzes the candidates' files. Selected candidates have to pass written and oral tests. By respecting this procedure, it was difficult to find local candidates, in other words residents in the region of Dari Suf. Most of the candidates who passed the ACF test lived in Mazar and did not know much about the Dari Suf area.

During 10 days (the last two weeks in March 2015), 16 enumerators, 6 team leaders, and 4 supervisors were trained for five days in taking anthropometric measurements[57], and another five days in administering the RFS questionnaire.

The training in anthropometry usually takes two to three days. However four additional days were added to the training, (SMART and RFS).The training was provided in English by the program manager who is a specialist in the SMART methodology, with the assistance of a translator. All training sessions were in the Dari language. Reverse translation of the questionnaire gave an indication of how well the enumerators understood the questions. At the end of this training period, the questionnaire was tested in a village near Mazar. A first session was not conclusive, so we added a second one, so that teams could become suitably familiar with the administration of the questionnaire.

At the same time, two data clerks were recruited and trained for a week in Mazar. The data entry procedure was entered according to Link NCA methodology[58]. During data collection (4 weeks) in the villages of the DSB District, data clerks were located at the ACF base (DSB). Two weeks were needed to complete the data entry for all survey questionnaires.

2.3.3. Qualitative Survey

The preparations for the qualitative survey were launched during the first week of April 2015. This was first of all to contact the local authorities for permission to meet with key people in the villages. As we have already mentioned, the Link NCA was initially supposed to be conducted in the DSP district. As we were going through the administrative procedures to obtain the permits from the district governor, the SMART NCA team was repatriated to Mazar awaiting an alternative proposal for the continuation of field surveys.

Once the decision was taken to conduct the study in the neighboring DSB district, reset the sample clusters and have the sample of 4 cluster-villages in the district, it was possible to initiate the process of recruitment and selection of team members for the qualitative survey. It was possible to start with the field survey during the last week of April 2015.

Upon the arrival of the team at the ACF base in Bazar Stocka the last week of April 2015, a timetable was developed for field work in 4 villages. After obtaining the administrative

[57]Training on anthropometry must be based on the SMART Guidelines. Anthropometric measurements taken during the survey must strictly adhere to the SMART method. *Measuring Mortality, Nutritional Status, and Food Security in Crisis Situations: SMART Methodology* (2006), Retrieved from

[58] "*Data clerks are responsible for entering the data from the questionnaires into the computer. It is recommended that double blind data entry be used for every Link NCA with a quantitative survey. In order to implement double blind data entry, two data clerks must be hired. Each data clerk should enter the same questionnaire data into the computer. The Field Survey Coordinator will then be able to easily spot data entry errors. Checks for data entry errors should be done regularly throughout the data entry process. The Field Survey Coordinator is responsible for providing the questionnaires every day to data clerks*". NCA Guidelines. ACF. 2015

authorizations of the district governor, we had to organize visits to each of the sample villages. Given a reduced amount of available time remaining on the activity schedule (end of the NCA mission on 1 June 2015), we were able to visit two villages; one near the ACF base (5 km) and the other much farther (50 km). According to the NCA protocol, data collection (FGD and individual interviews) in a village in the qualitative survey requires six days of field presence. We chose to start the studying the nearest village, and then continue to other farther one afterwards. (cf. vulnerable group Workshop).

The implementation of enhanced security measures made it impossible to collect data in the more remote village. By default, only one village remained available under these conditions and it was decided to enrich the collection of qualitative data in this village. We conducted focus groups with the mothers over 6 days instead of 4 in order to collect more refined data on children's health under two years (cf. vulnerable group, WK). For the fathers, we held as many focus groups as with the mothers. This allowed us to introduce more sensitive topics often cited in the literature as potential causes of child malnutrition such as Afghan cultural habits within marriage, the daily division of tasks between spouses, and birth control. We discuss bellow data collection in this particular context.

- ¤ Team configuration

At first it became apparent that if we were to be most effective in the short amount of time available we needed a team well-adjusted to these difficult conditions in the field. It is therefore with the help of the human resources department of the Mazar ACF office that we put together the team for the qualitative investigation beginning of April 2015.

According to Afghan cultural practices for individual and group meetings, we needed a female translator for focus groups with women and a male translator with men. Two translators (1 man and 1 woman) were recruited. With the advice of the HR department whose manager knew Dari Suf well, an assistant was recruited rather than a data collecter. Job descriptions were posted at the Mazar Office. A recruitment process was also been launched at the same time. Thus the team was established, composed of two translators, an assistant, and the NCA analyst. The translators and the assistant received three-days training on the major components of the data collection protocol. This training was done at the ACF DSB base . This team proved very successful, and they were able to maintain excellent communication during the course of interviews and focus groups with participants. In terms of logistics, a car was available to the team during the data collection in the field.

- ¤ Sampling

Some clarifications on the villages and the sample of respondents in local communities:

- Selecting the Community Sample

In the following table (table29) the 4 villages from the selection in the quantitative survey are presented. As already explained, only one village was taken into account in this Link NCA survey, the village of Sarwalang Miana located 5 kilometers from the ACF base in the district of DSB.

Table 29. Sampling of the Clusters for Qualitative Survey in DSB

Cluster (village)	Population
SARWALANG MIANA	1043
WAY BALAQ	1723
GOUM CHASHMA	158
QALAI PAYEN TOUR	698

On our first visit, the CDC (elected principal) welcomed us; being an important player in the political and economic management of Afghan village life. He informed us that Sarwalang Miana is an important symbol for the people of the Hazara district DSB. This village was completely burned down during the period of the Taliban regime in Afghanistan, and completely reconstructed when the population returned and resettled after the fall of the Taliban.

The village is near the chief town of the district, where the district hospital is located. This hospital is a 30 minutes' walk for the population of Sarwalang Miana. This geographical proximity helped to include key informants such as, health professionals and nutrition specialists treating sick children and who keep the maternity ward open to mothers from surrounding villages including the village of Sarwalang Miana.

- Sampling of Respondents within a Community

According to Link NCA methodology, community beneficiaries fit into 4 groups: community leaders (1) key informants (2), mothers and fathers of children under 5 (3) women, based on the nutritional status of their children (4). In the Sarwalang Miana village, all of these categories were included in the survey. We should add that for mothers and fathers, in order to ensure the interest of the local population in our data collection, the team asked the CDC to provide us with a list of 15 families with children less than 5 years' old. During a morning with the help of a member of CDC, we visited each family (father and mother) to present the objectives of the investigation, to request their consent to conduct focus groups.

Ethnically, the entire population is of Hazara origin in the DSB district, including the selected village,. The villagers were mostly farmers. Although the survey did not specifically aim to address the impact of the economic status on the prevalence of malnutrition, we instructed the CDC to take into account the economic status for the list of 15 families (7 families identified as of superior economic position, and 7 families identified in a lower economic

position). This was also a way of introducing an objective filter in order to avoid having a selection of 15 families chosen arbitrarily by the CDC. This categorization was not used during the focus group. The reasons why not are given in the following section.

¤ Data Collection

Here the components of data collection are addressed: the use of measuring instruments; the objectives of data collection; field notes; and a synthesis on conducting the survey according to NCA guidelines.

- Development and Pre-testing of Discussion Guides and Other Instruments

Between April 27 and May 3, the team has been trained in the rudiments of the instruments for collecting qualitative data. During this period the translators and the assistant with the analyst prepared two questionnaires, one for key informants and the other for community representatives. A pre-test was done with a representative from each of these two groups.

All along the data collection, the team followed a process called "cognitive debriefing." Cognitive debriefing involves asking interviewees, after completion an interview, their interpretations of the questions to judge whether the respondent's understanding corresponds with the intended meaning of the question.

The sexual separation of translating work offered an additional advantage. When a translator remained at the base, he or she completed the notes of the previous morning/day. When the team arrived he or she was entrusted with asking questions to each team member to highlight the key points of interviews and focus groups. These daily sessions lasted for two hours and notes were gathered in a book (40 pages) of the qualitative survey.

- Objectives

The six main objectives for the survey were as follows:

OBJECTIVE 1:	*Develop a local definition and understanding of under-nutrition*
OBJECTIVE 2:	*Characterize food security, health, and care in the community*
OBJECTIVE 3:	*Explore respondent perceptions of the causes and consequences of poor food security, health, and care in relation to under-nutrition*
OBJECTIVE 4:	*Understand the practices of caregivers of positive deviant children (i.e., well-nourished and healthy children of parents who seemingly face the same challenges and barriers as parents of under-nourished children)*
OBJECTIVE 5:	*Identify seasonal and historical trends in under-nutrition and risk factors*
OBJECTIVE 6:	*Understand how the community prioritizes these factors*

In the District of DSB, all activities were related to the applied Link NCA guidelines. We add a few remarks on the conduct of interviews and focus groups in the village of Sarwalang Miana.

- Field Notes

First Observation: A Participation Rate of Over 100%

We were not able to identify the participants in each focus group (men and women) according to their economic status. During the holding of all focus groups, 50 women participated in each of the 6 focus group sessions and 25 men in each of the 5 five sessions reserved for males. We tried to explain the difficulty that this elevated participation would pose, but the villagers wanted to be present and fully participated in the activities. It was possible to divide the men into sub-groups with specific questions for all sectors (FSL etc.). For women, we separated the oldest who did not meet the inclusion criteria (mother with at least one child under 5 years), and had between 15 and 20 participants per focus group. For women with young children, we had no choice but to divide them into 5 subgroups.

Second Observation: Accentuated Focus Groups Participation for Mothers

For focus groups with women, it was not possible to have a thorough discussion with all five subgroups; when we were talking with sub group women in the other four subgroups easily abandoned discussion to talk more on current matters of their interest. So we recruited in each of five subgroups a mother (team leader) who was asked to lead the discussion. It was then possible to make a plenary as the 5 female teams' leaders reported the content of the discussions for each of the subgroups. This also allowed for more time to discuss the content with the older women and address more general questions.

Third Observation: The Representations Consistent with Granted Mother and Father Roles

In this very specific context of "Hazara" village communities we were met with receptivity and curiosity by both fathers and mothers. These reactions were expressed differently. With mothers, we were in a large room, but they came with their children of all ages. The older children played together in a corner of the room. In this environment, mothers adopted a posture of learning, they asked many questions, trying to understand why and how the disease infected their children. The male focus groups were conducted in a community hall reserved for political activities where there were no children. In a quiet atmosphere, they accepted to discuss the local child malnutrition situation. During the oral presentation, each of the subgroups in a focus group session presented their answers in a "search process hypothesis" about the current situation and the impact on the health of their children.

Fourth Observation: Specific Approaches of Men and Women at the Session Rating the Causes of Malnutrition

Among females, the rating exercise was taken very seriously. Dynamics for voting on the causes of malnutrition was consensual. Among men the rating exercise was not seen as finalizing the working sessions. They wanted to stress two points before consenting to complete the exercise. The first concerned how they were represented during the survey, as a precaution, they emphasized that "their village" was privileged over other more distant villages and that they had worse health and health services than their own. The second requirement was aimed at describing the socio-political environment of the DSB District. For them, this was an important observation: there is a history of internal Afghan conflicts which continues. For them there is a single clinical diagnosis: the population is affected by mental health disorders.

- Summary of Data Collection

All recommendations concerning the Link NCA methodology were followed. We provide in the table below a summary of the data collection for the qualitative survey.

Table 30. Summary of the Data collection for the Qualitative Study

Targeted stake holders in the village	Community leaders	Key informants	Fathers	Mothers	Mothers with SAM child
Methodological tool	**Individual interview**	**Individual interview**	**Focus group**	**Focus group**	**Individual interview**
Term of data collection	**1 day**	**2 days**	**4 days Session 3 hours per day**	**6 days Session3 hours per day**	**1 hour for each interview**
Composition of the group	**CDC (1) An elected member of CDC (3) Mullah (1) Local doctor (traditional healer) (1)**	**Hospital Directorate (1) Hospital pharmacist (1) Pharmacist Bazaar (1) Teachers (3) Nurse, the nutrition unit (1)**	**20-30 men present per session**	**40-50 women present per session**	**- A mother with a malnourished child with a single episode - A mother with a malnourished child with several episodes - A mother who had children without malnutrition episodes**
Targeted stake holders in the village	Community leaders	Key informants	Fathers	Mothers	Mothers with SAM child
Risk factor And causes of malnutrition		Understanding of under nutrition in DSB			
Characteristics of the risk factor			Food security (seasonal calendar) Marriage and fertility Health Access to health Access to water Sanitation Prioritize the causes of under-nutrition	CPMH Care practices IYCP (child from 0-23 months) Care of Women Psychosocial care Health Child health status (seasonal calendar) Access to health Practices of hygiene Prioritize the causes of under-nutrition	

Practices of caregivers					Understanding the practices of caregivers to positive deviant children (i.e., well-nourished and healthy children of parents who seemingly face the same challenges and barriers as parents of under-nourished children).

2.4. Data Management and Analysis

Besides pertaining to the SMART survey, the guidelines of the Link NCA methodology provide tool kits that allow for proper preparation of surveys including sampling and questionnaire design for the two large surveys (quantitative and qualitative). Conducting the surveys also depends on the specific conditions of each local context. In the Afghan context, particularly in the Samangan province, and the District of DSB in general, several key quality control points were impossible to meet, especially concerning data collection for the quantitative study. Regarding the qualitative survey, the items such as preparation, production of the questionnaire, recruitment of team members, and conduct of data collection have been well completed.

¤ Quantitative Data Management and Analysis

Two points are in this section. The first is a description of the management process for the quality of the quantitative data during the household survey. The second point presents the main statistical data analysis tool used to for the Link NCA survey (Risk Factor Survey).

- Data Management

For the inquiry quality, we can see in Table31 the strengths and weaknesses in the quality of data management.

Table 31. Quality of Data Management (RFS and Smart Survey)

Process	Tools	Validation	Scale
Sampling	Link NCA Guidelines or Smart Guidelines ENA software	Program manager, NCA analyst, NCA Focal Point, Technical Advisor Technical Advisory Group (TAG)	5
Building the questionnaire	NCA guidelines and Smart guidelines In English In Dari	NCA Analyst, NCA Focal Point: Technical Advisor Technical Advisory Group (TAG)	 5 4
Recruiting and training	Smart and NCA Guidelines	NCA analyst, HR in Mazar Low experience of the team Program manager Smart Bad pilot test (enumerators)	3 3

During the survey	SMART measurements Team leaders NCA questionnaire Tool kit for NCA Paper questionnaire	Program manager improves the quality of the measurements. NCA Analyst, Program manager Smart. The quality of experience of the supervisor team was variable. Many manipulations of the questionnaires by field teams	5 3 3
Data entry	Good instruments Excel and The EPIDATA comparison module	NCA Analyst, Program manager and data clerk	5

For the SMART Survey, good quality can be expected for the whole process, and specifically for anthropometric measurements. This was confirmed in the SMART Survey July 2015preliminary report. For the RFS survey in the next chapter, we see in more detail the operational indicators for the analysis.

As shown in Table 30, a key point that was not effective for the household survey was the inspection of enumerators by the supervisors, when the former filled the questionnaire. It should be noted that the supervisors had numerous tasks including conducting an interview with CDC members from each village explaining the household survey goals so as to obtain permission. This task demanded nearly an hour at the beginning of the day. Moreover, reception has been mixed in some villages. According to the supervisors, the CDC would have said that they openly preferred to be consulted regarding the establishment of aid programs rather than participate in a survey[59]. It is possible that this collective apathy had an impact on data collection.

- Analysis

The analysis of anthropometric measurements was made by the program manager. A report followed in July 2015 and the results on the prevalence of malnutrition in children under 5 years of DSB District are analyzed in the following chapter.

Data analysis for the RFS survey was based on one principal measurement. The key concept is related to sample size where[60]:

[59]During the conduct of the Smart-NCA investigation, the ACF base Bazar Stocka had no activity or program.The activities were arrested in June 2014.

[60]**N = sample size.** For the purposes of an NCA, a sample size of approximately 800 to 1000 children will provide sufficient precision to measure the prevalence of under-nutrition. **D = design effect.** The design effect is a factor which corrects for possible homogeneity within clusters that may bias the survey results. Subjects within a cluster are generally more similar to each other than to individuals in other clusters. To account for possible homogeneity within clusters we need to have a larger sample size than we would if we were using systematic or simple random sampling. This correction factor is called the "design effect". The design effect would be equal to 1 but cluster sampling generally uses a design effect ranging between 1 and 4. NCA recommend using a design effect of 2 when calculating your sample size. **z = Statistical certainty chosen.** Most studies assume a 95% confidence level. A 95% confidence level means that there is a 95% chance that the true value is included in the confidence interval. The corresponding z value for a 95% confidence level is 1.96 for indicators that follow a normal distribution (which is the case for anthropometric indicators and most biological indicators). Use 1.96 as your statistical certainty when calculating your sample size. **d= Desired precision.** Precision levels are expressed as decimals. For example, a desired precision of 10% is written as d=0.10. The higher your desired precision level the larger your sample size

N = sample size
D = design effect
z = statistical certainty chosen
d= desired precision
p = estimated prevalence
q = (1 – p)

The following table (32) is an example of what we can provide on the indicators particularly for the quantitative analysis results.

Table 32. Typical Sample Size Calculation Link NCA

Indicator	N	Mean or proportion	Lower Confidence Interval-95%	Upper Confidence Interval-95%
% Children (0-23 months) with adequate initiation of breastfeeding (<1hr after birth)	176	38%	31%	45%
Mean Household Diet Diversity Score (score 0 to 12)	479	4.75	4.62	4.87

Source: NCA Guidelines, ACF, 2015

- Qualitative Data Management and Analysis

Data collection in Sarwalang Miana was done following the NCA methodology. For each covered sector, there was a narrative that describes the typical knowledge, attitudes, practices, assets, access issues, strategies and trade-offs related to food, healthcare that are common in the community. The qualitative survey issues remain, even if we can only rely on the data from one village. A more thorough analysis of hypotheses made by the workshop and taking into account all proposals of technical experts in the workshop of Kabul is needed to build a local causal model.

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must be. For example, a desired precision of 2% (d=0.02) will require a much larger sample size than a precision level of 10% (d=0.1). **p= estimated prevalence.** By definition you will not know the prevalence of malnutrition or prevalence of a given risk factor in advance of completing your quantitative survey. Nonetheless you must provide an estimate of the prevalence in order to calculate a sample size that will be large enough to reliably estimate the prevalence for the indicator you wish to measure. We recommend that you use an estimated prevalence of 50% (p=0.5) when calculating the necessary sample size to measure the prevalence of a risk factor for malnutrition. This is a conservative estimate and will give you the largest possible sample size for your study. Use a specific estimated prevalence to calculate the sample size for your anthropometric survey. Local data are ideal but if they are not available then consult national surveys. Ensure that the data are comparable by consulting surveys conducted during the same season you plan to survey. **q = 1-p.** For example, if the estimated prevalence p is 15% (p=0.15), then q = 1 - 0.15 which equals 0.85.

2.5. Ethical Considerations During the Survey

The ethical considerations are a key point for the success of the investigation for various reasons. In the District of DSB, the arrival of a data collection team is of course noticed by Afghan villagers. At the same time, supervisors had an important role to play by visiting the villages and presenting the teams with respect to the customs so as to maintain excellent communication with the villagers. It should also be taken into account that in Afghanistan the village with its CDC committee is a vector to all rural activities. It is therefore necessary to establish a trusting relationship with members of the CDC. In the village of Sarwalang for example, we had to interrupt the focus group of fathers for three days. They were busy working to start an irrigation pump.All men in the village had been called to help. As we kept good contact, it was possible to resume the focus group after this brief interruption.

During the study, there have been modifications to the protocol for the identification of children with malnutrition. The ACF base no longer held any operational activities and never had other activities beyond nutrition in the district. Accordingly, identified children could not be directly supported by nutrition services provided by the ACF programs. To compensate, ACF proposed to parents whose children were affected by malnutrition to pay the transportation costs of the "caregiver" to travel to the nearest nutrition care unit. This measure was limited to the duration of the data collection . Although the offer to cover transportation expenses was welcomed by families, it often did not correspond to demand "more complex" to help families.

Table 33. Ethical Considerations for Link NCA in DSB

Obtain permission to conduct the survey from appropriate local/national authorities	• District level • Local level
Obtain informed consent and respect confidentiality:	• Household • Consent form first section of the household questionnaire
Ensure there is a protocol for severely under-nourished or severely ill children identified during the SMART nutrition survey	• NCA tool kit • See questionnaire
Provide an adequate environment for the community-level qualitative enquiry	• Community hall for men • community center for women
Present the results of the NCA survey to participating communities	• Sarwalang Miana, village of the Qualitative survey

2.6. Limitations of Link NCA in DSB

The NCA Guidelines emphasizes two basic limitations, namely what an NCA survey cannot provide to operational actors and researchers regardless of the country or region.

- The Link NCA method does not seek to statistically demonstrate nutrition causality but instead creates consensus around the plausible causes of under-nutrition in a localized context. Initially, the Link NCA was designed to rely primarily on statistical tests of association to inform conclusions; after testing, this approach was rejected by the scientific committee.

- The Link NCA is not an emergency assessment tool: it is not well suited for application in rapid onset crises due to the time required to conduct the study. Furthermore, in acute emergencies the immediate causes of under-nutrition will likely be overt and prioritized over underlying and basic causes.

When the qualitative survey covers four villages using the Link NCA methodology, one must be aware that:

- The qualitative portions of the Link NCA are designed to provide an in-depth picture of the nutrition situation in a relatively small geographic area. It is not always possible to generalize the results of this enquiry to other parts of the country.

The limitation encountered in the Afghan context, are:

- The results for the qualitative survey are partial and are not representative of the situation of the DSB District.

When a Link NCA quantitative survey obtains a good set of exploitable data:

- In order to quantitatively analyze the relationships implied by the global UNICEF causal framework, a statistically complex 'path analysis' is appropriate.

Given the reduced number of exploitable indicators in the household survey in the district of DSB:

- That results analysis does not allow for covering all risk factors hypotheses .

It is possible to do further analysis on the causal models developed in the Kabul workshop in February 2015.

The results of a Link NCA can contribute:

- The Link NCA can provide an excellent baseline
- A more holistic picture of the local situation

Under the current conditions in Afghanistan, this survey contributes significantly to provide an "excellent baseline" of the challenges to access the population. Also, by providing "a more holistic picture of the local situation" operational actors will have adequate information to structure innovative and relevant programs for reducing the prevalence of malnutrition in the Dari Suf region.

Part II. Results and Preliminary Hypothesized Risk Factors for Link NCA Study in DSB, Samangan Province

1. Descriptive Findings Link NCA Study in DSB

In this chapter the first results of the NCA study are described taking into account previous results of different surveys at the local and provincial level. This section covers the prevalence of acute and chronic malnutrition for children under five years old in the DSB District. The results are given on the core and optional indicators for each sector. These statistical descriptions are enriched with contextual information contained in the discourse of local actors.

The perceptions of the causes of malnutrition for mothers and fathers collected via the focus groups are discussed in the context which has a rural population benefiting from nearby public services such as a school and a district hospital, but also a large consumer goods market, a mosque and the presence of an elected committee with CDC.

A seasonal calendar, explained by mothers, was added. It concerned the prevalence of disease for children under 5 years old and the comprehension of the incidence of these diseases for mothers.

Information on the population is targeted by the two surveys.

1.1. Targeted Populations of the Link NCA Study

15 households in each of the 35 clusters were visited for the SMARTRFS survey. The objective was to gather information from 530 households in which all children under five years of age were to be measured and weighed.

In the Sarwalang Miana village, 15 households (mothers and fathers) with at least one child under five years old were asked to participate in focus group sessions during 5 consecutive days.

1.1.1. For the Quantitative Survey

530 households were visited in the quantitative survey. In the "identification of households" section, some information allows us to identify the makeup of a household located in the DSB District household. The average household size is 7.1 people. In 2012, an ACF survey of 102 households in seven villages in Dari Suf (DSB and DSP), hadan identical average size for 78% of the households. Although 530 households were visited, this number is reduced if one counts only those with children aged less than 5 years (403). If one takes into account all mothers, the number is relatively greater (427) because of the practice of polygamy in some households. As shown in the following table (table1), the proportion of polygamous

households is not very strong in the survey sample. The average age of household heads is 41 years. The average age of mothers (403) is 29 years. 90% of the households had a male household head.

