



The adapting atolls

Final evaluation of the project “Community-based adaptation to climate change (CBA CC)” in Nissan district, Papua New Guinea



Abbreviations

ABG	Autonomous Bougainville Government
ANCP	Australian NGO Cooperation Program
AUD	Australian Dollar
BEB	Bougainville Education Board
BOUTHA	Bougainville Traditional Health Association
BWF	Bougainville Women's Federation
CBA	Community-based adaptation
CBCCAG	Community-based Climate Change Action Grants Program CCA Climate Change Adaptation
CCA	Climate change adaptation
CoE	Council of Elders
CVCA	Climate Vulnerability and Capacity Assessment
DFAT	Department of Foreign Affairs and Trade (Australia)
DMO	Disaster Management Office
DRR	Disaster risk reduction
EC	European Commission
FCS	Food Consumption Score
GEF	Global Environment Facility
IPCC	Inter-Governmental Panel on Climate Change
IPM	Integrated pest management
MSC	Most Significant Change
NARI	National Agricultural Research Institute
NDA	Nissan District Administration
NGO	Non-Governmental Organisation
OECD	Organisation for Economic Co-operation and Development
PGK	Papua New Guinea Kina
PMERL	Participatory Monitoring, Evaluation, Reflection and Learning
PNG	Papua New Guinea
PPS	Probability Proportional to Size
ToR	Terms of reference
USAID	United States Agency for International Development
WASH	Water, Sanitation and Hygiene

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Final evaluation of the project “Community-based adaptation to climate change in Nissan district (CBA CC)” in Papua New Guinea



This report presents the final evaluation results of the project “Community-based adaptation to climate change in Nissan district (CBA CC)”. CARE implemented this project between July 2012 and April 2015 with funding from the Australian Department of Foreign Affairs and Trade (DFAT) under its Community-based Climate Change Action Grants (CBCCAG) program..

The evaluation was carried out by Banyaneer and included visits to six villages on Nissan and Pinepal islands. Banyaneer has offset greenhouse gas emissions of 1,640 CO₂e incurred by the international flights of its consultant .

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Cover photo: Nissan island, as seen from its northernmost tip at Balil from 220 meters altitude. (P. Bolte)

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Executive summary

The project 'Community-based Adaptation to Climate Change in Nissan District (CBA CC) was launched in mid-2012 to increase the islanders' adaptive capacity and resilience to existing hazards and the impacts of climate change. Three years on, this evaluation shows that the project indeed raised capacity and resilience - it notes a strong positive impact on food security, organizational capacity, as well as towards more equitable gender relations in particular. The project's implementation approach through core groups, who were trained and passed on their knowledge across all villages is seen as being very effective. The merit of these groups is recognized by the local government, who plans to integrate them into formal governance structures.

The evaluation also shows that the process of adaptation to both climate change and challenges in natural resource management is long; while the project provided solid groundwork, further efforts are required to sustain the lives and livelihoods of the people on Nissan and Pinepal islands into the future. This concerns both structural measures (additional rainwater tanks) as well as organizational strengthening. Capacity-building of the Nissan District Administration (NDA) is seen as particularly crucial to further raise the islanders' adaptive capacity.

The report begins with an overview of the project (chapter 1) as well as the evaluation objectives and design (chapter 2). Tasked to provide both accountability in terms of relevance, effectiveness, efficiency, impact and sustainability as well as to contribute to evidence-based learning, the evaluation was based on a mixed-method approach. Tools included a survey amongst 225 villagers as well as a range of qualitative tools (community workshops, focus group discussions, in-depth interviews, site visits and transect walks). Field research was carried out in April 2015 and covered five of the 21 villages on the two islands of Nissan and Pinepal.

This summary contains the key findings, arranged by evaluation criteria. Figure 1 furthermore provides a list of recommendations for future programming in community-based adaptation.

Relevance

The interventions of the CBA CC project are seen as highly relevant. It is recognized that the islanders of Nissan district have a range of traditional coping mechanisms - yet, the combined effects of a changing climate (in particular: more droughts) and high population growth render these mechanisms as insufficient on their own.

- 89.2% of survey respondents say they observed changes in the climate over the past decade, with most pointing to less regular and predictable rainfall and extended dry spells. This had made the cultivation of vegetables and crops more difficult - and the promoted adoption of climate-resilient crops and practices highly relevant.

- The broad uptake of climate-resilient practices underscores the observation that they are perceived a very relevant: on average, islanders now grow 1.81 more types of crops than they did in 2011. Survey results also show that on average, households added 2.71 agricultural climate-resilient practices, and 5.04 livelihood activities.
- Regarding disaster risk reduction, it is found that almost half of respondents (47.4%) were affected by disasters over the past five years. Economic damages (crop losses, damage to houses) constituted the main effect. Villages devised action plans; for instance, these included the cutting back of high trees around houses to reduce the risk of storm damage. While these measures are seen as relevant, there is potential to reduce disaster risk more substantially.
- The creation of core groups is seen as a relevant measure to increase organizational capacity and enable adaptive processes.

Efficiency

Against a backdrop of the high implementation costs in the South Pacific, it is found that CARE undertook efforts to maximize efficient use of resources. This included shared office structures and coverage of Nissan's entire population - making best possible use of logistical set-up investments.

- The project incurred a minor over-run of the budget by around 5.5%.
- Overall expenditures (approximately AUD 2.13 million) translated to AUD 270 per beneficiary and AUD 1,565 per household.

Effectiveness

The evaluation finds that the project was based on a highly effective design and implementation approach. The core groups were trained well and spread the gained knowledge of climate-resilient practices throughout the islands.

- On average, core group members adopted 5.06 out of 7 promoted techniques. Other islanders adopted 3.81 of these techniques on average.
- The use of home gardens grew from 35.1 to 76.9% over the project period.
- Islanders also planted a greater variety of crops and vegetable. Furthermore, they diversified their livelihoods.

- In terms of disaster risk reduction, it is observed that while awareness has increased, the increase in risks outweigh the benefits of the project - as a result, a majority feels less prepared than they did in 2011. In this context, more coaching and support would have been required to better adapt and prepare.
- The core groups have proved an effective tool both for implementation as well as organization of community activities in general.
- Stronger linkages are required to external actors to ensure continuous flows of support and the crucial climate information needed to adapt seasonal planting patterns. Further capacity-building of formal government entities will therefore be needed.

Impact

In three important aspects, the CBA CC project generated positive impacts on the islanders in Nissan district - food security, community capacity, and gender. Taken together, the project impacts increased both the coping range and the adaptive capacity.

- There is very robust evidence that **food security** has improved due to the project - this positive impact is supported by results of qualitative and quantitative tools. For instance, 52.3% of survey respondents see food security enhanced (more than 80% of them attribute this to project-related factors). Similarly, trend analysis recognizes an improvement (from 'rather bad' to 'rather good') and attributes this to the CBA CC project.
- The number of food-insecure months has been reduced from seven in 2011 to four in 2014.
- The greater diversity and security is also supported by a proxy indicator - the concordance between food preferences and actual intake. For instance, the concordance score for vegetables increased from 0.65 to 0.91 (minimum/maximum: 0.0/1.0).
- The CBA CC project led to stronger **community capacity**. Almost two-thirds (62.7%) see collective action increased, with 80.4% of them attributing this improvement to the project.
- The core groups were a new organizational entity within the villages. Their strong engagement had spin-off effects on other community groups - particularly those with a strong overlap (women's groups and church groups).
- The project furthermore generated a strong impact towards **more gender-equitable decision-making**. Due to gender training and the strong role that women played in core groups, women

gained influence both at the household and at the community level. Amongst those who identified a power shift to women, 75.9% (household roles) and 76.3% (community roles) of attributed this change to the CBA CC project.

Sustainability

With the strong sense of ownership expressed by core groups in particular, the sustainability of most project outcomes is found to be very high. Given the continuous role these groups will play, the capacity to sustain climate-resilient crops and techniques is provided.

- Asked about their ability to sustain the climate-resilient technique 'most important' to the respondent, 96.9% say that they will be able to pursue these techniques with or without support of other villagers (52.1% and 44.9% respectively).
- The planned integration of the core groups into formal governance structure will further reinforce their sustainability.
- At the same time, the weak state of district-level governance bears implications for developing adaptive capacity further. More capacity-building of the NDA and the Council of Elders (CoE) is therefore required.

Figure 1 | Overview of recommendations

1 Review and enhance.	2 Sustain and replicate.	3 Extend and expand.
<p>1a Future projects need to be based on a more solid framework without losing flexibility.</p> <p>Based on a sound situational analysis, an effective project was designed. However, no baseline was conducted at the outset - which would have allowed for a longitudinal comparison and thus, a more robust assessment of the project's impact. Furthermore, it made the identification of suitable indicators (with baseline and target values) difficult. The CBA CC project thus lacked concrete targets against which it could be assessed.</p> <p>Future project would be well-advised to prepare a suitable and realistic framework, without losing the flexibility to address emerging concerns of the target population.</p>	<p>2a Maintain the core group approach and consider replication in weak governance contexts.</p> <p>The core group model has been highly successful and should be considered for use in similar contexts (remoteness, weak governments). Grown out of necessity (with a local office on Nissan proving unviable), the approach demonstrated that implementation 'by remote control' can work well. It is crucial that the extent of required coaching and support be continuously fine-tuned.</p> <p>Furthermore, it is important to link core groups with local governments in order to avoid that these are being sidelined or undermined. Local governments play a crucial potential role for an enabling environment.</p>	<p>3a Add more rainwater harvesting systems, particularly on Nissan Island.</p> <p>By far the most pressing unresolved concern for islanders is the inability to capture and store enough rainwater to survive long droughts. Current capture and storage is sufficient for two weeks without rain - many droughts last longer.</p> <p>Rainwater harvesting systems are seen as the single most important investment required to help islanders cope with and adapt to climate change.</p>
<p>1b Continuously review the required local presence and adapt team strengths accordingly.</p> <p>While the overall core group approach should be retained (see recommendation 2a), the extent to which local support is needed needs to be continuously reviewed. It should be recognized that villagers may find it easy to adopt one practice, while finding it difficult to adopt another. Overall, the project may have benefitted from selecting islanders as community facilitators, training them extensively (e.g. through internships), and then deploying them for problem-solving with issues that were too difficult for core groups.</p> <p>Disaster risk reduction in particular would have benefitted from stronger guidance and support.</p>	<p>2b Replicate the promotion of kitchen gardens with a wide array of climate-resilient techniques</p> <p>Kitchen gardens and the various crops and techniques that were promoted proved successful in enhancing food security and coping range of islanders.</p> <p>The various manuals should be disseminated to enable replication in similar contexts. The appropriateness of techniques in different areas should be verified, and possibly adapted, by local experts.</p>	<p>3b Address natural resource management concerns</p> <p>Sustainable management of natural resources is found to be a missing element in the community-based adaptation framework, as well as in the CBA CC project.</p> <p>On the atolls of Nissan and Pinepal, a key issue concerns wild pigs, who are so numerous that they cause significant damage to natural and planted food resources. Options for controlled culling and/or more regular consumption of pork should be considered.</p>
<p>1c Strengthen monitoring and support to foster local climate change awareness and adaptation.</p> <p>The project deployed community-based monitoring tools, conducted regular monitoring visits, and carried out short surveys on food security and overall needs.</p> <p>On balance, however, monitoring could have been stronger and more concise. Concrete targets and reporting on progress against them would have been particularly beneficial.</p>	<p>2c Replicate cooking stove distribution in similar contexts and aim for marketability.</p> <p>EcoZoom cooking stoves made the lives of villagers easier, particularly for women. Reducing firewood usage, time spent on wood collection and cooking, and the smoke that is generated, the stoves were appreciated across Nissan and Pinepal. With many islanders asking for additional stoves, it is worth exploring whether a social enterprise could be established to market them across Bougainville.</p> <p>In other settings, the distribution of stoves should be considered - depending on the socio-economic situation, either for free or for a price.</p>	<p>3c Support district governance, particularly in improving disaster preparedness capacity.</p> <p>When trying to create support mechanisms for villagers across both islands - to foster disaster preparedness and response capacity, and to develop an enabling environment - there is no way around building up the capacity of the district government.</p> <p>The difficulties in such a process are fully acknowledged, and it is recognized that efforts must also be directed at the ABG. The involvement of NDA and CoE has led to nascent progress. And yet, much more needs to be done to render the district government a viable link between villages and the outside world.</p>

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Introduction

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The trip to Nissan is not for the faint-hearted. Around 60 kilometres off the northern tip of Buka island, the only way to get there is by boat - two hours through the open, at times windy and treacherous, Pacific Ocean.

Our boat breaks into one wave, then flies over the next. While bracing for each coming wave, I wonder what my destination will hold. An internet search revealed Nissan's role during World War II, when it had been a base for up to 17,000 U.S. and New Zealand troops. The island still features the second-longest runway in the South Pacific - but without a single plane having landed on the airstrip for fifteen years, it is being reclaimed by nature.

Since 2009, Nissan district - which includes the islands of Nissan and Pinepal - has been the focus of two CARE projects. Between 2009 and 2012, CARE implemented a water and sanitation project, providing rainwater harvesting tanks for the 7,500 people on the atolls of Nissan and nearby Pinepal. Since mid-2012, CARE has been supporting islanders to adapt to climate change. Now that this project concludes, this evaluation is to assess its outcomes - and to see what can be learned from this experience.

Atolls. Few symbols of climate change impact are as powerful as a low-lying atoll awaiting its fate of being submerged by the rising sea. But having read the project documents, I know that the most immediate threat is not related to the rising sea-level. Rather, the main threat stems from increased variability of rainfall and more frequent weather extremes. What has been achieved to render islanders more resilient? Has their coping capacity increased? In what way are the atolls adapting?

This report presents the answers to these questions and highlights lessons for future programming in community-based adaptation. The report is structured in three sections.

Section A presents the background - both of the context and the project (*chapter 1*) as well as of the evaluation (*chapter 2*). **Section B** provides the findings: the extent to which the project is seen as relevant (*chapter 3*), the degree to which it can be seen as efficient (*chapter 4*), the extent to which it has achieved its objectives (*chapter 5*), the impact that has been created (*chapter 6*), and the extent to which its outcomes are sustainable (*chapter 7*). Building on these insights, **section C** contains the evidence base for learning, and recommendations as to how future programming may be designed in an even more effective way (*chapters 8 + 9*).

Having the busy reader in mind, the report is kept to a concise format of 32 pages. More detailed information is provided in the appendix - including the survey results and the specific findings from each village.

As our boat approaches Nissan, the stunning beauty of its lush forests and surrounding lagoon comes into full sight. Islanders in outriggers greet us with a wave. How have their lives changed as a result of climate change on the one hand, and of the CARE project on the other? Time to find out.

