

# **DEMONSTRATING THE BENEFITS OF EARLY RESPONSE: Cash for Work in the Sahel**

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For Oxfam Intermón

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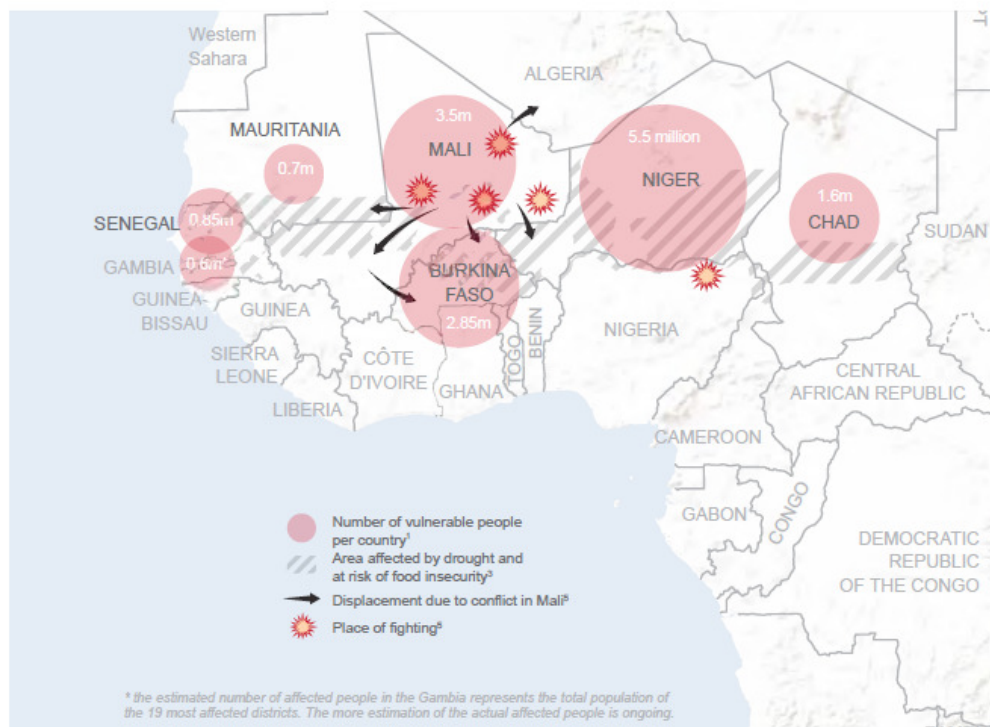
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# 1 Introduction

## 1.1 Context

In 2012, the Sahel faced a food security crisis, driven by chronic poverty, malnutrition, high food prices, drought, and low agricultural production. The crisis affected 18.7 million people across the region, six million of whom were severely food insecure, spread across seven countries. The first warnings of drought and poor harvests came through in late 2011 – cereal production was 26% lower than in 2010.<sup>1</sup> Figure 1 below shows the effect across the region.

**Figure 1: Effect of 2012 Food Crisis in the Sahel**



Source: Ocha. The Sahel: Humanitarian Snapshot. (April 2012)

<sup>1</sup> Oxfam (2012), *Joint Agency Issue Briefing*. Available at <http://www.oxfam.org/en/grow/policy/food-crisis-sahel>

Drought is not new for people in the Sahel. What is new is the increase in the frequency and severity of events (see Figure 2). Before households have a chance to recover from one event, another begins, and as a result households start from an already low coping capacity.

**Figure 2: Number of People Affected by Drought in Western Africa (1965-2011)**



Source: Ocha (2012). The Sahel: Humanitarian Snapshot. Taken from Gubbels, P. (2012). "Ending the Everyday Emergency: Resilience and children in the Sahel." Save the Children/World Vision.

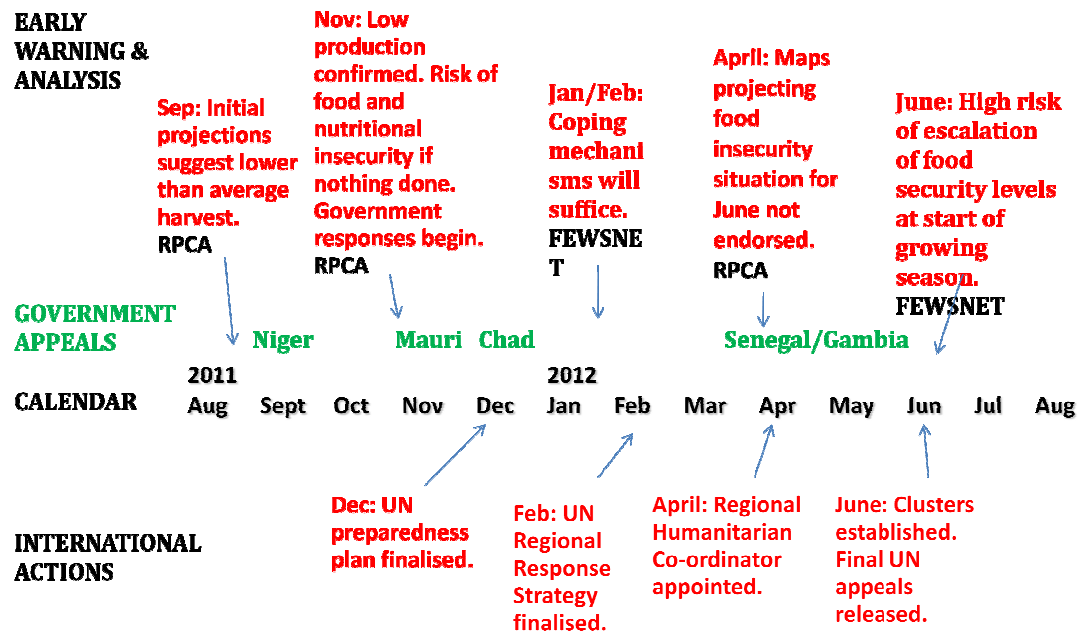
The response to the Sahel 2010 and Horn 2011 food crises has been critically analysed by many of the actors involved showing a "dangerous delay"<sup>2</sup> between early warning and action. This is especially pronounced in these slow onset, protracted crises, where assistance often comes nine months after the first failed rains, well after communities have started a decline characterized by negative coping strategies and asset depletion. As shown in the figures above, these crises are beginning to stack on top of each other, with shocks impacting households before they have had the chance to recover from a previous shock.

Figure 3 below shows how despite confirmation of low production in November 2011, UN appeals were not released until June 2012. Yet this was within the context that the response to the 2012 crisis was considered to be more positive than responses to previous crises – the early warning systems functioned well, governments raised the alarm quickly, and some donors mobilised funds more quickly than in previous crises.<sup>3</sup>

<sup>2</sup> Hillier, D & B. Dempsey, (2012). "A Dangerous Delay: The cost of late response to early warnings in the 2011 drought in the Horn of Africa". Oxfam, UK.

<sup>3</sup> Oxfam, Joint Agency Issue Briefing, 2012. <http://www.oxfam.org/en/grow/policy/food-crisis-sahel>

Figure 3: Timeline of 2012 Food Crisis in the Sahel<sup>4</sup>



Early response is therefore critical. Providing aid early has a number of important effects:

1. Aid procured early is significantly cheaper than aid procured late<sup>5</sup> (as a result of prepositioning, early procurement before prices rise, and storage and transport costs), reducing the burden on donor and government budgets and allowing for more money to be freed up for longer term recovery and development activities.
2. Safety nets, such as cash and food transfer programmes, are increasingly being used as a very cost effective modality for delivering aid early. Cash is much cheaper and easier to transfer than food,<sup>6</sup> and gives the household greater flexibility for meeting their specific needs. Furthermore, cash can be delivered much more quickly than food aid.

<sup>4</sup> Oxfam. (n.d.). "Learning the Lessons? Assessing the response to the 2012 food crisis in the Sahel to build resilience for the future." policy-practice.oxfam.org.uk. Retrieved April 29, 2013, from <http://policy-practice.oxfam.org.uk/publications/learning-the-lessons-assessing-the-response-to-the-2012-food-crisis-in-the-sahe-281076>

<sup>5</sup> Cabot Venton, C (2013). "Value for Money of Multi-Year Approaches to Humanitarian Funding." DFID, UK.

<sup>6</sup> Ibid.

3. Early response can slow or stop asset depletion and hence reduce caseloads, both in terms of number of beneficiaries, as well as the number of months that aid is required.

## 1.2 The Cash for Work Programme

Within this context Oxfam and its partners<sup>7</sup> initiated a “cash-for-work” (CFW) programme. The concept is to transfer cash to affected populations, as an early response mechanism, in return for able-bodied beneficiaries engaging in community development projects. The aim is to ensure access to food and other basic needs for affected populations well before a crisis is reached, while also promoting longer term development. Cash and food transfers can be one mechanism for such an early response.

To date, the response has covered seven countries: Senegal, Gambia, Niger, Mali, Mauritania, Burkina Faso, and Chad. The total beneficiary population reached is 1,223,110 (not including Senegal and Gambia - final figures have not yet been submitted).

- Burkina: 239,000
- Chad: 290,001
- Mali: 255,000
- Mauritania: 61,278
- Niger: 377,831

## 1.3 Aim of the Assignment

Oxfam has progressively introduced Cost-Benefit Analysis (CBA) in its Disaster Risk Reduction (DRR) programs to appraise and present the cost and benefits of interventions and inherent tradeoffs in DRR investment. In 2009, Oxfam America (OA) DRR staff worked with a CBA Consultant to develop a robust yet user-friendly Community-based CBA methodology, designed to enable effective decision making in OA’s DRR projects in every region.