Table 34. Average Household size, Age Head (male), Main Caregiver (female) age in DSB

Indicator	N (households)	Mean	LCI-95%	UC I-95%
Household size (core indicator)	530	7.119	6.65	7.58
Age Head (Optional indicator)	403	41.866	40.073	43.659
Main caregiver age (Optional indicator)	427	29.07	28.40	29.73

1.1.2. For the Qualitative Survey

According to the Link NCA guidelines, when a sample of four villages is selected, it is important to describe the social, economic, and health conditions for each of them. As it is well known, these determinants in a local context may interact in different ways from one village to another. In the district, there may be different practices between mothers in villages that are 15 kilometers away from each other. In the Afghan context, in a rural province, and more specifically in a district such as DSB, a description of the village environment is necessary in order to comprehend constraints affecting the populations studied.

Sarwalang Miana is near the chief town of the district (5 km); the population has a proximity to public services (hospital and school). In this environment, the target population is defined as a population with access to services as opposed to a population living in a remote village with little access to such services. Having only one village, a contextual comparative analysis cannot be made, however, , it will be possible to explain how the target population perceives the causes of malnutrition despite having access to health and nutrition care.

The main criterion for both for mothers and fathers for participating in the qualitative survey was to have at least one child younger than 5 years. During a visit to the village, using a list provided by the CDC, we invited 15 families with at least one child under five years old to participate in the five focus group sessions (5 consecutive days).

1.2. Results from the Link NCA Study by Sector

In this section, we firstly presented and analyze the rates of the prevalence of malnutrition (SMART) in the DSB district. We continue with a detailed analysis of the findings of the quantitative survey (indicator calculations) enhanced by the participant's perceptions regarding the impact of various risk factors in the four major sectors (FSL, CPMH, Health and Unhealthy environment). An analysis of the causes of malnutrition reported by participants (mothers and fathers) is available in Sarwalang Miana,as well their understanding of the

incidence of childhood diseases during one year, taking into consideration the variability of risk factors of the four major sectors during a calendar year.

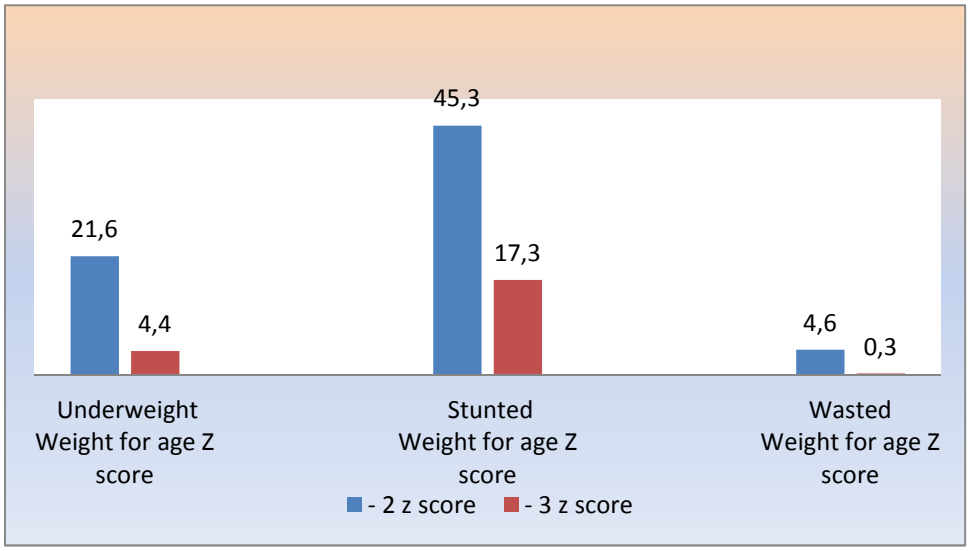
1.2.1. Under-Nutrition

In 2015, in the DSB district, the prevalence of malnutrition (wasted) was 4.6% (-2 z score), the prevalence of malnutrition (stunted) was 45.3% (-2 z score) and finally the underweight prevalence was 21.6% (- 2 z score) (see Chart1).

Looking at the wasted prevalence (NNS 7.8%) for Samangan province for 2013, there has been a decrease in DSB between 2013 2015, the rate being much lower (4.3%) than the prevalence rate for the entire province. In contrast, the prevalence of wasted malnutrition (45.3%) is comparable (NNS 47.1%) and the underweight prevalence is close to the provincial rate (25.2%) but slightly lower (21.6%).

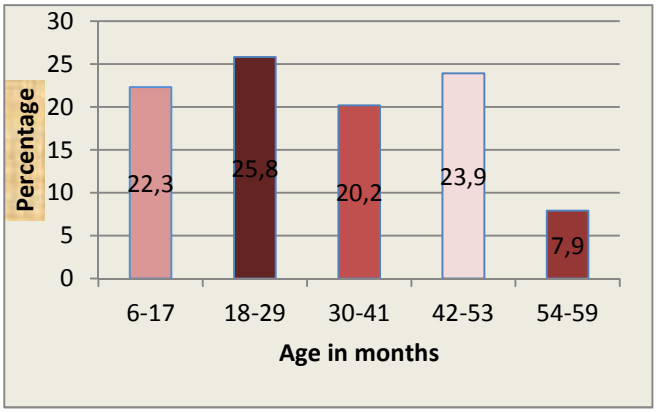
Concerning the prevalence rates (-3 z-score), the rate of severe acute malnutrition is very different from that obtained by the NNS in 2013 (2.4%) at the provincial level. In 2015, in the district of DSB, the prevalence of severe acute malnutrition is only 0.3%.

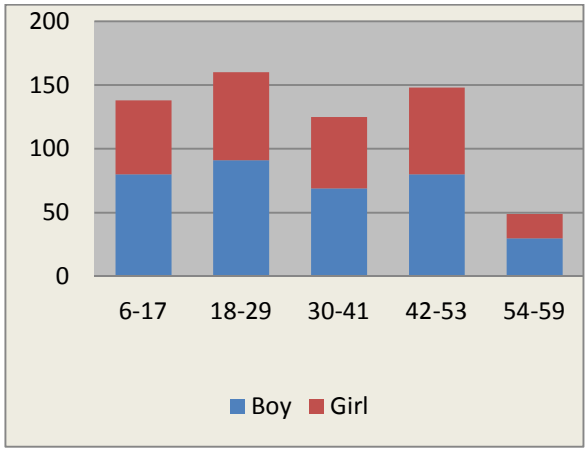
Chart1. Malnutrition Children, 0-5 years, DSB District, Samangan Province, 2015



For 611 children aged less than five years, weighed and measured during the SMART Survey in DSB, the number of children is distributed proportionally to the age groups between 6-17months and 42-53 months. The age group 54-59 months accounted for % (7.9%). In all, the ratio girls/boys was 1.3, it is higher especially for the age group 6-17 months (1.4) and the grouping for children of 54-59 months (1.6); (see Chart2).

Chart2. Age and Sex Distribution, Children U5, DSB, 2015, Smart Survey





In 2011 or the prevalence of severe acute malnutrition (SAM), the SMART UNICEF-ACF survey for the6 districts (including DSB) of Samangan province measured a rate of 1.1%. In 2013 while NNS obtained 4.4%. This significant difference in percentage is attributable to the food crises in 2012 and 2013. In 2015, for DSB, the prevalence of severe acute malnutrition table3) was below 1% (0.3%).

Table 35: Prevalence of Acute Malnutrition, 0-5 years, DSB District, Samangan Province, 2015

N=611		Boys	Girls
Prevalence of global malnutrition (<-2 Z score and/or oedema)	4.6% (28) (3.0-7.0 95%CI)	4.9% (17) (2.8 -2.5 95% CI)	4.1% (11) (2.1% -7.9% 95% CI)
Prevalence of moderate malnutrition (<-2 Z score and >=-3 Z score, no oedema)	4.3% (26) (2.6-6.8 95 % CI)	4.7% (16) (2.6% 8.3% 95% CI)	3.7% (10) (1.8% - 7.6% 95% CI)
Prevalence of severe malnutrition (<- 3 Z score and/ or oedema) The prevalence of oedema is 0.0%	0.3% (2) (0.1-1.3 95% CI)	0.3% (1) (0.0% -2.1 95% CI)	0.4% (1) (0.0%-2.8% 95% CI)

Source: Prevalence of acute malnutrition on weight for height z scores, Report Smart. July 2015.

Length, height, weight and mid-upper arm circumference (MUAC) was the most accurate predictor of mortality followed by weight-for-age, height-for-age and weight-for-height. MUAC is particularly useful when the precise age of the child is unknown. <there is still considerable controversy around MUAC or WH being the best indicator of wasting and in particular which is the best indicator to use in surveys. Recent studies comparing the prevalence of malnutrition according to MUAC and WH have shown large differences, particularly in pastoral populations (Myatt, Duffield et al. 2009). If one takes into account these limitations, it can be carefully noted note (table3) that the prevalence rate for the GAM is 4.6% (-2 z-score), based on MUAC while the GAM rate is 4.6% (-2 z-score), and the SAM rate is 1.9% (<115 mm and oedema). With these results showing a risk of mortality in children of the DSB district, special attention will be given to risk factors such as food insecurity, inadequate care and poor health on the causes of malnutrition.

Table 36. Prevalence of Acute Malnutrition Based on MUAC cut offs by Sex, DSB, 2015

Based on MUAC cut offs	All N=620	Boys N=350	Girls N=270
Prevalence of global malnutrition (<125 mm and or oedema)	6.6% (41) (4.5 -9.6 95% CI)	5.1% (18) (3.0-8.6 95% CI)	8.5% (23) (5.5 – 13.0 95% CI)
Prevalence of moderate malnutrition (<125 mm and >= 115 mm, no oedema)	4.7% (29) (3.1-7.1 95% CI)	3.1% (11) (1.7- 5.8 95% CI)	6.7% (18) (4.0 – 10.9 95% CI)
Prevalence of severe malnutrition(< 115 mm and or oedema)	1.9%(12) (1.1-3.4 95% CI)	2.0% (7) (0.9 - 4.4 95% CI)	1.9% (5) (0.7 -5.0 95% CI)

In 2011 (October), the prevalence of stunting (<-2 z-score), for 6 districts (Including DSB) in Samangan province was 54.7%. In 2015, for DSB, the prevalence of stunting (<- 2 z score) is 45.3%. Between 2011 and 2015, the prevalence of stunting malnutrition has declined, for the District of DSB, however this prevalence still remains "very high" according to WHO standards (see table4). The GAM prevalence among boys is 45.7% and for females 44.8%. The SAM prevalence is higher among boys (19.9%) than girls (13.8%).

Table 37. Prevalence of Stunting Malnutrition, 0-5 years, DSB, Samangan Province, 2015

	N=602
Prevalence of global malnutrition (<-2 Z score)	45.3% (273) (41.3 – 49.4 95%CI)
Prevalence of moderate malnutrition (<-2 Z score and >=-3 Z score)	28.1% (169) (24.7-31.7 95 % CI)
Prevalence of severe malnutrition (<- 3 Z score and/ or oedema)	21.6% (104) (13.8 – 21.5 % CI)

Source: Prevalence of stunting malnutrition on weight for height z scores, Report Smart. July 2015.

According to WHO standards, severity is "high" when the prevalence is within a range between 20% and 29%. In 2013, NNS estimated the prevalence rate of underweight births at 25.2% for the Samangan province. In 2015, for the District of DSB, the rate is 21.6%, slightly less than the provincial rate. ABoys are more affected (GAM: 22.3% -2 z score) than girls (20.7%), whereas the prevalence SAM (-3z-score), the rate (4.3%) for boys and girls (4.5%) are close (see table6).

Table 38. Prevalence of Underweight, Children 0-5 years, DSB, Samangan Province, 2015

	N=612
Prevalence of underweight (< -2 z score)	21.6% (132) (16.8 -27.2. 95%CI)
Prevalence of moderate underweight (<-2 z score and >= -3 Z score)	17.2% (105) (13.2- 22.1 95% CI)
Prevalence of severe of moderate underweight (<-3 z score)	4.4%(27) (3.0 - 6.4 95%CI)

Source: Prevalence of stunting malnutrition on weight for height z scores, Report Smart. July 2015.

1.2.2. Food Security and Livelihoods

The Household Dietary Diversity Score (HDDS) represents recalled food diversity from the past 24 hours in 12 food groups. In May 2015 (RFS Survey), the last month of the lean season the mean was 5.27 (Feb-May is the lean season, known to be most difficult, predominantly because of the lack of food availability). This is also the main period for precipitation, which frequently results in flooding).

Indicator	Number of household	Mean	LCL (95%)	UCL (95%)
HDDS (Household Diversity Score)	396	5.27	5.016	5.525

In November 2014, after the harvest, the ACF survey (210 households) obtained are relatively similar score (5.5.). in 6 districts of Samangan province including DSB. This period is known to be better for food security and livelihoods (income, cash and assets are available after the harvest season).

To have a clear idea of the configuration over the two periods (November 2014 and May 2015), in accordance with the guidelines of FAO, we classified household samples into 4 groups. For the month of May 2015, the following classification was made:

Table 39. HHDS, DSB, May 2015 (RFS Survey)

Group 1 HDDS<3	Group 2 HDDS 3-4	Group 3 HDDS 5-6	Group 4 HDDS>6
1 Hoh (0.25%)	121 Hoh (30.56%)	207 Hoh (52.27%)	67 Hoh (16.91%)

For the District of DSB in November 2014, the percentage of households with a low score was 28.5% (group 1 and group 2) while in May 2015 it was slightly higher at 30.8%. For groups 3 and 4, the percentage was 71.5% in November 2014, and 69.1% in May 2015. There isone "very good" household distribution configuration for" and one for a period known as "difficult". The optional FCS indicator may provide some additional information about this configuration. "*FCS is a composite score based on dietary diversity, food frequency, and relative nutritional importance of different food groups*" (NCA Indicator Guidelines, ACF, 2015).

Table 40. FCS, DSB, May 2015 (RFS Survey)

FCS	Number of Households	%	FCS	Design Effect
Poor	37	9,23	0-21	
Borderline	163	40,65	21.5-35	
Acceptable	201	50,12	>35	
	401	100%		2,107

In May 2015 (RFS Survey), 40.6% of households seem to be in a "borderline" situation while 50.1% of households score as "acceptable". In November 2014, the ACF[61] survey showed a similar effect on the proportion of households on the "borderline". The scores are different for the two other categories; only 29% being in "acceptable" condition and 30% of households have a "poor" score in November 2014, while in 2015 these two categories have a very different distribution:

May 2015			November 2014		
poor	borderline	acceptable	poor	borderline	acceptable
9.3 %	40.6%	50.1%	30%	41.3	29%

In 2015, during the difficult "lean season", the FCS indicator shows that households would be in a better situation than the period "after harvest".

The qualitative survey can explain this contrast. In focus group discussions on the topic of food security and livelihood fathers said that there are two main periods dividing the year: a first period from April to November and a second period from December to March.

During the first period, men are present in the villages, and for the second period, they migrate to the coal mines located in the heart of DSB District or to Mazar for Afghanistan or nearby Iranian cities. They explain that during the "lean season" families have savings, and therefore have enough money to buy food.

Men say that it was during this period and until the time after the harvest when poorer families are obliged to borrow money to cover food expenses especially if the head of household has not worked during the previous winter. They also mention that during this period (April to September) they are unable to find jobs in mines or elsewhere. If the harvest is good enough, they would be able to have access to food. By contrast, if the harvest was not sufficient, then households could be vulnerable until work starts again in the beginning of the winter season (December).

This way of regulating of food security was confirmed in 2014. 89% of respondents in the FSL survey in November 2014 said they had been affected by a shock in the six months preceding the survey. Under these conditions, a shock such as floods or droughts will jeopardize a larger proportion of households (+30%) in the months that follow. In this case households need extra money as well as farming production.

Mothers have corroborated the fact that leaving their village permanently so that their husband can obtain permanent employment is not an option as coal mining is possible during the winter.

[61] Food Security, Livelihoods and Water, Sanitation and Hygiene Evaluation, Samangan Province, ACF December 2014.

This situation seems to represent the whole district, as nearly 40% of heads of households in the Link NCA survey reported being "unskilled laborers" i.e. belonging to an "employable" category while only 27% reported working in agriculture.

Table 41. Household Head Occupation, RFS, DSB, 2015

Occupation	N	%	LCL %(95)	UCL %(95)
Farmer	112	27,317	19,619	35,015
NGO/GVT	9	2,195	0,858	3,532
Laborers/Unskilled	179	43,659	36,545	50,772
Unemployed	68	16,585	11,389	21,781
Other	42	10,244	5,871	14,617

The MAHFP is the only Link NCA indicator that specifically targets seasonality. A number of factors can affect the ability of a household to meet its food needs, such as insufficient crop production as a result of poor soil, lack of labor, decrease in income due to employment status, a conflict or natural disaster. The higher the MAHFP, the shorter the hunger gap, defined as the period in time between harvests when hunger is at its highest.

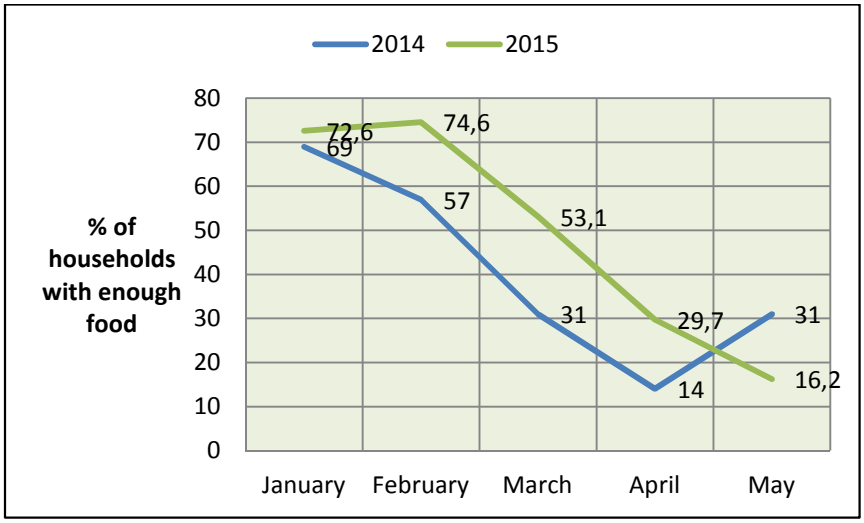
In May 2015, households (RFS survey) reported having experienced an average hunger gap of 1.59 months.

Indicator	Number of Household	Mean	LCL (95%)	UCL (95%)
MAHFP (Months of adequate food provisioning)	401	8.471	8.096	8.846

The question asked was: "I would like to ask you about your household's food supply during different months of the year. When responding to these questions, please think back over the last 12 months, from now to the same time last year".

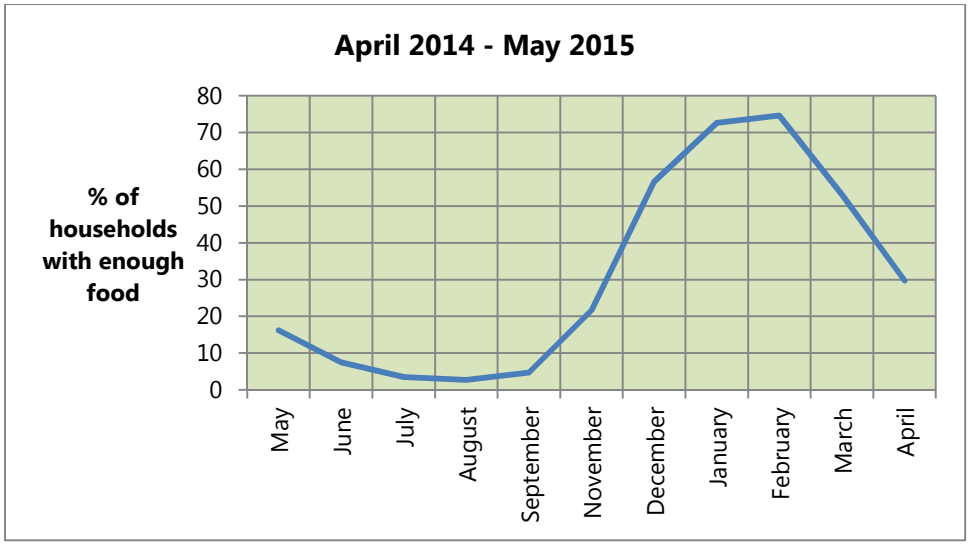
In November 2014, the average was 3.4 for the District of DSB, but this result was calculated with the data covering the period between January-May 2014 and t is therefore difficult to compare these two averages. When comparing the two periods in 2015 and 2014 for the same month we can see that there would have been a greater percentage of food-insecure families in 2014 than in 2015, but trends appear to be similar for both years (see chart below).

Chart 3. MAHFP, 2014-2015, % of Households with Enough Food, DSB



In May 2015, the heads of households (RFS survey) reported that the most difficult months are in the summer quarter (June-August).

Chart 4. RFS Survey, % of Households with Enough Food by Month, DSB, April 2014-May 2015



HFIAS in combination with HDDS provides *a global view of food insecurity* in the survey area. HFIAS is more qualitative and relies on perception. To our knowledge, this is the first time with the Link NCA survey that this indicator is used for FSL in Afghanistan. As shown in Table 9, the HFIAS[62] classification shows that a significant number (144 of 307) of households believe that they suffer from severe food insecurity.

[62] A **food secure household experiences** none of the food insecurity (access) conditions, or just experiences worry, but rarely. A **mildly food insecure (access) household** worries about not having enough food sometimes or often, and/or is unable to eat preferred foods, and/or eats a more monotonous diet than desired and/or some foods considered undesirable, but only rarely. But it does not cut back on quantity nor experiences any of the three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating). A **moderately food insecure household** sacrifices quality more frequently, by eating a monotonous diet

Table 42. HFIAS, DSB, May 2015, RFS Survey

HFIAS	Prevalence	Number	D effect
Secure	3,93	16	
Mildly	18,18	74	
Moderately	42,51	173	
Severely	35,38	144	
Total	100%	407	D effect : 2,006

HFIAP Prevalence: (number of household /sample) x100

Table 43. Statistical Results and Risk Factors Related in the FSL Sector, NCA Survey, DSB, 2015

Sector and concept S: FSL C: Food access	Indicator HDDS : 5.27 (average) FCS: score "borderline" (40.6%)" and "acceptable" (50.1%) households MAHFP : 8.47 (average) HFIAS: 35.38% severely food household (last month)	Risk factor related Household food access: the level of food consumption is good, but food vulnerability increases when during a year, there are shocks that affect crops. Food access instability: the level of annual household food instability is low (43% of household heads work in the winter). As early as April, when there is no more work for men. More than a third of households had not food stability.

1.2.3. WASH

In the following sections results are presented for: water, sanitation, and hygiene.

- **Water**

If one refers to the NNS national survey of 2013, it appears that Samangan province has poor access to drinkable water. In addition, 95.6% of households in this region believe that drinking water quality and quantity should be the main priority for public services.

The RFS survey household visits in DSB clarified the risk of contamination of water points. Among the six types of drinking water sources: groundwater; protected springs; rain water harvesting; water transported by truck, piped supply, and river water, the results of the survey

or undesirable foods sometimes or often, and/or has started to cut back on quantity by reducing the size of meals or number of meals, rarely or sometimes. But it does not experience any of the three most severe conditions. A **severely food insecure household** has graduated to cutting back on meal size or number of meals often, and/or experiences any of the three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating), even as infrequently as rarely. In other words, any household that experiences one of these three conditions even once in the last four weeks (30 days) is considered severely food insecure.

show that more than one in two households (52.9%) gets its water supply from surface water, including directly from the river (see table 11).

Table 44. Access to Safe Water, DSB Samangan, 2015

Indicator		N &%	LCL (95%)	UCL (95%)
Access to safe water source	Groundwater	12 % (50)	4.66	19.726
	Protected spring	28 % (117)	14.52	42.55
	Pipeline	6.34% (26)	-1.43	14.026
	River	52.9% (217)	39. 20	66.64
		100% (410)		D effect: 5.24

In 2013, for the province of Samangan the percentage of households that drank water from the rivers was estimated by the NNS at 47.2%. In 2015 (RFS Survey), the percentage of households drinking water from the rivers in the DSB (52.9%) was higher than the provincial average. In 2014, the ACF survey (with a sample of households in DSB) obtained for the six districts studied a similar average (47%) to the NNS survey. Access to water from surface wells has a higher risk of contamination compared with protected wells (ground water, protected spring, and pipeline). For 217 households identified by the RFS survey, the water management score is very high at 4.02 on average as shown on the table below.

Table 45. Water Management Score, RFS, DSB, 2015

Indicator	Mean	N	D effect
Water management score	4,024	217	D effect 5.24

Almost 43% of households in DSB with access to surface water are exposed to severe risks for water contamination.