SECTION A | BACKGROUND



Boys in an outrigger, near Lihon, Nissan island *Photo: P. Bolte*

1. Project overview

“Welcome to Nissan Island”, reads a faded billboard next to Nissan’s airstrip, “your potential tourist destination...” The billboard reflects a cautious aspiration that failed to materialize. With neither scheduled ferries nor planes to the island, the absence of tourism (and the jobs it would create) is a minor worry. More broadly, the fact that people have nothing but small out-boarders¹ to commute restrains governance, development and trade with the main islands of the Autonomous Region of Bougainville (Buka and Bougainville). The lack of power supply and the very limited phone coverage compound the issue.

Most of the 7,500 islanders face much more basic concerns, such as limited availability of clean water during prolonged dry spells. Food supply is precarious: while the sea and the forest provide around half of the food that islanders consume, active cultivation of crops and vegetables has long tended to be very limited or non-existent.

Following a local request from the Nissan District Administration (NDA) to ameliorate severe water shortages, CARE began supporting Nissan in 2009 with a water, sanitation and hygiene (WASH) project. With funding from the European Commission (EC), CARE set up rainwater harvesting systems across Nissan, provided sanitation training and material for latrine construction.

Having started to address water security under the WASH project, CARE then proceeded to reinforce the islanders’ resilience through a broader approach. Launched in mid-2012, the “Community-based Adaptation to Climate Change in Nissan District (CBA CC)” set out to advance food security in particular, while reducing disaster risks and building adaptive capacity (see figure 1). Funded by the Australian Department of Foreign Affairs and Trade (DFAT) through the Community-Based Climate Change Action Grants (CBCCAG) program, the CBA CC project started with Climate Vulnerability and Capacity Analyses (CVCA) in target villages - participatory exercises that formed the basis of village action plans and that indeed shaped the overall programming. On Pinepal island, where water needs had previously been assessed but not addressed, a smaller project (funded by the Australian NGO Cooperation Program, ANCP) was run concurrently to add rainwater harvesting systems for all three villages on that atoll.

Figure 1 | Objectives and outcomes of the CBA CC project²

Objective	Outcome	Outcome indicator
Objective 1 Vulnerable women, men and young people in Nissan district have increased their adaptive capacity and resilience to existing hazards and the impacts of climate change	Outcome 1 Vulnerable households have increased food security and improved nutrition through the introduction of climate-smart agricultural practices	1.1 Average number of food-insecure months reduced*
		1.2 Average food consumption score (FCS) increased over the project period*
		1.3 Percentage of households who have introduced climate-smart agricultural practices
	Outcome 2 Improved capacity to prepare for and respond to hazard events and disasters	2.1 Percentage of households who see disaster preparedness capacity increased*
		2.2 Extent to which community DRR groups and preparedness/response plans are in place and are being sustainably implemented
		2.3 Percentage of households who practice emergency water management has increased and is at least 25%
Objective 2 Improved capacity to incorporate a climate change adaptation and disaster risk reduction lens into local level planning and development	Outcome 3 Communities and local level government have an enhanced understanding of climate change adaptation to inform development planning and policy development	3.1 Extent to which communities use climate information for decision-making in agricultural adaptation, water management, and DRR/M
		3.2 Extent to which local government agencies factor in climate information and gender-sensitive CBA needs
		3.3 Mechanisms for exchange of experiences are in place that support continuous learning and equitable engagement.

1. On windy days, these small boats cannot make the trip over the open ocean. Despite precautions, boats frequently capsize and get lost, making this link to the nearest town unreliable, dangerous and costly.
2. As the project’s M+E framework had undergone several changes over the course of implementation, the most recent version available to the consultant did not feature a complete list of suitable outcome indicators. In consultation with CARE, some indicators were therefore added - marked here with an asterisk (*).

Given the islands' isolation and the great difficulty to establish a project office here, CARE sought an effective way to overcome this challenge to implementation. Following initial assessments, it devised the so-called 'core group' model: rather than deploying community facilitators, the project promoted the formation of six core groups - each consisting of 20-30 volunteers from traditional village clusters.

Core group members learned about the fundamental elements of climate change and adaptation and were trained in various conservation farming techniques, nutrition, as well as key gender issues and basic principles of disaster risk reduction. Thus equipped, they passed on the new knowledge to fellow villagers and led by example. Community nurseries were established in all six clusters; these served as activity hubs for training and coaching and also provided seedlings required for broader uptake of new techniques.

In terms of agricultural innovation, the following techniques were promoted with the assistance of the National Agricultural Research Institute (NARI):

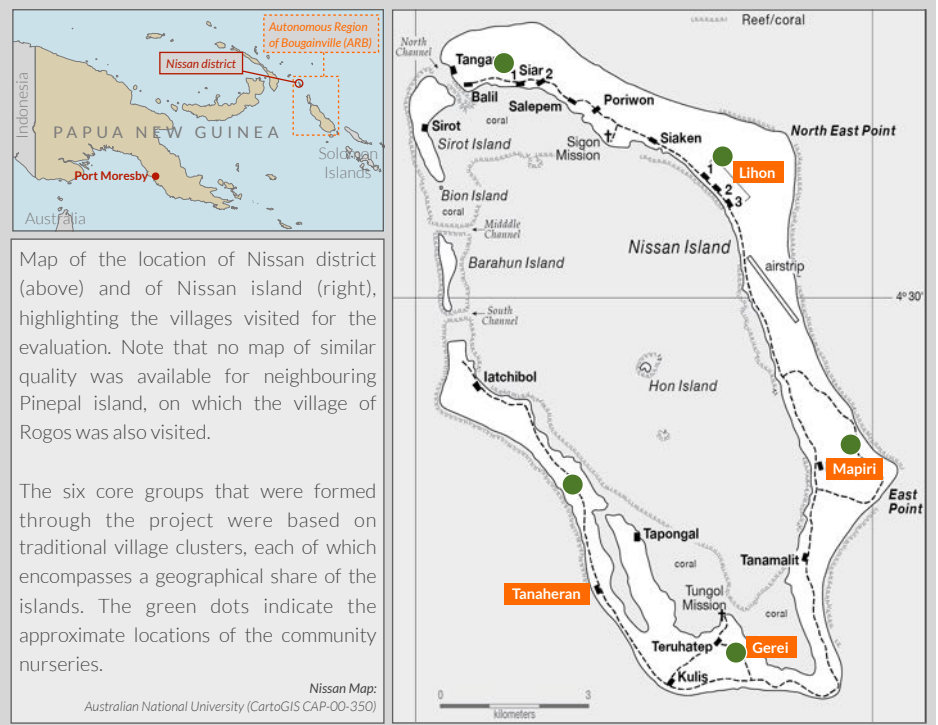
- set-up of kitchen gardens for vegetable cultivation
- planting of drought-resilient crops
- covering of crops
- composting and use of bio-fertilizer
- mulching
- agro-forestry
- integrated pest management
- pig and chicken raising

While the initial model envisaged two separate groups per cluster - with one promoting agricultural innovation and the other disaster risk reduction (DRR) - the two group types were eventually merged. These groups then initiated DRR planning, which included steps such as the recording of weather information (to enable forecasting and adapted planting patterns), the cutting of high breadfruit trees (to reduce the risk of breadfruits falling on villagers during storms), mangrove afforestation, and the erection of pig fences.

With a huge population of wild roaming pigs destroying garden vegetables that represent an important food source, pigs were perceived as a significant risk that undermined food supplies during critical times.

Given that many villagers had identified tree-cutting for fire wood as a damaging and unsustainable practice, CARE arranged the distribution of EcoZoom cooking stoves across all households on the islands. These stoves require far less wood and render cooking much faster and less smoke-intensive. As will be discussed in more detail in subsequent chapters, the stoves proved hugely successful - to the extent that many families have requested additional stoves.

Map | Nissan district



As much as feasible, CARE collaborated with government actors throughout planning and implementation. On Nissan and Pinepal islands, the government actors include the Nissan District Administration (NDA) and the elected Council of Elders (CoE). While interviewed NDA and CoE members were very appreciative of the support CARE had provided to the islands (“Once again, CARE has worked wonders”, a recent letter of gratitude begins), the extremely limited resources (irregular transport, no internet, irregular and insufficient funds) also meant that there was neither any planning or policy formation to which the project may have contributed.³

While the anticipated impact on government planning (*see outcome indicator 3.2 in figure 1*) remained elusive, the NDA viewed the formation of core groups as highly beneficial: recognizing the groups’ potential to enhance communication between NDA and villages, it envisages the formal integration of these groups into governance structures.

In the course of a USAID-funded successor project that will focus on the sustainable use of marine resources, CARE will be able to accompany and support this emerging change. Indeed, CARE may begin to see much broader changes over coming years: a scheduled ferry service and third-generation phone network coverage, both in preparation, are likely to reduce isolation and enhance market access. Not the least, these improvements will reduce the tremendous logistical challenges that CARE has been facing since it first arrived in 2009. In turn, they will bring opportunities for future implementation that will be discussed in chapter eight.

With the CBA CC project concluding, it is almost impossible to overstate the level of appreciation that was observed across all visited villages: the facts that CARE managed to provide support against the logistical and associated financial odds, that it reached almost all households, that it created and empowered core groups, and that it committed to extended support were all seen with gratitude. With 89.4% of survey respondents saying that they had experienced ‘changes in weather patterns’ over the past decade, and with fresh memory of an eight-week dry spell in 2014, the project addressed one of the key concerns of Nissan islanders.

3. By the time of the evaluation, the NDA had not received any money from the provincial government (Autonomous Bougainville Government, ABG) for more than six months (neither had the ABG received the allocated funds from the PNG government). Interviewed NDA officials had little hope that they would receive money in coming months - in fact, the delayed or irregular funding is the norm rather than the exception.

Given these difficulties, the fact that schools and health centers remain well-run is remarkable. At the same time, it must be understood that formal governance in Nissan district is restricted to very limited day-to-day administration, and that any long-term planning - addressing climate change or otherwise - is a rather alien concept.



Students at the Mapiri Primary School show CBA CC project manager Andrea Dekrout what they have planted in their school yard. Photo: P. Bolte

2. Evaluation objectives and approach

Why evaluate? It is worth recalling the general two-fold purpose of an evaluation - that is, to deliver accountability to donors by assessing project achievements, and to identify lessons learnt. This identification enables the replication of what went well and the modification of what did not. This chapter discusses the 'what' and the 'how' of the present evaluation: it first looks at the concrete evaluation objectives and then proceeds with a brief look at the applied approach.

2.1 Objectives

The evaluation of the CBA CC project is part of a multi-country evaluation process to collate and synthesize experiences in community-based adaptation across the Asia-Pacific region. With a focus on both **accountability** and **learning**, CARE Australia commissioned the evaluation of three projects it has been implementing since 2012 with funding from the DFAT's CBCCAG program. Through these three projects⁴ CARE and its partners have been aiming to a) promote climate-resilient livelihoods, b) reduce disaster risk, c) strengthen the capacity of communities as well as local civil society and governments, and d) address the underlying causes of vulnerability.⁵ A fourth project in Vanuatu shares these objectives and has been evaluated separately.⁶

The purpose of the evaluation consists of two aspects: **first**, it was to provide **accountability** by assessing the projects in terms of their relevance, effectiveness, efficiency, impact, and sustainability (see terms of reference, ToR). In addition to these criteria, the evaluation was to assess the role of the project towards gender equality and women's empowerment, and to analyze the monitoring and evaluation system used.

Second, the evaluation was to facilitate **evidence-based learning**. Based on the synthesis of project-level findings, the evaluation was to identify and map good practices and success factors as well as obstacles and challenges, and make recommendations as to how effective and sustainable adaptation strategies for increased resilience can be further enhanced. In this context, the terms of reference provide a set of key research questions for each of the four CBA framework themes.

Thus tasked to provide a project-specific review as well as to generate insights for the synthesis report and future learning, the evaluation of the CBA CC project was planned in two steps: **first**, an overall inception report was prepared that integrated the ToR key evaluation questions into a meta-evaluation framework. To facilitate consistent approaches, generic research tools were also devised (see inception report). In a **second step**, a more specific evaluation plan for the CBA CC project was prepared, and research tools adapted to take the project-specific factors into account. In particular, the meta-evaluation framework was transformed into project-specific frameworks for accountability and evidence-based learning (see evaluation plan Papua New Guinea).

2.2 Approach

Field research was carried out in April 2015 and included visits to five villages (see figure 3 overleaf). Taking all 21 villages on the islands as a sampling frame, these five were selected on the basis of the Probability-Proportional-to-Size (PPS) technique.⁷

Research proceeded along the lines of two parallel streams: On the **quantitative side**, enumerators conducted a survey amongst 225 households.⁸ The survey questionnaire (see appendix D) included questions on adapted cultivation practices, DRR, community capacity,

4. The three projects are:
 - **Papua New Guinea:** "Community-based adaptation to climate change in Nissan district",
 - **Timor-Leste:** "Climate change in a secure environment" (MAKAAS),
 - **Vietnam:** "Integrated community-based adaptation in the Mekong (ICAM).
5. These objectives are in line with the four key elements (CBA framework themes) for successful adaptation recognized in CARE International's manual for Participatory Monitoring, Evaluation, Reflection and Learning for Community-Based Adaptation (PMERL).
6. Oxfam, lead organization behind the project in Vanuatu, commissioned this evaluation separately. The results will be integrated into the synthesis report that is envisaged as the final product of this consultancy.
7. For a brief overview of PPS, see: http://www.who.int/tb/advisory_bodies/impact_measurement_taskforce/meetings/prevalence_survey/psws_probability_prop_size_bierrenbach.pdf
8. The six enumerators were trained prior to field research. A survey test run was arranged in Balil village. Data was collected through iSurvey, an application installed on Banyaneer's handheld electronic devices.

Figure 2 | List of sampled villages

Village	Location	Community nursery	Number of households	Planned sample size	Actual sample size
Gerei	Nissan	Yes	44	44	42
Mapiri	Nissan	Yes	154	44	46
Lihon	Nissan	Yes	153	44	64
Rogos	Pinepal	Yes	47	44	31
Tanaheran	Nissan	No	49	44	42
Total			1,296	220	225

gender, food security and a general review of the project. Since no baseline existed that would have allowed for a longitudinal comparison, the questionnaire was designed to capture perceived changes and attribution of that change to the project. In addition, a brief survey on food security was replicated⁹ to assess the extent to which actual food intake was aligned with food preferences.

On the **qualitative side** of the evaluation toolkit, research featured community workshops with 20-40 randomly selected participants - **figure 3** below summarizes the exercises applied during each workshop.¹⁰ In addition, focus group discussions with core group members provided the opportunity to delve deeper into the way the CBA CC project was experienced - and to thereby gain lessons for future programming.¹¹

Most Significant Change (MSC) interviews with selected beneficiaries, interviews with key informants from the NDA and CoE, extensive walks through the villages,¹² and aerial imagery¹³ added both depth and perspective. A brief management workshop as well as extensive ad-hoc interviews gathered the insights from the project team.

Despite having to wait for two days for stormy conditions to clear - a wait that gave a first-hand account of the implementation difficulties - the evaluation progressed without significant challenges: thanks to the experienced project team and a conscientious group of enumerators, the evaluation objectives and survey quota were met.