Oxfam has implemented cash for work programs as an early response measure to support food security and livelihoods of affected populations in the 2011-2012 food crisis. In order to appraise the concrete benefits that this intervention has provided to

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<sup>7</sup> These are : i) Burkina Faso: ATAD; ii) Mauritania: AMAD and ACORD; iii) Chad: ACORD, Moustagbal, Nagdaro; and iv) Niger: Fédération des Unions des Groupements Paysans du Niger (FUGPN) – Mooriben.

affected populations, a community-based CBA methodology has been applied. The aim of the assignment has been to:

*Provide evidence of the cost-efficiency of the Oxfam/partner early response in the 2011/2012 Sahel Food Crisis through the cost benefit analysis of interventions in four countries of the Sahel (Burkina Faso, Chad, Mauritania, and Niger).*

Clearly, CBA is not the only tool that can be used to assess the benefits of using a CFW programme. However, it is a commonly used methodology for generating and analyzing quantitative evidence on the benefits of an intervention. The findings must be processed within the context of the full suite of benefits – both qualitative and quantitative.

The four countries were selected because they shared the following characteristics:

- a. Interventions and contexts were similar;
- b. Oxfam had performed early interventions in these countries; and
- c. the required staff capacity and security conditions existed (for example, Mali was discarded because of the war).

Although the context was similar in the four selected countries, there are a number of special features worth noting:

- In Chad, roads and communications were much worse than in the rest of the countries. Cash transfers were also delayed (sometimes up to 3-4 months after the work was done).
- In Burkina Faso, the response was planned by the State at the national level. The process was completed rapidly and the response was prompt (really early) as a result, which contributed to limiting livelihood losses. The only delays in payments occurred during the second wave of cash transfers, in May to June, which may have delayed the preparation for the next agricultural season.
- In Mauritania, most of the cash transfers were carried out without problems during the first phase. During the second phase, there were some delays caused by liquidity problems in the nearby banks.
- In Niger the most remarkable feature of the context was the high increase in food prices in the area of intervention, which undermined cash purchasing power. In order to compensate this deterring factor, the project was extended from three to four months.

## 1.4 Structure of the Report

This report is structured as follows:

- Section 2 described the methodology undertaken;
- Section 3 summarises the findings from the four country studies; and
- Section 4 presents conclusions from the analysis.

The findings presented here are high-level summaries, and are not intended to supply the full detail on the analysis. The four annexes contain more detail on each country study, and these are in turn supported by full country studies (in French).

- Annex A: Burkina Faso Summary
- Annex B: Chad Summary
- Annex C: Mauritania Summary
- Annex D: Niger Summary
- Annex E: Details on Cash Distributions

## 2 Methodology

### 2.1 The Approach

CBA is an economic tool used to compare the benefits against the costs of a given project or activity. It typically relies on the comparison of two scenarios – in this case, the aim was to compare the scenario “without CFW” to the scenario “with CFW” as an early intervention, and document and quantify the changes. This was undertaken in each of the four study countries.

The methodology was based on nine steps, as summarised in Table 1 below.

**Table 1: Study Methodology**

<b>Phase I: Preparation</b>	<b>Step 1:</b> Define the Study Parameters
	<b>Step 2:</b> Prepare for Field Work
<b>Phase II: Field Work: Data Collection</b>	<b>Step 3:</b> Hazard Assessment
	<b>Step 4:</b> Impact Assessment
	<b>Step 5:</b> Valuation of Quantifiable Impacts
	<b>Step 6:</b> Identification of Risk Reduction Measures and Costs
<b>Phase III: Data Analysis and Reporting</b>	<b>Step 7:</b> Cost Benefit Analysis
	<b>Step 8:</b> Sensitivity Analysis
	<b>Step 9:</b> Reporting



### **Phase I: Preparation**

The intention with this study was to facilitate local programme staff to conduct the field work for the CBA themselves. Hence, the use of the methodology relied on a “training of trainers” approach. Key Oxfam staff, including country team members from Burkina Faso, Niger, Mauritania and Chad were gathered on July 18 and 19, 2012, in Oaugadougou, Burkina Faso, for training in the community based CBA methodology.

One of the outcomes of the training was to facilitate staff to work with their respective country teams to design the fieldwork, including selection of teams, selection of communities, and design of focus group discussion questions. It was emphasised that field work should be done with communities that were felt to be representative of the experience with CFW, and that care should be taken not to cherry-pick those with the best outcomes. The criteria for selecting communities for field work included:

- Physical accessibility;
- Communities with average/typical economic profiles;
- Livelihood profiles focused on agriculture;
- CFW projects focused on soil conservation; and
- Availability of the population (according to field production and other activities).

### **Phase II: Data Collection**

Each field team spent approximately one week, using Focus Groups Discussions (FGDs) with men and with women, to discuss the impacts of CFW on their communities. The approach is very participatory. Focus group participants are asked about the hazards that affect their communities, the impact of those hazards both without and with CFW, and the magnitude of changes that have occurred. The outcome of this line of questioning is that communities identify the benefits, or avoided losses, associated with the introduction of CFW in their community. In addition to FGDs, in some cases the field teams were able to interview the village chief as well as members of the village committee, and used the proportional piling technique in order to quantify some impacts.

### **Phase III: Data Analysis and Reporting**

Country teams then systematized the data collected, analysed the data for the CBA, and presented their findings according to a common analysis and reporting framework. The findings were the subject of in depth discussion with Oxfam staff, and the economics expert leading the study, to ensure that they were robust and accurate. All modelling was then conducted by Oxfam staff and the economics expert, in order to ensure accuracy and consistency across studies. Quantification of benefits was compared with

programme costs, and modelled in a cost benefit analysis (details of the model are included below).

## 2.2 Limitations

The following points highlight some of the limitations that were inherent in conducting this kind of analysis. It should be noted that a conservative approach is used throughout the analysis; in other words, in most cases, changes should amplify the findings.

- Due to time and resource constraints, it was only possible to assess a subset of villages – other communities under the same programme could have alternative experiences. Further, those who engaged in participatory activities may not be fully representative of the entire village. As a result, the findings are not considered to be statistically representative.
- A number of assumptions had to be made, which are described in greater detail below. Sensitivity testing was used for three of these, namely the discount rate, the frequency of drought occurrence, and crop and animal prices, as these factors are likely to have the greatest impact on the outcomes.
- Quality of data is always an issue, as reporting on impacts is subject to bias (particularly in the case where implementing partners are interviewing households, who may have expectations for further support). To the extent possible, data were triangulated with other sources, and between programmes.
- For three of the countries, improvements to agricultural yields are expected to continue for five years (they are expected for two years in Mauritania). However, estimates of ongoing variable costs required to maintain these yields were not available, and hence no variable costs are included in the analysis (it is expected that the influence on the final results would be minimal). Further to this, estimated yields are based on a good year in relation to rainfall, but do not account for the range of other impacts that could affect yields, such as pests, birds, and wildfires. Improvements in yields are estimated, as crops had not yet been harvested to document actual yields.
- As this was the first CBA carried out by Oxfam for this kind of intervention, the lack of a comprehensive list of impacts could mean that some impacts may have been missed. All impacts represented by the communities are included here; however, further probing may have initiated discussions around more potential areas of benefit. Further to this, while all country teams underwent the same training in order to systematize the approach, separate teams undertook each of the country studies, and therefore are likely to have had differences in approach.

## **3 Summary of Findings**

### **3.1 Introduction**

This section presents the findings from the research. This report is intended as a summary document – each of the annexes, and associated country reports (in French) contain detailed calculations and data that support these findings.

### **3.2 Study Parameters**

Table 2 outlines the study parameters for each country study, including programme area, programme activities, number of beneficiaries, and study participants.

The studies that were selected for analysis under the CBA have mostly been beneficiaries of agricultural improvements. Road improvements were also a focus of the CFW programme, but were not addressed for this analysis, simply because resources were prioritised for a more comprehensive assessment of the impacts of agricultural interventions.

**Table 2: Study Parameters**

<b>Country</b>	<b>Study Parameters</b>
<b>Burkina Faso</b>	<p><i>Programme Area:</i> Two regions in the North and Central North</p> <p><i>Programme Activities:</i> Cash for work operated over six months, between December 2011 and June 2012. Analysis focuses on Phase I, which took place between January and March 2012. Cash transfers were complemented by works to improve soil condition and reverse land degradation.</p> <p><i>Beneficiaries:</i> Phase I – 84 villages, 7,424 households (51,968 people)</p> <p><i>Study participants:</i> 6 villages, in the Bokin and Arbollé provinces, consisting of 786 households.</p>
<b>Chad</b>	<p><i>Programme Area:</i> Department of Mangalmé.</p> <p><i>Programme Activities:</i> Cash for work operated over four months, between March and June 2012. The main activities were cash transfers, development of pools to help with water retention for fields and animals, the rehabilitation of roads, and the development of bunds to help with land degradation, erosion and infiltration of water.</p> <p><i>Beneficiaries:</i> 25 villages (3,500 households)</p> <p><i>Study participants:</i> 3 villages, in the Bokin and Arbollé provinces, consisting of 620 households (3,720 people).</p>
<b>Mauritania</b>	<p><i>Programme Area:</i> Gorgol and Brakna regions, southern Mauritania</p> <p><i>Programme Activities:</i> Cash for work between April and June 2012. Cash transfers, water management measures, and garden enclosures.</p> <p><i>Beneficiaries:</i> 20 villages, 392 households (2,744 people)</p> <p><i>Study participants:</i> 6 villages, comprising 124 households (882 beneficiaries).</p>
<b>Niger</b>	<p><i>Programme Area:</i> Departments of Doutchi and Madaoua</p> <p><i>Programme Activities:</i> Cash for work between February and May 2012. Cash transfers, construction of demi-lunes<sup>8</sup>, and the rehabilitation of a road.</p> <p><i>Beneficiaries:</i> 15 villages, 1,389 households</p> <p><i>Study participants:</i> 4 villages, consisting of 675 households</p>

### 3.3 Hazard Assessment

Communities were asked to describe the hazards that affect them, and drought was considered a significant risk. Other hazards mentioned include: floods, pests and birds that attack crops, drying up of water bodies/wells, illness, and conflict. The table below describes the exceedance probability of drought in any given year – in other words, the probability of having a severe drought in any year. If severe droughts happen once every

<sup>8</sup> Demi-lunes (also known as half moons) are mounds of soil in the shape of a half moon that promote water catchment, and are often used in degraded lands.