Table 46. Water Management Risk, RFS, DSB, 2015

Indicator	Water management score	Proportion	LCL	UCL
0-1	Mild risk	5.26 (11)	2.06	8.46
2-4	Moderate risk	51.67 (100)	41.798	61.551
4-7	Severe risk	43.06 (90)	31.22	54.89
		100% (209)		D effect: 1.005

For 47% of households with access to protected wells in the DSB, it was not possible for investigators to go observe the villagers water points because of bad weather and lack of time in each village (one visit was allowed).

In 2014, an ACF assessment showed that for the 112 water points visited in the province of Samangan, "*38% were found contaminated with E. coli, turbidity and had a 71% above 5 NTU. PH and conductivity were found within standards. While functional, the water points were found to be in poor condition, being either damaged or destroyed (59%) or inducing high risks*

of contamination. Only 10% of respondents treat water (boiling or Bio Sand Filter) "(ACF FSL and WASH, page 16).

Water quality is certainly a major issue in the District of DSB. This also seems to be the case with water quantity according to the results of the RFS survey. The average number of liters per household is well below the three standards: Sphere (7.5-15 LCD-liter per capita per day); FANTA (50); MRRD (Afghanistan) 25 liters per person per day. The 2014 ACF survey obtained a higher average, or 27 liters per day per person for the sample of households covering the province of Samangan.

Table 47. Water Needs, RFS, DSB, 2015

Indicator	Count	Mean	Std Error	LCL	UCL	Minimum	Maximum
Water needs	411	16,812	0,437	15,924	17,701	2,222	85,714

This topic was discussed with the fathers in a focus group session. The use of surface water is frequent in the village of Sarwalang Miana. At walking distance, families have direct access to surface water. In contrast, wells cannot be used because they are not maintained. According to the focus group participants, the villagers do not have the financial means to keep wells operational, especially during winter and spring. In addition, choosing a common place to install causes conflict between the villagers[63]. Well installation and maintenance thus appears to be a local political issue.

Women and especially children fetch collected water for the family. Being close to the river, which is true for many villages in the district of DSB (see table below), daily reserves are more limited. For tasks such as washing clothes and carpets, children and women go directly to the river.

Table 48. Water Distance Collection, RFS, DSB, 2015

Indicator	Water collection distance	100% (359)	LCL (95%)	UCL(95%)
	More than 30 minutes	36% (100)	30.71	41.698
	Less than 30 minutes	63% (259)	58.30	69.284

In focus group discussions, men appeared very aware of the risk of contaminated surface water. Moreover, they consider "poor water quality" one of the 5 five causes of child malnutrition in their village. In the course of the focus group session, they discussed the presence of "chemicals" discharged into rivers from fields where fertilizers are used. They add that children go unsupervised to drink directly from the river, especially in the summer. Furthermore, in the winter, they comfort themselves by stating that the cold weather lowers

[63] Refers to "*Seasonal Livelihood Programming in the Northern Region of Afghanistan*". ACF, 2013.

the risk of contamination. The river serves as a substitute for wells for villagers who lack funds and prevents villagers from acquiring protected wells. Paradoxically, using funds for different tasks remains anchored in the daily practices of families. Note that in line with these discussions with men in Sarwalang Miana village and the results of the RFS survey, the Vulnerability Index (2015) of Samangan Province"[64] access to safe drinking water " is a very high risk (4 of 5).

- **Sanitation Facilities**

For this section, the selected indicator was "safe disposal of child feces." and use of safe sanitation facilities. Unfortunately, the results are not exploitable for the Link NCA survey in the district of DSB. We must therefore defer to earlier survey data for the province of Samangan and the focus group discussions with participants (mothers and fathers) in the sampled villages.

According to the NNS survey in 2013, 58.9% of households in Afghanistan and 89.1% in Samangan province have no access to correct sanitation. According to the ACF survey (2014) in Samangan Province (including the DSB), we can observe "*26% of the population interviewed practices open defecation while 72% of households possess (cross-checked through direct observation) and reportedly use family latrines*". Of 177 observed latrines in the compound where families live: "*The vast majority of latrines observed are vault latrines, usually overflowed, and poorly maintained. The physical condition of latrines observed (presence of flies, pit full, overflow going to the street) indicate they are unhealthy*" (FSL and WASH ACF Assessment 2014, Samangan province).

This topic emerged during focus group sessions with the fathers in particular. For men of the village of Sarwalang, houses are too small to install an additional bedroom with a household latrine system. When latrines are located in the compound, it is difficult for households to properly maintain them, especially during rainy seasons. This corroborates the MoPH 2013 results showing a very low rate of sanitation coverage (10.6%) in the compounds in the Samangan province.

- **Hygiene Practices**

Four indicators cover the situation of households in the RFS investigation. The first indicator examines the behavior of mothers regarding hand washing. In the district of DSB, the results show that 75% of mothers do not use soap correctly (see table below). Refers to the results NNS (2013) for the population (men and women) the proportion in percentage of people (90%) with good hygiene practices (after defecation and before eating) for the province in the RFS Survey.

[64] Overall Needs and Vulnerability Index Samangan 2015

Table 49. Caregiver Hand Washing Behavior, RFS, DSB, 2015

Indicator	Caregiver hand washing good behaviour	% proportion	LCL (95%)	UCL (95%)
	Bad	75% (308)	69.99	81.25
	Good	24.87 (102)	18.75	31.00
		100% (410)		D effect: 1.99

The NNS survey (2013) shows that in the province of Samangan only "30.8% of respondents had soap available at the hand washing facility", a proportion that is close to the results of the RFS Survey (24.8%). Table 17, indicates that mothers in DSB (21.5%) use soap proportionally less than the population of Samangan Province (30.8%).

Table 50. Use of Soap, RFS, DSB, 2015

Indicator	Use of soap	% proportion	LCL (95%)	UCL (95%)
	No soap	78.43% (320)	72.85	84.01
	Soap	21.5 (88)	15.98	27.14
		100 (408)		D effect: 1.81

It is regarding these specific practices that tensions between spouses have been observed. This is consistent with the ACF survey (2014) showing that among heads of families only 36% of them consider that it is necessary to use soap for hand washing. For men (94%), hand washing is done with water only, stating that soap is a commodity whose price is too high for families. Contrary to men, women perceive the benefits of soap. They say they that they would like to have certain products, but cannot for different reasons. In the focus group sessions addressing this topic, mothers talked at length about the importance of good hygiene practices which in their view were linked to the use of soap. A first obstacle that does not allow the women to improve their hygiene practices is that only their husbands have cash holdings and it is also their husbands who make the purchases at the bazaar. Although they say that their husbands buy things at their request, they also say that when they have access to cash, they save up to buy soap the opportunity they have to go to the bazaar themselves. It was acknowledged that in the Afghan context, particularly under the Taliban regime, Afghan women were deprived of their rights to work and pursue an education. We addressed the issue of hygienic practices of mothers in this particular sociopolitical context with health care professionals from the hospital.

Unanimously (for 4 key informants), the response has been as follows: "*in our context, it was the women who are empowered to convince men to improve hygiene practices, so it is with them that we must work in this direction*". Afterwards, we checked with husbands if this recommendation from health professionals was credible, who confirmed that this was true during focus group sessions. For them, women have the power to convince. Moreover, they told us that every night during the data collection couples discussed the topics covered in the Link NCA meetings. Nevertheless, mother's representations of their positions must be

done collectively. For them, if mothers express themselves with one voice in a village, then women can accomplish their goals in the community.

This description does not reflect a full understanding of the relationship between men and women in the Afghan context. The qualitative survey provides additional useful information. While rating the causes of malnutrition, mothers identified one of the causes as "poor hygienic practices". It is possible that women saw the survey as an opportunity to communicate to their husbands what they considered necessary to reduce the prevalence of malnutrition of their children.

The indicator "household hygiene (food)" also provides an interesting perspective in terms of further research on hygiene practices. There is almost a parity between the households with good practices (42.5%) compared to others (57.4%) which do not respect good practices. It can be concluded first that households in DSB favored good food hygiene practices more than personal hygiene practices (soap). As the population is generally heterogeneous, it is possible to compare the main characteristics of households with good and poor practices. In so doing it was possible to have a more representative picture of the of hygiene practices, currently classified with a rating of 3 of 5 in the province of Samangan[65].

Table 51. Household Hygiene Food, RFS, DSB, 2015

Indicator	Household hygiene (food)	% proportion	LCL (95%)	UCL (95%)
	Clean	42.5 (175)	38.33	46.82
	Not clean	57.42 (236)	53.17	61.66
		100% (411)		D effect: 0.731

As animals are kept nearby households a greater effort is necessary to maintain a clean environment around their home. We discussed this issue indirectly in focus group with mothers, particularly when women explained their workloads by talking about their daily work. When describing the tasks of a normal day, they said they started by caring for the livestock. In the lean season, they do so quickly because they must go to the field early. Animal waste was observed in almost every household.

The fact that it is women who have this responsibility may indicate that care for animals may become an aggravating factor of poor hygiene and could contribute to higher prevalence of malnutrition, given the lack of good hygiene practices such as the use of soap.

Table 52. Statistical Results and Risk Factors Related to WASH, Link NCA Survey, DSB, 2015

Sector and concept S: Unhealthy environment	Indicator	Risk factor related

[65] Overall Needs and Vulnerability Index Samangan 2015

C: Quality of drinking water	Water Management Score: 4.02 (average, core indicator) Water needs: 16.8 (average), core indicator) Water distance collection: 36% of household need more than 30 minutes (optional indicator) FGM: among 5 causes of malnutrition(poor quality of water)	Drinking water supply: for households with sole access to surface water, the level of risk is very high. Domestic water supply :middle risk to have access to water (basic needs) Water distance collection: middle risk to have access to water distance.
C: Sanitation	RFS: N/A ACF and NNS surveys in 2014 and 2013, only 10% of household have clean latrines	Sanitation facilities: FGM confirmed poor sanitation in the compound and households. High risk, especially in raining season.
C: Hygiene	Caregiver hand washing: behavior: bad behavior 75% Use of soap:78% no soap Household hygiene food: 57% of households are not clean (optional indicator) Household (animal waste): 90% of households are not clean (optional indicator) FGW: 'bad hygiene" among 5 causes of malnutrition.	Hygiene practices: the level of risk is very high, in particular for women with children under five years old. FGW "bad hygiene", cause of under-nutrition. Hygiene food: the level of risk is middle, compared to the risk of hygiene practices (soap)

1.2.4. MHCP: IYCF, Care of Women, and Psycho Social Care

The MHCP sector is divided into three distinct groups. The first relates to IYCF child nutrition of children aged between 0 and 36 months. The core indicators related are recognized by several organizations and thus validated by USAID, AED, FANTA, UCDAVIS, IFPRI, UNICEF and WHO. These measures do not only help to understand how children are fed, but also how, when and why.

The second group relates to the topic "care of women". It measures the nutritional status of the mother and then looks more closely at different aspects of the role of the mother: the scale of domestic work, the perception of her social capital and wellbeing. In the local context, there is a comprehensive analysis that takes into account the findings of the qualitative survey. Finally, the psycho-social dimension takes into account the interactions between mother and child. These interactions are seen as key to the quality of life of the child, including its relationship with food, since the mother is in charge of child rearing.

- **IYCF** : early initiation of breastfeeding, exclusive breastfeeding under 6 months, continued breastfeeding at 1 year, minimum dietary diversity, meal frequency, child feeding behavior

Early Initiation of Breastfeeding

The RFS survey in the District of DSB identified 80 children aged 0 - 23 months. The responses coded by investigators cannot be used and therefore were forced to rely on earlier surveys on this topic as well as statements during focus group with mothers in the village of Sarwalang Miana.

In 2011, in Samangan province (including the District of DSB) an ACF[66] survey showed that 61.5% of children had received one hour of breastfeeding after birth. The NNS survey obtained a higher proportion, since according to the results of this survey 89.9% of children were breastfed within a period of "at least one day" in this province.

For mothers interviewed during the qualitative survey, the topic of breastfeeding practices has been a central issue since it raised several questions regarding the arrival of the newborn and their nutritional care. In this village, women deliver more at clinics or at the district hospital than in other areas. Virtually all mothers breastfeed the first hour of birth. Things get complicated when they return home in a context where they may stop breastfeeding or not exclusively breastfeed. Mothers referred to the fragility of their own general health and that of their children when answering questions on exclusive breastfeeding and even more when discussing nutritional and pediatric follow-up questions regarding the children.

Exclusive Breastfeeding (0-5 months)

The "exclusive breastfeeding" indicator specifically targets children aged between 0 and 5 months. This indicator has strong scientific support that suggests not providing exclusive breastfeeding to infants less than 6 months old is a risk factor of under-nutrition.

For the RFS survey in the DSB, the recorded population was 65 children. According to the mothers of the 60 children in the survey (data usable), 68% are fed by exclusive breastfeeding during the first six months (see Table 21). In 2011, the ACF survey obtained a higher proportion; 71.4% for children in the province of Samangan.

Table 53. Exclusive Breastfeeding, RFS Survey, DSB, 2015

Indicator	Have an exclusive breastfeeding	Percentage proportion	LCL%(95)	UCL%(95)
	Yes	68% (41)	53.33%	83.33%
	No	31% (19)	16.65%	46.66%
		100% (60)		D effect: 1.462

[66] Anthropometric nutrition survey and Infant and Young Child Feeding Study, Preliminary results Dare sofpayen, Dare sofbala, Aybak, Roye doab and Hazrat e sultan - Samangan province – October 2011 - Afghanistan

These relatively high proportions in terms of percentages collected by the quantitative survey are very different when the practice is explored in-depth with the mothers in focus group sessions. During the discussions on this subject, mothers say almost unanimously, that they were not able to breastfeed, for different reasons. Firstly, by default, as many of them do not have enough milk to satisfy their newborn[67]. Fathers also discussed this issue in the focus group. For them, lack of breastmilk appears to be the first cause of child malnutrition in their village.

Then mothers explained that infants are often sick when they return home after childbirth. To feed the babies, but also to relieve them when they cry, they will resort to sugary plants and other substances while trying to give them the breast again. They also say they will often resort to external services provided by the hospital when the child refuses breastfeeding because he/she is ill. It must be emphasize that in line with observations, mothers prominently rate the lack of exclusive breastfeeding among the 5 most important causes of malnutrition.

Continued Breastfeeding

In the DSB, the proportion of children fed continuously (see table 22) is high (92%). For the province of Samangan, ACF survey (2011) calculated a similar proportion (87.3%).

In view of the Afghan national average (64.8%, NNS 2013), it is not surprising to see a higher proportion in the District of DSB and in the province of Samangan. Recall that in the DSB district, mothers do not work outside the home and that there is important food instability in the region. Mothers are in constant contact with their children and often the only food they can give is breast milk. This is consistent with the value that parents (mothers and fathers) attach to continuous breastfeeding for children.

Table 54. Continued Breastfeeding, RFS Survey, DSB, 2015

Indicator	Continued breastfeeding	Percentage proportion	LCL%(95)	UCL% (95)
	Yes	92% (50)	85.47%	99.71%
	No	7.4% (4)	0.28%	14.5%
		100% (54)		D effect: 0.919

[67]The two mothers with a child suffering from severe malnutrition have been confronted with this problem (narrative history by individual interview).

Introduction of Solid, Semi-Solid or Soft Foods

This indicator is defined as the proportion of infants 6 to 8 months of age who receive solid, semi-solid or soft foods. The proportion of children (with a relatively small sample[68]) aged between 6 and 8 months that eat semi-solid or solid foods was 46.7%. This proportion is close to the national average (41%). It is very different from the results obtained in 2011 by ACF where the proportion was 86.7%. This important difference leads us to be very careful about the interpretation of the results of this indicator within the RFS investigation. This indicator can refer to get a better idea of the introduction of food for children aged between 6 and 23 months.

Table 55. Introduction of Semi Solid or Solid, Children 6-8 months, RFS Survey, DSB, 2015

Indicator	Introduction of semi solid or solid		LCL%(95)	UCL%(95)
	No	53.3 (8)	25.8%	80.8%
	Yes	46.6 (7)	19.1%	74.6%
		100% (15)		D effect: 0.856

Complementary Feeding

This core IYCF indicator best reflects the child's food intake, which is obviously of major importance when studying the causes of under-nutrition. Minimum dietary diversity is the proportion of children 6-23 months of age who receive food from 4 or more food groups (see table25). The mean score for IDDS is 3.02 (table24), a score that remains rather low if one puts into perspective the proportion of children who do not eat from at least four food groups is 35.7%.

Table 56. IDDS 6-23 months, RFS Survey, DSB, 2015

Indicator	Children 6-23 months	Mean	Std Error	Confidence Limits	
				Lower (95%)	Upper (95%)
IDDS (Individual Dietary Diversity score)	190	3,021	0,111	2,796	3,246

The proportion of children who consume less than four food groups was slightly above the national average (27.2% NNS 2013). Compared to the ACF survey (2011) for the province of Samangan, there is a similar proportion (69%) for children who did not consume more than four groups of food.

[68]The indicator has a very narrow age range of 3 months. Estimates from surveys with small sample sizes are likely to have wide confidence intervals.

Table 57. IDDS Group Children, RFS Survey, DSB, 2015

IDDS Group Children 6-23 months	Count	%	D effect
Children who did not consume ≥4 groups	122	64%	
Children who consumed ≥4 groups	68	35,7	
Total	190	100	1,026

Meal Frequency

In the district of DSB, at least 4 children (6-23 months) out of 10 do not have an adequate meal frequency compared to the national average (52.1% NNS 2013), the proportion of children (57%) with adequate meal frequency is slightly higher in the District of DSB. Provincially, there are no figures concerning this indicator.

Table 58. Meal Frequency, Children 6-23 months, RFS Survey, DSB, 2015

Indicator	Meal frequency	Proportion percentage	LCL % (95)	UCL %(95)
	Yes	57% (88)	45.72%	68.56%
	No	42% (66)	31.43%	68.56%
		100% (154)		D effect: 1.96

Child Feeding Behavior

In scientific literature, there is evidence that a large proportion of children below 36 months of age are not regularly helped when they eat. In this perspective, it is important to know the type of behavior that will be "adopted by the caregiver when a child does not want to eat". Using Tables 27 and 28, we see that for DSB district the score is quite good since 72% of children (9-36 months) are helped by their mothers when they refuse to eat. They are assisted in most cases (57.3%) with playful techniques.

Table 59. Child Feeding Behavior (1) Children 9-36 months, RFS Survey, DSB, 2015

Indicator	Child feeding behavior	Proportion percentage	LCL %(95)	UCL %(95)
	Nothing	33.3% (110)	28.11%	38.55%
	Play and etc.	57.3% (189)	51.32%	63.21%
	Force	9.39% (31)	5.84%	12.94%
		100% (330)		D effect: 0.977

Table 60. Child Feeding Behavior (2) Children 9-36 months, RFS Survey, DSB, 2015

Indicator	Child feeding behavior	Percentage Proportion	LCL%(95)	UCL%(95)
	Helped	72.62% (268)	67.5%	78.10%
	Did not Help	27.3% (101)	21.8%	32.8%
		100% (369)		D effect: 1.34

In focus group sessions, mothers have confirmed the significance they place on the nutrition education of their children. This concerns both breastfeeding and the introduction to solid foods. Nevertheless, for fathers and mothers it is the lack of dietary diversity that has emerged as the main problem for child nutrition at the time of weaning.

- **Care of women**: mother food intake during pregnancy, caregivers' completed years of education, perceived social capital, caregivers' perceived workload, and wellbeing

Food Intake During Pregnancy

We know that in some communities, weight loss during pregnancy is not always a significant criterion for detecting malnutrition among pregnant and lactating women. Other indicators such as MUAC may be used to measure maternal malnutrition risks. Still, we cannot afford to confidently generalize the prevalence for the study area. In 2011, the ACF anthropometric survey reported with the same limitations a severe malnutrition prevalence rate of 3.67% for pregnant and lactating women surveyed in the province of Samangan. In 2015, for the DSB, the prevalence was estimated at 0.33%.

For the RFS survey in DSB, 56% of mothers reported eating less (31%) and the same amount (25%) during their last pregnancy. Half the mothers remain in the same or less identical nutritional diet than when they are not pregnant (see following table 29). The participants of the focus group did not speak directly about this issue.. The main concern that came back in all the discussions (mothers and fathers) focused on the lack of breast milk at the time of the birth of the child.

Table 61. Food Intake During Pregnancy, RFS, DSB, Samangan Province, 2015

Indicator	Food intake during pregnancy	Percentage Proportion	LCL %(95)	UCL%(95)
	More	42% (183)	38.15%	47.55%
	Less	31.3% (100)	27.8%	35.4%
	Same	25.52 (109)	20.7%	30.3%
		100% (427)		D effect: 0.93

Average Level of Caregiver Education

In Afghanistan, we know that the Taliban limited access to education for women during the last decade of the twentieth century and a whole generation of girls was not educated at all. If one refers to the average age of women in the DSB (29 years), it is possible that this estimate did not fully represent the female population. 96% of women in rural settings cannot read or write. Those whose parents were affected by the war, find themselves proportionately far behind other Afghan women in terms of an educational background (83% of Afghan women have attended school according to 2011 official statistics; see table below). Eventually, they will be mothers of children attending school and educated with the quality of education possible in remote areas, away from Afghan urban centers.

Table 62. Average Level of Education of Caregiver, RFS, DSB, Samangan, 2015

Indicator	Average level of education	Proportion Percentage	LCL (95%)	UCL (95%)
	None	96.24% (410)	94.30%	98.18%
	Education	3.75% (16)	1.81%	5.69%
		100% (426)		D effect: 1.07

In focus groups, women and men have talked openly about the generalized lack of education for the entire population of the district. In discussion sessions, they perceived the impact of this problem, including their inability to master the vocabulary used by health professionals for the care of children. For men, there is a real sense of frustration about how educated people explain nutritional problems, especially when they evoke the type of report they receive at the time of consultation with healthcare professionals. For example, they say they are unable to accurately read the prescriptions. Parents think that this communication hinders a relationship of trust with doctors and nurses.

Well Being

53.8% of caregivers are at risk in DSB (see Table 31), meaning that around one in two women are in a state of psychological distress. This result should also be interpreted with caution since we firstly have no comparative basis for this indicator and secondly, the proportional configuration obtained by the survey is split between two nearly equal groups, one at risk and one not at risk (46.1%).

Table 63. Well-being of Caregiver, DSB, RFS, Samangan, 2015

Indicator	Well Being	Percentage Proportion	LCL%(95)	UCL%(95)
	At risk	53.8% (230)	46.52%	61.20%
	No risk	46.1% (197)	38.79%	53.47%
		100% (427)		D effect: 2.36

The qualitative survey can help this issue. We explored the issue of the mental condition with women first by asking questions about their ability to project themselves into the future. Interviewed women (15) have individually responded very positively. For the 50 women attending sessions however, there was talk of a "stress disorder" when they have to deal with particular problems. Here is the list of stressful situations in which women from the village of Sarwalang Miana say they are affected:

Women alone (head of household) whose husbands are not currently at home: polygamous, migrants outside the country;
Women with fertility and health issues: abortion and chronic diseases;
Women who have the responsibility of children who are not theirs (grandmothers): death of mother;
Women with disabled children: suffering from poliomyelitis, mental health problems etc;
Women with sick children: children's diseases caused by poor hygiene.

The men of Sarwalang Miana expressed misgivings on the subject. They observed that parents' mental health problems affected children. According to them, the general state of health of children in the village is not good.

Their explanation was that the parents (mothers and fathers) are no longer able to cope with problems because they have lost family and community cohesion. They attributed this loss of cohesion to the negligence of economic development by the local authorities, the permanent presence of corruption of institutional representatives (hospitals and schools), the high workload of mothers and fathers due to insufficient agrarian technical means and the pollution of rivers with toxic products (fertilizers).

Workload

76% of mothers in the DSB district clearly state in the RFS that the domestic workload has negative impacts on of the relationship between caregivers and children (see Table 64).

Table 64. Caregiver Perceived Workload, RFS, DSB, Samangan, 2015

Indicator	Workload	Percentage Proportion	LCL%(95)	UCL%(95)
	Yes	76.% (320)	71.44%	80.5%
	No	23.9% (101	19.42%	28.55%
		100% (421)		D effect: 1.16

Taking into account the survey period, it is not surprising to have such a high proportion of mothers expressing a negative perception on the impact of workloads on children care. In a rural context, sowing and harvesting periods require mothers to actively participate in agricultural work. In May 2015, women were occupied for much of the day in the fields with their husbands. As in many countries, the villagers also have calmer periods where mothers are more present with their children. For the District of DSB, women in focus groups acknowledged that the April-June period was an intense period of activity; however, they said that during the winter season, they were in their homes and much more available for their children.