In the next section, we will find out what has been unearthed in the process. Our first question: To what extent have the various interventions been relevant given the local risk and climate context, government priorities, and - most importantly - the needs of the people who call Nissan and Pinepal their home.

Figure 3 | List of exercises during community workshops

Exercise	Description	Completed by		Purpose
		Women	Men	
Trend analysis	Participants were asked to rate aspects of their living conditions over the past three years and to attribute underlying factors to emerging trends	x	x	Relevance, impact
Livelihood analysis	Participants were given a set amount of yellow (income sources) and red (food sources) stickers and asked to distribute all of these on a grid of various livelihood activities, in proportion to their relative importance in 2014. They were then asked whether the proportions had been different in 2011. If so, they were asked to reiterate the exercise for 2011.	x		Relevance, impact
Community mapping	Participants were asked to list all groups within the village as well as all relevant external stakeholders on small stickers. In a second step, they had to place these stickers on circles of various sizes, indicating their importance. Thirdly, the circles had to be placed on a flip chart to indicate overlaps and relations between groups. Finally, they had to indicate whether the relative importance of these groups had changed.		x	Relevance, impact
Food security analysis	Participants were presented with a calendar and asked to rate the amount of food production in relation to needs for each month. The exercise was applied both for 2014 and retrospectively for 2011, in order to identify differences and potential impact.	mixed genders		Relevance, impact

9. Throughout project implementation, CARE conducted several food security surveys. While the small sample size of these surveys implies a substantial margin of error, they represented the only available option for a longitudinal comparison.

10. All tools are explained in greater detail in the PNG evaluation plan and its appendices. Note that the planned 'hazard and coping strategy analysis' proved unviable - information on hazards and coping strategies was elicited through focus group discussions instead.

11. Since the number of core group members residing in visited villages was fairly small, FGDs were conducted in joint rounds (with both men and women being present). Given the extent to which both women and men were outspoken, there was little reason to insist on gender-segregated groups (as had been planned).

12. The walks through the village provided an opportunity for core group members and other villagers to show kitchen gardens, nurseries and mitigation measures. Walks also included visits to several schools and the island's health centre.

13. Aerial imagery proved useful to obtain an overview over each visited village (e.g. to direct enumerators, as guidance for village walks, and to capture the extent of adapted practices in nurseries and kitchen gardens). The use of a small drone (such as the DJI Phantom used during the evaluation) may be considered for post-disaster assessments, mapping, and longitudinal comparisons (before versus after a project). Seeing their village from above for the first time also proved a great attraction to communities - adults and children alike.



SECTION B | FINDINGS

Rogos village and the southern part of Pinepal island, with Nissan in the background. Photo: P. Bolte

3. Relevance

Relevance:
 "The extent to which the objectives of a development intervention are consistent with beneficiaries' requirements, country needs, global priorities and partners' and donors' policies."

OECD 2010:32

The turquoise-coloured waters around Nissan's coral reefs are home to abundant fish resources, and the lush forests provide coconut, breadfruit, banana, and much else. There is also an enormous population of wild-roaming pigs. While waiting for the boat to Nissan, another consultant had poignantly said: "the people here have all the bits and pieces of the Garden of Eden." Indeed, the available food enabled the population of Nissan and Pinepal atolls in the first place, sustained a rapidly growing number of people ever since, and the diversity of food sources provides some resilience in times of crises.¹⁴

Yet, closer inspection shows that the reality for the islanders is less trouble-free today. Amongst survey respondents, 89.2% observed changes in the climate (see fig. 4). Most of the workshop participants pointed to less regular and less predictable rainfall, to extended dry-spells and to scorching sunshine. This had rendered the cultivation of crops and vegetables more difficult and led to many crop failures. In 2011, these drought-related crop failures necessitated food relief from the Autonomous Bougainville Government (ABG). While such food relief reduces hardship and hunger, interventions geared to enhance the long-term food resilience - like those carried out by CARE - are highly relevant.

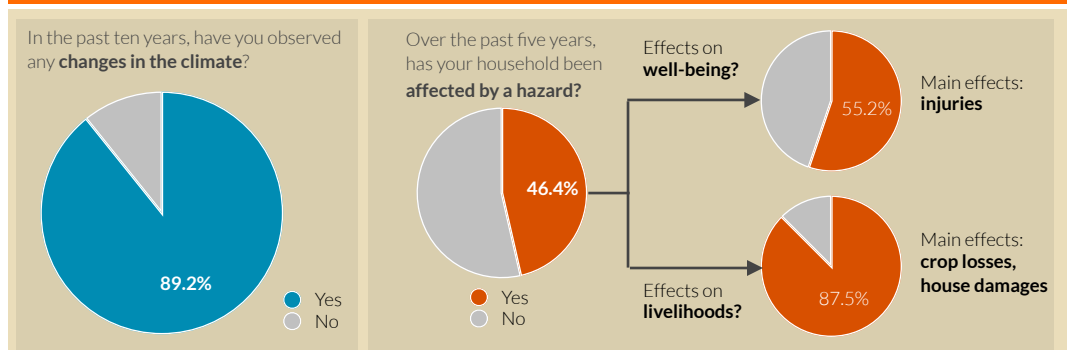
The regular surveys on food preferences conducted throughout the project¹⁵ demonstrate that at the beginning of the CBA CC project, islanders could not eat what they preferred - rather, they were just coping with shortages by eating less desirable (and often less nutritious) food.

Unsurprisingly, workshop participants saw the introduction of kitchen gardens and drought-resilient crops and practices as highly relevant. The actions speak even louder than the words - the enormous uptake of promoted climate-resilient activities and diversification underscores the relevance of related project activities. On average, islanders now grow 1.81 more types of crops than they did in 2011. Survey results also show that on average, households added 2.71 agricultural climate-resilient practices, and 5.04 livelihood activities (the uptake is further discussed in chapter 5).

With regard to disaster risk, villagers see drought and storms (including cyclones) as the main hazards. Despite frequent earthquakes (and associated tsunami risk) in the region, geophysical hazards are not perceived as a major threat. Over the past five years, almost every second survey respondent has been directly affected by a disaster - mainly in terms of economic losses (see fig. 4). One of the main risk to human life is the passage in small boats to Buka island: stories of boats that capsize or get lost abound. During the field research for this evaluation, the search for a missing boat was ongoing (the boat was later found far off-course, with nobody harmed). On the south-western tip of Nissan, villagers report that they frequently rescue passengers from capsized boats.

- 14. For instance, coconuts are used as supplementary supply of liquid during extended droughts. Breadfruit also provides a 'natural buffer' for hard times and are often roasted and conserved.
- 15. Throughout project implementation, CARE conducted several food security surveys. While the small sample size of these surveys implies a large margin of error, they represented the only available option for a longitudinal comparison.

Figure 4 | Climate change and disasters





In celebration of World Food Day, women showcase the food they have produced in their kitchen gardens. Photo: A. Dekrout

Core groups members and village leaders largely devised disaster risk management plans on their own (following training of core group members). Measures included the cutting of high breadfruit trees around houses (to reduce the risk of injuries from falling breadfruits) and the construction of walls throughout some villages, to prevent wild pigs from accessing and eating the garden vegetables (villagers argued that the losses would reduce food supplies needed during times of crisis). In some areas, awareness was also raised on the important function of trees along the outer coastlines of the atolls. Recognizing that the trees reduce the extent of sea spray (which deposit salt on plants and incur crop failures), villagers in Tanaheran banned tree-cutting along the sea coast. The project distributed EcoZoom cooking stoves to all households on the two islands, in an effort to reduce the needs for firewood collection - and thus, to better sustain the forests in the context of a rapidly growing population.

The implemented DRR measures are recognized as relevant. At the same time, it is also noted that future work could enhance disaster risk management on the island. This may include establishing early warning systems, forming and equipping rescue teams, and improving communication with the Disaster Management Office (DMO) on Buka island.

In terms of governance, it was found that the capacity of both the Nissan District Administration (NDA) and the Council of Elders (CoE) was severely constrained, mainly due to resource limitations. While the project collaborated with both NDA and CoE and helped to strengthen expertise, the lack of resources and budget security means that capacity to plan ahead is so limited that any efforts to develop or influence plans and policies would have been futile. CARE's ingenious approach to form and train Core Groups instead was not just an effective implementation vehicle, it is also found to be a highly relevant outcome that led to slightly enhanced communication with NDA and CoE. Not least, the relevance is highlighted by the decision of the local government to formally embed Core Groups into the official governance structure in Nissan District (see chapter 6).

In *summary*, the interventions of the CBA CC project are highly relevant. The strong sense of ownership and flexibility of CARE to incorporate villagers' ideas and address their concerns¹⁶ formed a solid basis to sustain outcomes. Two additional aspects stress this relevance: *first*, the absence of other development organizations and the government's low capacity to address villagers's concerns renders the support of CARE even more important. *Second*, if future projections of climate change impact in the region hold true,¹⁷ both food and water security as well as sound disaster risk management will be even more needed to sustain livable atolls. Although the islanders demonstrate a relatively high degree of resilience and traditional coping strategies, these will be increasingly put to the test. In this context, the early adaptation to growing pressures is commendable. The expected arrival of a strong El Nino season later in 2015 will be a major test of the islanders' resilience.¹⁸

16. Initial assessments were based on a commendably broad coverage; 78.9% of survey respondents say that they were involved in assessments and planning meetings at the beginning of the CBA CC project.

17. In its Fifth Assessment Report, the Inter-Governmental Panel on Climate Change (IPCC) highlights the greater chance in the South-West Pacific of strong storms and cyclones during El Nino years, and forecasts that average rainfall in this region will decrease. See <https://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-chapter16.pdf>

18. "El Nino strengthens"; see <http://www.bom.gov.au/climate/enso/>

4. Efficiency

Efficiency:

"A measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to results."

OECD 2010:21

Project implementation on remote islands in the South Pacific is not just fraught with logistical challenges, it also tends to be more expensive than in most other regions. Above-average prices for many items that need to be brought in from distant places for a comparatively small number of customers are unavoidable - in Bougainville, fuel in particular is extraordinarily expensive. As a result, a return trip from Buka to Nissan island costs AUD 1,200 in fuel alone.

Against these odds, CARE ensured the efficient use of funds: It shared the Buka project office and support staff with other projects. It swiftly arranged the purchase of a boat to reduce the additional costs for charter (a return trip to Nissan in a chartered boat costs around AUD 3,200). While the boat capsized and had to be replaced (through insurance), and while this accident unavoidably incurred additional costs, the new boat will remain in service for the successor project.

Most significantly, the 'core group' approach (*see fig.6*) is not just found to be an effective, but also an efficient and cost-saving design: the only alternative - setting up a project office on Nissan island - would likely have incurred significantly higher costs. The fact that the project covered the entire population of Nissan district also maximized the efficiency of overhead and logistical investments. Furthermore, the fact that CARE refrained from paying per diems for core group members is commendable, having both sustainability and efficiency in mind.

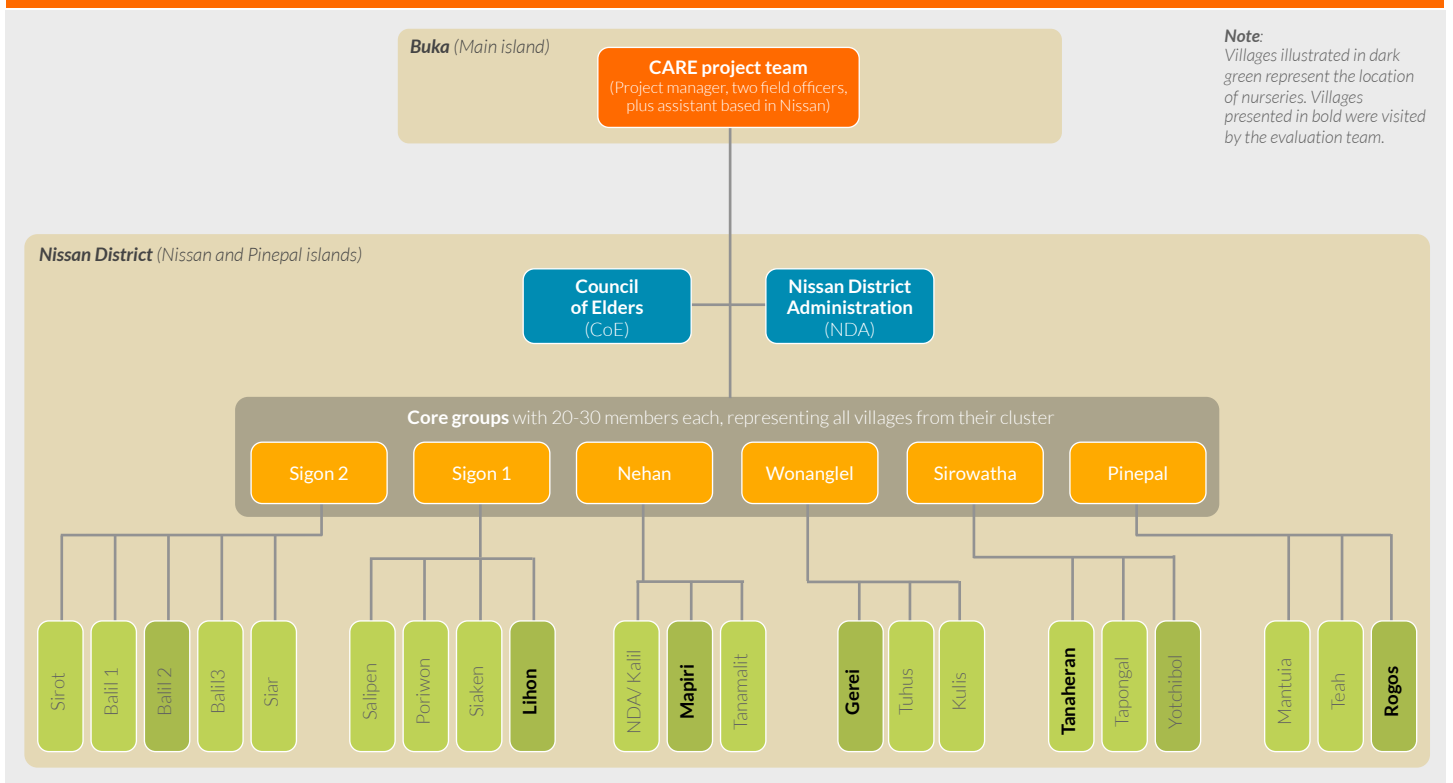
Between January 2013 and February 2015, project expenditures amounted to AUD 2,028,600. Estimating additional expenditures at AUD 100,000 (inception and conclusion phases), the CBA CC project ran about 5.5% (or AUD 112,000) over-budget, a relatively minor over-run that was incurred largely due to the indirect costs related to the boat accident (additional charters).

Overall expenditures per beneficiary amounted to AUD 270 (or AUD 1,565 per household). Especially when considering that islanders benefitted from the project in multiple ways (numerous climate-resilient crops and practices, community nurseries, trainings in gender, nutrition etc), and that the uptake of new practices has been substantial and broad, this figure is seen as commendable. In summary, the efficiency of the CBA CC project is therefore seen as very high.