10 years, then there is a 10% probability of a severe drought in any year. These figures are then used to weight the agricultural yields according to the type of drought.

**Table 3: Drought Recurrence – Exceedance probability**

	Burkina Faso	Chad	Mauritania	Niger
<b>Favourable rainfall year</b>	40%	40%	37.5%	10%
<b>Low magnitude drought</b>	50%	50%	50%	50%
<b>Medium magnitude drought</b>	[not defined]	[not defined]	[not defined]	30%
<b>High magnitude drought</b>	10%	10%	12.5%	10%

### 3.4 Impact Assessment

Focus group work with communities was used in each country to identify the benefits of the CFW programme in a participatory manner. In each country, a range of benefits was identified, and they differed by country, though many issues came up repeatedly, indicating a fair bit of commonality (see Table 4 below).

Benefits as a direct result of early cash transfers: Generally speaking, cash is largely used to buy food, and to meet basic needs, leading to greater food security. As a result of having this safety net as an early response, households across all four countries report a range of benefits, for example:

- *Education:* Without cash for work, families could not afford school fees, children were needed around the house, or they have to migrate with their families. As a result of early cash transfers, families can afford to keep their children in school.
- *Migration:* Youth don't migrate because their families have cash support and because they can also get work through the work component of the programme.
- *Stress sale of animals:* Families are no longer forced to sell animals during stress times at depressed prices, or in the case where they do have to sell, they are selling far fewer animals.
- *Income generation:* Women no longer stop income generating activities during drought times – they have the capacity to maintain activities, as they are less distracted by ensuring that the household has enough food and they retain the capital needed for running their small business.
- *Debt reduction:* Families are less reliant on expensive moneylenders.

- *Social*: Villages report much more social cohesion as stress is lessened.

Benefits as a result of community development activities: The benefits listed above all result from having a cash transfer early in a crisis, which helps to prevent asset erosion and the use of negative coping strategies. In addition to the immediate cash transfer, beneficiaries are engaged in community development activities that have wider ongoing benefits. The analysis presented here focuses specifically on agricultural interventions that were undertaken in the study communities. A variety of techniques and structures, such as demi-lunes, bunds and other soil and water conservation (SWC) techniques have been used to help with water infiltration, improved soil quality, and decreased pressure on groundwater. Communities consistently cited the improved quality of restored land. The immediate tangible benefit is increased agricultural productivity (due to increased agricultural land available) – communities have planted grains as well as vegetables (including okra, tomatoes and aubergine), leading to an increase in incomes over several years.

Table 4 summarises the key areas of benefit **that could be quantified** for analysis in each country. The Country Study Annexes contain greater detail on how each of these categories of benefit was calculated. Table 5 provides some detail on the assumptions that underlie the calculation of benefits.

**Table 4: Quantified Benefits, by country study**

Country	Quantified Benefits
<b>Burkina Faso</b>	<ul style="list-style-type: none"> <li>• Improved access to food (cash)</li> <li>• Decreased stress sale of animals</li> <li>• Decreased migration</li> <li>• Protection of income generation activities</li> <li>• Decreased loss of education days</li> <li>• Improved yields</li> </ul>
<b>Chad</b>	<ul style="list-style-type: none"> <li>• Improved access to food (cash)</li> <li>• Decreased stress sale of animals</li> <li>• Increased agricultural production</li> </ul>
<b>Mauritania</b>	<ul style="list-style-type: none"> <li>• Improved access to food (cash)</li> <li>• Reduced migration maintains income in community</li> <li>• Protection of income generation activities</li> <li>• Increased agricultural production</li> </ul>
<b>Niger</b>	<ul style="list-style-type: none"> <li>• Improved access to food (cash)</li> <li>• Reduced loss of animals</li> <li>• Decrease in lost education days</li> <li>• Increased crop yields from demi-lunes</li> </ul>

- Increased fodder from demi-lunes

**Table 5: Assumptions for Quantification of Benefits**

Country	Quantification assumptions
<b>Access to food</b>	<ul style="list-style-type: none"> <li>The benefit of greater access to food has been quantified as equal to the cash distributed, as it is assumed that almost 100% of CFW has been dedicated to food consumption and other basic needs (according to post-distribution monitoring surveys).</li> </ul>
<b>Decrease in lost education days</b>	<ul style="list-style-type: none"> <li>As a result of cash transfers, children do not abandon classes. The reduction in lost school days was estimated by communities, valued using the estimated tuition per school day.</li> </ul>
<b>Reduced migration</b>	<ul style="list-style-type: none"> <li>In Burkina Faso, households are able to plant more fields as a result of reduced migration. Communities estimate additional land planted, average yield per hectare, price of millet in drought times.</li> <li>In Mauritania, the amount of benefit produced by avoided migration is equivalent to the people who stayed in the community minus the amount of money that they would have earned through migration (assuming only 50% of success in finding a job).</li> </ul>
<b>Decreased stress sale of animals</b>	<ul style="list-style-type: none"> <li>Reduction in number of animals sold as a result of cash, as well as improved prices achieved.</li> <li>Estimates made separately for both small ruminants, and poultry, as appropriate.</li> </ul>
<b>Protection of income generation activities</b>	<ul style="list-style-type: none"> <li>In Burkina Faso, women are able to maintain sale of beignets for two weeks (which otherwise would have been abandoned). This is valued based on the income they can generate during those two weeks.</li> <li>In Mauritania, women continue fish selling and cooperative businesses that otherwise would have stopped, valued based on the income generated.</li> </ul>
<b>Improved yields</b>	<ul style="list-style-type: none"> <li>Improved yields are estimated for favourable rainfall years, as well as a combination of low, medium and high magnitude droughts depending on data availability.</li> <li>Crop yields are estimated, as crops had not yet been harvested. Crop yields for other types of years were estimated in terms of a percentage reduction in yields depending on the severity of the event.</li> <li>Prices are similarly adjusted for better and worse years, to reflect inflated prices in bad times, to the extent that data were available.</li> <li>Grains and vegetable production are estimated as applicable.</li> </ul>



The following two tables present the quantification of benefits used in the model. The first table presents those benefits that are only realised in year one, as a direct result of the cash. It is clear that they will have knock on benefits that are not quantified here, as a result of early response, for example, through improved nutrition, which increases lifetime earnings and education attainment. The second table presents the improved agricultural yields that are expected as a result of the work done over subsequent years. The figures cannot be compared across countries - each is in relation to a different size population. However, it does give a sense of the magnitude of benefits across categories within a country.

The variation in benefits listed below is very much due to the local context, and how the local communities reflected the impact. These are described in the annexes in more detail. Perhaps the biggest difference between the findings is that some countries reported certain areas of benefit, while others did not. Again, this may just reflect the ways in which benefits materialised for different countries, depending on the local context. Different teams led the country participatory exercises, and questions may have been posed differently. It also may be that, with more time, and greater prompting around specific areas of impact, that communities would more consistently cite each category of benefit.

**Table 6: Calculation of Benefits – Year one**

	Burkina Faso (FCFA)	Chad (FCFA)	Mauritania (UM)	Niger (FCFA)
<b>Access to food (cash)</b>	19,650,000 (€29,956)	10,758,000 (€16,401)	5,952,600 (€17,365)	77,625,000 (€118,339)
<b>Education</b>	720,000 (€1,098)			5,100,000 (€7,775)
<b>Migration</b>	10,195,200 (€15,543)		819,000 (€2,389)	
<b>Stress sale of animals</b>	5,963,775 (€9,092)	2,678,400 (€4,083)		4,489,700* (€6,845)
<b>Income generation</b>	2,400,000 (€3,659)		365,600 (€1,067)	

\*refers to loss of animals through death rather than stress sales

Notes on local currencies: UM = Mauritania Ouguiyas and FCFA = the West African CFA Franc.