Seasons affects the repartition of domestic tasks and accordingly child care. In this particular context, the issue of the sexual division of labor in the domestic sphere can also be questioned. A structural unequal division of labor puts women at a disadvantage and negatively impacts child care.

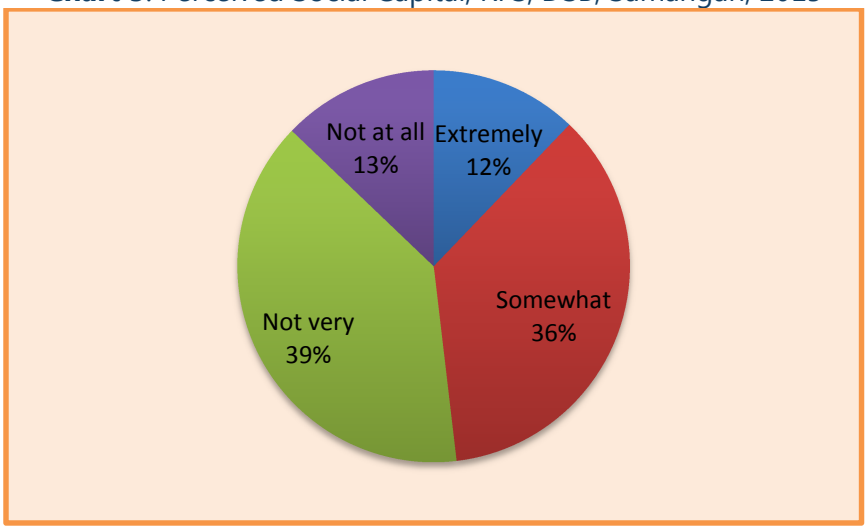
In the women's focus groups, unequal division of labor by sex did not emerge as a chronic factor reducing their ability to care for children. For them, the biggest factor affecting proper child care is the number of children in their care during planting and harvest periods. They expressed this problem as follows: "*as we have more than five children to look after,*

everything becomes difficult, when we have less than 5, we can accomplish all our household chores, doing both our work in the farm (animals and fields), and taking care of children"

Perceived Social Capital

The "value" of social relationships is reflected by the quality and quantity in a given population.. In this perspective, it is important to know if mothers receive support from their families and their communities. As shown in Chart 5, 36% said they had some support while 39% say that they are not very well supported. This partition is almost identical to the one found with the wellbeing indicator.

Chart 5. Perceived Social Capital, RFS, DSB, Samangan, 2015



For a better understanding of this finding, the ethnic background of the DSB District should be described briefly. All communities in this district are original "Hazara". This remains a minority ethnic community in Afghanistan. The population of this small community suffered particularly from Taliban violence because of their Shiite religious affiliation. This community has a reputation of openness compared with other communities (Uzbek, Tajik and Pashtu). Although it is difficult in the context of a Link NCA survey to account for this difference, we can testify that the "Hazara" women showed open mindedness at the focus group meetings. They spoke very openly about their problems[69].

Table 65. Perceived Social Capital, RFS, DSB, Samangan, 2015

Indicator	Perceived social capital	Percentage Proportion	LCL%(95)	UCL%(95)
	extremely	12.1% (52)	8.08%	16.2%
	somewhat	35.9% (154)	28.4%	43.5%
	Not very	39.0% (167)	32.4%	45.63%

[69] For example, we had been told that women would not accept a man in the place where the session was held, but they easily accepted the presence of the male in charge of taking notes.

	Not at all	12.8% (55)	8.0%	17.69%
		100% (428)		D effect: 1.60

Returning to perceptions of the support received in the community, the mothers of Sarwalang Miana explained that and in greater closeness, their mother-in-law or co-wives or other relatives play a supporting role depending on the distance they live from the family. These observations can determine if there is support, if it comes mainly from the immediate family and if the lack of support is explained by a social division in the community.

- **Child Psycho-Social Care**

As shown in Table 34, 4 out of 10 caregivers are not able to correctly interact with their children. This partition was constructed from caregiver's responses on welfare, including their perceptions of their mental condition contained in the following sentence: "I have felt calm and relaxed," on a scale ranging from 1 to 5.

Table 66. Caregiver-Child Interactions, RFS, DSB, Samangan, 2015

Indicator	Caregiver-children interactions	Percentage	LCL% (95)	UCL% (95)
	Inappropriate	40.6% (230)	46.%	61%
	Medium	24.5% (139)	8.%	18%
	Appropriate	34.5% (197)	38.5 %	53%

As it can be seen, the four indicators: "Caregiver-children interactions (1) Perceived share capital (2) Workload (3) Well-being (4)" are strongly linked. We note how they intersect a divided social structure, a seasonal calendar that differentiates intense periods of work from calmer periods, social vulnerability exposing families to stressful situations and the high prevalence of children in poor health.

Table 67. Statistical Results and Risk factors Related in the CPMH, Link NCA Study, DSB, 2015

Sector and concept	Indicator	Risk factor related
S: MHCP C: IYCF	Early initiation of breastfeeding: N/A (RFS), From qualitative survey: Exclusive breastfeeding: 31% of children don't have exclusive breastfeeding. According to the responses of mothers in the qualitative survey, this proportion is still higher. This practice as they would not be respected by the majority of women present at meetings of the focus group(85%). Mothers have identified this risk factor among the five causes of malnutrition of children under5 years Continued breastfeeding: 92% of children have continued breastfeeding Introduction of solid, semi-solid or soft foods:	Initiation of breastfeeding: for women who give birth in hospitals, the protocol is followed. Breastfeeding practices : discrepancy between the quantitative and qualitative results Continued breastfeeding: the level is very good. Complementary feeding practices: introduction of solid is at a good level, but IDDS and Meal frequency are very low.

C: Care of women	IDDS 6-23 months: 3.02 (average) Meal frequency: 42% of children don't have a good meal frequency. Child-feeding behavior: 72% of children are helped when they don't want to eat. Food intake during pregnancy: 42% of women eat more during their pregnancy and 32% of women eat less. Average level of education of Caregiver: 97% of caregiver has no education Well-being: 53.8% of women are at risk. Qualitative survey: women are in the lean season, and face stressful situations related to the poor health of their children. Men have produced a strong statement on this subject. For them, women and men would be severely affected by mental health problems due to the economic situation that is chronically disastrous in their district. Workload: 76% of caregivers are very busy during the lean season	Responsive feeding: the level is good Maternal nutritional status: the level is intermediate Caregiver's level of education: no education at all for women. Maternal well-being: the level is very low Caregiver's workload: highly dependent on seasonal calendar. Between April and June, the mothers are busy in the field. They have too much work to care for children during this period. The risk of poor childcare appears very high at this time of year.
C: Psycho social care	Perceived social capital: 58% of caregivers have a positive perception of their social capital. According to the qualitative survey, this positive perception is due to the support provided within their family. However, there would exist in communities DSB, tensions between families that put indirectly to test the caregivers' perceptions of their social capital. Caregiver-child interactions scale: 40% of caregivers don't have appropriate interactions with their child.	Social capital: in the context of DSB, the social capital is constituted at two levels: the first is relative to the family environment, and the second to the social status of the household head. In the family environment, women feel supported, and in the community environment, they are dependent on the social status of their husbands. The proportion of women (58%) appears quite good in this holistic configuration of social relations. Caregiver-child interactions: considering the period of strong sowing activity (seasonal calendar), the score is significant but remains acceptable.

1.2.5. Health (children and women)

In this section, there is an analysis of the productive health indicator "birth spacing" that normally appears according to the Link NCA methodology in the Care of women section. It is illustrative of the MHCP sector "proxy for women's empowerment". For the RFS survey in the District of DSB, we have reported the risk factor “birth spacing” in the Health section because the topic has been addressed in the focus group of men and women and has emerged as a disturbing issue, namely expressing a need more "complex" than an access to contraceptives.

The indicator on early pregnancy was also included in this section, since it is important to note that in Afghan society, marriage is a decision made primarily by the parents of the future spouses. This is sometimes referred to as arranged or early marriage. This is Afghan tradition and is not therefore exclusively related to women's education. In this perspective, we considered it more appropriate to treat it as a risk, or a specific vulnerability that exposes young women and their children to health problems. This is also how men and women interviewed in the qualitative survey perceive this issue.

Acute Respiratory Infection in the Past 14 days, Diarrhea in the Past 14 days

As shown in Table 36, the caregivers of the household survey of DSB were very likely to report diarrhea in children. According to data collected almost 8 out of 10 children have suffered from this infection. This rate is difficult to interpret since it indicates that almost all the children of this district were affected during the month of May 2015 (RFS survey).

If one looks at the results obtained on the prevalence of diarrhea in the province of Samangan, we note that these rates are still very high. In 2011, a government survey found there was a prevalence rate of 58%, while at the national level (NNS 2013), the prevalence rate was 35.5%. The ACF survey obtained a prevalence rate of 43% during a period (dry season) where normally the prevalence should be much lower.

Table 68. ARI and Diarrhea in the Past 14 days, RFS, DSB, Samangan, 2015

Indicator	Diarrhea	Proportion Percentage	LCL	UCL
	Yes	80.2% (411)	76.6%	83.9%
	No	19.7% (101)	16.05%	23.39%
		100% (512)		D effect:1.05
	ARI	Proportion Percentage	LCL	UCL
	Yes	88.8% (454)	84.2	92.83
	No	11.15 (57)	7.16	15.14
		100% (511)		D effect: 1.98

According to the ACF survey (2014) in Samangan Province (including the District of DSB), *the prevalence of diarrhea was found to be higher when children have no safe drinking water: 59% of affected children U5 got diarrhea by drinking water from unprotected sources (rivers,*

channels, dams, unprotected shallow wells, kandas[70]*)*". A significant proportion of the prevalence could be explained by the access to water. This finding was confirmed in discussions with fathers (see WASH). It still remains very far from the prevalence rate obtained with the RFS survey. In May 2015, we obtained a 20% differential, i.e. a prevalence exceeding the results of previous surveys.
How can this high prevalence be explained?

It could be attributed to seasonal variations: at the time of the survey (May 2015), floods were common. It could also be mothers expressing the fragility of children in the district DSB without taking into account the 14 days deadline. The qualitative survey may better explain the position of the participants. It is important to consider the context of a village whose population has relatively good access to health centers, (the distance is only 3 km) knowing that the care and primary health drugs are not paid by the public health system in Afghanistan.

Health care professionals (individual interview) who welcome children at the nutrition unit and the outpatient clinic of the hospital confirmed that diarrhea is the main reason for the hospitalization of malnourished children. For mothers, the prevalence of diarrhea is part of their daily lives. For them, hospitalization although based on an acute episodes of diarrhea is only the last phase of a process in which there have been many trips to and from to the health centers to treat the affected child.

According to mothers, the first phase of the consultation process is characterized by a lack of breast milk before the diarrhea starts. To treat the problem, they receive a milk formula prescription. The pharmacist's bazaar reported that when there is a shortage of milk at the hospital, then families come to buy at the pharmacy. Moreover, fathers have expressed some dissatisfaction on available stocks of milk formula. For them, there is a hospital, but with frequent shortages of infant formula, additional costs are imposed to have continuous access to formula. Faced with this situation, they clearly state that referring to the "local doctor" is less expensive. When the problem becomes chronic, they opt for this approach. Mothers have confirmed this practice, when the husband does not want to pay for the purchase of milk formula, they will resort to the "local doctor." In this context, children receive a mixed formula with herbal teas, thus starting the second stage of the process, which entails chronic problems of diarrhea in children.

According to mothers, chronic diarrhea of children could be explained by bad practices in the preparation of the milk formula requiring precautions such as boiling the water, which they report that if not done adds to other practices of failing hygiene (no use of soap). A recent ACF medical report (May 2015 visit to the ACF Medical advisor to the Mazar hospital treating children SAM in the province of Balk, and for some severe cases of children Samangan province, the nutrition unit) validates this narrative and the lack of breast milk, the

[70] Local name for traditional hand dug Water reservoir

high frequency of episodes of diarrhea and poor hygiene practices: "*As there is a lot of admissions case in IPD because of "diarrhea" and a lot of "Mother Milk deficiency". There is no counseling towards breastfeeding and in some facilities it seems that they do not promote the technique. From what I saw at the hospital level, there is a lot of hygiene and basic care practices related diseases we need to reinforce primary health care. As we try to integrate SAM management to the BPHS (Basic Package Health Service), it would be wise to support all the BPHS, in some areas where nobody else is doing it. As we can see it's strongly needed by the population. Milk needs to be prepared with the same precaution as if it was a drug, and in fact, it is a drug. F75 is a big part of what make the SAM physiology recovery in phase 1. So this is very important to focus on its preparation*."(ACF Report, Dr A. Senequier).

ANC (Ante Natal Care)

The ANC indicator (health professional) reveals that in the district of DSB, there is a demand for prenatal care. Over 80% of mothers have gone to prenatal visits in clinics and hospitals serving the villages (see table below). The results of the qualitative survey show the same. Mothers in the town of Sarwalang Miana confirmed the practice. It also seems that gradually the traditional "daya" women helping mothers give birth at home in the DSB villages is disappearing. A major transition is obvious since women attend the centers for prenatal visits but also give birth in health centers, which also was confirmed in focus groups. The majority of participating mothers said that they had given birth at the health center for their latest pregnancy.

Table 69. ANC (health professional), RFS, DSB, Samangan, 2015

Indicator	ANC		LCL%	UCL%
	No Health professional	19.7% (83)	14.3	25.06
	With Health professional	80.2% (338)	74.9	85.6
				D effect: 1.841

Moreover, what seems harder to maintain is related to compliance of the number of visits and thus tracking quality. Indeed only half of pregnant women observe the suggested 4 antenatal visits.

Table 70. Number of Visits ANC, RFS, DSB, Samangan, 2015

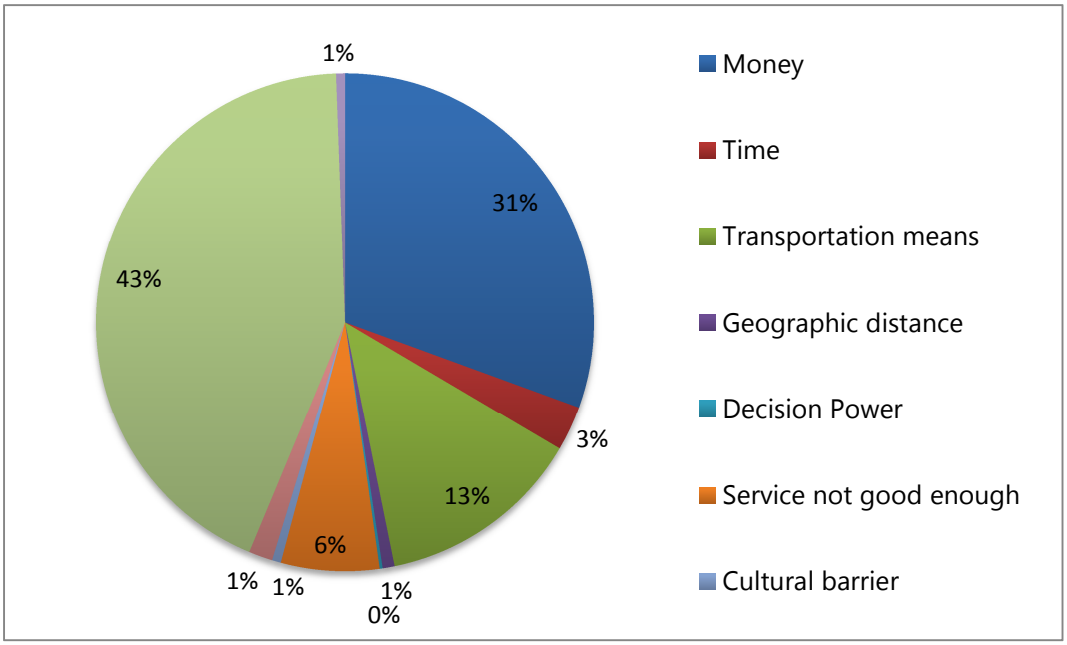
Indicator	ANC (number of visits)		LCL %	UCL%
	Less than 4 times	51.06% (215)	44.10	58.03
	Equal or more than 4 times	48.96% (206)	41.9	55.8
		100% (421)		D effect: 1.97

Regarding access to healthcare for children, the Link NCA methodology recommends using the DPT3 vaccine indicator and take into account the proportion of children vaccinated in a district. DPT3 immunization is a proxy for health services access and utilization. Unfortunately, this indicator is not used. In fact, during the procurement the household questionnaire, we found a number of codification errors by the investigators.

Barriers to Health Centers

The proportion of caregivers who reported not having barriers to health centers would be close to one in two (43%). For mothers who responded that they experience problems (242/428) getting to the center, the barriers (see graph below) relate to financial constraints (31%), transportation problems (13%) and a lower relative percentage to the poor quality of service (6%). Regarding financial barriers, they are only important to the extent that there is a free care for children under five and for deliveries.

Chart 6. Barriers to go to Health Centre, RFS, DSB, Samangan, 2015



The average time to get to the health center for all mothers of interviewed during the RFS iis almost 80 minutes (Table 39). The time needed to return after the consultation needs to be taken into account for the consultation.

Table 71. Time Needed to go Health Center, RFS, DSB, Samangan, 2015

Indicator	Count	Time to go	LCL% (95)	UCL % (95)
	427	79.95 minutes	61.63	98.27

Note that in this district as in many rural contexts, most distances are covered on foot. 80% of mothers are at a distance greater than 30 minutes (Table 40). Among them, 41% can cover the distance in less than one hour, and 58% need more than one hour (Table 41).

Table 72. Time Needed go to Health Center (2), RFS, DSB, Samangan, 2015

Distance to health facility	Time to go	Proportion Percentage	LCL % (95)	UCL% (95)
	30 minutes	15.9% (68)	6.28%	25.5%
	More than 30 minutes	84.0% (359)	74.43%	93.71%
		100% (427)		D effect: 7.15

Table 73. Time Needed go to Health Center (3), RFS, DSB, Samangan, 2015

Distance to health facility	Time to go	Proportion Percentage	LCL %(95)	UCL % (95)
	More than 60 minutes	58.% (249)	44.07	72.55
	Less than 60 minutes (1 hour)	41.6% (178)	27.44	55.93
		100% (427)		D effect: 8.6

Early First Pregnancy

This issue generated considerable discussion in the focus group sessions, both with mothers and fathers. Moreover, it seems that participants in the focus group considered it important to deal with this subject[71] and also - taking into account the number of children that the couple would like to have – the issue of adequate contraception in order to practice good birth spacing.

The average age of first pregnancy is close to 19 years (18.75). In proportion 66.7% were pregnant at that age or later while 33% had their first pregnancy at an earlier age than the average of 18.75.

Table 74. Early First Pregnancy (average age), RFS, DSB, Samangan, 2015

Age fist pregnancy	Count	Mean	LCL % (95)	UCL % (95)
	424	18.75	18.37	19.14

Table 75. Age of First Pregnancy (proportion of women), RFS, DSB, 2015

Indicator	Age of first pregnancy	Percentage Proportion	LCL % (95)	UCL% (95)
	Early	33% (100)	26.85	39.65
	Not early	66.7% (324)	60.34	73.14
		100% (424)		D effect:1.889

In the Afghan rural zones, social organization is highly structured around inter family relations.

In their focus group session, the men discussed their perceptions of the appropriate age of marriage for women. To do this, they discussed the advantages and disadvantages of the low age of a future bride. According to them the advantage of a marital engagement with a young girl quickly given by her family is it guarantees survival in hard times with the support of the in-laws. The men say that they will marry their daughters at an early age if economic conditions deteriorate and families need very long term alliances to prevent degradation of their social status. They are less likely to engage their young girls in this process as their

[71] The question concerning birth spacing in the RFS survey was misunderstood by respondents. According to the Link NCA methodology, this indicator is optional. However, this subject came up significantly in the focus group sessions for mothers and fathers.

economic situation is more stable and they are aware of the negative impact of early pregnancy on the health of young mothers and children.

It was in this perspective they say they are looking for resources to secure the welfare of the family. They believe that well-being may be linked to a reduction in the number of children[72]. Moreover, they remain very cautious about the use of contraceptives finding that the quality of care is not sufficient. What they are most concerned about is the current situation of "lack of milk" of young mothers. Under these conditions, without access to good contraceptive measures, it is necessary to seek help from qualified professionals to reduce birth spacing.

Women are almost entirely withdrawn into their houses. In the district of DSB, women do not engage in activities outside, they are wives, mothers and carry out domestic tasks relating to farming activities (see table below).

Table 76. Caregiver Occupation, RFS, DSB, Samangan, 2015

Occupation	Proportion Percentage	LCL % (95)	UCL % (95)
Housewives	98.%.% (422)	97.81	99.84
	100% (427)		D effect: 0.919

In sessions where women came in large numbers (50), we randomly selected fifteen young women who were asked to stay longer and address the issue of teenage pregnancies and age of marriage. Every one of them had the opportunity to speak on this subject.

Firstly, they all said that they were married through arrangement between their families and the families of their spouses. They say have complied with this practice as it is their duty to do so, however, they relate this event to how their parents have informed them of their future marriage. Women are solicited for their agreement and said that they appreciated this gesture and felt that they participated in the decision. For all of the interviewed women, the arrival of a first pregnancy and the following period gradually enabled them to grow accustomed to their new life. Mothers who were prematurely married (15 years old) compared to others, reported having experienced problems properly breastfeeding their children. Talking about this subject changed the tone of the discussion and the female participants focused on the issue of breastfeeding.

Like fathers in focus groups, women are aware of this issue. Two problems appear to be linked. At the same time they have too many children and they also lack breastmilk, so they would like to promote more sustainable birth spacing practices to solve both problems.

Table 77. Statistical Results and Risk Factors Related in the Health, NCA Survey, DSB, 2015

Sector and concept S: H	Indicator Acute respiratory infection in the past 14 days:	Risk factor related

[72] In focus groups, men have been asked to explain the number of children that they considered satisfactory. On average, men want at least 4 and a maximum of 6 children.

	N/A Diarrhea in the past 14 days: 80% of children has diarrhea in the last 14 days FCW: cause of malnutrition DPT3 immunization coverage: N/A (RFS) ANC: 80% has a ANC, but, only 48.6% of women has a good follow up (4 visits) Barriers from going to the health center: half of respondents face barriers to go to health center. Main barriers are linked to indirect costs (drugs and transportation) Short birth spacing: N/A RFS survey FCM and FGW: cause of malnutrition Early pregnancy: 33% of women in the DSB district.	Child health status: the level of risk is very high Access to health services (children and women): For women: the problem of access appears be strongly linked to the regularity of visits to the health center. Reproductive and Health: the level is high, but the problem is more acute for the primary care of children.

1.2.6. Basic Causes of Malnutrition According to Mothers and Fathers in Sarwalang Miana

In the first two sections, perceptions of the causes of malnutrition by the men and women of the village were described. In the third section, the findings are analyzed in light of the ratings done by the two groups (men and women).

Causes of Malnutrition Perceived by Mothers of the Village of Sarwalang Miana

At the final focus group session, (May 26, 2015), 30 mothers participated. Ahead of time, four mothers (team leaders) were selected to lead this final session. Participants were randomly distributed into 4 groups. With their "team leader", they talked freely on what they believed to be the causes of child malnutrition. After 30 minutes of discussion, the 4 "team leaders" gave the following results:

Table 78. FCW: First Round, Free Exercise of the Causes of Malnutrition, Sarwalang Miana Village

First Group:	Second Group:	Third Group:	Forth Group:
No good foods during pregnancy, diarrhea; bad hygiene; not enough milk; no exclusive breast feeding.	Not enough milk; fever; lack of foods during pregnancy; poor birth space; diarrhea.	Poor birth space, lack of breast feeding, bad hygiene, diarrhea, pneumonia. No good health care during pregnancy	The child is weak, diarrhea, lack of good foods during pregnancy, bad hygiene, fever, no exclusive breast feeding

Returning the lists participant's for each of four groups, team leaders asked their group to establish a ranking of the causes selected in the first round by vote. To do this, the 4 groups were separated.