Delivery by boat: to access Nissan island, CARE purchased a speedboat that made the passage over the open ocean safer. It will also serve for upcoming projects, saving costs in the long run. Photo: P. Bolte

Figure 6 | Project implementation structure



5. Effectiveness

When first learning that the CBA CC project did not have a project office in the target area, a sense of scepticism emerged: could a project function by ‘remote control’? Following the field research for this evaluation, the answer is: yes, under certain conditions and with a smart design.

The CBA CC project formed the core groups on the basis of traditional village clusters, each of which consists of three to five neighbouring villages (see fig.6). Following initial assessments during which the project was announced across Nissan and Pinepal, villagers were invited to become Core Group members. Based on their preference, they joined either the agricultural or the disaster risk reduction group of their cluster. CARE ensured that the groups’ composition reflected more or less proportionally all villages within a cluster, as well as both genders (however, there was no gender quota). Initially, there was great interest in joining the groups. Over time, some members dropped out - leading to the eventual merger of agricultural and DRR groups. After one year, membership stabilized at around 20-30 member per cluster and was sustained at this size throughout the project.

As presented in chapter 1, core group members were trained in a range of agricultural techniques and acquired the basics of gender, nutrition and disaster risk management. Encouraged and empowered, the groups established community nurseries that became the hubs for training and group activities. In the nurseries they also produced the seedlings that were then used in the newly set-up kitchen garden of individual group members.

As the name ‘core group’ implies, the groups were not just an end but also a means to an end: group members were encouraged to disseminate what they had learned to fellow villagers. This indirect approach worked exceptionally well, as the uptake of new

Effectiveness:

"The extent to which the development intervention's objectives were achieved, or are expected to be achieved, taking into account their relative importance."

OECD 2010:20



Balil II case study to be added here.

techniques and crop varieties (see fig. 7 and 8) demonstrate. The merit of the approach is also recognized by the NDA and CoE, which plan to make them part of the formal governance structure.

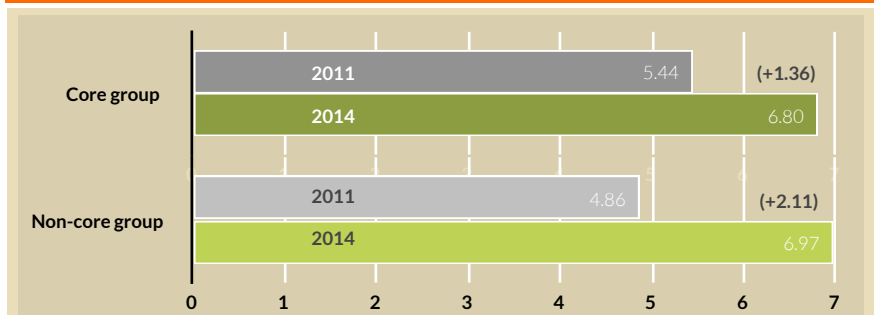
Compared to a more conventional direct implementation approach, there are two drawbacks: **first**, group formation and training takes time - and tangible results take longer to emerge. **Second**, the ability to implement rather complex technical aspects through groups tends to be limited. The CBA CC project gave great flexibility to groups in devising their DRR plans - however, the underlying process may have been more effective with greater direct support from the CARE team. For instance, the recording of weather information provided rather unreliable results and was carried out erratically. Group members in Gerei also pointed out that the walking distance between the nursery and other cluster villages was too long. As a result, the involvement of members from those villages was not as strong, largely leaving the care of the community nursery in the hands of Gerei.

Overall, the core group approach as well as the overall project management set-up is found to be very effective, especially when considering the difficult circumstances. At the same time, it is noted that the project did not conduct a baseline, which prevented the formulation of concrete targets.

In the assessment of the project’s achievements, this evaluation therefore uses the proposed indicators set out in figure 1 (see page 3) as an analytical lens. Note that the first two indicators on food security (1.1 and 1.2) are discussed in the impact chapter.

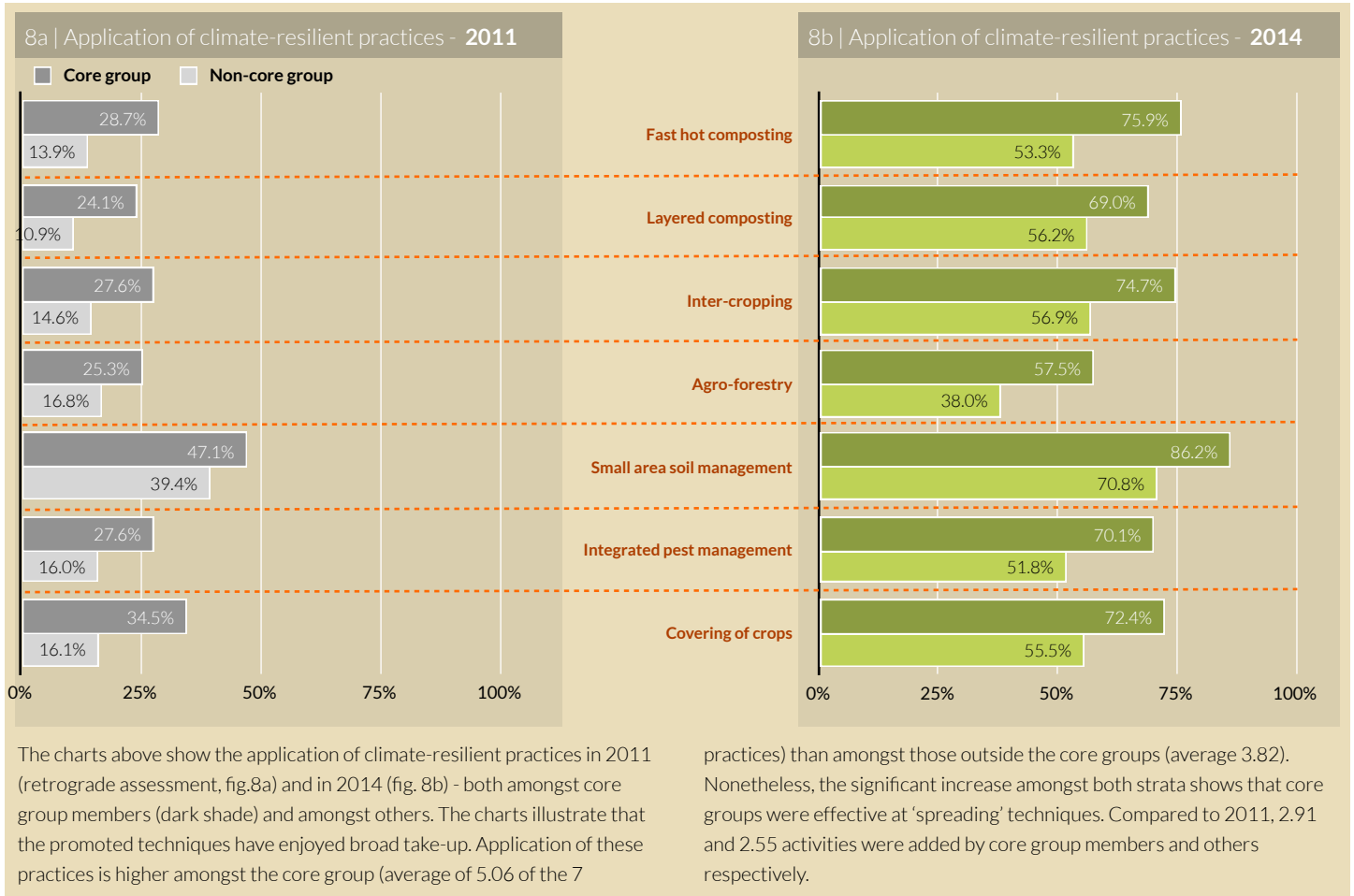
Indicator 1.3 | Percentage of households who have adopted climate-resilient practices
 As illustrated in figure 8 overleaf, the islanders took up the promoted agricultural techniques on a broad scale - with small area soil management topping the list. This technique - locally referred to as the ‘big hill’ is designed to keep plants and soil moist for a longer time. “The big hills are very good”, notes Michelle from the core group around Gerei, “we get bigger vegetables than normal.” On average, core group members took up 5.06 of the 7 techniques, with the figure for those outside the core groups standing at a respectable 3.82. The figures illustrate the effective indirect dissemination of new practices. The retrograde assessment of practices in 2011 further indicates that those who became core group members already had a slightly greater uptake of these appropriate techniques.

Figure 7 | Increased crop variety



The charts above show the average number of crops grown over the years 2011 (grey) and 2014 (green). They illustrate that both core group members and others have increased over the three years.

Figure 8 | Broad uptake of climate-resilient practices



While not an explicit target of the project, the islanders furthermore diversified crop types - on average, islanders grew 1.81 more crop types over the 2014 annual cycle than they had in 2011 (see figure 7). They also added 'livelihood strategies' to become more climate-resilient: the actual set-up of kitchen gardens was particularly popular. Due to the promotion of the project, three out of four households on the islands now practice home-gardening (76.9%, up from 35.1% in 2011). The complete results on the various techniques are provided in appendix A (questions C.6/C.7).

Indicator 2.1 | Percentage of households who see disaster preparedness increased

In terms of disaster risk reduction, the perceived benefits of project interventions are outweighed by the perceived increase in disaster risk (storms and droughts). While two-thirds of respondents see their households as well prepared (40.8% very prepared; 28.2% somewhat prepared) in the face of disasters, the trend in perceived preparedness is negative: The share of those who see themselves less prepared (69.9%) exceeds that of those who feel more prepared (18.5%) than prior to the start of the project (net trend -41.4).

In terms of community preparedness, the majority feels unprepared (somewhat unprepared 47.5%; very unprepared 17.5%). More than two-thirds (67.4%) see their communities less prepared than three years ago. While 67.9% of villagers say they are usually warned ahead of a storm, there is little they can do in response. Core group members in Tanaheran said they lacked rescue training and equipment, and that multiple requests for equipment towards the NDA had not been responded to. Following the rescue of passengers from a boat that had capsized close to Tanaheran in January 2015, the core

group plead again: “We told the NDA: this is the last time that we risked our lives. We need to have live vests and other rescue items”, says group member Chanel. Villages have neither an early warning system nor an evacuation regime in place.

Indicator 2.2 | **Extent to which community DRR groups and preparedness/response plans are in place and are being sustainably implemented**

Village action plans are in place in all of the district’s villages. As presented earlier, they include small-scale mitigation (walls) and the cutting of high trees around houses. However, none of these plans and activities include more systematic preparedness.

Indicator 2.3 | **Percentage of households who practice emergency water management has increased and is at least 25%**

The survey results show that the share of those who ‘keep any water reserves for bad times’ has actually fallen from 59.6% to 31.4%. However, this decline is not a paradox effect of the project, but more likely due to the fact that by the time of the evaluation visit, Nissan district had just experienced an extended dry-spell - keeping reserves is easier said than done when there is no rain to refill tanks. In other words, the emergency for which water was to be saved was actually happening. As part of the earlier WASH project, the “wise use of water” had been promoted, as a woman in Gerei put it. Yet, “some people are ignorant, and waste too much water.” Overall, it was observed though that most islanders see water as precious and try to save it when they can. Across the two islands, interviewed villagers said that the water tanks provided by CARE had helped tremendously - but that their storage capacity was far from sufficient for the extensive droughts that the islanders experience (*see chapter eight for further details*).

Indicator 3.1 | **Extent to which communities use climate information for decision-making in agricultural adaptation, water management, and DRR/M**

‘Climate’ information available to villagers is limited to regular short-term weather forecasts. Amongst survey respondents, 73.4% claim to receive such forecasts; amongst



Rainwater tanks in Rogos village: across the Pinepal island, 30 tanks were installed through small project that ran concurrently to the CBA CC. Photo: P. Bolte

them, 82.6% say they use this information. Given that islanders have no electricity, these survey findings came as a surprise. But whether the data are valid or not, the more crucial long-term or seasonal forecasts needed to make decisions on what to plant when are not available to villagers.

The project established a 'rain radar': core group members were provided with measuring gauges and asked to record rainfall, in an effort to determine rainfall patterns from which future chances could be deducted. However, records provided to the evaluator show that entries are irregular, incomplete and unreliable.

Furthermore, the approach must be questioned a) because there is little capacity to actually analyze the information gained, and b) because one of the key observations is that rainfall is increasingly irregular. Thus, even if data were complete and reliable enough to analyze past rainfall patterns, this would bear little merit for predicting future rainfall.¹⁹

Indicator 3.2 | Extent to which local government agencies factor in climate information and gender-sensitive CBA needs

As presented above, the capacity of the local government (NDA and CoE) is so severely limited that there are no plans or strategies for future development that could be informed by climate data or gender-sensitive approaches. However, through the involvement of NDA and CoE in the CBA CC project, NDA officers have gained insights into climate change impact and adaptation options. As a result, the idea of planning is emerging. As one of the NDA officers put it: "We need a vision for the island. Where do we want to be in five years from now?"

Indicator 3.3 | Mechanisms for exchange of experiences are in place that support continuous learning and equitable engagement

With their level of engagement and dedication, core groups represent a solid mechanism for exchange of experiences: from focus group discussions and interviews, it emerged that group members advise each other on experiences they have made with climate-resilient practices. The strong sense of ownership provides solid foundation to sustain mutual learning.

Taking mutual learning to another level, NDA staff advised that collaboration between the six core groups should be facilitated: "The core groups are great. We should further explore their potential, for example the formation of a core group association."

In *summary*, it is found that the CBA CC project has been very strong in promoting agricultural adaptation, as well as in building up community capacity. As we will see in the next chapter, this led to strong positive, and at times unexpected, impacts. In terms of disaster risk reduction however, the project did not lead to significant improvements.

Here, the adverse impact of climate change - in particular the prolonged droughts - by far exceed any gains of the project. As will be discussed in chapter eight, further investments will be required to enable greater community resilience to disasters.

Case study 2



Joyceanne Bonnie

Mapiri case study to be added here.

19. A more viable way to provide usable seasonal climate information would be the dissemination of forecasts provided by Red Cross/Red Crescent Climate Centre through the NDA and core groups. See: <http://climatecentre.org/climate-info-and-forecasts/seasonal-forecasts>

6. Impact

Impact:
"Positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended."

OECD 2010:24

In three important aspects, the CBA CC project generated positive impacts on the islanders in Nissan district - food security, community capacity, and gender. Taken together, the project impacts increased both the coping range and the adaptive capacity. Let us look at the impacts in more detail.

6.1 Impact on food security

The evidence of a strong positive impact of the CBA CC project is robust - as illustrated by some of the key results from workshops and the household survey (*see figure 9*). As villagers have taken on more climate-resilient techniques and increased the diversity of crops and vegetables, overall food security has improved. Qualitative results from the trend analysis (*see fig. 9a*) and quantitative results from the household survey (*see fig. 9e*) both underscore this point. Amongst surveyed core group members, 66.2% see food security enhanced. For both qualitative and quantitative results, the positive trend is attributed mainly to the project. More than eight out of ten survey respondents see project-related factors such as changed cultivation and water management practices behind this improvement.