**Table 7: Calculation of Benefits – Multiple years**

	Burkina Faso (FCFA)	Chad (FCFA)	Mauritania (UM)	Niger (FCFA)	
<b>Improved yields</b>				Cereal production	Fodder production
<b>Favourable rainfall year</b>	23,580,000 (€35,948)	20,970,000 (€31,969)	29,495,000 (€86,028)	1,856,250	3,564,000
				(€8,263)	
<b>Low magnitude drought</b>	18,864,000 (€28,758)	16,776,000 (€25,575)		1,485,000	2,851,200
				(€6,610)	
<b>Medium drought</b>				1,262,250	2,138,400
				(€5,184)	
<b>High drought</b>	4,244,400 (€6,471)	700,000 (€1,067)	5,124,000 (€14,945)	668,250	712,800
				(€2,105)	

Clearly, the cash itself plays a significant role as one of the largest contributors to benefits in year one. All of the other benefits are fairly substantial as a proportion of the total benefit. The other major area of benefit is the work component – specifically increases in agricultural yields as a direct result of efforts to rehabilitate land. The gains from this are significant, and are likely to continue for several years (and certainly many more years with small levels of input, though this is not modelled here due to data constraints). This suggests that the combination of the two components is important – early provision of cash helps people to maintain daily activities that prevent asset erosion (and should help engagement with positive coping strategies), while the work to rehabilitate land is bringing important long term benefits that can build community resilience.

While CBA does not differentiate impacts across different groups, it is important to highlight that gender impacts are embedded within these findings. For instance, the income generation activities entirely relate to activities undertaken by women. In Burkina Faso, women specifically cited the long distances that they had to travel to fetch water. With the CFW programme, they were able to repair water pumps and reduce the time burden for fetching water. Migration relates primarily to young men, who are now more likely to stay at home.

Further to this, many of these benefits will bring further indirect benefits that are not quantified here. For example:

- Access to food and medical care can bring nutritional gains, improved health, greater productivity, and improved performance at school;
- Education can lead to higher wage jobs and add to lifetime earnings;

- Reduced migration can improve the social fabric of the household and community; and
- Income generation can give women independence and foster a sense of confidence.

### 3.5 Costs

Table 8 below summarizes the programme costs for each country programme, including total costs and the portion of the total cost that was provided as cash transfers. Note that the costs are not for the programme as a whole, but rather for those communities where data were gathered (so that they are proportionally in line with the estimated benefits).

All programmes had a component of unconditional cash distributed alongside CFW activities for those households not able to participate in community works (for example, disabled or elderly). Amounts of unconditional cash distributed have been removed from programme costs, as only the CFW components were analysed. Overhead costs have been calculated as proportional to the number of communities included in the analysis, and included in the total cost.

**Table 8: Summary of Programme Costs (€)**

Country	Total Programme Costs (€)	Cash Transfers (€)
Burkina Faso	61,195	29,956
Chad	67,900	16,401
Mauritania	37,420	17,187
Niger	147,923	118,339

Differences in the programme costs between countries are due to several factors:

- Although all budgets have common budgetary lines, such as human resources, monitoring and evaluation activities, travelling costs, running costs etc, some budgets add budgetary lines for specific activities, such as Household Economy Assessment (HEA) studies or specific office or transport equipment.
- The period of implementation of CFW activities varies between countries. Chad and Niger CFW interventions were implemented over four months, Burkina Faso over three months, and Mauritania over two months. Human resources travel or running costs are correspondingly higher in countries that had longer periods of implementation.
- Travel costs can vary significantly between countries due to isolation and difficulty of access to beneficiary communities where CFW activities have been implemented.

- Finally, amount of cash distributed by beneficiary has not always been the same, and there are notable differences between countries:
  - Niger: 115.000 FCFA per beneficiary (€175)
  - Mauritania: 46.754 UM per beneficiary (€138)
  - Burkina Faso: 25.000 FCFA per beneficiary (€38)
  - Chad: between 15.000 and 25.000 FCFA per beneficiary (€22 to 38)

The main reason for this difference is the number of months that cash is intended to cover. Specifically, cash distributed in Mauritania and Niger was foreseen to cover 3 months (Mauritania) and 4 months (Niger), while Burkina Faso and Chad were intended to cover 1 month (Annex E contains details on cash distributed).

### 3.6 Benefit to Cost Ratio

The cost benefit analysis is run for five years (with the exception of Mauritania where it was run for two years due to the short life cycle of rehabilitation measures), using a discount rate of 10%.<sup>9</sup> All of the benefits listed above are considered in the first year only, other than the recuperation of land, which is expected to continue to yield additional crops for another four years (one year in Mauritania). Data were not available on the investment that would be required over this time, but it was estimated that it would be minimal. Yields are calculated and weighted according to the probability of drought (e.g. favourable rainfall year, low magnitude drought, high magnitude drought – see Table 3) and its impact on potential agricultural production (typically estimated as a percentage reduction of actual yields in the first year of additional production).

Further to this, sensitivity tests were run to evaluate the impact of some of the underlying assumptions used in the model, specifically:

- Sensitivity 1: Crop and animal prices, as well as potential yields, were often presented as a range. The baseline model typically used an average for the modelling, and the sensitivity tested the upper end of the potential benefit that could be achieved.
- Sensitivity 2: The frequency of a high magnitude drought is increased (lowering potential crop yields) to reflect possible changes under climate change.
- Sensitivity 3: The discount rate is increased to 18%.

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<sup>9</sup> A discount rate is applied in economic modelling to account for the time preference for money. In other words, a dollar today is more than a dollar tomorrow, because it can be invested now, for instance, to buy an animal that will grow and be worth more tomorrow. A discount rate of 10% is commonly used for development projects, and can be varied in sensitivity testing. Given the high rates of inflation in West Africa, a higher interest rate could be justified.

These three scenarios were chosen because they represent the main assumptions in the modelling, and any changes to these parameters may have a relatively large impact on outcomes.

**Table 9: Cost Benefit Findings**

	<b>Burkina Faso</b>	<b>Chad</b>	<b>Mauritania</b>	<b>Niger</b>
<b>Benefit to Cost Ratio (BCR)</b>	3.38	2.21	3.65	1.11
<b>Sensitivity 1</b>	4.32	2.23	5.58	1.14
<b>Sensitivity 2</b>	3.01	1.86	3.19	1.09
<b>Sensitivity 3</b>	3.06	1.96	3.59	1.08

The findings all indicate that benefits outweigh costs, by a reasonable margin. This is also true in all of the sensitivity tests; the ratio is consistently positive, and the sensitivity testing did not have any major impacts on the findings. It is also important to note the context within which these ratios are evaluated. Most of the benefits are only considered in the first year, as a direct result of the cash. The agricultural improvements are only modelled for five years (two years in the case of Mauritania), but indeed many of the practices that have been introduced are ones that could be easily replicated over many more years, with small amounts of input. As a result, these findings should be interpreted as very positive, with the potential for significant increases.

Differences between the countries largely relate to the types of benefits recorded. Both Burkina Faso and Mauritania have the higher returns relative to the other two countries. In Burkina Faso, this is because the communities quantified the most areas of benefit, and hence total benefits are high relative to cost. By comparison, while Chad has a similar level of cost, the benefits from agriculture are estimated to be lower. This is because in Chad an estimated 25 hectares were rehabilitated, benefiting 620 households, whereas in Burkina Faso, 393 hectares were rehabilitated benefiting 786 households. In Burkina Faso, the construction of demi-lunes was the main approach used for rehabilitation, whereas in Chad the main approach was bunds, and this finding may suggest that the former is the more cost effective approach, though more research would be required to verify this.

In Niger, the ratios are low because the costs of the programme are so high (Niger actually has the highest total benefit but the programme was implemented over the longest period – four months).

## 4 Conclusions

The following conclusions can be drawn from the analysis presented above.

***Cash as an early response is slowing asset depletion and preventing negative coping strategies.*** It is clear that the early cash transfer has allowed households to avoid negative coping strategies, such as pulling children out of school or migrating. It is also slowing the asset depletion that can deepen a crisis and lead to food insecurity, as is evident by the reduced stress sale of animals, and ongoing promotion of business activities that contribute to household income. Further, the cash transfers appear to be strengthening cohesion and social relations within and between households. This can be critical, as communities working together can be more effective at finding ways to support each other through hard times.

***Community development works are adding a significant potential contribution to household resilience.*** The largest benefit in the analysis is the potential increase in yields from rehabilitation of land undertaken as the work component of the programme. Not only is the size of the potential benefit significant (in relation to other areas of benefit), but it has the potential to recur for multiple years. Improved agricultural production can improve food security, and the planting on vegetable crops can improve nutritional diversity, as well as provide the household with higher value crops to sell at market.

***A longer term focus on agricultural benefits may be necessary to justify costs.*** Agricultural benefits play a significant role in the economic return of the CFW programme, and as a result there is a risk that if this benefit is not sustained, the economic return presented here could become negative. This suggests that the programme should take a longer-term focus on beneficiary communities, beyond cash in year one, to ensure that agricultural benefits are sustained.

***The programme is having a clear impact on women,*** as cash is helping women to maintain income generating activities. Small businesses can help women to have some financial independence as well as building confidence. Further to this, women in Burkina Faso cited a reduced time burden for fetching water as a result of repaired handpumps through CFW.

***Early response through cash for work can be a more cost effective response to drought.*** The evidence presented here suggests that cash for work as an early response is providing families with resources before they get into a deeper state of crisis. By slowing this decline, households are demonstrating improved coping capacity. This should in turn lead to lower caseloads – both the number of people requiring humanitarian aid, as well as the number of months that they require aid. It could also have an important nutritional impact, helping to prevent a decline in

caseloads from moderate to severe acute malnutrition, which is very expensive to treat. While the evidence presented here does not directly indicate this, greater income and food security, as well as access to medical care, are all important contributing factors to maintaining nutritional status, and are all evident here. Further to this, cash transfers are typically much less expensive to administer than food aid rations. The intention with early response is to prevent asset erosion, such that humanitarian response can be minimised. The combination of all of these effects suggests that early response through cash transfer is a very important piece of a more cost effective response.