Table 79. FCW, Second Round, Prioritizing the Causes of Child Malnutrition in the 4 Groups

First Group	**Second group**	**Third group**	**Forth group**
Rating:	**Rating:**	**Rating:**	**Rating:**
Mothers do not have good health during pregnancy (1)	Fever (1)	Lack of food during pregnancy (1)	Poor birth spacing (1)
Fever (2)	Diarrhea (2)	Poor hygiene (2)	Lack of breast milk (2)
Diarrhea (3)	Child does not have good health (3)	Not exclusive breast feeding	Not early breast feeding(3)
Poor hygiene (4)	Poor hygiene (4)	Fever(3)	Poor hygiene (4)
Poor birth spacing (5)	Lack of breast milk (5)	Diarrhea (4)	Diarrhea (5)
		Not good health during pregnancy (5)	

With "team leaders", a second exhaustive list was produced with the causes identified by order of priority before the final meeting.

10 causes of malnutrition: Mothers do not have good health during pregnancy, Fever, Diarrhea, Poor hygiene, Poor birth spacing, Child does not have good health, Lack of breast milk, Lack of food during pregnancy, No exclusive breastfeeding, No early breastfeeding.

Finally, the mothers were asked to select from among these ten causes, 5 causes of malnutrition. They chose: Poor birth spacing (1) Not enough breast milk (2) No exclusive breastfeeding (3) Poor Hygiene (4) Diarrhea (5).

To obtain an order of priority, the mothers had to vote arguing why they had chosen one cause over another as being the most important among the five, etc. Table 80 shows the result of the women's vote.

Table 80. Rating Causes of Malnutrition, FCW, Sarwalang Miana

1)	Poor birth spacing
2)	Diarrhea
3)	Lack of breast feeding
4)	No exclusive breastfeeding below six months
5)	Bad hygiene

Causes of Under-Nutrition Among Fathers in Sarwalang Village

A list of the 10 most frequently mentioned risk factors by fathers in the four previous sessions has been submitted during the last session.

Shortlisted causes of under nutrition for men: 10 frequent causes of malnutrition (focus group)

Lack of food (spring and summer)
Lack of food diversity and cooking (summer and spring)
Poor access to clean water (spring and summer)

Lack of means to store cooked food (summer) *Poor environmental sanitation practices (summer)* *Lack of breast milk (for mothers)* *Poor care-giving practices in spring and summer* *Poor health care and services for mothers and children* *Too many children* *Poor use of household goods such as soap products*

At the last meeting (May 27, 2015), the participants (12) added to this list the following four causes:

Mental Destabilization, War, Poor birth spacing, Lack of Health Education

We asked 7 randomly chosen participants[73] to select 5 causes that they considered most important among those 15 leading causes.

Participant 1: Poor birth spacing (1), Lack of medicine (2), Lack of food (3), Mental disorder (4), Recommended drugs (5)
Participant 2: Dirty water and lack of water(6) , Lack of food, Lack of facilities to keep food in good condition (7), Lack of doctor for under nutrition (8), Lack of fruits (diversity)(9)
Participant 3: Lack of water, Poor sanitation (10), Lack of good food, Lack of doctor, Lack of food for mothers (11)
Participant 4: Lack of good medicine, No good hygiene practice (12), Non-use of soap (13), Lack of food during pregnancy (14), Lack of breast milk (15)
Participant 5: Lack of food diversity during pregnancy, No good medicine to have breast milk (16), Lack of care-giving (mothers are busy) (17), Lack of food, Lack of clean water
Participant 6: Poverty (18), War (19), Pressure (20), Far away from hospital (21), Jobless (22)
Participant 7: Lack of knowledge (23) , Lack of care-giving to children, Poor birth spacing (24), Mental disorder, poor sanitation

We asked them to select among all the identified causes, five which the 7 participants could agree upon between them. By consensus, fathers have selected the following 5 causes: mental disorders, lack of clean water, lack of quality health services, lack of breast milk and poor birth spacing.

Thereafter, men established an order of priority for f the 5 selected causes:

Table 81. Rating of Causes of Malnutrition, FCM, Sarwalang Miana

1)	**Lack of breastfeeding**
2)	**Poor birth spacing**
3)	**Mental destabilization**
4)	**Lack of clean water**
5)	**Lack of good quality health services**

Discussion on the Rating of 5 Causes Malnutrition for Mothers and Father of Sarwalang Miana

There are certain similarities between the male and female perceptions. First, each explores the causes of malnutrition from their own roles in the community. Women are in the domestic sphere while men are in the public sphere. For women, lack of soap is important,

[73] 4 participants asked to leave the meeting after the first discussion because the day before the meeting, a tragic accident occurred in the village. Two women belonging to the families of the participants died as a result of mishandling the newly installed water pump.

while for men it is the lack of good quality water (note that it is the local authorities (CDC) which have a mandate for water management) and the poor quality health services which cause malnutrition.

Mothers, being more often at home are well placed to observe diarrhea episodes that can cause malnutrition (stunting and wasting). Men are also apprehensive but believe it is the deteriorating mental health of their community that makes children more vulnerable to malnutrition. The lack of breast milk is the number one cause child malnutrition according to mothers and fathers. There are two dimensions to this issue. First is the problem of reproductive health. Participants have access to acceptable birth planning measures for birth spacing, so women can have sufficient breast milk for their offspring. It is also possible that this problem is not in itself a direct cause of child malnutrition. Measures could be employed like an umbrella to prevent future risks (e.g. too many children, or poor diet diversity, etc.). Secondly, there needs to be a focus on the foundations of primary care (WHO 1978). Mothers wish to practice better exclusive breastfeeding for children under six months and adequate hygiene practices. Fathers hope these practices can be taught by healthcare professionals attentive to these problems that affect their communities.

Table 82. *Rating of 5 Causes Malnutrition for Mothers and Fathers of Sarwalang Miana*

1) Lack of breast feeding	1) Poor birth spacing
2) Poor birth spacing	2) Diarrhea
3) Mental destabilization	3) Lack of breast feeding
4) Lack of clean water	4) No exclusive breastfeeding below six months
5) Lack of good quality services (health)	5) Bad hygiene

Finally, note that food insecurity was not selected by the participants of the two focus groups, even if this issue has been addressed in previous sessions.

1.2.7. Seasonality

Chart 7. Seasonal Calendar, DSB, Link-NCA, Samangan, Afghanistan

	Season	Winter			Spring			Summer			Autumn		
Topic	**Month**	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Acute malnutrition	Prevalence of acute malnutrition perceptions												
	Peak of admissions in nutrition service	Low		Middle				Middle	Low	Unknown			
Water resources	Rainy season	Snow											
	Underground water	52% of villages					Conflict on water				Water shortage		
	Ground water												
Harvest	Hunger season			Planting									
	Harvest												
	Harvest fruits					Wild fruits							
	Harvest vegetables												
	Milk and eggs	High			Middle								
Household economy	Food market prices	High				Middle		Low					
	Terms of trade(sales and storage)	Storage							Sales surplus grain and maize				
	Far employment opportunities	Mine and FCountries				No migration						Migration Mine	
	Temporary job, Farms					Work on others farms							
Movement and family organization	Busy months for mothers	At home			Farm and livestock		Harvest					At home	
	Live stock activities	Birthing cow, sheep and goats						Sold for income					
Health	Diarrhea (among FGW)												
	ARI (among FGW												
Social	Social events			Nowruz		Zakat				Marriage season EID			

Legend

High	
Important	
No relevant, or no activities,	

2. Preliminary Rating of Hypothesized Risk Factors

This chapter is divided into two parts. In the first part, the 19 hypotheses are reviewed in light of all analytical results. These hypotheses have been classified in following 4 areas: FSL, MHCP, and healthy and unhealthy environment. In the second part, the 19 hypotheses are categorized by into four risk levels: major, important, minor, and rejected. If a hypothesis cannot be defined by any of these levels, it means that there was not enough information collected or available on this question and the event will be classified as untested.

2.1. Review of Hypotheses (19) According to the Methodology Link NCA

In the Link NCA guidelines, the rating hypotheses should be developed in three stages. We have slightly modified this process due the two following considerations:

- ¤ Two considerations on the local context of DSB district: the strength of the RFS survey and the qualitative survey

i) Whereas secondary data is based on prevalence rates at the provincial (Samangan province) and national level (Afghanistan), the goal is to estimate the coherence and consistency of the RFS analysis (e.g., the NCA survey findings with SMART measure the prevalence of malnutrition in a given district). We introduced a measure that evaluated the prevalence of the RFS survey (local context) while taking into account its wider environment at provincial and national levels. Considerations for each hypothesis include under "Source of primary data", a rating used to establish the relevance of each risk factors.

Provincial level prevalence by national prevalence: Secondary data (SD)	**RFS survey**	**Source of Primary data Criteria (- to +++)**
Prevalence is very high	And Prevalence is very high	**+++**
Prevalence is high or middle	And Prevalence is high or prevalence is middle	**++**
Prevalence is very high, high or middle	And Prevalence is very low, or middle	**-**
Prevalence is low or middle	And Prevalence is very high, or high , or middle	**+**
Prevalence is low	And prevalence is low	**-**

ii) Although the DSB survey in the district remains a limited qualitative survey (one village), it was necessary to complete understanding of the causes of malnutrition. To do this, we have put into perspective the perceptions of men and women. If both sexes have similar perceptions, that result showed a homogeneity of representations of the causes of

malnutrition in a local context. The following table shows the convergence of the perceptions of men and women.

FGW (Focus group Women)	FCM (Focus group Men)	**Qualitative survey Criteria (- to +++)**
The topic is not mentioned during the focus group	Or not mentioned during the focus group	-
The topic is mentioned during the focus group	Or mentioned during the focus group	+
The topic is mentioned as one of the top five risks	Or mentioned as one of the top of five risks	++
The topic is mentioned as one of the top of five risks	AND mentioned as one of the five risks	+++

- Literature Review

A third component relates to the review of scientific literature (meta-analysis, clinical trials, etc.). Each hypothesis was analyzed with the works from pathways to under-nutrition module which enriched the explanatory scope of the study in a local context (see following table).

Strength of consistency across the context of association between the risk factor and under-nutrition (from pathways to under-nutrition Module)	**- Weak association has been demonstrated in at least a few contexts**
	+ Medium strength association has been demonstrated in at least few contexts
	++ Strong association were demonstrated in at least a few contexts or an association demonstrated in a particular context of the link NCA

In order to support the explanatory reach of the literature review, we used the following approaches in the context of the Dari Suf region: modeling the basic causes selected by national experts (first workshop in Kabul), a first draft of pathways on the causes of malnutrition and the indicators that were selected as being the most relevant in the local context DSB district.

Finally a third component, "seasonality", is also estimated in section 1.2.7 (the calendar established at the Link NCA survey for the DSB, and an ACF reference calendar (for 3 northern Afghanistan provinces: Samangan, Sari and Paul Balk) that can be found in the appendix of the report. The rating is consistent with the methodology proposed by the Link NCA.

In the following pages, the narrative justifies the rating that is presented as a summary table of these four components.

2.1.1. For FSL Sector: 2 Hypotheses

Figure 32. Poor Food Access Stability Leading to Poor Food Availability

Source of primary data	Qualitative survey	Seasonality
SC: Samangan province HDDS: 5.01 (average) HFIAS: n/a	FCM: is mentioned during the focus group about this topic : Employment FCW: is mentioned during the focus group about this topic: Employment	ACF Calendar: Shocks (flood and drought). Employment during winter. DSB calendar: Shocks (flood and drought). Employment during winter.
RFS: DSB HDDS: 5.27 (average) the level is good but: HFIAS: 35.38% severely food household (last month)		
Rating: +	Rating: +	Rating: +++

Basic causes of under-nutrition from FSL Workshop	**Pathway to under-nutrition in DSB district**	**DSB context**	
Unfavorable geographic and climatic conditions: Poor dietary diversity Limited political and economic resources: **Limited availability and access to food (+ stability)** WK1. Hypothesis believed to be **significant** contribution to under-nutrition Rating: 3.5	Economicresources: Employment: Limited availability ↓ Low Maternal nutritional status : ↓ Under-nutrition in DSB Stunting: 41.3% Underweight: 26.6%	Based on HFIAS prevalence and Seasonality for employment **Module Pathway NCA: Stunting and underweight** Links to other risk factors : Child health status (HR), water: (HR) hygiene practices(HR)	**From literature review: +**

Figure 33. Poor Dietary Diversity (mother and child)

Source of primary data	Qualitative survey	Seasonality
SC: Samangan Province FCS: 30% of household has a poor FCS IDDS: n/a SC: National level IDDS: 27.6% who received more than four food groups	FCW: is irregularly mentioned as one of the top 5 risk factors for mother during pregnancy FCM: is irregularly mentioned as one of the top 5 risk factors for children	ACF Calendar: shocks and employment in mining DSB calendar: shocks and employment in mining. See FCS between November 2014 et May 2015.
RFS: DSB FCS: 9.3% of household has a poor FCS IDDS: 3.02 (low average) 64% of children who did not receive four food groups		
Rating: ++	Rating: +	Rating: ++

Basic causes from FSL Workshop	Pathway to under-nutrition in DSB district	DSB context	
Unfavorable geographic and climatic conditions: Poor dietary diversity Limited political and economic resources: Limited availability and access to food (+ stability) WK1. Hypothesis believed to be **significant** contribution to under nutrition Rating: 3.5	Unfavorable geographic conditions ↓ Poor dietary diversity FCS: 40% of households borderline situation ↓ Poor diversity IDDs for children (HR prevalence 62% ↓ Prevalence Underweight: 26.6%	Seasonality (shocks + (FCS)+ IDDS **Module Pathway NCA:** **Underweight** Links to other risk factors: Food Intake: eat less during pregnancy: 31% of caregivers (RFS)	**From literature review** **Rating: +**

Figure 34: Hypothesizes Risk Factor in FSL sector

Hypothesis in FSL sector	Source of primary data	Qualitative survey	Seasonality	From literature review
Poor food access stability leading to poor food availability	+	+	+++	+
Poor dietary diversity (mother and child)	++	+	++	+

2.1.2. From MHCP Sector: 7 Hypotheses

Figure 35. Inadequate Initiation of Breastfeeding (<1 hour)

Source of primary data	Qualitative survey	Seasonality
SC: National level IBF: 69.4% who are first breastfed (one hour) SC: Samangan Province IBF: 61.5% who are first breastfed (one hour)	FCM: not mentioned, except for the lack of milk for mothers as a chronic issue. FCW: for mothers who have deliveries in hospital, it is not relevant.	ACF Calendar: not relevant DSB calendar: not relevant
RFS: IBF: N/A		
Rating: -	Rating: -	Rating: -

Basic causes from CPMH Workshop	Pathway to under-nutrition in DSB district	DSB context	
Low level of education of women: Inappropriate infant and young child feeding WK1. Hypothesis believed to be **significant** contribution to under nutrition causes Rating: 3.8	Inadequate initiation of breastfeeding ↓ Low exclusive breastfeeding ↓ MUAC children: Prevalence (4.6%)	Based on IBF (39% of children who are not breastfed (one hour) **Module NCA Pathway:** Mortality and Diarrhea Links to others risk factors: exclusive breast feeding (HR).	**From literature review** **Rating:** +

Figure 36. Low Rate of Exclusive Breastfeeding Under 6 Months

Source of primary data	Qualitative survey	Seasonality
SC: National EBF : 69.4% who receive breastfeeding SC: Samangan province EBF: 71.4% who have exclusive breastfeeding	FCM: is regularly mentioned as one of the top 5 risk factors FCW: is regularly mentioned as one of the top 5 risk factors	ACF Calendar: not relevant DSB calendar: not relevant
RFS: DSB EBF: 31% of the children don't have exclusive breastfeeding		
Rating: -	Rating: +++	Rating: -

Basic causes from CPMH Workshop	Pathway to under-nutrition in DSB district	DSB context	
Low level of education of women: Inappropriate infant and young child feeding WK. Hypothesis believed to be a **major** contribution to under-nutrition causes Rating: 4.4	**Low rate of exclusive breastfeeding** ↓ **Unhealthy environment** ↓ **Child health status 80% (prevalence) Diarrhea**	Based on qualitative survey and RFS prevalence of exclusive breast feeding Module Pathway NCA: Complementary feeding HR; **unhealthy environment** HR; child health status HR; maternal nutritional status MR; social capital MR	**From literature review** **Rating: +**

Figure 37. Inadequate Complementary Feeding Practices

Source of primary data	Qualitative survey	Seasonality
SC: National MF: 52.1% of children (6-23 months) with minimum meal frequency SC: Samangan province N/A	FCM: mentioned poor food diversity for children during focus group FCW: mentioned they don't give a good introduction of solid, poor food diversity for children, and not good meal frequency for children and mothers	ACF Calendar: not relevant DSB calendar: not relevant
RFS: DSB Introduction of solid: 53.3% of children don't have a good		

introduction IDDS: see H. Poor diversity, bad average Meal frequency: 42% don't have good meal frequency		
Rating: ++	Rating: +	Rating: -

Basic causes from CPMH Workshop	Pathway to under-nutrition in DSB district	DSB context	
Low level of education of women: Inappropriate infant and young child feeding WK1. Hypothesis believed to be **major** contribution to under-nutrition: Rating: 4.3		IDDS poor diversity and Introduction on solid food **Module Pathway NCA** Link to other risk factors: breast feeding practices (HR) Unhealthy environment (HR)	**From literature review** **Rating:** ++

Figure 38. Lack of Women Empowerment

Source of primary data	Qualitative survey	Seasonality
SC: Samangan Province % of literate women: 10% RFS: DSB Not education at all (97%) Workload: 76% of caregivers are very busy (during survey period) Perceived social capital: 52% of caregivers have a good perception of their social capital	FCM: workload is mentioned on the rating exercise FCW: workload is mentioned on the focus group about this topic, in particular for the period of survey (May)	ACF Calendar: mentioned the intensity of work DSB calendar: May is a busy month for women.
Rating: ++	Rating: +	Rating: +

Basic causes from MHCP Workshop	Pathway to under-nutrition in DSB district	DSB context	
Weakness of women's social capital leads to low maternal status Women's workload leads to poor care practices Hypothesis believed to be **significant** contribution to under-nutrition Rating: 3.3		Workload and Social Capital **Module Pathway NCA** Link to other risk factors: food security; exclusive breastfeeding	**From literature review** **Rating:** -

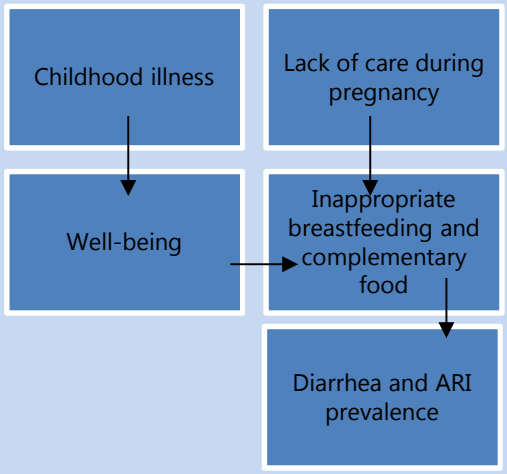
Figure 39. Maternal Well-being and Lack of Care During Pregnancy

<table>
<tr><td>Source of primary data</td><td>Qualitative survey</td><td>Seasonality</td></tr>
<tr><td>SC: Samangan Province
Well-being
ANC: 20.5% (four or more visits)</td><td rowspan="2">FCM: is regularly mentioned as one of the top 5 risk factors in terms of “mental disorder”

FCW: is regularly mentioned in each focus group (vulnerable mothers)</td><td rowspan="2">ACF Calendar: not relevant

DSB calendar: not relevant</td></tr>
<tr><td>RFS:
Well-being: women are at risk (53.8%)
Lack of care during pregnancy:
ANC: 51% of caregiver has less than 4 visits</td></tr>
<tr><td>Rating: ++</td><td>Rating: +++</td><td>Rating: -</td></tr>
<tr><td>Basic causes from MHCP Workshop

Women’s workload: housework leads to poor maternal well-being and care during pregnancy

Hypothesis believed to be significant contribution to under-nutrition
Rating: 3.6</td><td colspan="2">Pathway to under-nutrition in DSB district
 
</td><td>DSB context
Well-being indicator RFS, Vulnerable mothers (childhood illness), Mental disorder, Poor maternal health, Context of Post-conflict (Rural areas in Afghanistan)

Module Pathway NCA: breastfeeding and complementary feeding; household food insecurity; child health status</td><td>From literature review
Rating: +</td></tr>
</table>

Figure 40. Inappropriate Care Practices (mother and child interaction)

<table>
<tr><td>Source of primary data</td><td>Qualitative survey</td><td>Seasonality</td></tr>
<tr><td>SC: Samangan province
N/A</td><td rowspan="2">FCM: is never mentioned in the focus group about this topic

FCW: is never mentioned in the focus group</td><td rowspan="2">ACF Calendar: not mentioned

DSB calendar: during the seeding period, women are very busy</td></tr>
<tr><td>RFS: 40% of caregivers don’t have appropriate interactions with child
For responsive feeding: 72% of children are helped</td></tr>
<tr><td>Rating: +</td><td>Rating: -</td><td>Rating: +</td></tr>
<tr><td>Basic causes from CPMH Workshop

Women’s workload leads to poor maternal well-being and poor care practices</td><td>Pathway to under-nutrition in DSB district</td><td>DSB context
Score: 40% of caregivers (no good practices) but 72% of children are helped

Module Pathway NCA: earlier detection</td><td>From literature review</td></tr>
</table>

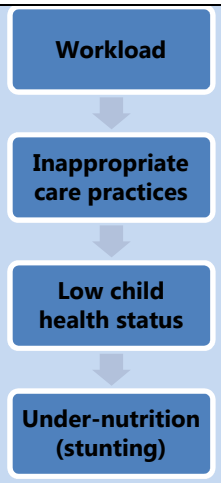
Hypothesis believed to be **significant** contribution to under-nutrition Rating: 3.0		of disease Link to other risk factors: breastfeeding; complementary feeding; child health status;	**Rating:** -

Figure 41. Health Seeking Behavior for Mother and Child

Source of primary data	Qualitative survey	Seasonality
SC. Samangan Province N/A	FCM: not mentioned in the focus group except for well-being (mental disorder) FCW: Women are stressed with children health status and bad practices of hygiene	ACF calendar: not relevant DSB calendar: not relevant
RFS: DSB CMPH: Response feeding: 72% of children are helped; Health: Access to health for child N/A Unhealthy environment : bad practices		
Rating: +	Rating:+	Rating:-

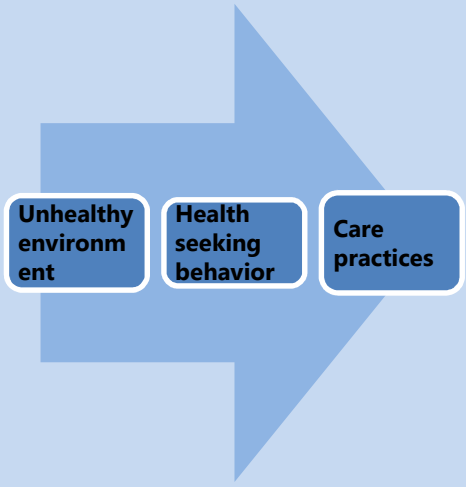
Basic causes from CPMH Workshop	**Pathway to under-nutrition in DSB district**	**DSB context**	
Low level of education and Lack of empowerment (decision making power) Hypothesis believed to be **significant** contribution to under-nutrition Rating: 3.7		Unhealthy environment **Module Pathway NCA:** Link to other risk factors**:** unhealthy environment "*In an unhealthy or unsanitary living environment, a mother or caretaker faces additional challenges as well as threats to the positive effects of good care practices*"	**From literature review** **Final rating:** +

Figure 42. Hypothesizes Risk Factor in CPMH Sector

Hypothesis in CPMH sector	**Source of primary data**	**Qualitative survey**	**Seasonality**	**From Literature review**
Inadequate initiation of breastfeeding (<1 hour)	-	-	-	+

Low rate of exclusive Breastfeeding under 6 months	-	+++	-	+
Inadequate complementary feeding practices	++	+	-	++
Lack of women empowerment	++	+	++	-
Maternal well-being and lack of care during pregnancy	++	++	-	+
Inappropriate care practices (mother and child interaction)	+	-	+	-
Health seeking behavior for mother and child	+	+	-	+

2.1.3. From Health Sector: 6 Hypotheses

Figure 43. Child Health Status (Diarrheal and ARI infection)

<table>
<tr><td>Source of primary data</td><td>Qualitative survey</td><td>Seasonality</td></tr>
<tr><td>SC. Samangan Province
ARI: 24.9% of children has in the 14 days
Diarrhea: 48.4% of children has in the 14 days</td><td rowspan="2">FCM: is mentioned in the rating exercise