The broad application of kitchen gardens and specific techniques has also led to changes in the composition of food intake: as demonstrated in *figure 9d*, the share of crops (+5%) and vegetables (+3%) has increased - taken together, crops and vegetables now make up for almost half (49.3%) of food intake (up from 41.1%). Furthermore, it is observed that the concordance between food preferences and food intake has increased since the start of the project (*see fig. 9b*).²⁰ In other words, islanders eat increasingly what they would like to eat - because there is now greater availability of the various food items.

Despite the improvements, the supply of food in sufficient quantity does not yet cover the entire year: as the seasonal calendar exercise reveals (*see fig. 9c*), supply exceeded demand for seven months in 2014. In 2011, this had been the case in only three months. Conversely, the number of food-insecure months fell from seven in 2011 to just four in 2014. The project's indicator 1.1 ("average number of food-insecure months reduced") has thus been achieved. Furthermore, the gap between supply and demand that had been substantial in many months of 2011 - pointing to chronic food shortages - has been reduced.

Concerning the second indicator of food security that had been proposed for the evaluation - the current and retrograde assessment of the Food Consumption Score (FCS)²¹, it is found that the lack of adaptation of this tool to the local context led to distorted and unreliable figures. If true, the results would indicate both very high food security with a negative trend. Given that these results would contradict those provided by all other tools, they are discarded. Thus, indicator 1.2 ("average food consumption score (FCS) increased over the project period") could not be reliably assessed.

6.2 Impact on community capacity

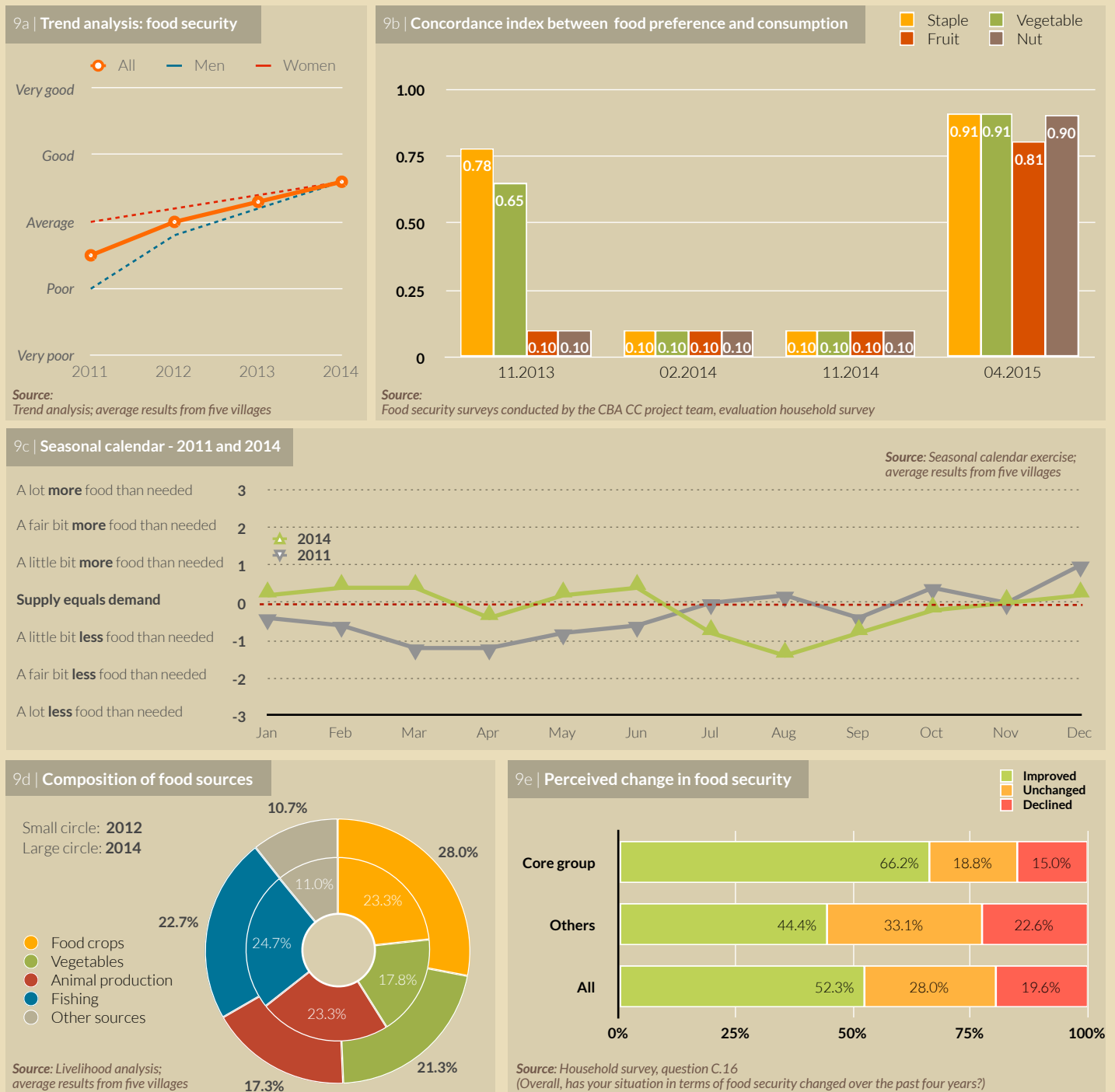
The CBA CC project enhanced the basic capacity of the communities in terms of structures, knowledge, mutual support and collective action, and planning. Let us consider these aspects one by one.

In terms of **structures**, the project did not only introduce the core groups as a new entity. As the results of the community mapping exercise (see appendix D for results village by

20. The concordance index is assessed in three steps: *First*, respondents are asked for the three main items from a food group (e.g. staples) that they prefer to eat. *Second*, they are asked which three main items they ate from this food group in the past week. *Third*, the preference is compared with actual intake, resulting in a score between 0.0 (no match at all) to 1.0 (complete match). The concordance index is the average score amongst all respondents.

21. The Food Consumption Score (FCS) is a tool originally developed by the World Food Programme. It is based on the extent to which respondents have consumed items of eight food groups over the past seven days. For 2011, this referred to 'a typical week' three years ago.

Figure 9 | Project impact on food security



The evidence on a strong positive impact of the project on food security is robust, as the data presented in these charts show. **Figure 9a** shows the results of the trend analysis in terms of food security. It demonstrates a perceived improvement (from rather poor to rather good). Villagers attribute this improvement to the project (for details, see appendix C).

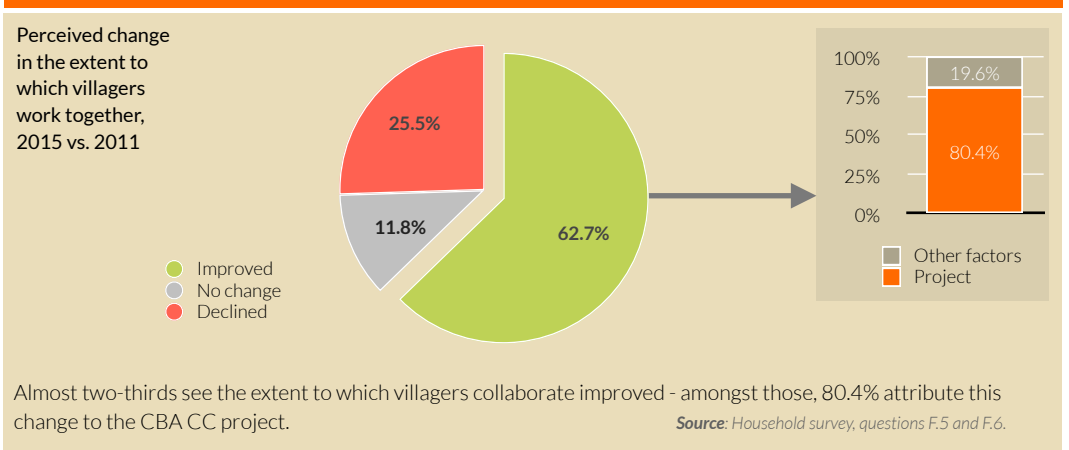
Figure 9b shows the concordance between the three *preferred* types of staples, vegetables, fruit and nuts with the *actual* types eaten. Based on monitoring surveys conducted three times throughout the project and as part of the evaluation, the trend is positive: For instance, the concordance index for vegetables has increased from 0.65 to 0.91 - indicating a greater availability of food sources.

Figure 9c shows the relation between food needs and food supplies throughout the years 2014 and 2011 (retrograde assessment). It demonstrates that while there were still periods in 2014 during which needs exceeded supply, the chronic food shortages seen in 2011 were overcome.

Figure 9d shows the mix of food sources for both 2014 (large circle) and 2011 (small circle). The results demonstrate the increased production of crops and vegetables that was promoted by the CBA CC project.

Finally, **figure 9e** shows that more than half of survey respondents see food security improved. This is attributed to a range of factors, largely related to the project (any changes in cultivation techniques, 83.9%; any changes in water management, 82.3%; any other project-related factors, 85.8%)

Figure 10 | Collective action enhanced

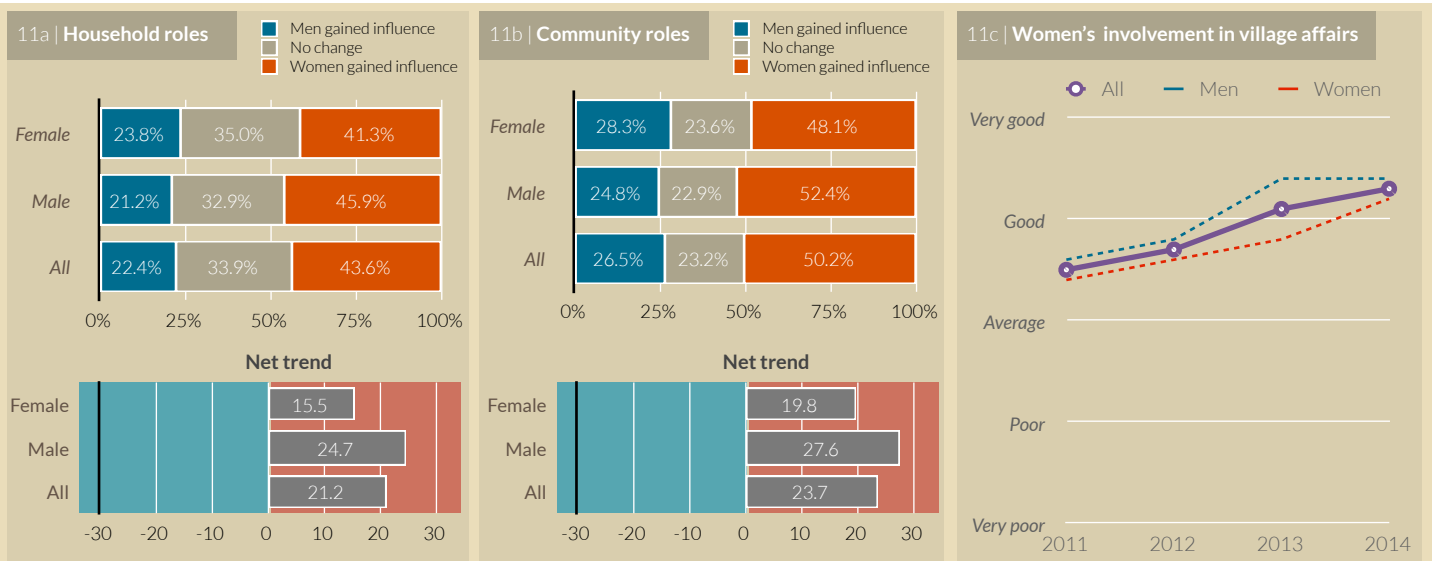


village) revealed, there were also ‘trickle-down’ effects that saw other groups (particularly those with a strong overlapping membership with core groups - women’s groups and church groups) grow in perceived importance (highlighted green in respective charts). Overall, the extent to which perceived structural capacity has grown is astounding - and is likely due to the overall gains in *collective action*. As *figure 10* shows, almost two-thirds of survey respondents see ‘the extent to which villagers work together’ improved, with a large majority attributing this trend to the project. Given the broad dissemination and uptake of new techniques and *knowledge* on issues such as climate change, gender, nutrition and disaster risk management, it is further argued that knowledge transcended the household level and indeed became a property of the overall community. Finally, due to encouragement and empowerment, the project introduced formal *planning* processes and generated capacity. Taking a ‘hands off’ approach in these processes, the project enabled a strong sense of ownership.

Tanaheran village provides a concrete example: once core group members had identified that wild roaming pigs posed a threat to the newly set-up kitchen gardens, they devised a plan to construct a wall throughout the village, thereby preventing the pigs from eating the gardens’ vegetables. The whole village helped, carrying rocks and constructing a wall several hundred meters in length.



Figure 11 | Project impact on gender roles



Solid evidence on a strong impact of the project towards changing gender roles: Based on survey questions E.2 and E.5, figures 11a and 11b show that the distribution of roles in households as well as in the community have changed in favour of women (see net trends). This is confirmed by both male and female respondents. Furthermore, 75.9% (household roles) and 76.3% (community roles) of respondents say that this change was mainly due to the project.

Figure 11c furthermore presents the results of the trend analysis that was part of community workshops (dotted lines show results by gender). Across all visited communities, the positive trend in the way women were involved in the community was attributed to the CBA CC project. For further gender analysis, see appendix B on pages 43-44.

One of the aspects of community capacity - and indeed its resilience - is its ability to nurture and maintain links with external actors. In times of crisis, these links can provide crucial back-up support. In this regard, it is both a sign of success as well as of isolation and weak government that CARE itself is featured as amongst the strongest external actors. The expression of the NDA to integrate core groups may well improve links between villages and NDA, but not address the chronic capacity shortages of the NDA itself.

6.3 Gender-related impact

A surprisingly strong, and not explicitly intended, impact of the CBA CC project concerns gender: As figure 11 shows, the balance of household and community decision-making power has shifted in favour of women, who are seen as more involved in village affairs.

Concerning the assessment of household roles, six survey questions referred to decision-making power, while two questions (on childcare and food preparation) served as a comparison tool (see questions E.2.1-E.2.8 in appendix C; detailed analysis in appendix D). The net trend of change is strongly in favour of women; and 75.9% of respondents who see a gain for women attribute this to the project. The question as to why this has occurred can only be answered with anecdotal evidence and requires further exploration. It was observed though that in most villages, women appeared to be the main drivers in core groups, those who promoted the take-up of new techniques. This knowledge advantage may well correspond with the survey finding that amongst all decision-making roles in the household, those concerning the planting of vegetables and crops are most equitable.

The distribution of EcoZoom cooking stoves (pictured), meanwhile, is found to both reduce women's workload as well as to contribute to the enabling of a greater community role for women: with women being the ones mainly in charge of food preparation, they are the ones who benefit the most: with less time spent on firewood collection and cooking (benefits respectively recognized by 94.7% and 78.9% of women), women's time - often one of the

main constraints for greater community participation - is freed up. While this may be considered as a moderate enabler, the main reason however for the increased equity of community roles is again seen in the knowledge advantage mentioned above, as well as in the gender training provided by CARE (see village-level findings in appendix D).