## Annexes:

Annex A: Burkina Faso Cash for Work Summary Report

Annex B: Chad Cash for Work Summary Report

Annex C: Mauritania Cash for Work Summary Report

Annex D: Niger Cash for Work Summary Report

Annex E: Details about amount of cash distributed with CFW intervention



## Annex A: Burkina Faso Cash for Work Summary Report

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### 4.1 Introduction to Programme

The Burkina Faso CFW programme operated over the course of six months, from December 2011 to May 2012. This analysis focuses on Phase I of the intervention, which took place between January and March 2012, benefiting 7,424 households (poor and very poor) with cash for work, in two regions in the North and Central North of Burkina. In addition to cash transfers, the works undertaken primarily aimed to improve soil condition, through “zai”<sup>10</sup>, demi-lunes<sup>11</sup> and stone bunds.

Data were collected in two provinces, Bokin and Arboillé, and six villages. In this area, 786 households were represented.

### 4.2 Impact Assessment

The programme has had a number of positive impacts on communities, which are summarised in Table A1 below.

This is immediately followed by Table A2, which summarises the quantification of those benefits that could be monetised. There are two types of benefit:

1. Benefits that accrue in the first year only as a direct result of the cash transfer – namely the cash itself, reduced stress sale of animals, migration, income generating activities, and education.
2. Benefits that accrue over subsequent years, namely improvements in agriculture as a result of the work carried out under the cash for work programme. The improvements in yields are estimated for a “favourable rainfall” year, a year with a low magnitude drought, and a year with a high magnitude drought.

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<sup>10</sup> Zai is a traditional farming technique that concentrates and conserves nutrients and water near the roots of the plants grown in them. Planting pits are dug and the earth removed from the hole is piled up to form a small ridge around the rim.

<sup>11</sup> This technique involves building low embankments with compacted earth or stones in the form of a semi-circle with the opening perpendicular to the flow of water and arranged in staggered rows. They are used to rehabilitate degraded, denuded and hardened land for crop growing, grazing or forestry.

**Table A1: Overview of Impacts**

<b>Elements at risk</b>	<b>Impacts – “without CFW” scenario</b>	<b>Impacts – “with CFW” scenario</b>	<b>Quantifiable?</b>
<b>Financial</b>	During drought times: <ul style="list-style-type: none"> <li>• Certain income generating activities are stopped</li> <li>• Rely on credit</li> </ul>	During drought times: <ul style="list-style-type: none"> <li>• Income generating activities are continued</li> <li>• Decreased reliance on credit</li> </ul>	Y N
<b>Physical</b>	<ul style="list-style-type: none"> <li>• Animals are sold at low prices</li> </ul>	<ul style="list-style-type: none"> <li>• Reduction in animals sold at low prices</li> </ul>	Y
<b>Natural</b>	<ul style="list-style-type: none"> <li>• Environmental degradation</li> <li>• Soil degradation</li> </ul>	<ul style="list-style-type: none"> <li>• Reduction in impact on environment</li> <li>• Recovery of soil, leading to increased yields</li> </ul>	N Y
<b>Human</b>	<ul style="list-style-type: none"> <li>• Migration – particularly youth to urban areas or neighbouring countries</li> <li>• Limited access to food and medical care</li> <li>• Limited access to water</li> <li>• Increased malnutrition in children under 5</li> <li>• Children miss school</li> </ul>	<ul style="list-style-type: none"> <li>• Reduction in migration as a result of cash received</li> <li>• Improved access to food/medical care</li> <li>• Improved access to water</li> <li>• Reduced malnutrition in children under 5</li> <li>• Reduction in lost school days</li> </ul>	Y Y N N Y
<b>Social</b>	<ul style="list-style-type: none"> <li>• Social tension related to lack of food</li> </ul>	<ul style="list-style-type: none"> <li>• Better social cohesion, work as a team</li> </ul>	N

Key: Y= Yes; N= No

**Table A2: Data Analysis Record**

Impact	Impact without CFW	Impact with CFW	Values/Assumptions	Estimation of losses/benefit without CFW	Estimation of losses/benefit with CFW	Total Benefit
<b>Benefits that accrue in the first year only</b>						
Access to Food	Cereal crops are lost and access to food is limited	Cash allows families to buy basic food and other needs	<ul style="list-style-type: none"> <li>100% of cash is used for food/basic needs.</li> <li>Each household receives 25,000 FCFA.</li> <li>786 households</li> </ul>	786*25,000 = 19,650,000	0	<b>19,650,000</b>
Stress sale of animals – small ruminants	Stress sale of animals at depressed prices to buy food	Reduction in stress sale of animals	<ul style="list-style-type: none"> <li>Households own an average of 3 animals.</li> <li>Without CFW, hhs sell 70% of their animals. With CFW this reduces to 30%.</li> <li>A small ruminant is sold for an average of 12,500 FCFA in a normal time, stress sale price is on average 6,750 FCFA, for a loss of 5,750 on each animal sold.</li> </ul>	786 hhs * 3 small animals * 70% * 5,750 FCFA = 9,490,950	786 hhs * 3 small animals * 30% * 5,750 FCFA = 4,067,550	<b>5,423,400</b>
Sale of animals – poultry	Stress sale of animals at depressed prices to buy food	Reduction in stress sale of animals	<ul style="list-style-type: none"> <li>Households own an average of 5 poultry.</li> <li>Without CFW, hhs sell 10% of their poultry. With CFW they do not need to sell poultry.</li> <li>Poultry are sold for an average of 2,250 FCFA in a normal time, stress</li> </ul>	786 hhs * 5 poultry* 10% * 1,375 FCFA = 540,375	0	<b>540,375</b>

Impact	Impact without CFW	Impact with CFW	Values/Assumptions	Estimation of losses/benefit without CFW	Estimation of losses/benefit with CFW	Total Benefit
			sale price is 875 FCFA. Thus each animal sold at a stress price loses a value of 1,375.			
Migration	Youth migrate out of the community for work, not available to plant land.	Reduction in migration	<ul style="list-style-type: none"> <li>Without CFW, 50% of the population migrates. With CFW, this reduces to 20%.</li> <li>Each household loses yields from approx 2 ha of land that is not planted.</li> <li>The average yield per ha of millet in crisis times is 80 kg/ha (compared with 800kg/ha in good year).</li> <li>The average price of millet is 270-300 FCFA/kg in drought times.</li> </ul>	<p>786 hh * 50% * 2 ha = 786 ha</p> <p>786 ha * 80 kg/ha * 270 FCFA = 16,977,600 FCFA</p>	<p>786 hh * 20% * 2 ha = 314 ha</p> <p>314 ha * 80 kg/ha * 270 FCFA = 6,782,400 FCFA</p>	<b>10,195,200</b>
Protection of income generation	Women abandon small businesses – sale of beignets	Activities are maintained in drought times	<ul style="list-style-type: none"> <li>120 women sell beignets 5 out of 7 days a week.</li> <li>They make 2,000 FCFA/day</li> <li>They stop activities for 2 weeks (10 days equivalent) during drought times.</li> </ul>	120 * 2,000 * 10 = <b>2,400,000</b>	0	<b>2,400,000</b>
Losses in education	Families are not able to pay school fees and	Children do not abandon classes	<ul style="list-style-type: none"> <li>35 students miss classes, for a total of 720 school days missed.</li> </ul>	720 days * 1,000 FCFA = <b>720,000</b>	0	<b>720,000</b>

Impact	Impact without CFW	Impact with CFW	Values/Assumptions	Estimation of losses/benefit without CFW	Estimation of losses/benefit with CFW	Total Benefit
	students abandon classes		<ul style="list-style-type: none"> <li>Estimated tuition per student day: 1,000 – 1,500 FCFA</li> </ul>			
<b>Benefits that accrue over subsequent years</b>						
Favourable rainfall years						
Improved yields	Land not under cultivation due to effects of drought	Recovery of degraded land (approx 0.5 ha per hh)	<ul style="list-style-type: none"> <li>Productivity in new lands is estimated to be 50% of already cultivated lands, 400kg/ha (this will increase in subsequent years but this value is taken to be conservative).</li> <li>393 ha recuperated.</li> <li>100 kg of millet is worth 150-200 FCFA in good times.</li> </ul>	393 ha * 400kg/ha * 150 FCFA/kg = 23,580,000 FCFA	0	<b>23,580,000</b>
Low intensity drought						
Improved yields	Land not under cultivation due to effects of drought	Recovery of degraded land (approx 0.5 ha per hh)	<ul style="list-style-type: none"> <li>Yields are estimated to be 80% of normal times. 400 Kg/Ha*80% = 320 Kg/Ha</li> <li>393 ha recuperated.</li> <li>100 kg of millet is worth 150-200 FCFA in low intensity drought times.</li> </ul>	393 ha * 320 kg/ha * 150 FCFA/kg = 18,864,000 FCFA	0	<b>18,864,000</b>
High intensity drought						

Impact	Impact without CFW	Impact with CFW	Values/Assumptions	Estimation of losses/benefit without CFW	Estimation of losses/benefit with CFW	Total Benefit
Improved yields	Land not under cultivation due to effects of drought	Recovery of degraded land (approx 0.5 ha per hh)	<ul style="list-style-type: none"> <li>• Yields are estimated to be 10% of normal times. 400 Kg/Ha*10% = 40 Kg/Ha</li> <li>• 393 ha recuperated.</li> <li>• 100 kg of millet is worth 270-300 FCFA in severe drought times</li> </ul>	393 ha * 40 kg/ha * 270 FCFA/kg = 4,244,400 FCFA	0	<b>4,244,400</b>

Key: FCFA = CFA Franc (the local currency)

Ha = Hectare

Hh= household

Kg = kilogram

T = tonne

### 4.3 Identification of Risk Reduction Measures and Costs

The budget was adjusted to account for the six communities that are the subject of this analysis. The total cost is 40,141,080 FCFA (€61,195), of which 19,650,000 FCFA (€29,956) is cash distribution.