FCW: is regularly mentioned as one of the top 5 risks factors</td><td rowspan="2">ACF calendar: ARI in winter and spring, and Diarrhea in summer

DSB calendar: very important</td></tr>
<tr><td>RFS: DSB
ARI: 88% of children has in the 14 days
Diarrhea: 80% of children has in the 14 days</td></tr>
<tr><td>Rating:++</td><td>Rating:++</td><td>Rating: +++</td></tr>
<tr><td>Basic causes from Health and WASH Workshop

Lack of access to safe water, Lack of hygiene, and Lack of sanitation lead to disease and under-nutrition

Hypothesis believed to be a major contribution to under-nutrition
Rating: 4.4</td><td>Pathway to under-nutrition in DSB district

Lack of hygiene
↓
High prevalence of ARI and Diarrhea
↓
Under-nutrition Stunting (41.3%)</td><td>DSB context
Very important in RFS and for FCW

Module Pathway NCA:
Link to other risk factors: access to health services, healthy environment</td><td>From literature review
Rating: ++</td></tr>
</table>

Figure 44. Low Maternal Health and Nutritional Status

<table>
<tr><td>Source of primary data</td><td>Qualitative survey</td><td>Seasonality</td></tr>
<tr><td>SC. Samangan Province
MUAC: 3.67% (but not significant)</td><td rowspan="2">FCM: is mentioned in the rating exercise

FCW: is mentioned regularly in the rating exercise</td><td rowspan="2">ACF calendar: not relevant

DSB calendar: workload in may</td></tr>
<tr><td>RFS: DSB
MUAC: 0.33% (but not significant)
Food intake during pregnancy: 31% of caregiver are eat less during pregnancy
Early first pregnancy: 33% of caregiver</td></tr>
<tr><td>Rating: +</td><td>Rating: ++</td><td>Rating: -</td></tr>
</table>

Basic causes from Health and Wash Workshop	Pathway to under-nutrition in DSB district	DSB context	
Weakness of women social capital to get counseling; early marriage and pregnancy; low knowledge of mother nutrition on care pregnancy lead to low maternal conduct to low birth weight lead to under-nutrition. Hypothesis believed to be **significant** contribution to under-nutrition Rating: 3.9	See H. Wellbeing and lack of care during pregnancy	Link with H. Well-being and lack of care during pregnancy **Module Pathway NCA** Link to other risk factors: food access, low birth weight; caregiver's workload	**From literature review** **Final rating: +**

Figure 45. Poor Birth Spacing

Source of primary data	Qualitative survey	Seasonality
SC. Samangan Province N/A SC. National N/A	FCM: risk factor is regularly mentioned as one of the 5 risk factors FCW: risk factor is regularly mentioned as one of the 5 risk factors	ACF calendar: not relevant
RFS: DSB Birth sibling: N/A		DSB calendar: not relevant
Rating: untested risk	Rating:+++	Rating:-

Basic causes from CPMH Workshop	Pathway to under-nutrition in DSB district	DSB context	
From cultural/social norms toward women Low birth spacing leads to inappropriate care practice for infant and child Hypothesis believed to be significant contribution to under-nutrition Rating: 3.6	Mothers and fathers think breast milk is insufficient ↓ Mothers and fathers think have too manychildren ↓ Poor birth spacing ↓ High prevalence of disease ↓ Under-nutrition prevalence (stunting) 41.3%	No data, except from qualitative survey **Module Pathway NCA** Link to the other factors of risk: low maternal nutritional status; breastfeeding: low access of health services	**From literature review** **Final rating:** ++

Figure 46. Low Access to Health and Nutrition Service

Source of primary data	Qualitative survey	Seasonality
SC. Samangan Province DPT3: N/A ANC: 20.5% of caregivers (four or more visits Post natal: 58.7% of caregivers (no check up)	FCM: for lack of maternal milk (drug), regularly mentioned as the rating exercise FCW: mentioned for nutrition service (Samangan city) on the rating exercise	ACF calendar: mentioned in the calendar for access to health center in winter time. DSB calendar: time to go to the Health center is longer during the winter season
RFS: DSB		

DPT3: N/A ANC: 80% of caregiver with health professionals, 49% (four visits). Barriers to go to health center: 57% of households. Time to go to health center: 80 minutes (average)		
Rating: ++	Rating: +	Rating: +

Basic causes from Health and WASH Workshop Low investment in public services, low use of public health service, low immunization coverage to children lead to disease and under-nutrition Hypothesis believed to be **significant** contribution to under-nutrition Rating: 3.9	**Pathway to under-nutrition in DSB district** **Low access to Health and nutrition service** **No post-natal check up** ↓ **Low child health status** ↓ **Under- nutrition stunting**	**DSB context** No data at all for children, but for mothers ANC (number of visits) **Module Pathway NCA** Link to other risk factors: maternal knowledge and practices; socio economics factors; child health status	**From literature review** **Final rating:** +

Figure 47. Low Quality of Health and Nutrition Services

Source of primary data	Qualitative survey	Seasonality
SC. Samangan Province SQUEAC: recommendation to increase the poor quality in nutrition services of health staff	FCM: is regularly mentioned as one of the top 5 risk factors FCW: women preferred to go to health private sector for in the focus group about this topic	ACF calendar: not relevant DSB calendar: not relevant
RFS: DSB Barriers to go to health center: 6 % of households (poor quality of health service)		
Rating: -	Rating: +	Rating: -

Basic causes from Health and WASH Workshop Low investment in public service, low use of public health service, low immunization coverage for children lead to disease and under-nutrition Hypothesis believed to be **significant** contribution to under-nutrition Rating: 3.8	**Pathway to under-nutrition in DSB district** **N/A** **Information gathered not complete**	**DSB context** FCM mentioned as one of the 5 risk factors **Module Pathway NCA:** Link to other risk factors: maternal knowledge and practices; socio economics factors; child health status	**From literature review** **Final rating: -**

Figure 48. Low Awareness on Under-Nutrition (causes, symptoms, and treatment)

Source of primary data	Qualitative survey	Seasonality
SC. Samangan Province ACF (2014) **:** Diarrhea was mentioned as the main cause of morbidity amongst under-5 children by 70% of respondents When asked about how they can prevent diarrhea, as much as 83% of respondents were unable to answer	Indirectly by the prevalence of diarrhea FCM: as mentioned a lack of information from health professionals in health center about under-nutrition. FCW: during the focus group, an exercise to understand the causes of diarrhea: for causes, symptoms and treatment: 18/22 discussed the poor conditions of hygiene, as a cause of diarrhea. To prevent it, they mentioned improving hygiene measures such as using soap, a clean house, and boil water.	ACF calendar: not relevant DSB calendar: not relevant
RFS: DSB N/A		
Rating: +	Rating:-	Rating: -

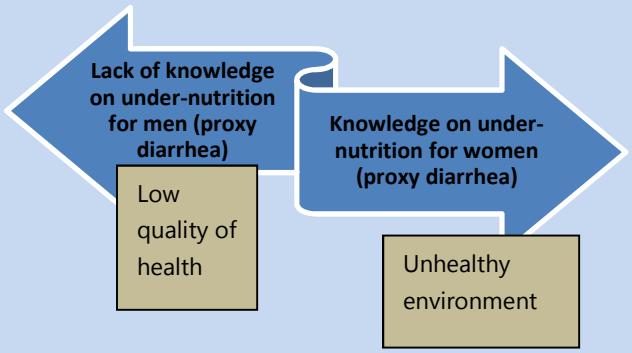
Basic causes from Health and WASH Workshop	**Pathway to under-nutrition in DSB district**	**DSB context**	
Low level of education Low knowledge of environmental hygiene Hypothesis believed to be significant contribution to under-nutrition Rating: 4.1		Diarrhea (proxy) **Module Pathway NCA** Link to other risk factors: child care practice	**From literature review** **Final rating:** -

Figure 49. Hypothesis from Health Sector

Hypothesis from Health sector	Source of primary data	Qualitative survey	Seasonality	From literature review
Child Health Status (Diarrheal and ARI infection)	++	++	+++	+
Poor maternal health and nutritional status	+	+	-	+
Poor birth spacing		+++	-	++
Poor access to health and nutrition service	++	+	+	-
Low quality of health and nutrition services:	-	+	-	-
Low awareness on under-nutrition (causes, symptoms, and treatment)	+	-	-	-

2.1.4. From Unhealthy Environment: 4 Hypotheses

Figure 50. Lack of Access to Safe Water

<table>
<tr><td>Source of primary data</td><td>Qualitative survey</td><td>Seasonality</td></tr>
<tr><td>SC: Samangan province
32.7% of households have access to safe water
22% need more than 1 hour
Water needs: 27 liters per day (average)

RFS: DSB
WSM: 43% of households has a severe risk
Access in distance: 36% of households need more 30 minutes
For water needs: 16 liters per day (average)</td><td>FCM: among 5 causes of under-nutrition

FCW: mentioned during focus group about this topic, particular in terms of boiling the water</td><td>ACF Calendar:

DSB calendar:</td></tr>
<tr><td>Rating: ++</td><td>Rating: ++</td><td>Rating: ++</td></tr>
<tr><td>Basic causes from Health and WASH Workshop

Unfavorable geographic conditions and seasonality of water supply
Lack of improved water infrastructures

Hypothesis believed to be significant contribution to under-nutrition
Rating: 3.7</td><td colspan="2">Pathway to under-nutrition in DSB district

Lack of improved infrastructure (CDC village)
↓
No access to safe water
↓
Lack of hygiene pratices
↓
Childhood illness
↓
Diarrhea</td><td>DSB context

Based Water management score: 43% household has a severe risk and qualitative survey

Module Pathway NCA
Links to other risk factors: Childhood illness</td><td>From literature review
Rating: ++</td></tr>
</table>

Figure 51. Lack of Adequate Hygiene Practices

<table>
<tr><td>Source of primary data</td><td>Qualitative survey</td><td>Seasonality</td></tr>
<tr><td>SC. Samangan Province
98% of people reportedly washing hands after defecation and before eating
30.8% of households have soap

RFS: DSB
Caregiver hand washing: behavior: bad behavior 75% of caregiver
Use of soap:78% of households have no soap</td><td>FCM: is irregularly mentioned on the rating exercises

FCW: is regularly mentioned as one of the top 5 risk factors</td><td>ACF calendar: not relevant

DSB calendar: not relevant</td></tr>
</table>

Household (animal waste): 90% of households are not clean (optional indicator)		
Rating: ++	Rating:++	Rating:-

Basic causes from Health Wash Workshop	Pathway to under-nutrition in DSB district	DSB context	
Basic causes from Health Wash Workshop Limited economic resources; low level of education; poor knowledge of improved personal hygiene and sanitation. Hypothesis believed to be **significant** contribution to under-nutrition Rating: 3.1	**Limited economic resources (no soap)** ↓ **Lack of hygiene practices** ↓ **Childhood illness** ↓ **ARI and Diarrhea** ↓ **Under nutrition (stunting)**	**DSB context** Findings with RFS survey and FGW are consistent **Module Pathway NCA** Link with other risk factors: Child care practices; Maternal education; childhood illness (HR)	**From literature review** **Rating:** ++

Figure 52. Poor Sanitation Practices

Source of primary data	Qualitative survey	Seasonality
SC. Samangan Province 10.6% used improved sanitation facilities RFS: DSB Safe disposal of child feces: N/A	FCM: is mentioned in the rating exercise FCW: is mentioned in the focus group about this topic	ACF calendar: DSB calendar: during the rainy season (flood)
Rating: +	Rating: +	Rating: +

Basic causes from Health and WASH Workshop	Pathway in DSB	Context in DSB	
Basic causes from Health and WASH Workshop Low level of education, Poor knowledge on improved personal hygiene and sanitation, low improved latrine coverage Hypothesis believed to be significant contribution to under-nutrition Rating: 3.1	Poor sanitation ↓ Childhood illness (diarrhea) ↓ Under-nutrition (stunting)	**Context in DSB** From primary source data and FCW and FCM **Module Pathway NCA** Link to others risks factors: childhood illness (HR)	**From literature review** **Rating:** +

Figure 53. Inappropriate Food Utilization (food hygiene, habits, food sharing)

Source of primary data	Qualitative survey	Seasonality
SC. Samangan Province N/A	FCM: mentioned in the rating exercise	ACF calendar: not relevant

RFS: DSB Observation: 57.4% of households was not clean Household (animal waste): 90% of households are not clean (optional indicator)	FCW: mentioned irregularly in the focus group about hygiene	DSB calendar: not relevant
Rating: ++	Rating: +	Rating: -

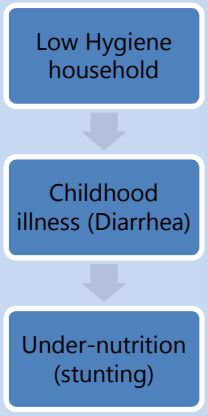
Basic causes from Workshop	Pathway to under-nutrition in DSB district	DSB context	
Low level of education, Poor knowledge of improved personal hygiene and sanitation Hypothesis believed to be significant contribution to under-nutrition Rating: 3.3		**Module Pathway NCA:** Household Hygiene: Link to others risks factors: childhood illness (HR)	**From literature review** **Rating:** +

Figure 54. Hypothesis from WASH sector

Hypothesis from WASH	Source of primary data	Qualitative survey	Seasonality	From literature review
Lack of access to safe water	++	++	++	+
Lack of adequate hygiene practices	++	++	-	++
Poor sanitation environment and practices	+	+	+	+
Inappropriate food utilization (food hygiene, habits, food sharing): Hygiene household	++	+	-	+

2.2. Classification of Preliminary Rating

The following table presents the five risk factor categories and the criteria used to characterize them.

Figure 55. Risk Factors Categories and Criteria, DSB, Samangan, 2015

Major risk	Source of primary data: RFS survey and Secondary data: classified as + + or +++ and Qualitative survey: as + or +++ and Strength of association from literature review: Pathway and basics causes of under-nutrition classified as + for ++
Important risk	Source of primary data: classified as ++ to +++ and Qualitative survey: + and Strength of association from literature review: Pathway and basics causes of under-nutrition: as + to ++

Minor risk	Source of primary data: + to++ and Qualitative survey:+ and Strength of association from literature review: Pathway and basics causes:+ or -
Rejected risk	Source of primary data: - and Qualitative survey: - and Strength of association from literature review Pathway and basics causes of under-nutrition:-
Untested risk	Information gathered not complete or not available

In the Link NCA survey, the full results of a qualitative study include an analysis of near thirty focus groups (four villages), twenty-one interviews with key informants and community leaders. We co-explored these results with the results from the RFS investigation. A comprehensive knowledge of the context greatly facilitated a first classification of hypotheses. It was more difficult to make those comparison s for the Link NCA survey in the district of DSB.. The prevalence rate obtained with the RFS investigation played a major part in classifying 19 hypotheses in the study.

It is important to recall here the prevalence rates found by the SMART survey in the district. In DSB , the prevalence of under-nutrition (wasted) is 4.6% (-2 z score) and the prevalence of under-nutrition (stunted) is 45.3% (-2 z score). This is then in a local context where the prevalence of malnutrition is centered more on the issue of "stunting" than on the "wasting".

Five hypotheses constitute a "major risk", 10 as "significant risk", and two hypotheses "minor risk". One hypothesis was rejected. Finally, only one hypothesis did not have enough information and was classified as "untested".

The argument of this classification was based on four categories linking the results of the Link NCA hypotheses grouped under "major", "significant" and "minor" risk. These refer firstly to the importance of the causal relationship with the prevalence of chronic malnutrition; secondly, the results of the qualitative and quantitative survey have the same significance concerning the impact of seasonality. Finally, the level of congruity between the initial rating (Workshop in Kabul) and that obtained by the analysis of the data.

2.2.1. Hypotheses Causes Believed to be a Major Contributor to Causes of Malnutrition

There are five "major" hypotheses which helped to form the causal schema of malnutrition in the district of DSB.

- According to the prevalence of chronic malnutrition (45.3%) : three hypotheses are strongly linked to this prevalence (see figure 20, figure 12, figure 6);
- The results obtained from the qualitative survey and qualitative inquiry have the same bearing on all major hypotheses ;

- 2 hypotheses are strongly related to seasonality: access to safe water and child health status (ARI and diarrheal infection);
- Two hypotheses: inadequate complementary feeding and child health status were classified as "major" in the first workshop in Kabul.

Figure 56. Causes Believed to be a Major Contributions to Malnutrition

Risk factor	Source of primary data	Qualitative survey	Literature review	Seasonality
Lack of adequate hygiene practices RWK: 3.1	++	++	++	-
Lack of access to safe water RWK: 3.7	++	++	++	++
Inadequate complementary feeding practice RWK:4.3	++	+	++	-
Child Health Status (Diarrheal and ARI infection) RWK:4.4	++	++	++	+++
Maternal well-being and lack of care during pregnancy RWK:3.6	++	++	+	-

Hypotheses about the *lack of adequate hygiene practices* and *lack of access to safe drinking water* appear to be the key risk factors increasing a high prevalence of ARI, diarrhea and inadequate complementary feeding practices.

According to the Link NCA guidelines, any new hypothesis from the survey must also be classified. During the rating exercise of the causes of malnutrition with the fathers of the village of Sarwalang Miana, a new hypothesis emerged. Fathers thought that the village population is affected by mental health problems which are a risk factor that could lead to a high prevalence of malnutrition among children under 5 years.

Although this hypothesis only emerged in a single focus group and only in one village it is clearly evident in the results of the RFS and also with the focus groups with mothers when discussing the "Maternal well-being and Lack of Care during pregnancy" risk factors . For women's focus groups, high stress does not refer exclusively to the intensive work they must carry out during the seeding season. Stress levels can be explained by the difficulties they regularly meet in coping with all problems affecting their children (see child Health status) as well as personal health problems they face themselves during pregnancy and after the birth of the child.

2.2.2. Causes Believed to be Important Contributors to Causes of Malnutrition

There are 10 "significant" risk factors contributing to the causal schema of malnutrition in the district of DSB.

- According to the prevalence of chronic malnutrition (45.3%): six hypotheses are linked to this prevalence (cf. figure1, figure7, figure13, figure14, figure15, figure21);

- The results obtained from the qualitative and quantitative survey contribute for eight hypotheses;
- 5 hypotheses are strongly linked to seasonality, which means that they could be "major" risk factors at certain times of the year, and minor at other times, particularly for hypotheses related to FSL;
- With the exception of the hypothesis on exclusive breastfeeding under six months, all 9 other hypotheses were classified as "significant" in the first workshop.

Figure 57. Causes Believed to be Important Contributions to Malnutrition

Risk factor	Source of primary data	Qualitative survey	Literature review	Seasonality
Poor access to health and nutrition service RWK:3.9	+ +	+	+	+
Poor dietary diversity (mother and child) RWK:3.6	+ +	+	+	+ +
Lack of women empowerment (workload and social capital) RWK:3.3	+ +	+	-	+ +
Inappropriate Hygiene household (only food) RWK: 3.3	+ +	+	+	-
Poor maternal health and nutritional status RWK: 3.9	+	+	+	-
Poor sanitation environment and practices RWK:3.1	+	+	+	+
Poor food access stability leading to poor food availability RWK: 3.5	+	+	+	+ + +
Health seeking behavior for mother and child RWK:3.7	+	+	+	-
Low rate of exclusive breastfeeding under 6 months RWK:4.3	-	+ + +	+	-
Poor birth spacing RWK:3.6		+ + +	+ +	-

At the workshop in Kabul, the hypothesis "Poor access to health and nutrition services" obtained a rating of 3.9. It was therefore very close to being classified as a "major" risk and received the same score according to the Link NCA results. It must be noted here that qualitative survey respondents had good access to care (maternity) since most of them gave birth in a maternity.

As we had access to the mothers in remote villages, we could have checked if mothers gave birth at the same maternity services even if they are far from health centers and particularly when it comes to at risk pregnancies. The indicator measuring children's access to health care

from the household survey - DPT3 coverage- could also be exploited, but which unfortunately does not explain the impact of this risk factor.

At the bottom of Figure 26, are two hypotheses that show some inconsistencies between the results from the RFS survey and the qualitative inquiry (FGM and FGW):

Low rate of exclusive breastfeeding under 6 months: according to the rating obtained in the workshop of Kabul, this hypothesis was among the 4 major hypotheses of the causes of malnutrition. Technical experts, mothers and fathers share the same view on this issue. The RFS survey however, shows that female respondents have not adopted the same perspective, since nearly two-thirds of them reported that they practiced exclusive breastfeeding. Note that when we addressed this issue with mothers, they also reported the same, but further explained and quickly rectified their reports, especially since their main concerns touched upon the complications related to breastfeeding. It is probable that the question on this subject was briefly answered by the mothers of the RFS survey, which leads us to accept the results of the qualitative survey as more reliable than the RFS investigation.

Poor birth spacing: referring to - primary data sources- in Figure 26, there is no notation, since we did not have Afghan secondary data or suitable information from the RFS. This hypothesis should be considered non-tested. This subject remains very important in the qualitative survey. In this case, it cannot be classified as “untested” or “minor” because it was chosen by respondents in the qualitative survey as a primary cause..

2.2.3. Causes Believed to be Minor Contributions to Causes of Malnutrition

As can be seen in Figure 27, there are two "minor" hypotheses. The first: "Inadequate initiation of breastfeeding (<1 hour)" concerns a third of the mothers of the RFS survey, which is still a relatively significant prevalence rate and therefore a non-negligible risk. Mothers in the village of the qualitative inquiry have clearly said during sessions on breastfeeding practices that midwives have helped them to breastfeed the newborn immediately after their birth. For the second, "Inappropriate care practices", the opposite was observed.

Figure 58. Causes Believed to be Minor Contributions to Malnutrition

Risk factor	Source of primary data	Qualitative survey	Literature review	Seasonality
Inadequate initiation of breast feeding (<1 hour) RWK:3.8	-	-	+	-
Inappropriate care practices RWK:3.0	+	-	-	+

2.2.4. Rejected Causes of Malnutrition

This hypothesis refers to risks related to the nutrition knowledge of both male and female respondents. In the District of DSB, the RFS survey shows that 98% of mothers had no formal education. This hypothesis can therefore not be tested with this indicator. The knowledge level of mothers on the causes and preventive treatment of diseases such as ARI and diarrhea can be tested during focus groups. This is very relevant because of high prevalence rates in the district.

Results show that mothers have a fairly good knowledge of the causes and the preventative practices against infections. This hypothesis cannot be accepted if only the outcome of the qualitative survey is taken into account. It is through this hypothesis that the existence of a large gap between the representations of the fathers (of heads of households) and those of mothers was revealed. Men give priority to the role of health professionals with respect to their lack of knowledge on the subject, while women are forced to remain in their domestic roles which they consider unhealthy.

Figure 59. Causes Rejected as Contributing to Malnutrition

Hypothesis risk factor	Source of primary data	Qualitative survey	Literature review	Seasonality
Low awareness on under-nutrition (causes, symptoms, and treatment) **RWK:** 4.1	+	-	-	-

Fathers feel that it is the health professionals who should teach mothers how to care for their children so as to have better maternal care practices. Fathers included among the five causes of malnutrition the following hypothesis: Low quality of health and nutrition services.

2.2.5. Untested Hypotheses During the Survey in DSB

One hypothesis could not be tested (see figure below). It could be classified as a minor risk according to the qualitative study. This hypothesis was selected by fathers as one the 5 causes of child malnutrition. It cannot be accepted as such because unlike the hypothesis on birth spacing, it is not clearly identified by both mothers and fathers. In addition, for the household survey this hypothesis does not appear to be a main barrier to health care access.

Figure 60. Untested Hypotheses During the Survey in DSB

Hypothesis risk factor	Source of primary data	Qualitative survey	Literature review	Seasonality
Low quality of health and nutrition services **RWK:3.8**	-	+	-	-

We cannot reject this hypothesis because in the qualitative survey it is demonstrated as a cause for the male respondents. We cannot classify it under minor risks since the proportion of respondents that classify it as a barrier is still quite low (6% RFS). We know that if fathers (FG) put forth this hypothesis, it is because male heads of households want more help from medical professionals. Within such a framework, it is unclear if it is the skills of health professionals that are concerned, or if the relationship of trust is either damaged or not established. It must be concluded that this hypothesis remains "untested". No doubt if a SQUAEC investigation was carried out in the local context, we could link the results of this survey with the prevalence of outcomes related to other hypotheses on access to care, and then establish the rating of this hypothesis.