6.4 Impact on coping range and adaptive capacity

What do the described impacts on food security, community capacity and gender mean for islanders' coping range and adaptive capacity? While 54.0% of survey respondents see their ability to address climate risks 'such as irregular and unpredictable rainfall' as 'moderate', and while almost half (47.8%, see fig.12) see their ability improved, it is worth connecting the dots.

The islanders' *coping range* - the intensity of (climatic) stressors that they can absorb without a negative effect on overall living conditions - has increased: with drought and storms as the main stressors, the adoption of more resilient crops and practices has enabled the population of Nissan district to cope for longer periods. In combination with the rainwater harvesting systems that CARE had set up in the previous WASG and the concurrent ANCP-funded projects, villagers say that they can now cope with droughts that last two to three weeks. While villagers could not provide a similar figure for the time prior to the interventions, this was described as a significant improvement. At the same time, it is worth noting that droughts can last much longer - in 2014, the islands received no rainfall at all over a stretch of eight weeks. Thus, further investments - mainly in water systems - will be needed to extend the coping range further for true climate-proofing.

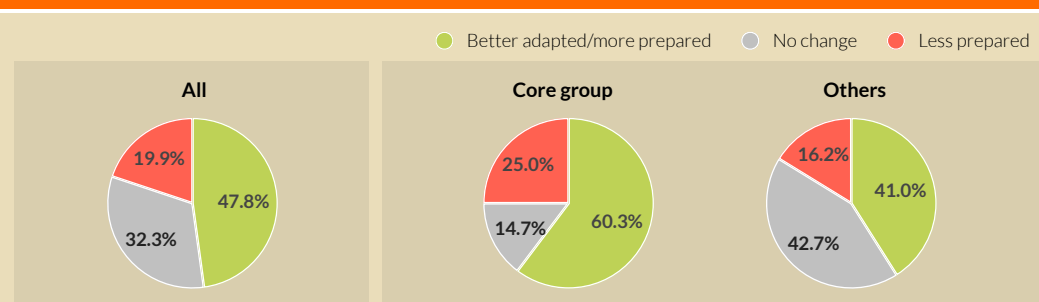
In terms of *adaptive capacity*, the advances in cognitive and structural social capital generated by the CBA CC project are a crucial step forward: core groups have demonstrated that they can lead truly community-based adaptation. Villages have shown that they can plan and implement proactive action.

Yet, with weak government structures and few linkages to external actors and information, the links that are needed to sustainably and proactively adapt remain weak. While these linkages are envisaged by the CBA framework, the project faced obstacles that would have taken far more time and greater efforts particularly on the provincial and district-level governance.

In the context of a changing climate, the question is not so much as to *whether* people will adapt, but rather *how* and *when* - and how much hardship is associated with that process. In order to sustain the lives and livelihoods on Nissan and Pinepal islands, more proactive action will be required. This will need to bring down the unsustainably high level of population growth,²² reduce and manage the large number of pigs,²³ further enhance disaster risk management,²⁴ and reinforce formal governance on the islands and the links to external partners.²⁵

- 22. Population growth on the islands is around 2.7% - an unsustainably high level for the atolls' subsistence economy. To address this issue, Maria Stopes International is about to launch a project in reproductive health and family planning.
- 23. The pig population on the islands has gotten out of control and was quoted as a menace in all visited villages. Yet, with pigs traditionally being reserved for ceremonies, islanders have thus far refrained from killing and consuming more pigs. The issue requires a sensible resource management that increases the benefits (consumption of animal protein) and reduces the current disadvantages (depletion of garden vegetables and forest resources).
- 24. While the community-based approach to DRM is commendable for several reasons, additional technical input will be required to make DRM regimes more effective. In particular, this should include better training and equipment for response teams, and the introduction of island-wide early warning systems.
- 25. Reinforcing governance and external links is the greatest challenge, given isolation and the weak state of affairs. However, the integration of core groups into formal governance, the planned ferry links, and the upcoming availability of third-generation phone coverage provide opportunities that are worth exploring further.

Figure 12 | Perceived preparedness to face climate risks, 2015 vs. 2011



Overall, almost every second respondent sees his or her ability to face climate risks improved (with a greater share amongst core group members). Nine of ten respondents attribute the improvement to the Care project.

7. Sustainability

The sustainability of an intervention largely depends on a strong sense of local ownership - local actors' *willingness* and *capacity* to continue running or maintaining the intervention's results. Neither willingness nor capacity is a fixed given (see figure 13).

Local actors' **willingness** to continue maintaining outcomes usually is a function of **a) perceived relevance** (did an activity address a community concern?), **b) the perceived benefit-cost ratio** (did an activity generate tangible benefits, how much input is needed to maintain these, and do the benefits justify the inputs?), and **c) process ownership** (did local actors invent, steer, participate, accept or reject the underlying process?).

Similarly, local actors' **capacity** can be broken down to **d) funds and inputs** (do beneficiaries have the time and money to sustain the outcome?), **e) skills and capabilities** (do they have the required technical skills?), **f) structures and routines** (are there solid organizational structures underpinning the outcome?), and **g) organizational resilience** (will beneficiaries be able to adapt after a shock such as the death of a local leader?). In addition to the willingness and capacity, the extent of an **enabling environment** also plays a role.

Having described the key components of sustainability, how is the CBA CC project judged against them? Concerning *perceived relevance*, it is evident that agricultural activities are seen as highly relevant, as they address the pressing issue of food security in the context of more erratic weather. The very broad uptake of climate-resilient crops and techniques speaks for itself. Meanwhile, the relevance of community nurseries is not perceived as high: now that villagers have taken up new techniques, the nurseries have fulfilled their main function.

Looking at the nurseries from an angle of *perceived benefit-cost ratios*, it is observed that input to maintain them may not be justified by benefits (e.g. further training of villagers and seedling production). In fact, the nurseries that were inspected during the evaluation already showed that they had not been attended much. With pigs roaming through them, and with local core group members complaining that fellow members from more distant villages of the cluster did not show up as much as they used to, it is likely that the nurseries will eventually share the same fate as Nissan's airstrip - they will be reclaimed by nature.

The likely demise of nurseries should not be of concern, however: as an implementation 'vehicle', they have fulfilled their function. What matters more is that agricultural practices that were taught and practiced here are sustained. And in this regard, the outlook is overwhelmingly positive: not only do islanders recognize tangible benefits (more, and more secure food), the broad uptake also provides the critical mass that facilitates sustainability and further replication.

Sustainability:

"The continuation of benefits from a development intervention after major development assistance has been completed. The probability of continued long-term benefits. The resilience to risk of the net benefit flows over time."

OECD 2010:36



Case study 3



Gerei case study to be added here.

The evaluation also notes that **process ownership** is exceptionally high - with core group members becoming the effective implementors, and with groups setting priorities and devising plans, the core groups have been empowered and encouraged to take proactive roles. Women have benefitted from this process in particular.

In **summary**, the **willingness** of local actors to sustain the outcomes of the CBA CC project is seen as very high. What about their **capacity** to do so?

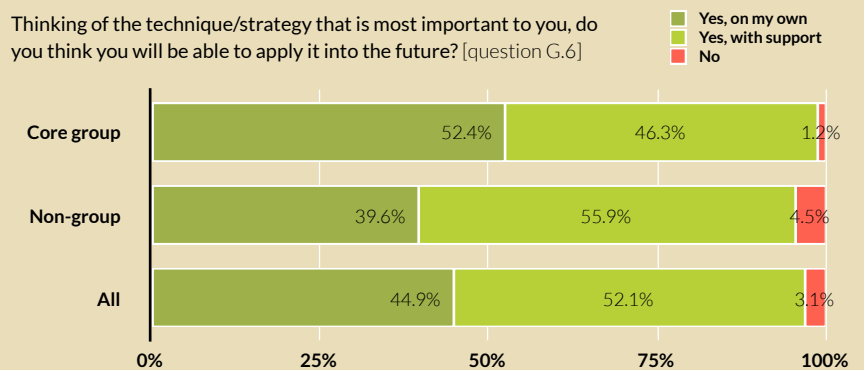
Concerning **funds and inputs**, it is observed that no additional inputs are required to sustain agricultural techniques. However, with an economy that sees very little money turned over, neither individuals nor the core groups would have financial resources to maintain or upgrade structures in case this were necessary. Regarding **skills and capabilities**, it is found that so many islanders have gained skills that the ability to sustaining and perpetuating them is given.

Similarly, **structure and routines** are found to be solid. Similarly, **organizational resilience** (e.g. the extent to which a group will be sustained if a leader resigns) is seen as high, given that none of the groups visited were exclusively based on the engagement and drive of one - but instead on several - persons. The planned integration of core groups into the islands' formal governance will provide additional impetus to maintain core groups as an effective component of village structures.

Overall, the key outcomes on the project - new planting techniques and greater food security, raised community capacity, and a stronger involvement of women in public affairs, are seen as very sustainable. Compared to many other projects that may be perceived as an external intervention, the CBA CC project already belongs to to the people of Nissan. The project is truly community-based not only in the sense that it is being located in the community, but also that it is owned by the community. That in itself is arguably the greatest enabler of sustainable outcomes.

The only downside to sustainability is the weakness of the 'enabling environment'. As argued earlier, the reinforcement of government capacity and of external links (in particular between district and provincial governments) would be required to advance Nissan's overall economic outlook. This however would require a more long-term and multi-pronged approach - it is an aspect that could not be reasonably expected from the CBA CC project.

Figure 13 | Ability to sustain new techniques





SECTION C | LEARNING

8. Evidence-based learning

The CBA CC project was as unusual as it was effective. With its indirect approach to implementation, it managed to improve the islanders' food security and community capacity. What can we learn from it? This chapter provides general lessons along the lines of the framework for community-based adaptation (8.1), and then turns to considerations for specific future implementation in Nissan district (8.2).

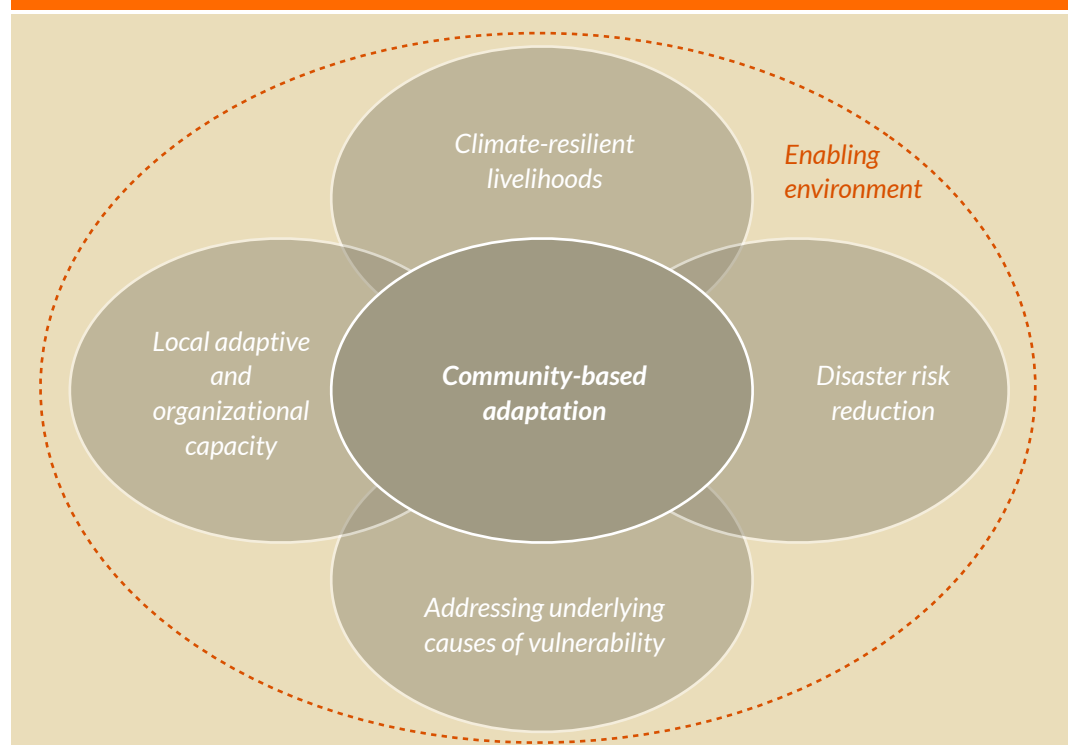
8.1 Learning to adapt: re-considering the CBA framework

Seeing community-based adaptation as a function of five components (see fig.14), the CBA framework underpinned the design of all projects that CARE has been implementing under the CBCCAG program. Let us look at how the CBA CC project relates to these five components, and what can be learned from the project experience.

Climate-resilient livelihoods

The people on Nissan and Pinepal islands live at subsistence level - almost all their daily needs are accommodated by what they produce. As such, they are principally much more sensitive to changes in the environment than populations whose livelihoods include non-agricultural activities. While there is nascent small-level trade in copra, generating modest incomes, this is so limited that it makes little difference to the overall sensitivity. In terms of money (i.e. non-agricultural activities), the only significant contribution to islanders' livelihoods comes from remittances - a share of the money that relatives on Buka island have earned through jobs on the main island. While 38.2% of survey respondents say they received some remittances in 2014, the amounts appear to be very small - rather than a regular contributor to livelihoods, remittances are seen as a back-up support mechanism during times of crisis.

Figure 14 | The framework for community-based adaptation





A job well done: core group members pose in at the community nursery in Mapiri that has become the hub for their activities.

Photo: P. Bolte

Despite its strong reliance on natural resources, livelihoods have been resilient to a considerable degree: by having a wide range of marine and forest products at their avail, villagers managed to get through most shortages in the past. They have developed resilient practices, such as the drinking of coconut juice during droughts and the roasting (and thus, conservation for later consumption) of breadfruits. In the light of more extreme climate as well as a rapidly growing population, however, these mechanisms are put to the test. Not having enough rain for an extended period - the eight-week dry spell of 2014 being a recent example - renders current strategies insufficient.

By first introducing rainwater harvesting systems and then promoting climate-resilient practices, such as kitchen gardens with crop coverage, mulching, and adoption of more drought-tolerant crops, CARE effectively extended the coping range of islanders: people now have the ability to cope with stressors better, as the advances in food security powerfully demonstrate. Given the pressing concerns of having to produce enough to eat on the one hand, and the tangible benefits that new techniques provided on the other, not much convincing was required for a broad and enthusiastic uptake. Identify and address a major concern, provide an effective solution, and promote it well.

The new agricultural practices have been taken on by women as much as by men (there is no statistically significant gender difference in the uptake of new techniques), and there is no indication that workload has shifted either way as a result of their adoption. However, it was observed that women were the stronger drivers in their promotion. As one interviewee put it: “through the core groups, women had the opportunity to show their talent.” That women have gained decision-making power in both households and communities is seen not so much as a result of the new techniques themselves. Rather, the gains are due to the status and respect they have earned over the course of project implementation.