### 4.4 Cost Benefit and Sensitivity Analyses

The cost benefit analysis is run for five years, using a discount rate of 10%. All of the costs listed above are considered in the first year only, other than the recuperation of land, which is expected to continue to yield additional crops for another four years (without additional investment). Yields are weighted according to the probability of a good year (40%), a low magnitude drought year (50%) and a high magnitude drought year (10%).

**The benefit to cost ratio (BCR) under this scenario is 3.38.** In other words, for every Euro invested, 3.38 Euros of benefit are realised, a very positive return, especially considering that it is over such a short time frame.

The analysis uses conservative figures; for example, the difference in prices for animals in good and bad times could be higher, and millet production could be much higher. Sensitivity tests were run for three different scenarios:

- The estimation of animal prices and millet production is improved. This yields a **BCR of 4.32:1**.
- The frequency of a high magnitude drought is increased from an assumption of once every 10 years, to three times every 10 years, to account for the likelihood of increased drought under climate change. This yields a **BCR of 3.01:1**.
- The discount rate is increased to 18%. This yields a **BCR of 3.06:1**.

## Annex B: Chad Cash for Work Summary Report

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### 4.5 Introduction to Programme

The Chad CFW programme benefited 25 villages in the department of Mangalmé, during the drought of 2012. Three villages, of which 620 households (3,720 people) benefited from cash, were interviewed for this study.

The support lasted for four months, between March and June 2012. Households were supported with cash transfers. The main works included the rehabilitation of roads, the development of pools to help with water retention for fields and animals, and the development of bunds, to help with land degradation, erosion and infiltration of water. This study just focuses on the latter activities.

### 4.6 Impact Assessment

The programme has had a number of positive impacts on communities, which are summarised in Table B1 below.

This is immediately followed by Table B2, which summarises the quantification of those benefits that could be monetised. There are two types of benefit:

3. Benefits that accrue in the first year only as a direct result of the cash transfer – namely the cash itself, and reduced stress sale of animals.
4. Benefits that accrue over subsequent years, namely improvements in agriculture as a result of the work carried out under the cash for work programme. The improvements in yields are estimated for a “favourable rainfall” year, a year with a low magnitude drought, and a year with a high magnitude drought.



**Table B1: Overview of Impacts**

Elements at risk	Impact – “without CFW” scenario	Impact – “with CFW” scenario	Quantifiable?
<b>Financial</b>	<ul style="list-style-type: none"> <li>Reliant on debt</li> <li>Stress sale of animals</li> </ul>	<ul style="list-style-type: none"> <li>Debt reduction</li> <li>Reduction in stress sales</li> <li>Recuperated land that had been abandoned improves yields</li> </ul>	N Y Y
<b>Natural</b>	<ul style="list-style-type: none"> <li>Decreased recharge of groundwater due to land degradation (lack of infiltration)</li> </ul>	<ul style="list-style-type: none"> <li>Groundwater recharge improved as a result of development of bunds.</li> </ul>	N
<b>Human</b>	<ul style="list-style-type: none"> <li>Migration</li> <li>Limited access to food and medical care</li> </ul>	<ul style="list-style-type: none"> <li>Reduction in seasonal migration</li> <li>Improved access to food and health care</li> </ul>	N Y
<b>Social</b>	<ul style="list-style-type: none"> <li>Increased tension at home</li> </ul>	<ul style="list-style-type: none"> <li>Better social cohesion</li> </ul>	N

Key: Y= yes; N= no

**Table B2: Data Analysis Record**

Impact	Impact without CFW	Impact with CFW	Values/Assumptions	Estimation of losses/benefit without CFW	Estimation of losses/benefit with CFW	Total Benefit
<b>Benefits that accrue in the first year only</b>						
Access to Food and medical care	Cash is limited	Cash allows families to buy food and medical care	<ul style="list-style-type: none"> <li>100% of cash is used for food/basic needs.</li> <li>Cash distributed in 3 villages plus food in one = 10,758,000 FCFA</li> </ul>	10,758,000	0	<b>10,758,000</b>
Stress sales of animals	HHs sell animals at stress times to buy food.	Stress sale of animals is reduced as a result of cash transfers	<p>Without: 28% of 620 hhs sold animals at stress times; on average 3 small animals and 5 poultry            With: 50 hhs sell an average of 2 small animals and 3 poultry.</p> <p>Average sale prices are used for good and crisis periods:</p> <ul style="list-style-type: none"> <li>A small animal sells for an average of 13,750 FCFA in a good period, 8,750 FCFA in a crisis period, for a difference of 5,000 FCFA.</li> <li>Poultry sell for an average of 2,000 FCFA in a good period, 1,200 in a crisis period, for a difference of 800 FCFA.</li> </ul>	<p>620 hhs * 28% * 3 small animals * 5,000 FCFA = 2,604,000 FCFA</p> <p>620 hhs * 28% * 5 poultry * 800 FCFA = 694,400 FCFA</p> <p>Total: 3,298,400 FCFA</p>	<p>50 hhs * 2 small animals * 5,000 FCFA = 500,000 FCFA</p> <p>50 hhs * 3 poultry * 800 FCFA = 120,000 FCFA</p> <p>Total: 620,000 FCFA</p>	<b>2,678,400</b>
<b>Benefits that accrue over subsequent years</b>						
Favourable rainfall years						

Impact	Impact without CFW	Impact with CFW	Values/Assumptions	Estimation of losses/benefit without CFW	Estimation of losses/benefit with CFW	Total Benefit
Improved agricultural production	Production on existing land only	Exploitation of new land for production, through water retention and recharge of groundwater activities	<ul style="list-style-type: none"> <li>25 ha of new land used by 620 hhs: 2 planting seasons, one for vegetables and one for sorghum.</li> <li>Sorghum yields estimated at 700 kg/ha * 25 ha = 17,500 kg; sorghum price in a good year is 100 FCFA per kg. <b>Total sorghum production = 1,750,000 FCFA</b></li> <li>Veg yields are estimated per household. Okra – 15,000 FCFA * 620 hhs = 9,300,000 FCFA. Tomato – 8,000 FCFA * 620 hhs = 4,960,000 FCFA. Lettuce = 8,000 FCFA * 620 hhs = 4,960,000 FCFA. <b>Total veg production – 19,220,000 FCFA</b></li> </ul>	20,970,000	0	<b>20,970,000</b>
Low intensity drought						
Improved agricultural production	Production on existing land only	Exploitation of new land for production, through water retention and recharge of groundwater activities	<ul style="list-style-type: none"> <li>Yields are estimated to be reduced by 20% in a low intensity drought.</li> <li>Prices are estimated to be similar to a good year.</li> </ul>	20,970,000 * 80% = 16,776,000	0	<b>16,776,000</b>
High intensity drought						

Impact	Impact without CFW	Impact with CFW	Values/Assumptions	Estimation of losses/benefit without CFW	Estimation of losses/benefit with CFW	Total Benefit
Improved agricultural production	Production on existing land only	Exploitation of new land for production, through water retention and recharge of groundwater activities	<ul style="list-style-type: none"> <li>• Yields are estimated to be reduced by 80% in a high intensity drought.</li> <li>• Veg production is not undertaken due to lack of water availability.</li> <li>• Prices for sorghum double to 200 FCFA per kg.</li> </ul>	17,500 kg * 20% * 200 FCFA = 700,000 FCFA	0	<b>700,000</b>

Key: FCFA = CFA Franc (the local currency)

Ha = Hectare

Hh= household

Kg = kilogram

T = tonne

#### 4.7 Identification of Risk Reduction Measures and Costs

The total cost of the programme is 794,450,513 FCFA (€1,211,132). The cost for the three villages that are the subject of this analysis is 44,539,510 FCFA (€67,900). Of this, 8,760,000 FCFA (€13,355) was distributed as cash and 1,998,000 (€3,046) as food.

#### 4.8 Cost Benefit and Sensitivity Analyses

The cost benefit analysis is run for five years, using a discount rate of 10%. All of the costs listed above are considered in the first year only, other than the recuperation of land, which is expected to continue to yield additional crops for an additional four years (without additional investment). Yields are weighted according to the probability of a good year (40%), a low magnitude drought year (50%) and a high magnitude drought year (10%).

**The benefit to cost ratio (BCR) under this scenario is 2.21.** In other words, for every Euro invested, 2.21 Euros of benefit are realized, a very positive return considering that it is over such a short time frame.