Link NCA Dissemination Workshop

Phase Four: Synthesis of Results and Building Technical Consensus

The final Link NCA workshop was held on 1st February 2016 at UN-OCHA in Kabul, Afghanistan. The final phase of the link NCA process involved synthesizing the results and building technical consensus based on the evidence generated on the probable causal factors of under nutrition in Dare-Suf Bala district, Samangan province. The process involved taking participants through the findings of the Link NCA and later engaging participants in group discussions. The objectives of the workshop was to review evidence gathered from the Link NCA study, to generate a confidence note ranging from 1 (low) to 3 (high), to participate in the rating exercise of risk factors and to develop response plans. The various technical experts present at the workshop were later gathered into three groups. First, they were taken through the rating process of risk factors and provided with examples before starting the actual rating exercise. They had to use the experience, findings/information generated from Link NCA study (both quantitative and qualitative) and the association with the literature review during the rating process. The groups were engaged in assigning a confidence note to each of the hypothesized risk factors. The confidence notes ranged from (1-3), with 1=low, 2=medium and 3=high. The final output of the workshop is illustrated in table 51.

Table 83: Rated Risk Factors as Linked to Under-Nutrition

Risk factors	Rating proposed by Link NCA Expert	Nb of groups	Confidence Note			Rating			Average of Confidence Note	Final rating proposed by experts
			Group 1	Group 2	Group 3	Group 1	Group 2	Group 3		
Inadequate complementary feeding practices	Major	3	3	2	3	Major	Important	Major	2.7	Major
Maternal well-being and lack of care during pregnancy	Major	3	3	3	2	Major	Major	Major	2.7	Major
Child health status (diarrhea and ARI)	Major	3	3	3	3	Major	Major	Major	3.0	Major
Lack of adequate hygienic practices	Major	3	1	3	3	Minor	Major	Major	2.3	Major
Lack of access to safe water	Major	3	2	3	3	Important	Major	Major	2.7	Major
Low rate of EBF(children less than 6 months)	important	3	2	2	2	Important	Important	Important	2.0	Important
Lack of women empowerment	important	3	2	2	2	Minor	Important	Important	2.0	Important
Poor access to health and nutrition services	important	3	2	3	2	Important	Major	Important	2.3	Important
Poor maternal health and nutrition status	important	3	2	3	2	Important	Important	Important	2.3	Important
Poor health seeking behavior (mother and child)	important	3	2	2	1	Important	Important	Minor	1.7	Important
Low birth spacing	important	3	2	2	2	Important	Important	Important	2.0	Important
Poor sanitation environment and practices	important	3	2	2	2	Important	Important	Important	2.0	Important
Poor dietary diversity	important	3	2	2	2	Important	Important	Important	2.0	Important
Poor food access, stability leading to poor food availability	important	3	3	3	3	Major	Major	Major	3.0	Major
Inappropriate household hygiene (food)	important	3	2	3	2	Important	Major	Important	2.3	Important
late initiation of breastfeeding (less than 1 hour)	Minor	3	2	2	2	Important	Important	Important	2.0	Important

Inappropriate care practices (Mother and child interaction)	Minor	3	3	2	2	Major	Important	Important	2.3	Important
Low awareness on under-nutrition (causes, symptoms and treatment)	Rejected	3	2	2	1	Important	Important	Minor	1.7	Important
Low quality of health and nutrition services	Untested	3	2	2	1	Important	Important	Minor	1.7	Important

Phase Five: Link NCA Multi-Sector Response Plan

The participants were engaged in the development of multi-sector response plans based on risk factors identified as highlighted in table 52. The actualization of response plans will require concerted efforts of all stakeholders in setting a road map on minimizing under-nutrition in Dare-Suf-Bala district, Samangan province.

Table 84: Multi-sector Response Plan

Risk factors	Interpretation	Proposed interventions	Stakeholder	Desired Change	Time line
Inadequate complementary feeding practices	Major	• Increase awareness about importance of proper and timely CF • Increase caretakers awareness on preparation of complementary feeding recipes through food demonstration using locally available/accessible food items (Including quantity/frequency). • Assess potential role of MNP in regards to Complementary feeding, and its provision	PND/PNO/PPHD, BPHS/EPHS, Other relevant nut-partners	Optimal complementary feeding practices	2016-2018
Maternal well-being and lack of care during pregnancy	Major	• Support mechanisms of raising awareness of women to attend ANC and PNC visits • Awareness raising of community members including women and men about importance of maternal care during pregnancy and its link with the health and nutrition of baby	PND/PNO/PPHD, BPHS/EPHS, Other relevant nut-partners	Adequate maternal care during pregnancy	2016-2018
Child health status (diarrhea and ARI)	Major	• Community awareness about prevention of diarrhea and its correlation with poor hygiene, sanitation, and unsafe water • Coordination with WASH program to address the existing issues such as lack	PND/PNO/PPHD, BPHS/EPHS, Other relevant nut-partners	Low incidences of child diarrhea and ARI	2016-2018

		of safe water for drinking at household level. • Encourage health seeking behavior, particularly the ill children to visit HF • Provision of Oral Rehydration Syrups to all children with episodes of diarrhea • Upscale Zinc supplementation provision and uptake • Increase access of pneumococcal vaccination among under-fives to minimize the burden of ARI infections			
Lack of adequate hygienic practices	Major	• Increase awareness regarding personal and environmental hygiene • Distribution of hygiene kits at household levels • Community awareness raising about importance of proper hygienic practices, and its linkage with health • Introduction of proper hygienic practices to the community (IECs) • Behavior change communication (BCC)	PND/PNO/PPHD, BPHS/EPHS, WASH, Other relevant nut-partners	Adequate hygienic practices	2016-2017
Lack of access to safe water	Major	• Coordinate with WASH and explore possible options for provision of safe water • Chlorination of existing water sources	PND/PNO/PPHD, BPHS/EPHS, WASH, Other relevant nut-partners	Access to safe water	2016-2018
Low rate of EBF(children less than 6 months)	Important	• Enhance integration of IYCF messages through health services • Establishment of breastfeeding corners at work places • Capacity building of HF staff and CHWs on IYCF • Integrate the key IYCF messages with other health services such as GFD, literacy courses, vocational trainings,	PND/PNO/PPHD, Religious affairs, women affairs, BPHS/EPHS, Other relevant nut-partners	increased rate of EBF(children less than 6 months)	2016-2017

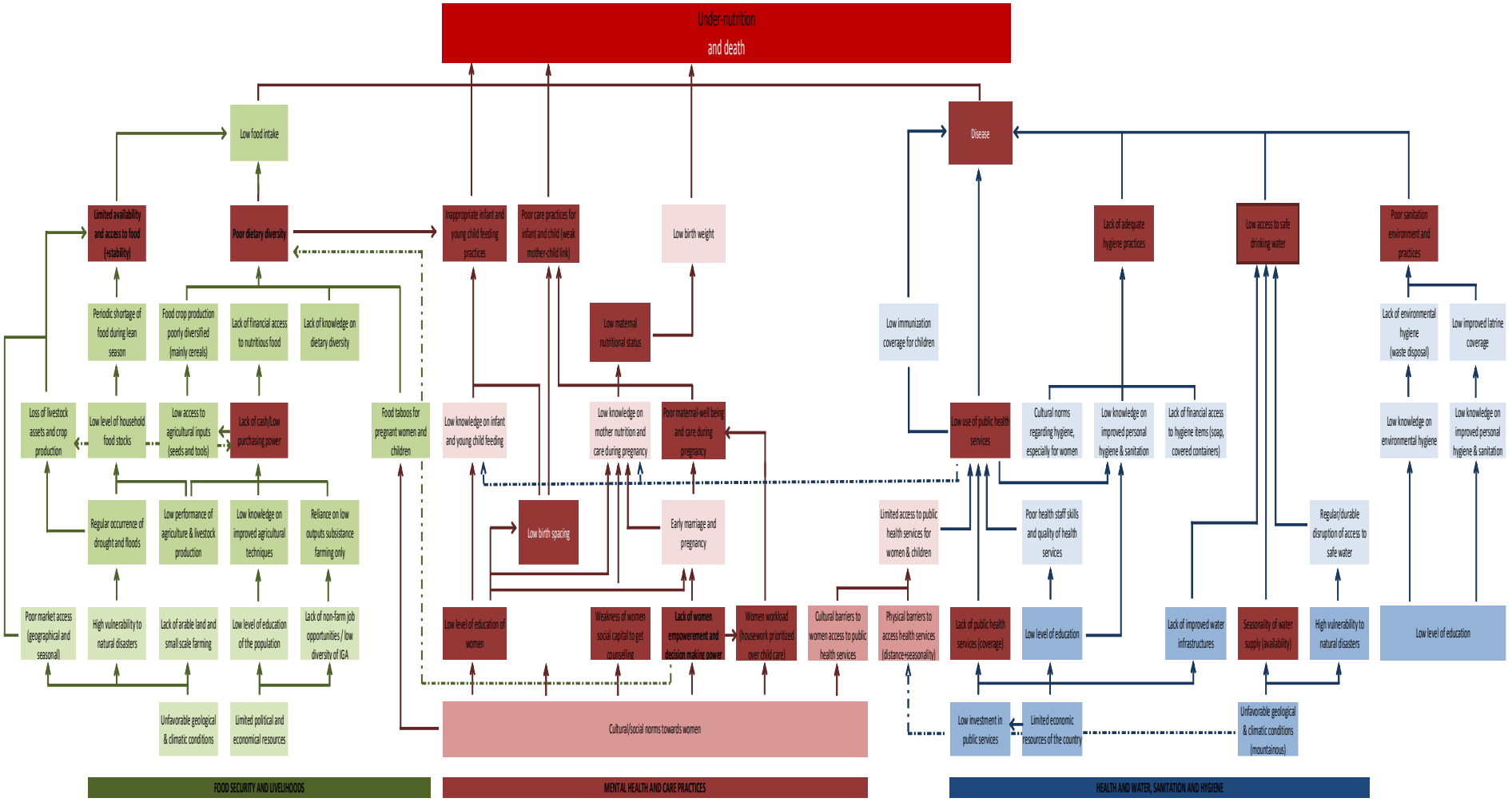
		women affairs, etc • Use different channels for delivering the key IYCF messages such as Masjid through Mulah, Maliks, School, etc			
Lack of women empowerment	Important	• Deliver the required information to women about appropriate care of their infants and children and its importance • Providing Income generation opportunities	PND/PNO/PPHD, BPHS/EPHS, Ministry of women affairs, Other relevant nut-partners NGOs Local institutions	women empowerment relatively improved	2016-2018
Poor access to health and nutrition services	Important	• Upscale mobile health and nutrition services at community levels	PND/PNO/PPHD, BPHS/EPHS, Other relevant nut-partners	improved access to health and nutrition services	2016-2017
Poor maternal health and nutrition status	Important	• Quality of MCH and nutrition services • Improved community referral by CHWs	PND/PNO/PPHD, BPHS/EPHS, Other relevant nut-partners	Better maternal health and nutrition status	
Poor health seeking behavior (mother and child)	Important	• Increase community awareness about importance of timely treatment of maternal and child illnesses, and the consequences if not treated or not timely treated	PND/PNO/PPHD, BPHS/EPHS, Other relevant nut-partners	Better health seeking behavior (mother and child)	
Low birth spacing	Important	• Community awareness about the importance of adequate birth spacing, and the consequences of inadequate birth spacing • Inform community about the available services for birth spacing and answer their religious concerns/misunderstanding	PND/PNO/PPHD, BPHS/EPHS, Other relevant nut-partners	Higher birth spacing	2016-2017

		• Regular health education sessions at HFs and HPs			
Poor sanitation environment and practices	Important	• Community awareness about importance of proper sanitation and its association with human health • Coordinate with WASH to identify the sanitation issues and explore possible solutions for them • Increase awareness regarding personal and environmental hygiene	PND/PNO/PPHD, BPHS/EPHS, WASH, Other relevant nut-partners	Better sanitary environment	2016-2017
Poor dietary diversity	Important	• Community awareness and sensitization about importance of dietary diversity • Conduct nutrition education and rehabilitation sessions(NERs) at community levels • Food demonstration at health facility levels • Introduce diversified food menu based on locally available/accessible foods • Coordinate with other sectors such as agriculture, trade, etc. for production or import of some key nutritious foods	PND/PNO/PPHD, BPHS/EPHS, Agriculture, Trade, Other relevant nut-partners	Improved dietary diversity	2016-2017
Poor food access, stability leading to poor food availability	Major	• Coordinate with relevant stakeholders to identify the main causes of poor food availability and accessibility sustainably • Explore possible solutions for addressing the causes of inadequate food availability and accessibility • Establishment of buffer stock food reserves at district levels	PND/PNO/PPHD, BPHS/EPHS, Agriculture, Trade, Other relevant nut-partners	Improved food availability and accessibility	2016-2017
Inappropriate household hygiene (food)	Important	• Community awareness about importance of food hygiene and its association with ill health • Communicate key points about food	PND/PNO/PPHD, BPHS/EPHS, WASH, Other relevant nut-partners	appropriate household hygiene (food)	2016-2017

		hygiene with community particularly women			
Late initiation of breastfeeding (less than 1 hour)	Important	• Further enhance integration of IYCF messages through health services • Integrate the key IYCF messages in other than health services, such as GFD, literacy courses, vocational trainings, women affairs, etc • Use different channels for delivering the key IYCF messages such as Masjid through Mulah, Maliks, School, etc	PND/PNO/PPHD, BPHS/EPHS, Other relevant nut-partners	Early initiation of breastfeeding (within 1 hour)	2016-2017
Inappropriate care practices (Mother and child interaction)	Important	• Further enhance integration of IYCF messages through health services • Integrate the key IYCF messages in other than health services, such as GFD, literacy courses, vocational trainings, women affairs, etc • Use different channels for delivering the key IYCF messages such as Masjid through Mulah, Maliks, School, etc • Increase CHW capacity on psychosocial counselling • Regular IYCF counselling at HFs and HP levels	PND/PNO/PPHD, BPHS/EPHS, Other relevant nut-partners	appropriate care practices (Mother and child interaction)	2016-2017
Low awareness on under-nutrition (causes, symptoms and treatment)	Important	• Community awareness about the importance of prevention of malnutrition • Increase community awareness on the main causes of under-nutrition and how to be prevented • Community awareness about the symptoms of under-nutrition and availability of its treatment • Weekly health and nutrition	PND/PNO/PPHD, BPHS/EPHS, Other relevant nut-partners	Increase awareness on under-nutrition (causes, symptoms and treatment)	2016-2017

		talks/education at health facility level • Capacity building of HWs on IMAM • Training health Shura's on IMAM			
Low quality of health and nutrition services	Important	• Identify the key quality problems in health and nutrition services • Identify the factors resulted the mentioned problems • Take action to address the factors and consequently improve quality • Joint monitoring and supervision	PND/PNO/PPHD, BPHS/EPHS, Other relevant nut-partners	Better quality of health and nutrition services	2016-2017

Annex 1: Pathways- Causal model, Workshop February 2015



Annex 2. RFS and Smart Survey Household Questionnaire

I. Identification

To be filled before the interview, before entering in the household

ID.10 -Date of the survey (day/month/year) __/__/____

ID.20 Name of the village: .....

ID.21 - Number of the cluster (1 to 46):

ID.30 -Team ID number (N° 1 to 8):

ID.40 -Household number: (1 to 12)

ID.50 -Starting time of the interview:

ID.70 – Comments

Read the consent form

ID.80 -Does the household accept the interview?
1=Yes
0=No

ID.90 – If no, what is the reason?

II. Introduction

Code	Question	Answer
IN.10	Size of the Household	|_||_|
IN.20	Does a child from 0 to 59 months present in the household? **If no, go to the next household**	1=Yes 0=No

IN.30	Is the head of household present?	1=Yes 0=No
IN.40	Does the mother or the caregiver of the 0-59months child is present?	1=Yes 0=No
IN.50	**If no to IN.40** I would like to ask few questions to the caregiver of the child, at what time could we come back?	_ _ : _ _ AM/PM

III. Food Security and Livelihood (FSL)

- **Household Dietary Diversity Score (HDDS)**

Now I would like to ask you about the types of foods that you or anyone else in your household ate yesterday during the day and at night. Since yesterday morning till this morning what are the food eaten in your household?DO NOT READ THE ANSWER FIRST, THEN PROBE		Yes	No
HDDS.10	**Cereals** (wheat, wheat flour, rice, maize, noodles, biscuits, or any other food made from wheat or maize etc)	1	0
HDDS.20	**Roots/Tubers** (Potatoes, carrots, radishes, onions, garlic, or any other foods made from roots or tuber etc)	1	0
HDDS.30	**Pulses/ Nuts** (beans, peas, lentils, wallnuts, etc)	1	0
HDDS.40	**Vegetables and leaves** (tomatoes, eggplants, corriander, spinach, lettuce,cabbages, squash, etc)	1	0
HDDS.50	**Fruits** (Apple, banana, pomegrante, grape, etc)	1	0
HDDS.60	**Meat/ Poultry/ Offal** (Beef, goat, lamb, mutton, chicken, duck, other animals, birds, liver, kidney, heart, or any other organ meat)	1	0
HDDS.70	**Fish**	1	0
HDDS.80	**Milk/ Diary products** (Yogurts, cheese, butter, Qorut)	1	0
HDDS.90	**Eggs**	1	0
HDDS.100	**Sugar, Honey**	1	0
HDDS.110	**Oil/Fat**	1	0
HDDS.120	**Condiments** (Tea, salt, or spices)	1	0
	TOTAL (Sum 0-12)		

- **Food Consumption Score (FCS)**

I would like to ask you about all the different foods that your household members have eaten in the last 7 days. Could you please tell me how many days in the past week your household has eaten the following foods? **READ THE ANSWERS AND MARK THE CORRESPONDING NUMBER OF DAYS**		**Days eaten in the past week (0-7 days)**
FCS.10	**Cereals and tubers** (Wheat, wheat flour, rice, maize, noodles, biscuits, or any other food made from wheat or maize, potatoes and food made of potatoes, etc)	
FCS.20	**Pulses/ Nuts (beans, peas, lentils, etc)**	
FCS.30	**Vegetables and leaves** (Tomatoes, eggplants, corriander, cabbages, lettuce, Spinach, squash, etc)	
FCS.40	**Fruits** (Apple, banana, pomegranate, cherry, grape, etc)	
FCS.50	**Meat/ fish/eggs** (Beef, goat, lamb, mutton, chicken, duck, other animals, birds, liver, kidney, heart, or any other organ meat)	

FCS.60	**Milk/diary product (yogurts, cheese, butter, Qorut)**	
FCS.70	**Sugar / Honey**	
FCS.80	**Oils/ fat products (Any foods made with oil or ghee)**	
FCS.90	**Condiments (Tea, salt, or spices)**	

- **Household Food Insecurity Access Scale (HFIAS)**

1 = Rarely (once or twice in the past 4 weeks)
2 = Sometimes (3 to 10 in the past 4 weeks)
3 = Often (more than 10 times in the past 4 weeks)

I would like to ask you what was the food available to your household for the past four weeks. To answer this question, please think about the last four weeks.

If the answer is no pass to the next question (ex. HFIAS.10 no, pass to HFIAS.20)

HFIAS.10	Did you worry that your household would not have enough food?	Yes 1		No 0
HFIAS.11	How often did this happen in the past four weeks?	1	2	3
HFIAS.20	Were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	Yes 1		No 0
HFIAS.21	How often did this happen in the past four weeks?	1	2	3
HFIAS.30	Did you or any household member have to eat a limited variety of foods due to a lack of resources?	Yes 1		No 0
HFIAS.31	How often did this happen in the past four weeks?	1	2	3
HFIAS.40	Did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	Yes 1		No 0
HFIAS.41	How often did this happen in the past four weeks?	1	2	3
HFIAS.50	Did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	Yes 1		No 0
HFIAS.51	How often did this happen in the past four weeks?	1	2	3
HFIAS.60	Did you or any household member have to eat fewer meals in a day because there was not enough food?	Yes 1		No 0
HFIAS.61	How often did this happen in the past four weeks?	1	2	3
HFIAS.70	Was there ever no food to eat of any kind in your household because of lack of resources to get food?	Yes 1		No 0
HFIAS.71	How often did this happen in the past four weeks?	1	2	3
HFIAS.80	In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	Yes 1		No 0

HFIAS.81	How often did this happen in the past four weeks?	1	2	3
HFIAS.90	In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	Yes 1		No 0
HFIAS.91	How often did this happen in the past four weeks?	1	2	3
	TOTAL (sum of the occurrences, 0-27)			

- **Months of Adequate Food Provisioning (MAHFP)**

DO NOT READ THE LIST OF MONTHS ALOUD.
Use a seasonal calendar if needed to help respondent remember the different months.
Probe to make sure the respondent has thought about the entire past 12 months.
If MAHFP.10 answer is No, then No to MAHFP.20 to MAHFP.130

MAHFP.10	**Now I would like to ask you about your household's food supply during different months of the year. When responding to these questions, please think back over the last 12 months, from now to the same time last year. Were there months, in the past 12 months, in which you did not have enough food to meet your family's needs?**	**Yes 1**	**No 0**
If yes, which were the months in the past 12 months during which you did not have enough food to meet your family's needs? **This includes any kind of food from any source, such as own production, purchase or exchange, food aid or borrowing.**			
MAHFP.20	April	1	0
MAHFP.30	March	1	0
MAHFP.40	February	1	0
MAHFP.50	January	1	0
MAHFP.60	December	1	0
MAHFP.70	November	1	0
MAHFP.80	September	1	0
MAHFP.90	October	1	0
MAHFP.100	August	1	0
MAHFP.110	July	1	0
MAHFP.120	June	1	0
MAHFP.130	May	1	0

Now, I would like to ask you some questions regarding the household head		
HoH.10	Who is the household head of your household?	Mother = 1 Father = 2 Grand-parent = 3 Other = 4
HoH.20	How old is he/she?	_ _
HoH.30	What is his/her occupation?	Farmer = 1 Government/Ngo Employee = 2 Labourers/unskilled workers = 3 Unemployed = 4 Other (specify)= 5

IV. WASH

All these questions are for domestic use of water and do not include water for animals

UE.10	What is the main source of drinking water for members of your household? (Present a map with the different water points that have been assessed) Coding key: to be determined according to the setting and map. Circle 1 to 4 and write the letter code DO NOT READ THE ANSWERS ONLY ONE RESPONSE POSSIBLE	1 = Groundwater: open well, well/borehole with hand-pump, well/borehole with motorized pump system 2 = Protected spring 3 = Roof rainwater 4 = Piped supply 5 = Sealed bottled water 6 = Surface water as river For answer 1 to 4, letter code of the source _
UE.20	What do you usually do to make the water safer to drink? Probe: Anything else? (record all items mentioned) Code 9 if the caregiver is using sealed bottled water	1 = Boil 2 =chlorine 3 = Strain it through a cloth 4 = Use water filter (ceramic, sand, composite etc.) 5 = Solar disinfection 6 = Let it stand and settle 7 = Other 8 = Nothing 9 = Drink sealed bottled water
UE.30	How much water did your household use YESTERDAY (excluding for animals)? ASK THE QUESTION IN THE NUMBER OF 20 LITER JERRICAN AND CONVERT TO LITERS	A. Volume of container [_____] B. Number of containers used [_____] Total water used = A*B = [_____]

Now I would like to ask some questions about sanitation.		
UE.45	Where do members of this Household usually relieve themselves? IF ANSWER IS LATRINE IN THE HOUSEHOLD OR PUBLIC LATRINES, ASK TO SEE IT AND REFER TO THE	1. Latrine in the household 2. Public latrine

	OBSERVATION QUESTIONNAIRE => May I see it please?	3. Open defecation 4. Other: _____
UE.46	Who in the family uses the toilet/latrine? RECORD THE NUMBER OF PEOPLE >12 MONTHS USING THE HOUSEHOLD/ PUBLIC LATRINE	Female |____| Male |____| Children |____|

Now I would like to know when and how you usually wash your hands. When do you wash your hands? (DO NOT PROBE)		**Quoted**	**Not quoted**
UE.100	After defecation	1	0
UE.110	After cleaning babies' bottom	1	0
UE.120	Before food preparation	1	0
UE.130	Before eating	1	0
UE.140	Before feeding children (including breastfeeding)	1	0

Would you explain and show me what you do when you wash your hands? Ask the participant to show how he/she wash his/her hands.		**Do**	**Don't**
UE.200	Uses water	1	0
UE.210	Uses soap or ashes	1	0
UE.220	Washes both hands	1	0
UE.230	Rubs hands together at least three times	1	0
UE.240	Dries hands hygienically by air-drying or using a clean cloth	1	0

UE.300	Do you have any soap in your household for washing hands? If yes, question UE.400 If no, question UE.500	Yes = 1	No = 0
UE.400	If yes: Can you please show it to me?	Not able to show = 1 Bar soap = 2 Detergent (powder/liquid/paste) = 3 Liquid soap = 4	

UE.500	How much time does it take on average to goto the drinking water source, get water, and comeback? If the participant gets water at home, then 5	30 minutes or less = 1 31 to 60 minutes = 2 61 to 180 minutes = 3 More than 3 hours = 4 Not applicable = 5

VII. Water point observation

Refer to question UE.10 "What is the main source of drinking water for members of your household?" and fill accordingly (1 to 5).