Local adaptive and organizational capacity

Villages across Nissan and Pinepal have a considerable number of entities that organize and structure village life. As can be seen in the community maps in appendix D, these include formal village governance (village chief, village assembly), religious associations (church groups) as well as interest groups (men, women, youth, sports). The addition of the core groups provided further organizational capacity, as members proactively engaged the

wider village communities in the preparation of village action plans and in promoting climate-resilient crops and practices. The maps indicate that the rise of collective action (62.7% of respondents see collective action improved) had spin-off effects on other groups, seeing the relative importance of most village-internal groups increased.

But what about the adaptive aspect in this capacity? Through the project, villagers learned about climate change and its likely impact on the atolls. Yet, adaptation requires the ability to anticipate and react. In this regard, the geographic isolation and the weak state of the district government provides an obstacle. There is little chance that communities will be informed about long-term future weather patterns that go beyond the usual weather forecasts. Furthermore, it is noted that two of the arguably most pressing issues - unsustainably high population growth and the menace of an uncontrolled pig population - remain unresolved. In both cases, social and traditional values serve as impediments: with the strong role of the Catholic church, family planning has been a discrete solution on an individual basis, as a visit to Nissan's health centre indicated.

Pigs meanwhile are reserved for ceremonies - while everybody acknowledges the problems they cause, no advances were made to reduce their population by more frequent consumption of pork. The erection of pig fences is a solution to protect home gardens - however, a more drastic solution may be required over the long term. Overall, it is found that while organizational capacity has increased, adaptive capacity may require further external facilitation and ongoing supply of information. In the end, this comes down to building the capacity of the NDA and CoE (see 'enabling environment').

Disaster risk reduction

Efforts in disaster risk reduction were largely in the hands of villages, who devised village action plans. While awareness was raised on the benefits of proactive risk reduction (the facts that the majority of survey respondents say they are rather unprepared, and that the level of preparedness had declined, are attributable to raised awareness), the interventions were not enough to adequately reduce risks. Neither do villages have an early warning and evacuation system, nor are they well trained and equipped to respond to accidents and disasters.

The 'rain radar' is seen as a model that may reinforce awareness on changing rainfall patterns. But is not suited to provide the information needed to prepare and adapt. Here, the linkage with climate science may have been a more suitable, and more costly option. The most promising intervention under the DRR component was the district-wide distribution of EcoZoom cooking stoves, which made lives easier and reduced the need for firewood collection. Meanwhile, the erection of pig-walls is a showcase of what is possible with a strong collective action. However, with these walls made out of corals, the construction incurred the destruction of natural resources.

Underlying causes of vulnerability

The CBA CC project made a deliberate effort to reach the most vulnerable, and people with disabilities in particular. Both the kitchen gardens and the distribution of cooking stoves were initially proposed to reduce the burden from collecting firewood and food from the forest. As both instruments proved hugely successful, they were promoted amongst the entire communities.

In terms of more gender-equitable relations, the project had a major impact, as described in chapter 6. The advance in decision-making power of women at both the household and community levels is due to the gender training and the potential that has been unleashed through the core groups.

Enabling environment

The capacity of the local government is severely limited at both the district and provincial levels. With governments having little equipment and financial resources, the idea of planning ahead is rather outlandish. On Nissan, the government *administers* more than *plans ahead*. Given these constraints, it is remarkable that some key institutions such as health centers and schools continue to operate. However, the constraints have thus far prevented the government from taking proactive action - in terms of climate change or anything else. The CBA framework rightly points out that all of its five components need to be addressed. Although investments and action in disaster risk reduction need to be upscaled, the most pressing challenge towards effective and sustainable adaptation is low government capacity. CARE is being seen as much more important than the NDA or CoE - yet, its time on the island is limited. So in order to raise the links between villages and external actors, there is no way around reinforcing NDA and CoE capacity - as difficult as that may be.

The planned integration of core groups into government structures, the upcoming regular ferry service, and the planned arrival of internet-enabled phone coverage will reduce these difficulties and offer new opportunities.

8.2 Towards further adaptation in Nissan district

How can community-based adaptation in Nissan district proceed further? This report presents its recommendations in three groups - aspects that ought to be reviewed and enhanced; those that should be sustained and replicated; and those where further upscaling is recommended.

1. REVIEW AND ENHANCE.

The CBA framework is found to be a sensible and effective guidance tool. Yet, when implementing future CBA projects, three particular aspects should be given more attention than it has been given throughout the CBA CC project: planning, coaching, and monitoring.

1a | Future projects need to be based on a more solid framework without losing flexibility.

The CBA CC project was conceptualized at a time when CARE already had a presence on Nissan island through the WASH project. This provided a sound basis for a situational analysis, and led to the design of an effective project. However, it is noted that no baseline was conducted at the outset - which would have allowed for a longitudinal comparison and eventually, a more robust assessment of the project's impact. Furthermore, it made the identification of suitable indicators (with baseline and target values) difficult. The CBA CC project thus lacked concrete targets against which it could be assessed. While a long list of ambitious indicators and targets had initially been put forward, most of these were taken out as they proved either unrealistic or too difficult to assess.

Future project would be well-advised to prepare a suitable and realistic framework, without losing the flexibility in addressing emerging concerns of the target population.

1b | Continuously review the required local presence and adapt team strengths accordingly.

As presented in this report, the core group approach worked exceptionally well in terms of agricultural activities. Aside from the inherent gains in ownership, it allowed CARE to operate in a remote location without the difficulties of setting up a local office.

While the overall approach should be retained (see recommendation 2a), the extent to which local support is needed may need to be continuously reviewed and fine-tuned. It should be recognized that villagers may find it easy to adopt one practice, while finding it difficult to adopt another. Overall, the project may have benefitted from selecting islanders

as community facilitators, training them extensively (e.g. through internships), and then deploying them for problem-solving with issues that were too difficult for core groups. Disaster risk reduction in particular would have benefitted from stronger guidance and support.

1c | Strengthen monitoring and support to foster local climate change awareness and adaptation.

The project deployed community-based monitoring tools, conducted regular monitoring visits, and carried out short surveys on food security and overall needs. On balance, however, monitoring could have been stronger. Concrete targets and reporting on progress against them would have been particularly beneficial.

2. SUSTAIN AND REPLICATE.

Core groups and cooking stoves: these two aspects of the project were hugely successful; and should not only be sustained in follow-up projects, but also be considered for replication beyond Nissan district.

2a | Maintain the core group approach and consider its replication in weak governance contexts.

While many community-based projects deploy groups as part of their implementation strategy, the particular model used by the CBA CC project has been so successful that it should be considered for similar contexts. Grown out of necessity (with a local office on Nissan proving unviable), the approach demonstrated that implementation 'by remote control' can work well. The extent to which core groups 'owned' the project and disseminated the knowledge they had gained throughout the villages is encouraging.

While it should be considered for similar contexts (remote location, weak or non-existing governments), it is important that the extent of required coaching and support be continuously fine-tuned. Furthermore, it is important to link core groups with local governments in order to avoid that these are being sidelined or undermined. As presented earlier, local governments play a crucial potential role for an enabling environment.

2b | Replicate the promotion of kitchen gardens and a wide array of climate-resilient options.

Kitchen gardens and the various crops and techniques that were promoted proved successful in enhancing food security and coping range of islanders. The various manuals should be disseminated to enable replication in similar contexts. The appropriateness of techniques in different areas should be verified, and possibly adapted, by local experts.

2c | Replicate cooking stove distribution in similar contexts and aim for marketability.

EcoZoom cooking stoves made the lives of villagers - women in particular - easier: reducing firewood usage, time spent on wood collection and cooking, and the smoke that is generated, the stoves were appreciated across Nissan and Pinepal. With many islanders asking for additional stoves, it is worth exploring whether a social enterprise could be established to market them across Bougainville. In other settings, the distribution of stoves should be considered - depending on the socio-economic situation, either for free or for a price.

3. EXTEND AND EXPAND.

The CBA CC project led to enhanced food security and started the process of villagers adapting to climate change. With the core groups, it has formed a solid foundation that could be built onto. Despite the achieved progress, several challenges remain that leave the people of Nissan district at risk from a changing climate. Therefore, it is suggested to build on the existing foundation of core groups, and fill the most pressing gaps. A new project could be implemented concurrently with the USAID-funded marine resource project already starting in June 2015, thereby reducing the significant logistics-related costs. Based on the evaluation findings, such a project should include more investments in rainwater harvesting, address natural resource management issues and population growth, and support district-level governance.

3a | Add more rainwater harvesting systems, particularly on Nissan island.

By far the most pressing unresolved concern for islanders is the inability to capture and store enough rainwater to survive long droughts. “The tanks that CARE provided are great”, said one core group member in Tanaheran. “But they are not enough. We need many more.” Currently, most villages have five 9,000 liter tanks (45,000 liters in total). This amount is enough for an average village to survive two weeks without rain - before they have to turn to the brackish, salty and unclean groundwater, or coconuts for the supply of liquids. Taking SPHERE standards as a benchmark, the village of Tanaheran would however need 232,000 liters of storage capacity to survive the longest dry-spell of 2014, which lasted over eight weeks. That is the equivalent of twenty additional tanks just for Tanaheran. Results indicate that rainwater harvesting systems are the single most important investment required to help islanders cope with and adapt to climate change.

The aerial image of Balil 2 village shows the five rainwater tanks that had been set up here by the WASH project. More are needed to tackle drought risk. *Photo: P. Bolte*



3b | Address natural resource management concerns and population growth.

Sustainable management of natural resources is found to be a missing element in the community-based adaptation framework. On the atolls of Nissan and Pinepal, the issue of wild pigs who are so numerous that they cause significant damage to natural and planted food resources. While fencing is a costly and at times ineffective solution (many fences break down or have holes; during the evaluation visit, pigs had a feast in Gerei's community nursery), controlled culling and/or more regular consumption of pork may be a more effective, less labour-intensive, and more beneficial solution. At the same time, a move to kill pigs has to be well-managed in order to prevent depletion of this valuable back-up resource. In terms of sustainable marine resources management, the upcoming USAID-funded project will address existing stressors. A small grant from the Global Environmental Facility (GEF) will also help restore and maintain the mangroves around the south-west of Nissan lagoon. Management of land-based resources ought to be tackled as well.

Another long-term issue for the islanders is the unsustainably high level of population growth. Maria Stopes International plans to provide support to family planning and reproductive health, and is worth exploring options for close collaboration with its efforts.

3c | Support district governance, particularly in improving disaster preparedness capacity.

There is no way around describing the current capacity of the islands' main bodies, the NDA and the CoE, as weak. In fact, to all but those villages adjacent to the NDA offices (Lihon and Mapiri), the government is irrelevant. When trying to create support mechanisms for villagers across both islands, to foster disaster preparedness and response capacity, and to develop an enabling environment, there is no other way than to build up the capacity of the district government.

The difficulties in such a process are fully acknowledged, and it is recognized that efforts must also be directed at the ABG. The involvement of NDA and CoE has led to nascent progress. And yet, much more needs to be done (e.g. technical support and training) to render the NDA in particular a viable link between villages and the outside world.

9. Conclusion

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During the last night on Nissan, torrential rainfall pours down - the only time during the one-week evaluation visit. As wind and rain recede, the boats are cleared for our departure. The ride back to Buka island gives time to reflect. What has been achieved to render islanders more resilient? Has their coping capacity increased? In what way are the atolls adapting?

The stories and the data collected give a clear picture: due to the CBA CC project and its preceding WASH project, the islanders on Nissan and Pinepal are more food-secure and indeed more resilient. The villages are better organized and have gained capacity to adapt. Women play a stronger role in both households and communities. Despite some of the shortcomings described in this report, the CBA CC project proved a tremendous success. This is even more so when considering the substantial logistical hurdles it encountered and overcame. In opting the core group approach, the project management team showed pragmatism and foresight.

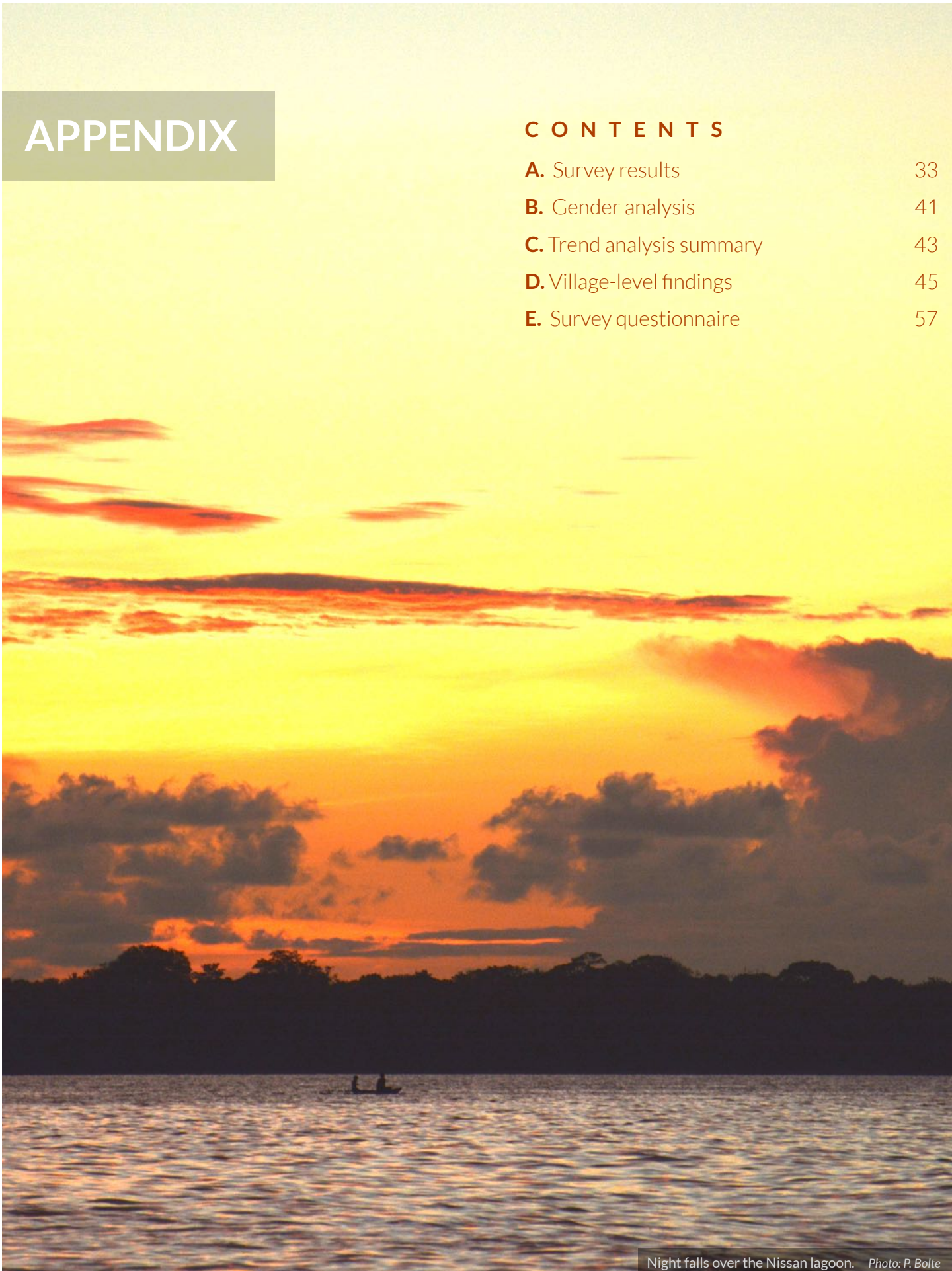
The experience has also served as a reminder that adaptation to climate change is a long process - in fact, it is a process that never really stops. Adaptive capacity is a characteristic that can be more or less developed. In the face of growing stressors - be they related to the changing climate or to local factors - people do and will adapt (be it by migrating). The key question is not so much *whether*, but rather *when*, *how*, and *how well* they will. Adaptation can be proactive or reactive - with the latter form involving more hardship and costs.