The analysis uses conservative figures; for example, the difference in prices for animals in good and bad times could be higher. Sensitivity tests were run for three different scenarios:

- The estimation of animal prices is improved. **This yields a BCR of 2.23:1.**
- The frequency of a high magnitude drought is increased from an assumption of once every 10 years, to 3 times every 10 years, to account for the likelihood of increased drought under climate change. **This yields a BCR of 1.86:1.**
- The discount rate is increased to 18%. **This yields a BCR of 1.96.**

## Annex C: Mauritania Cash for Work Summary Report

### 4.9 Introduction to Programme

The Mauritania CFW programme benefited 20 villages (392 households, 2,744 people). This study specifically focuses on cash for work support that was provided for two months, between April and June 2012. Households were supported with cash transfers, and engaged in work projects including rehabilitation of land and enclosures for vegetable gardens. Six of the 20 villages were consulted for this study (representing 124 beneficiary households and a total population of 882).

### 4.10 Impact Assessment

The programme has had a number of positive impacts on communities, which are summarized in Table C1 below.

This is immediately followed by Table C2, which summarises the quantification of those benefits that could be monetised. There are two types of benefits:

5. Benefits that accrue in the first year only as a direct result of the cash transfer – namely the cash itself, migration and small business activities.
6. Benefits that accrue over subsequent years, namely improvements in agriculture as a result of the work carried out under the cash for work programme. The improvements in yields are estimated for a “favourable rainfall” year, and a drought year.

**Table C1: Overview of Impacts**

Elements at risk	Impact – “without CFW” scenario	Impact – “with CFW” scenario	Quantifiable?
<b>Financial</b>	During drought times: <ul style="list-style-type: none"> <li>• Rely on credit</li> <li>• Unable to plant next crop cycle</li> <li>• Small business activities are stopped</li> </ul>	During drought times: <ul style="list-style-type: none"> <li>• Decreased reliance on credit</li> <li>• Planting of next crop cycle</li> <li>• Small business activities are continued</li> </ul>	N Y Y
<b>Physical</b>	<i>None identified</i>	<i>None identified</i>	
<b>Natural</b>	<ul style="list-style-type: none"> <li>• Soil degradation</li> </ul>	<ul style="list-style-type: none"> <li>• Recovery of soil</li> </ul>	N
<b>Human</b>	<ul style="list-style-type: none"> <li>• Limited access to food and medical care</li> <li>• Migration</li> </ul>	<ul style="list-style-type: none"> <li>• Improved access to food/medical care</li> <li>• Return of migrants</li> </ul>	Y Y
<b>Social</b>	<i>None identified</i>	<i>None identified</i>	

Key: Y= yes; N= no

**Table C2: Data Analysis Record**

Impact	Impact without CFW	Impact with CFW	Values/Assumptions	a. Estimation of losses/benefit without CFW	a. Estimation of losses/benefit with CFW	Total Benefit (UM)
Access to food and basic needs	Food intake is reduced from 3 to 1 meals per day. HH heavily reliant on loans to purchase food.	Cash transfers allow family to maintain food security	The cash distributed to 124 beneficiary households is 5,952,600 UM.	5,952,600 UM	0	<b>5,952,600</b>
Migration	70% of hhs interviewed report that someone in their hh migrates.	63 migrants within the 6 communities interviewed returned as a result of cash for work.	Without: 50% of migrants regularly remit 10,000 UM per month. The other 50% are not able to find work and remit nothing. With: 63 migrants returning as a result of CFW have 12 days work through CFW, 12 days at other activities, @ 1500 UM per day.	$63 * 50\% * 10,000 = 315,000$ UM	$63 * 12 * 1500 = 1,134,000$ UM	<b>819,000</b>
Small business activities	Business activities are abandoned during hardship times.	Beneficiaries are able to maintain business activities with cash input.	7 women were able to resume fish selling business @ 24,000 UM profit per woman. 22 women relaunched their cooperative businesses with the cash, for a total profit of 197,600 UM.	$(7 * 24,000) + 197,600 = 390,600$ UM.	0	<b>365,600</b>
Increase in production: <u>Favourable</u>	No production	Rehabilitation of 234 ha for Sorghum;	<u>Sorghum</u> yields are 400kg/ha (could be as high as 600). 193 ha were cultivated in year 1, 234 ha in year 2.	<u>Sorghum</u> : $85.4T * 200$ UM = 17.1m UM	0	<b>29,495,000</b>

Impact	Impact without CFW	Impact with CFW	Values/Assumptions	a. Estimation of losses/benefit without CFW	a. Estimation of losses/benefit with CFW	Total Benefit (UM)
<u>Rainfall Year</u>		Additional 16 ha for vegetables	<p>1 kg of sorghum is worth 200 UM.</p> <p><u>Vegetable</u> production on 16 ha per year: 27.25 T of tomatoes, 27 T Okra, 27 T Eggplant, 20 T onion.</p> <p>Values per kg: Tomatoes: 100 – 150 UM/kg Okra = 200 - 300 UM/kg Eggplant = 70 - 200 UM/kg Onion = 120 - 250 UM/kg.</p>	<p><u>Tomatoes</u>: 27.25T * 100UM = 2,725,000 UM</p> <p><u>Okra</u>: 27T * 200UM = 5,400,000 UM</p> <p><u>Eggplant</u>: 27T * 70UM = 1,890,000 UM</p> <p><u>Onion</u>: 20T * 120UM = 2,400,000 UM</p> <p><u>Total</u> per year: 29,495,000 UM</p>		
Increase in production: <u>Drought Year</u>	No production	Rehabilitation of 234 ha for Sorghum; Additional 16 ha for vegetables	<p><u>Sorghum</u> yields are 70-80% of normal production in a high magnitude drought. 1 kg of sorghum is worth 300 UM in a high magnitude drought.</p> <p><u>Vegetable</u> production does not take place in a drought year.</p>	<p><u>Sorghum</u>: 17.08 T * 300 UM = 5,124,000 UM</p>	0	<b>5,124,000</b>

Key: UM = Mauritania Ouguiyas (the local currency)

Ha = Hectare

Hh= household

Kg = kilogram

T = tonne



#### 4.11 Identification of Risk Reduction Measures and Costs

The total cost of the programme, attributable to the six communities surveyed, is 12,960,100 UM (€37,420). This includes a total cash distribution of 5,952,600 UM (€17,187).

#### 4.12 Cost Benefit and Sensitivity Analyses

The CBA is run for 2 years, using a discount rate of 10% (which has minimal impact because of the short term nature of the benefits). All of the benefits are counted in year 1 only, with the exception of the increased yields from the land, which are counted for two years. This is because the benefits associated with cash, migration, and small business are very much stimulated by the cash transfer in year 1, and therefore for these benefits to persist, cash transfers would need to continue. The yields from the land were generated over two years, and could arguably persist for many more years, with small inputs of seeds and tools. This would significantly enhance the cost benefit ratio.

**The benefit to cost ratio (BCR) under this scenario is 3.65.** In other words, for every Euro invested, 3.65 Euros of benefit are realised, a very positive return, especially considering that it is over such a short time frame.

The analysis uses conservative figures – the potential yield from the land reclamation could be 50% higher than that estimated (using a figure of 600kg per ha instead of 400kg per ha), and the prices for vegetables could also be higher. Sensitivity tests were run for 3 different scenarios:

- Agricultural production and prices are increased to the higher end of the range given. **This yields a BCR of 5.58:1.**
- Year 2 is assumed to be another drought year, reducing yields. **This yields a BCR of 3.19:1**
- The discount rate is increased to 18%. **This yields a BCR of 3.59.**

## Annex D: Niger Cash for Work Summary Report

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### 4.13 Introduction to Programme

The Niger CFW programme transferred cash to 1,389 households (in 15 villages) over the course of four months, from February to May 2012. The immediate aim was to improve food security for the most vulnerable. Works to be undertaken were agreed through a participatory process with communities, and included the construction of demi-lunes to rehabilitate land for both fodder and agriculture purposes, and the rehabilitation of a road (not included in this analysis).

Data was collected in four villages in the Dosso region (out of a total of 15 villages that were part of the programme). In this area, 675 households were represented.

### 4.14 Impact Assessment

The programme has had a number of positive impacts on communities, which are summarised in Table D1 below.

This is immediately followed by Table D2, which summarises the quantification of those benefits that could be monetised. There are two types of benefits:

1. Benefits that accrue in the first year only as a direct result of the cash transfer – namely the cash itself, reduced stress sale of animals, and avoided loss of education.
2. Benefits that accrue over subsequent years, namely improvements in agriculture as a result of the work carried out under the cash for work programme. The improvements in yields are estimated for a “favourable rainfall” year, a year with a low magnitude drought, a year with a medium magnitude drought, and a year with a high magnitude drought.