According to question UE.10, go to the correspondent water point and answer to the correct questionnaire (if UE.10 answer is 1, then fill the questionnaire 1, if answer is 2 fill questionnaire 2, if answer is 3 fill questionnaire 3, if answer is 4 fill questionnaire 4)

1. Groundwater: open well, well/borehole with hand pump, well/borehole with motorized pump system:		**No**	**Yes**
G.10	Is there a latrine or any source of pollution within 30 m of the well?	0	1
G.20	Does the fence around the well allow animals in? If there is no fence, answer is yes	0	1
G.30	Is there stagnant water close to the well?	0	1
G.40	Is the apron less than 1 m wide all around the well?	0	1
G.50	Are there any cracks in the well apron and headwall?	0	1
G.60	Is the cover of the well improperly closed?	0	1
G.70	Is the well poorly sealed for 3 m below ground level?	0	1
G.80	Is the water point dirty?	0	1
G.90	Is the lift system (ropes,bucket, hand/motorized pump) in bad condition and/or broken?	0	1
	TOTAL SCORE OF RISK (number of "yes" points)		

2. Protected spring		**No**	**Yes**
S.10	Is there a latrine or any source of contamination within 30m uphill of the spring?	0	1
S.20	Does the area around the spring allow animals in?	0	1
S.30	Is the drainage channel blocking the flow and allowing stagnant water?	0	1
S.40	Is the spring open to surface water contamination?	0	1
S.50	Is the spring box cracked?	0	1
S.60	Is the inspection cover cracked or unsanitary?	0	1
S.70	Is the cut-off ditch above the spring blocked or non-existent?	0	1
S.80	Is the water point dirty - presence of solid/ domestic waste, mud, animal dung?	0	1
S.90	Is there standing water at the collection point?	0	1
	TOTAL SCORE OF RISK (number of "yes" points)		

3. Roof rainwater harvesting sanitary inspection form		No	Yes
RW.10	Is the roof area dirty?	0	1
RW.20	Are the gutters that collect water dirty?	0	1
RW.30	Is there absence of a filter box at the tank inlet or is it not working well?	0	1
RW.40	Is there any other point of entry to the tank that is not properly covered?	0	1
RW.50	Are there cracks in the wall of the tank?	0	1
RW.60	Is the inside of the tank dirty or not periodically cleaned and disinfected?	0	1
RW.70	Are the taps leaking?	0	1
RW.80	Is the concrete apron near the tank absent or broken or dirty?	0	1
RW.90	Is the drainage in bad condition and the water inadequately drained?	0	1
RW.100	Is there any source of contamination around the tank or water collection area?	0	1

4. Piped supply sanitary inspection form		No	Yes
PS.10	Is the source badly protected, or not protected?	0	1
PS.20	Is there any point of leakage between the source and the reservoir?	0	1
PS.30	If break-pressure tanks, are they covers unsanitary? (If no break-pressure tanks, answer is no)	0	1
PS.40	Is the storage tank cracked or leaking and the inspection cover or the air vent unsanitary?	0	1
PS.50	Is the storage tank dirty or not regularly cleaned?	0	1
PS.60	Are there any leaks in the distribution lines of the system?	0	1
PS.70	Are the areas around the taps unfenced or allowing access to animals?	0	1
PS.80	Is there inadequate drainage and standing water around the taps?	0	1
PS.90	Are the surroundings of the taps dirty and with possible contamination source (excreta, refuse, etc.)?	0	1
PS.100	Is the water not chlorinated?	0	1
	TOTAL SCORE OF RISK (number of "yes" points)		

VIII. Observations hygiene/sanitation facilities

Individual sanitation Observation		Yes	No
SAN.10	Are the faeces well isolated from the environment? (Leak, crack) *	1	0
SAN.20	Is the outlet safe? (Leading to open sewer, river, sea water…) *	1	0
SAN.30	Presence of any anal cleaning item/material (paper, water…)	1	0
SAN.40	Is there a hand washing station inside the latrine or within 10 paces of the latrine?	1	0
SAN.50	Is there a cleansing agent at this hand washing station inside/near the latrine? Yes includes soap, detergent and ash, whereas no include mud, sand and other	1	0
SAN.60	Presence of flies or other insects entering or exiting the pit	1	0
SAN.70	Presence of excreta on the ground or around the pit or seat	1	0
	TOTAL SCORE OF RISK (number of "yes" points)		

Water management Observation		Yes	No
WAT.10	Is the container used to carry water left uncovered during transportation?	1	0
WAT.20	Is the container used to carry water dirty?	1	0
WAT.30	Is the water storage left open/uncovered?	1	0
WAT.40	Is there a water cleaning system visible (filter, boiling container, chlorine tablets…)?	1	1
WAT.50	While serving water to drink, is there a risk of water contamination? (do the fingers touch the water? Or is the scooping container used dirty?)	1	0
	TOTAL SCORE OF RISK (number of "yes" points)		

Food hygiene Observation		Yes	No
FH.10	Are there cooking utensils or food leftovers left on the ground or uncovered?	1	0

Animal waste Observation		Yes	No
Waste.10	Are there any animal excreta in or near the compound/playground/surroundings?	1	0

ID.60 - Ending time of the interview:

VI. Main caregiver questionnaire		

Code	Question	Answer
ID.210	Name of the Village	
ID.220	Number of the cluster (1 to 46)	
ID.230	Team ID number (N° 1 to 8)	
ID.240	Household number(1 to 12)	
1D .240	Caregiver ID	

Now I would like to ask you questions about yourself		
HoH.40	What is your relationship with the child?	1 = Mother 2 = Father 3 = Grandparent 4 = Other (please specify)
HoH.50	What is your occupation?	1 = Housewife 2 = Farmer 3 = Government/NGo Employee 4 = Labourers/unskilled workers 5 = Unemployed 6 = Other
HoH.60	What is your marital status?	1 = Married/In an union 2 = Separated 3 = Single 4 = Widow
CG.10	How old are you?	_ _ years
CG.11	Source	1 = Caregiver's statement 2 =Birth certificate

SECTION ANT.
THIS SECTION WILL BE FULLFILLED ONLY TO RESPONDERS ANNOUNCED THAT ARE MOTHER

Now I would like to measure your MUAC (Mid-Upper Arm Circumference) using this tape. It is safe, non-harmful and will take only few minutes.		
ANT.10	MUAC in millimeter	_ _ _ mm
ANT.20	What is the caretaker's physiological status?	1.Pregnant 2.Lactating 3.None of the above

CG.20	Did you eat more/less/same amount as usual when you were pregnant or breastfeeding?	1 = More 2 = Less 3 = Same

CG.30	Did you go to school? If no, ask question CG.50	Yes 1	No 0
CG.40	How many years did you complete?	[____] years	

CG.50	Do you feel supported? Include all kind of support such as financial, social etc. Do not probe, this question is left to the understanding of the mother	Extremely.....1 Somewhat.....2 Not very.....3 Not at all.....4

CG.60	Do you feel you have too much work to take care of your child?	Yes 1	No 0

Please indicate for each of the five statements, which is closest to how you have been feeling over the last two weeks.
Example: If the respondent has felt cheerful and in good spirits more than half of the time during the last two weeks, put a tick in the box with the number 3.

Over the last two weeks:		**All of the time**	**Most of the time**	**More than half of the time**	**Less than half of the time**	**Some of the time**	**At no time**
WHO5.10	I have felt cheerful and in good spirits	5	4	3	2	1	0
WHO5.20	I have felt calm and relaxed	5	4	3	2	1	0
WHO5.30	I have felt active and vigorous	5	4	3	2	1	0
WHO5.40	I woke up feeling fresh and rested	5	4	3	2	1	0
WHO5.50	My daily life has been filled with things that interest me	5	4	3	2	1	0
TOTAL (calculate immediately by summing up all answers)							

RH.40	How old were you when you gave birth for the first time?	_ _ years

H.50	During your last pregnancy, did you see anyone for antenatal care?	.Yes 2.No (go to H.80)
H.60	If yes, "Whom did you see?" Probe "Anyone else?" till the respondent answer "no one else" Probe for the type of person seen and tick all answers given.	1 = Health professional (Doctor, nurse/midwife, auxiliary midwife) 2 = Traditional birth attendant 3. community health worker, Relative/friend) 3 = Relative/Friends 4 = Others
H.70	How many times did you see someone for Antenatal care?	Number of times: |_||_|

H.80	What are your main barriers from going to the health centre when someone is sick?	1 = Money/cost 2 = Time 3 = Transportation means 4 = Geographical distance 5 = Decision power

		6 = The service is not good enough 7 = Culture (specify) 8= No man to a company the woman 9=No barriers 96 = Other (specify)
H.90	How long does it take you to go to the nearest health center?	_ _ minutes

V. Child Questionnaire

Fill this part for each child under 59months old in the HoH. To find the age, use the event calendar.
Fill part A and B for child 0-23 months.
Fill part B for child 0-59 months.

Code	Questions	Answers
ID.100	Name of selected child	
ID.110	Name of the Village	
ID.120	Number of the cluster (1 to 46)	
ID.130	Team ID number (N° 1 to 8)	
ID.140	Household number (1 to 12)	
ID.141	Child Number	
ID.200	Birth date If the birth date is not known, ask question ID.210	Birth date __/__/____ Don't know X
ID.210	Calculate immediately in months, if the birth date is known Otherwise use the event calendar to define the age	___ Months
ID.220	Source for obtaining age	Birth certificate = 1 Event Calendar = 2
ID.230	Sex of selected child	Male = 1 Female = 2

A. Child 0-23 months

Now I would like to ask some question about your child.				
CP.10	Has (**name**) ever been breastfed? If don't know, ask question CP.20	Yes 1	No 0	Don't know X
CP.11	How long after birth did you first put (**name**) to the breast?**(Probe)** If respondent reports she put the infant to the breast immediately after birth, circle '000' for 'immediately'. If less than one hour, circle '1' for hours and record '00' hours. If less than 24 hours, circle '1' and record number of completed hours, from 1 to 23. Otherwise, circle '2' and record number of completed days.	Immediately.....000 Or: Hours:.....1 |_||_| Or: Days.....2 |_||_|		
CP.20	Was (**name**) breastfed yesterday during the day or at night?	Yes 1	No 0	Don't know X

CP.21	Sometimes babies are fed breast milk in different ways, for example by spoon, cup or bottle. This can happen when the mother cannot always be with her baby. Sometimes babies are breastfed by another woman, or given breast milk from another woman by spoon, cup or bottle or some other way. This can happen if a mother cannot breastfeed her own baby. Did (**name**) consume breast milk in any of these ways yesterday during the day or at night?	Yes 1	No 0	Don't know X

Next, I would like to ask you about some liquids that (name) may have had yesterday during the day or at night. Did (name) have any:		**Yes**	**No**	**Don't know**
CP.50	Plain water?	1	0	X
CP.51	Infant formula such assimulac and promil?	1	0	X
CP.52	Milk such as tinned, powdered, or fresh animal milk?	1	0	X
CP.53	Juice or juice drinks?	1	0	X
CP.54	Clear broth?	1	0	X
CP.55	Yogurt/Curd?	1	0	X
CP.56	Thin porridge?	1	0	X
CP.57	Any other liquids such as water-syrup?	1	0	X
CP.58	Any other liquids?	1	0	X

How many times yesterday during the day or at night did (*name*) consume any (item from list)?		
CP.60	Infant formula such assimulac and promil?	Times B: |_||_|
CP.61	Milk such as tinned, powdered, or fresh animal milk?	Times C: |_||_|
CP.62	Thin porridge?	Times F: |_||_|

CP.70	Did (name) eat any solid, semi-solid, or soft foods yesterday during the day or at night?	Yes 1	No 0	Don't know X
CP.71	How many times did (**name**) eat solid, semi-solid, or soft foods other than liquids yesterday during the day or at night?	Number of times: |_||_| Don't know = X		

Please describe everything that (name) ate yesterday during the day or at night, whether at home or outside the home.
Please, think about when (name) eat yesterday from the time he/she woke up yesterday morning, till the time he/she woke up that morning, at home or outside.
Think about the time he/she woke up yesterday. Did (name) ate anything when he/she woke up?

IF YES: Tell me everything (name) ate at that time.
What did (name) after that? Did he/she eat something at that time?
IF YES: What did (name) eat at that time?
Anything else?
Continue till the person answer "nothing else". Repeat the question till this morning weak up.
If the participants answer a mix dishes, ask: **"what were the ingredient of this dish?"**
Tick all the food category related to the mix dishes
Each time one is telling what the child ate, tick "yes" in the food category

IDDS.210	Porridge, bread, rice, noodles, or other foods made from grains/cereals such as rice, millet etc.	Yes 1	No 0	Don't know X

IDDS.220	Pumpkin, carrots, squash, or sweet potatoes that are yellow or orange inside	Yes 1	No 0	Don't know X
IDDS.230	White potatoes, cassava, plantain, lotus roots or any other foods made from roots	Yes 1	No 0	Don't know X
IDDS.240	Any dark green leafy vegetables as spinach, bean greens…	Yes 1	No 0	Don't know X
IDDS.250	Ripe mangoes, ripe papayas, apricots	Yes 1	No 0	Don't know X
IDDS.260	Any other fruits or vegetables?	Yes 1	No 0	Don't know X
IDDS.270	Liver, kidney, heart or other organ meats?	Yes 1	No 0	Don't know X
IDDS.280	Any meat, such as beef, goat, chicken,pig, snakes or other meats	Yes 1	No 0	Don't know X
IDDS.290	Eggs	Yes 1	No 0	Don't know X
IDDS.300	Fresh or dried fish, sea snakes, shellfish, or seafood	Yes 1	No 0	Don't know X
IDDS.310	Any foods made from beans, jack beans, peas, lentils, nuts, soya or seeds	Yes 1	No 0	Don't know X
IDDS.320	Cheese, curd, yogurt or other milk products	Yes 1	No 0	Don't know X
IDDS.330	Any oil, fats, margarine, butter, or foods made with any of these	Yes 1	No 0	Don't know X
IDDS.340	Any sugary foods such as chocolates, sweets, candies, pastries, cakes, or biscuit, sugary drinks or any sugarymade from sugar or honey?	Yes 1	No 0	Don't know X
IDDS.350	Condiments for flavour, such as chillies, spices, herbs, fish powder, Maggi cubes. Tea and coffee?	Yes 1	No 0	Don't know X
IDDS.360	Any grubs, snails or insects?	Yes 1	No 0	Don't know X

H.10	Has (*name*) received DPT3 immunization before his/her first birthday?	Yes 1	No 0	Don't know X
H.11	Specify the source	On statement = 1		Checked on Immunization card = 2

B. Child 0-59 months

CP.100	Does anyone help (name) to eat?	Yes 1	No 0	Don't know X
CP.110	What do you do when (name) refuses to eat? Categorize answer into the positive, negative or no reaction	1 = Nothing (the child is left alone) 2 =Other (coax, play with, change food) 3 = Force		

H.30	Has (*name*) ever been ill in the past 14 days?	Yes 1	No 0	Don't know X
H.40	Has (**name**) had diarrhoea (more than 3 loose or watery stools in a 24-hour period) in the past two weeks?	Yes 1	No 0	Don't know X
H.50	Has (name) had an illness with a cough (trouble breathing or breathe faster than usual with short, quick breaths) in the past two weeks?	Yes 1	No 0	Don't know X

Now I would like to ask you some question regarding your relation with (name)				
MC.10	In the past 3 days, did you or any household member over 15 years of age engage in story telling, singing or playing with (name)?	Yes 1	No 0	Don't know X
MC.20	Do you leave (name) alone or in the care of other children younger than 12	Yes 1	No 0	

	years of age?		
MC.30	If yes, how often?	1 = Every day 2 = Several times a week 3 = Less than once a week X = Not applicable	

RH.60	Does (name) have a younger sibling? **If no, ask caregiver questionnaire**	Yes 1	No 0
RH.61	If yes, what is the age difference between (**name**) and his/her direct younger sibling? **Use the event calendar** **If don't know, ask RH.62** **If answered, ask next questionnaire**	_ _ months X Don't know	
RH.62	If don't know, what is the age of his/her direct younger sibling? **Use the event calendar** **Calculate immediately his/her age, then fill RH.61**	_ _ months	

OBSERVATIONS Child 0-59 months
To be filled at the end of the questionnaire

Caregiver-child interaction observation:		**Yes**	**No**
OC.10	Caregiver tends to keep the child within visual range and looks at the child quite often	0	1
OC.20	Caregiver talks to the child during the course of the visit	0	1
OC.30	Caregiver interacts with child to promote development and learning	0	1
OC.40	Caregiver smiles at the child, laughs with the child, caresses, kisses or hugs the child	0	1
OC.50	Caregiver spanked or hit the child during the visit, or shouted or yelled at him/her.	1	0

C. Child 0-59 months (anthropometric measurements)

Anthropometric measurements:		**Yes**
ANT.30	Weight in kilogram, record to the nearest 0.1 kilograms (100 grams)	_ _ _ _
ANT.40	Height/Length in centimeters, record to the nearest 0,1cm	_ _ _
ANT.50	Edema If yes, contact your team supervisor to refer the children	0 = Yes 1 = No
ANT.60	MUAC (mm)	_ _ _

Annex 3: Link NCA Risk Factors survey

Household composition

Indicator (core and optional	Sample	Mean or proportion	LCL% (95)	UCL% (95)
C. Household size	530	7.119	6.65	7.58
O. Household head age	403	41.886	40.07	43.65
O. Household head occupation	410	100%		
Farmer				
NGO/GVT	112	27.31%	19.61	35.05
Labourer	9	2.19%	0.858	3.53
Unemployed	179	43.65%	36.54	50.77
Other	68	16.58%	11.38	21.78
	42	10.24	5.81	14.61
O. Main caregiver age	427	29.07 (Mean)	28.40	29.73
O. Main care giver marital status	428	100%		
Married	420	98.1%	96.60	99.65
Single	2	0.46 %	-0.19	1.13
Widow	6	1.40%	0.14	2.65
O. Main caregiver occupation	427	100%		
Housewife	422	98.8%	97.81	99.84
Unemployed	2	0.46%	-0.19	1.13
Other	3	0.70%	-0.10	1.51

WASH

Indicator (core and optional)	Sample	Mean or proportion	LCL% (95)	UCL% (95)
Access to safe water	410	100%		
Groundwater	50	12%	4.66	19.72
Protected spring	117	58%	14.52	42.55
Pipeline	26	6.34%	-1.43	14.02
River	217	52.9%	39.20	66.64
C. Water management score (river) **Mild risk** **Moderate risk** **Severe risk**	217 11 100 90	4.02 (Mean) 100% 5.26 51.67 43.06	 2.06 41.78 31.22	 8.46 61.55 54.89
C. Water needs	411	16.3 LPD (mean)	15.92	17.7
O. Distance to water point	359	100%		
More than 30 minutes	100	36%	30.71	41.69
Less than 30 minutes	259	63%	58.30	69.28
C. Use of latrines **C. Use of safe latrines**	N/A N/A	N/A N/A	N/A N/A	N/A N/A
C. Safe disposal of child feces	N/A	N/A	N/A	N/A
C. Caregiver hand washing good behavior	410	100%		
Bad	308	75%	69.99	81.25
Good	102	24.87%	18.75	31.00
C. Use of soap	408	100%		
No soap	320	78.43%	72.85	84.01
Soap	88	21.5%	15.98	27.14
O. Household hygiene food	411	100%		
Clean	175	42.5%	38.33	46.82
Not clean	236	57.42	53.17	61.66
O. Animal waste	411	100%		
Clean	44	10.7%	7.22	14.19
Not clean	367	89.29%	85.8	92.78

FSL

Indicator (core and optional)	Sample	Mean or proportion	LCL% (95)	UCL% (95)
C. HDDS	396	5.27 (Mean)	5.01	5.52
Group1:<3	1	0.25%		
Group2: 3-4	121	30.56%		
Group3:5-6	207	52.27%		
Group4:>6	67	16.91%		
C. HFIAS	407	100%		
Secure	16	3.93	0.97	6.88
Mildly	74	18.18	12.67	23.69
Moderately	173	42.51	34.39	50.61
Severely	144	35.38	28.93	41.8
C. MAHFP	401	8.47 (Mean)	8.09	8.84
O. FCS	401	100%		
Poor (0-21)	37	9,23	4.66	13.7
Borderline (21.5-35)	163	40.65	34.78	46.51
Acceptable (>35)	201	50.12	42.74	57.5

MHCP

IYCF	Sample	Mean or proportion	LCL% (95)	UCL% (95)
C. Adequate breastfeeding	N/A	N/A	N/A	N/A
C. Exclusive breast feeding (0-6 months)	60			
Yes	41	53.33%	53.33%	83.33
No	19	16.65%	16.65%	43.6
C. Continued breastfeeding after one year	54			
Yes	50	92%	85.47	99.71
NO	4	7.4%	0.28	14.5
C. Introduction of solid, semi solid or soft foods (6-8 months)	15			
Yes	7	46.6%	19.1	74.6
No	8	53.3%	25.8	80.8
C. IDDS 6-23 months	190	3.02	2.79	3.24
Children who not consumed ≥4 groups	122	64%	57.03	71.31
Children consumed ≥4 groups	68	35.7%	28.61	42.96
C. Meal frequency	154			
Yes	88	57%	45.72	68.56
No	66	42%	31.43	54.28
C. Child feeding behavior	369			
Helped	268	72.6%	67.5	78.1
Not helped	101	27.3%	21.8	32.8

Care of women	Sample	Mean or proportion	LCL% (95)	UCL% (95)
C. Food intake during pregnancy	427	100%		
More	183	42%	38.1	47.5
Less	100	31.3%	27.8	35.4
Same	427	25.52%	20.7	30.3
C. Average level of education	426	100%		
No education				
Education	410	96.2	94.3	98.18
	16	3.75	1.81	5.69
Well-being of caregiver	427	100%		
At risk	230	53.8%	46.52	61.2
No risk	197	46.1%	38.79	53.47
C. Perceived social capital	428	100%		
Extremely	52	12.1%	8.08	16.2
Somewhat	154	35.9%	28.4	43.5
Not very	167	39.0%	32.4	45.63
Not at all	55	12.8%	8.0	17.69
C. Workload	421	100%		
Yes	320	76%	71.4	80.5
No	101	23.9%	19.4	28.5

Psycho social care	Sample	Mean or proportion	LCL% (95)	UCL% (95)
C. Child caregiver interaction	566	100%		
Inappropriate	230	40.6%	46	61
Medium	139	24.5%	8	18
Appropriate	197	34.5%	38.5	53

Health sector

	Sample	Mean or proportion	LCL% (95)	UCL% (95)
C. ARI in the past 14 days	511	100%		
Yes	454	88.4%	84.2	92.83
No	57	11.15%	7.16	15.1
C. Diarrhea in the past 14 days	512	100%		
Yes	411	80.2%	76.6	83.9
No	101	19.7%	16.05	23.39
C. DPT3 immunization at one year	N/A	N/A	N/A	N/A
C. ANC Caregiver who saw health professionals	421	100%		
No health professional	83	19.7%	14.3	25.06
With health professional	338	80.2%	74.9	85.6
Number of visits ANC	421	100%		
Less than 4 times	215	51.06%	44.10	58.03
Equal or more than 4 times	206	48.96%	41.9	55.8
C. Mains barriers to health center	242	100%		
Have barriers				
Financial barriers		31%		
Transport		13%		
Low quality in health care service		6%		
Time to go to Health center	427	100%		
More than 60 minutes	249	58%	44.07	72.5
Less than 60 minutes	178	41.6%	27.44	55.93
O. Early first pregnancy (<18 years)	424	18.7 (Mean)	18.37	19.14
Early pregnancy	100	33%	26.8	39.65
Not early pregnancy	324	66.7%	60.34	73.14
O. Birth spacing	N/A	N/A	N/A	N/A