**Table 4.2: Overview of Impacts**

Elements at risk	Impacts – “without CFW” scenario	Impacts – “with CFW” scenario	Quantifiable?
<b>Physical</b>	<ul style="list-style-type: none"> <li>• Degradation of agricultural land</li> <li>• Degradation of pasture land</li> <li>• Erosion</li> </ul>	<ul style="list-style-type: none"> <li>• Rehabilitation of agricultural land</li> <li>• Rehabilitation of pasture land</li> <li>• Reduction of erosion/improvement of vegetation cover</li> </ul>	<p>Y</p> <p>Y</p> <p>N</p>
<b>Financial</b>	<ul style="list-style-type: none"> <li>• Sale of animals and household goods</li> <li>• Low agricultural yields</li> <li>• Loss of animals due to decreased pasture</li> <li>• Loss of income generating activities during hard times</li> </ul>	<ul style="list-style-type: none"> <li>• Reduction in sale of animals</li> <li>• Improved agricultural yields as a result of rehabilitation of land</li> <li>• Survival of animals – byproducts from farming used to feed animals</li> <li>• Ability to maintain income generating activities</li> </ul>	<p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p>
<b>Human</b>	<ul style="list-style-type: none"> <li>• Migration</li> <li>• Food insecurity</li> <li>• Loss of education (as children migrate with parents)</li> </ul>	<ul style="list-style-type: none"> <li>• Reduction in migration</li> <li>• Greater food security as a result of cash transfers</li> <li>• Reduction in class drop out</li> </ul>	<p>N</p> <p>Y</p> <p>Y</p>
<b>Social</b>	<ul style="list-style-type: none"> <li>• Erosion of social cohesion, relationship</li> </ul>	<ul style="list-style-type: none"> <li>• Better social cohesion</li> </ul>	<p>N</p>

Key: Y= yes; N= no

**Table 4.3: Data Analysis Record**

Impact	Impact without CFW	Impact with CFW	Values/Assumptions	Estimation of losses/benefit without CFW	Estimation of losses/benefit with CFW	Total Benefit
<b>Benefits that accrue in the first year only</b>						
Access to Food	Cereal crops are lost and access to food is limited	Cash allows families to buy basic food and other needs	100% of cash is used for food/basic needs. 77,625 FCFA was distributed in the 4 villages studied	77,625,000	0	<b>77,625,000</b>
Loss of animals	Loss of pasture results in loss of animals	Animals maintained with agricultural byproducts from the project.	In a high magnitude drought, 50% of animals are lost without CFW, reducing to 30% with CFW. 675 hhs have 2,363 animals (3-5 animals each). Prices range from 6,500 to 12,500, for an average of 9,500 FCFA per animal.	2,363 animals * 50% losses * 9,500 FCFA = <b>11,224,250</b>	2,363 animals * 30% losses * 9,500 FCFA = <b>6,734,550</b>	<b>4,489,700</b>
Losses in education	Students abandon classes for 3-5 months while their families migrate (and hence lose a school year)	Reduction in migration and lost school days – note that this was only reported by 2 of the villages.	Without CFW, 80 students miss school (in the two villages), and this is reduced to 29 with CFW. 100,000 per child for a school year	80*100,000 = <b>8,000,000</b>	29*100,000 = <b>2,900,000</b>	<b>5,100,000</b>
<b>Benefits that accrue over subsequent years</b>						
Favourable rainfall years						
Cereal production	Soil eroded due to drought, not cultivated	Rehabilitated land increases production	79,200 demi-lunes constructed, 10% cultivated for millet Production per demi-lune: 1.5625 kg	79,200*10%*1.5625*150 = <b>1,856,250</b>	0	<b>1,856,250</b>

Impact	Impact without CFW	Impact with CFW	Values/Assumptions	Estimation of losses/benefit without CFW	Estimation of losses/benefit with CFW	Total Benefit
			Price per kg of millet : 150-180 FCFA			
Demi-lunes – fodder production	Soil eroded due to drought, no fodder production	Rehabilitated land increases fodder production	79,200 demilunes, 90% used for fodder production Production per demi-lune : 0.25 kg Price per kg of straw: 200 FCFA	79,200 demi-lunes x 90% x 0.25 Kg straw x 200 FCFA/kg = 3,564,000 FCFA	0	<b>3,564,000</b>
Low magnitude drought						
Cereal production	Soil eroded due to drought, not cultivated	Rehabilitated land increases production	Production is estimated to be reduced by 20% in a low magnitude drought, from 1.5625 to 1.25kg per demi-lune	$79,200 * 10% * 1.25 * 150 =$ <b>1,485,000</b>	0	<b>1,485,000</b>
Demi-lunes – fodder production	Soil eroded due to drought, no fodder production	Rehabilitated land increases fodder production	Changes in fodder production are assumed to be equivalent to changes in cereal production, estimated to be reduced by 20%, to 0.2kg/demi-lune. Price data was not available, and hence prices in favourable rainfall years are used.	79,200 demi-lunes x 90% x 0.20 Kg straw x 200 FCFA/kg = 2,851,200 FCFA	0	<b>2,851,200</b>
Medium magnitude drought						
Cereal production	Soil eroded due to drought, not cultivated	Rehabilitated land increases production	Production is estimated to be reduced by 40% in a medium magnitude drought, from 1.5625 to 0.9375kg per demi-lune. The price of millet is 170-220 FCFA	$79,200 * 10% * 0.9375 * 170 =$ <b>1,262,250</b>	0	<b>1,262,250</b>
Demi-lunes – fodder production	Soil eroded due to drought, no fodder production	Rehabilitated land increases fodder production	Changes in fodder production are assumed to be equivalent to changes in cereal production, estimated to be reduced by 40%, to 0.15kg/demi-lune. Price data was not available, and hence	79,200 demi-lunes x 90% x 0.15 Kg straw x 200 FCFA/kg =	0	<b>2,138,400</b>

Impact	Impact without CFW	Impact with CFW	Values/Assumptions	Estimation of losses/benefit without CFW	Estimation of losses/benefit with CFW	Total Benefit
			prices in favourable rainfall years are used.	2,138,400 FCFA		
High magnitude drought						
Cereal production	Soil eroded due to drought, not cultivated	Rehabilitated land increases production	Production is estimated to be reduced by 80% in a high magnitude drought, from 1.5625 to 0.3125kg per demi-lune. The price of millet is 270-300 FCFA	$79,200 * 10% * 0.3125 * 270 =$ <b>668,250</b>	0	<b>668,250</b>
Demi-lunes – fodder production	Soil eroded due to drought, no fodder production	Rehabilitated land increases fodder production	Changes in fodder production are assumed to be equivalent to changes in cereal production, estimated to be reduced by 80%, to 0.05kg/demi-lune. Price data was not available, and hence prices in favourable rainfall years are used, though it should be noted that these are likely to be higher.	$79,200 \text{ demi-lunes} * 90\% * 0.05 \text{ Kg straw} * 200 \text{ FCFA/kg} =$ 712,800 FCFA	0	<b>712,800</b>

Key: FCFA = CFA Franc (the local currency)

Ha = Hectare

Hh= household

Kg = kilogram

T = tonne

#### 4.15 Identification of Risk Reduction Measures and Costs

The total programme budget was adjusted – the costs associated with road rehabilitation were excluded from the budget, as this was not part of the benefits assessed. Instead the full cost of the CFW programme with the creation of the demi-lunes was accounted for.

The total budget, excluding roads, is FCFA 97,031,250 (€147,923). This includes a total cash distribution of FCFA 77,625,000 (€118,339).

It is estimated that no additional costs are necessary to maintain the demi-lunes; they have a lifetime of approximately five years before they require further investment.

#### 4.16 Cost Benefit and Sensitivity Analyses

The CBA is run for five years, using a discount rate of 10%. The estimated benefits from cash, reduction in animal mortality, and loss of education are only incurred in the first year, as these are a direct result of the cash transfer in year 1. The improved production from the demi-lunes is assumed to occur in years 2 through 5 as these will continue to deliver gains. The actual cash amount transferred is considered as both a cost, and a benefit, as households are able to use this cash to buy food and other essential items, and it therefore creates a form of income in the year in which it is given.

**The model results in a benefit to cost ratio (BCR) of 1.11:1.** In other words, for every Euro invested, the programme returns 1.11 Euros in gains. This is a positive finding, especially given the very short time frame of the return on investment.

The analysis uses conservative figures; for example, prices would likely be more favourable (in particular in the case of drought times where fodder prices were not available and so good year prices were used). Sensitivity tests were run for three different scenarios:

- The estimation of animal prices and millet production is improved. **This yields a BCR of 1.14:1.**
- The frequency of a high magnitude drought is increased to account for the likelihood of increased drought under climate change. **This yields a BCR of 1.09:1.**
- The discount rate is increased to 18%. **This yields a BCR of 1.08.**

## Annex E: Details about amount of cash distributed with CFW intervention

Country	CFW period (2012)	Number of months of CFW	Number of working days per person (average)	Daily wage per person		Number of participants in CFW (CBA sampling)	TOTAL Cash distributed (CBA sampling)		TOTAL Cash distributed per Household (HH)		Number of months of food needs intended to cover per HH with the cash distributed
				Local currency <sup>12</sup>	EUR		Local currency	EUR	Local currency	EUR	
Mauritania	May - June	2	53	900 MRO	2,60	124	5.952.600	17.187	48.005	138,60	3
Niger	Feb. - May	4	100	1.150 XOF <sup>13</sup>	1,75	675	77.625.000	118.339	115.000	175,32	4
Tchad	March - June	4	10	1.735 XAF <sup>14</sup>	2,65	620	10.758.000	16.400	17.352	26,45	1
Burkina Faso	Jan. - March	3	20	1.250 XOF	1,91	786	19.650.000	29.956	25.000	38,11	1

<sup>12</sup> The ISO currency codes are XAF for the Central African CFA franc and XOF for the West African CFA franc.

<sup>13</sup> The daily wage planned in Niger CFW intervention was initially 1000 FCFA per person, but due to the price increase in staple food, daily wage has been updated to 1300 FCFA. The figure in the table is an average, as the first two months of CFW intervention a wage of 1000 FCFA/pers./day was applied.

<sup>14</sup> The daily wage applied in Chad CFW intervention ranged from 1500 to 2500 FCFA depending on the job position. The figure in the table is an average.