On Nissan and Pinepal, much groundwork has been accomplished. And yet, the journey is not over. More will be needed to secure a viable future: this includes most urgently more rainwater storing capacity, as well as support in natural resource management. Over time, it will need to include a strengthened governance structure that can act as the bridge to external actors, information and support. Having accompanied the islanders in the adaptation process since 2009, CARE is in a formidable position to help build adaptive capacity further - and to assist the adapting atolls.

APPENDIX

C O N T E N T S

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Night falls over the Nissan lagoon. Photo: P. Bolte

X.9	Mean	4.26	4.38	4.32	5.06	3.82	4.79	4.43	5.18	5.3	2.6
	Number of activities 2011	1	1	1	1	0	0	1	3	1	0
	Median	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	Mode	1.49	1.74	1.61	2.15	1.28	1.33	1.75	2.88	1.48	0.91
	Mean	2.77	2.64	2.71	2.91	2.55	3.46	2.68	2.3	3.81	1.7
X.10	Change in mean number of activities (C.8-C.9)										
	Mean change	6	6	6	6	6	6	6	6	6	6
	Median	5	5	5	5	5	5	5	5	5	5
	Mode	7.06	6.72	6.9	6.8	6.97	6.64	6.69	8.52	6.93	6.16
	Mean	4	5	5	5	5	4	5	5	5	5
	Median	3	3.5	3	3	3	3	3.5	3	3.5	5
	Mode	4.88	5.31	5.08	5.44	4.86	4.58	5.36	4.91	5.15	5.12
X.11	Change in mean number of crops (C.10-C.11)										
	Mean change	2.18	1.41	1.81	1.36	2.11	2.06	1.33	3.61	1.78	1.05
C.12	How would you describe your household's ability to address climate risks such as irregular and unpredictable or extreme rainfall?										
	1 High	3	2.70	0	0.00	3	1.42	2	2.44	0	0.00
	2 Moderate	56	50.45	58	58.00	114	54.03	48	58.54	66	51.56
	3 Low	52	46.85	42	42.00	94	44.55	32	39.02	61	47.66
	99 don't know	6	8	14	5	9	2	4	2	2	2
C.13	Which of the following statements best describes your household?										
	1 We are now better-adapted and more prepared for climate risks than four years ago.	45	48.91	44	46.81	89	47.85	41	60.29	48	41.03
	2 Over the past four years, there has been no change in our ability to face climate risks.	31	33.70	29	30.85	60	32.26	10	14.71	50	42.74
	3 We are now less prepared for climate risks than we were four years ago.	16	17.39	21	22.34	37	19.89	17	25.00	19	16.24
	99 don't know	25	14	39	19	20	8	8	20	3	10
C.13a	In your view, to what extent has the CARE project played a role behind this improvement?										
	1 Main positive role	40	88.89	41	93.18	81	91.01	37	90.24	44	91.67
	2 Positive role amongst others	3	6.67	3	6.82	6	6.74	4	9.76	2	4.17
	3 No role	2	4.44	0	0.00	2	2.25	0	0.00	2	4.17
	99 don't know	72	64	136	46	89	15	45	17	22	30
C.14	Food consumption score (FCS) 2015										
	FCS 2015 Median	52	51.5	52	52.5	51	54.5	50.5	63	55.5	44.5
	FCS 2015 Mode	45	55	45	45	45	45	45	65	35	45
	FCS 2015 Mean	53.91	53.06	53.5	54.24	52.96	54.81	51.23	65.88	54.54	47.34
	Share 'acceptable FCS'	88.03	88.89	88.44	86.21	89.78	92.31	87.5	93.94	88.89	83.72
	Share 'borderline FCS'	11.97	7.41	9.78	11.49	8.76	5.13	11.11	6.06	7.41	13.95
	Share 'poor FCS'	0	3.7	1.78	2.3	1.46	2.56	1.39	0	3.7	2.33
C.15	Food consumption score (FCS) 2011										
	FCS 2011 Median	57.5	51.5	54.5	59	51.5	50.5	59.25	64.5	49	48.5
	FCS 2011 Mode	45	55	45	55	45	45	45	55	50	45
	FCS 2011 Mean	58.62	57.38	58.03	63.43	54.57	54.62	62.57	66.14	55.3	50.36
	Share 'acceptable FCS'	90.6	88.89	89.78	90.8	89.05	92.05	91.67	96.97	88.89	88.37
	Share 'borderline FCS'	7.69	8.33	8	6.9	8.76	15.38	5.56	3.03	7.41	9.3
	Share 'poor FCS'	1.71	2.78	2.22	2.3	2.19	2.56	2.78	0	3.7	2.33
X.12	Change in mean number of FCS (C.14-C.15)										
	Mean change	-4.72	-4.33	-4.53	-9.19	-1.61	0.19	-11.34	-0.26	-0.76	-3.02
C.16	Overall, has your situation in terms of food security changed over the past four years?										
	1 Yes, we are now better off than four years ago	55	48.67	112	52.34	59	44.36	27	72.97	33	47.83
	2 No, it has not changed	34	30.09	60	28.04	15	18.75	44	33.08	5	13.51
	3 Yes, we are now worse off than four years ago	24	21.24	18	17.82	42	19.63	12	15.00	30	22.56
	99 don't know	4	7	11	7	11	2	3	2	2	2
A1	Any changes in the weather										
	1 NOT APPLICABLE	6	7.59	5	6.67	11	7.14	7	10.77	4	4.49
	2 Positive effect	42	53.16	33	44.00	75	48.70	42	47.19	18	56.25
	3 No effect	9	11.39	6	8.00	15	9.74	5	7.69	10	11.24
	4 Negative effect	22	27.85	31	41.33	53	34.42	20	30.77	33	37.08
A2	Any changes in the market (access/prices)										
	1 NOT APPLICABLE	10	12.66	16	21.33	26	16.88	12	18.46	14	15.73
	2 Positive effect	46	58.23	34	45.33	80	51.95	36	55.38	44	49.44
	3 No effect	14	17.72	22	29.33	36	23.38	13	20.00	23	25.84
	4 Negative effect	9	11.39	3	4.00	12	7.79	4	6.15	8	8.99
A3	Any changes in cultivation techniques										
	1 NOT APPLICABLE	1	1.27	2	1.30	1	1.12	0	0.00	1	2.22
	2 Positive effect	64	81.01	60	80.00	124	86.15	68	76.40	27	84.38
	3 No effect	11	13.92	14	18.67	25	16.23	5	15.62	5	11.11
	4 Negative effect	3	3.80	0	0.00	3	1.95	1	1.54	2	4.44

A4 Changes in water management													
1	NOT APPLICABLE												
2	Positive effect	64	81.01	60	80.00	124	80.52	57	87.69	0	0.00	0	0.00
3	No effect	11	13.92	13	17.33	24	15.58	6	9.23	18	20.22	5	15.62
4	Negative effect	4	5.06	2	2.67	6	3.90	2	3.08	4	4.49	0	0.00
A5 Any other factors (related to the project)													
1	NOT APPLICABLE												
2	Positive effect	12	15.19	7	9.33	19	12.34	5	7.69	14	15.73	3	9.38
3	No effect	53	67.09	53	70.67	106	68.83	52	80.00	54	60.67	22	68.75
4	Negative effect	10	12.66	15	20.00	25	16.23	6	9.23	19	21.35	6	18.75
A6 Any other factors (unrelated to the project)													
1	NOT APPLICABLE												
2	Positive effect	20	25.32	21	28.00	41	26.62	13	20.00	28	31.46	6	18.75
3	No effect	36	45.57	33	44.00	69	44.81	36	55.38	33	37.08	11	34.38
4	Negative effect	19	24.05	20	26.67	39	25.32	13	20.00	26	29.21	13	40.62
C.17 Over the past year, did your household preserve any food for bad times?													
1	Yes	67	57.76	64	60.38	131	59.01	55	63.95	75	55.56	22	56.41
2	No	49	42.24	42	39.62	91	40.99	31	36.05	60	44.44	17	43.59
99	don't know	1		2		3		1		2		0	
C.18 And four years ago, did your household usually preserve any food for bad times?													
1	Yes	69	60.53	73	69.52	142	64.84	58	68.24	83	62.41	29	74.36
2	No	45	39.47	32	30.48	77	35.16	27	31.76	50	37.59	10	25.64
99	don't know	3		3		6		2		4		0	
C.19 Over the past year, did your household keep any water reserves for emergencies?													
1	Yes	36	31.30	34	31.48	70	31.39	36	41.38	34	25.19	13	33.33
2	No	79	68.70	74	68.52	153	68.61	51	58.62	101	74.81	26	66.67
99	don't know	2		0		2		0		0		0	
C.20 And four years ago, did your household keep any water reserves for emergencies?													
1	Yes	68	58.62	65	60.75	133	59.64	53	61.63	80	58.82	30	76.92
2	No	48	41.38	42	39.25	90	40.36	33	38.37	56	41.18	9	23.08
99	don't know	1		1		1		1		1		0	
D DISASTER RISK REDUCTION													
D.1 In the past five years, has your household been affected by a hazard?													
1	Yes	54	46.15	50	46.73	104	46.43	44	50.57	60	44.12	20	51.28
2	No	63	53.85	57	53.27	120	53.57	43	49.43	76	55.88	19	48.72
99	don't know	0		1		1		0		1		0	
D.2 What types of hazard has your household been affected by?													
1	Drought	49	41.88	39	36.11	88	39.11	34	39.08	54	39.42	17	43.59
2	Flood	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
3	Storm	41	35.04	40	37.04	81	36.00	30	34.48	51	37.23	15	38.46
4	Animal disease	2	1.71	1	0.93	3	1.33	1	1.15	2	1.46	0	0.00
5	Pest	4	3.42	0	0.00	4	1.78	2	2.30	2	1.46	0	0.00
6	Other												
D.3 In the past five years, has anybody in your household been harmed or fallen sick as a result of a hazard?													
1	Yes	31	57.41	27	52.94	58	55.24	30	68.18	28	45.90	13	65.00
2	No	23	42.59	24	47.06	47	44.76	14	31.82	33	54.10	7	35.00
99	don't know	63		57		120		43		76		19	
D.3a How have household members been harmed by a hazard?													
1	Minor injuries (did not seek medical attention)	4	3.42	6	5.56	10	4.44	5	5.75	5	3.65	4	10.26
2	Major injuries (required medical attention)	22	18.80	16	14.81	38	16.89	20	22.99	18	13.14	8	20.51
3	Diseases linked to disaster	7	5.98	4	3.70	11	4.89	5	5.75	6	4.98	1	2.56
4	Death	2	1.71	3	2.78	5	2.22	3	3.45	2	1.46	2	5.13
5	Other	3	2.56	3	2.78	6	2.67	3	3.45	3	2.19	0	0.00
99	don't know	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
D.4 In the past five years, has your household been affected economically by a hazard?													
1	Yes	47	87.04	44	88.00	91	87.50	35	81.40	56	91.80	16	80.00
2	No	7	12.96	6	12.00	13	12.50	8	18.60	5	8.20	4	20.00
99	don't know	63		58		121		44		76		19	
D.4a How has your household been affected economically?													
1	Property damage	26	22.22	25	23.15	51	22.67	22	25.29	29	21.17	9	23.08
2	Disruption or loss of income	36	30.77	29	26.85	65	28.89	21	24.14	44	32.12	10	25.64
99	don't know	1	0.85	2	1.85	3	1.33	1	1.15	2	1.46	0	0.00
D.5 How prepared is your household to handle a disaster?													
1	Very prepared	25	46.30	17	34.69	42	40.78	21	47.73	21	35.59	8	40.00
2	Somewhat prepared	10	18.52	19	38.78	29	28.16	11	25.00	18	30.51	8	40.00
3	Somewhat unprepared	12	22.22	7	14.29	19	18.45	9	20.45	10	16.95	2	10.00
4	Very unprepared	7	12.96	6	12.24	13	12.62	3	6.82	10	16.95	2	10.00
99	don't know	63		59		122		43		78		19	

Cross-tabulations

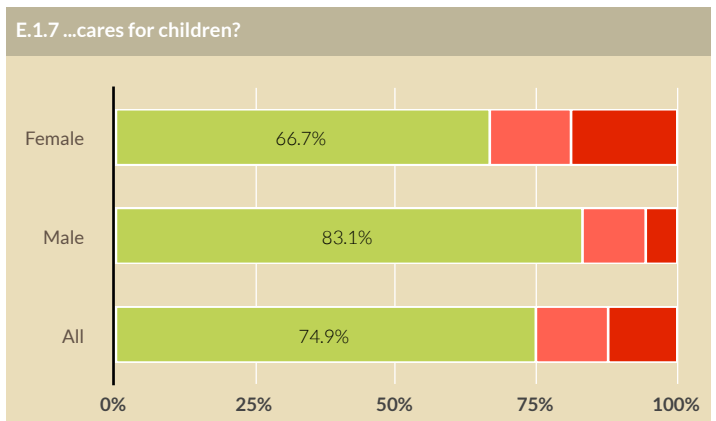
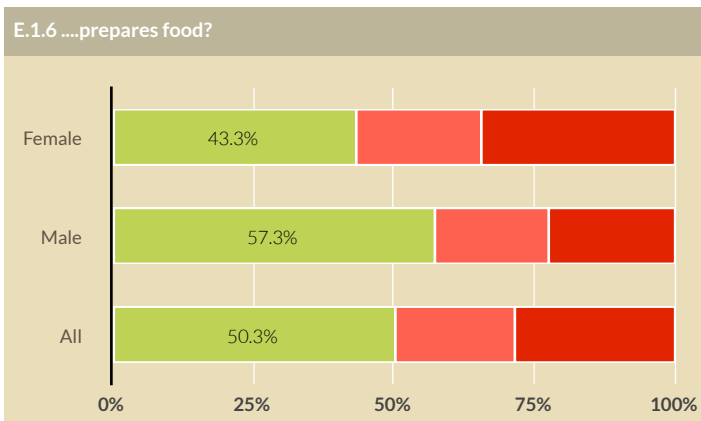
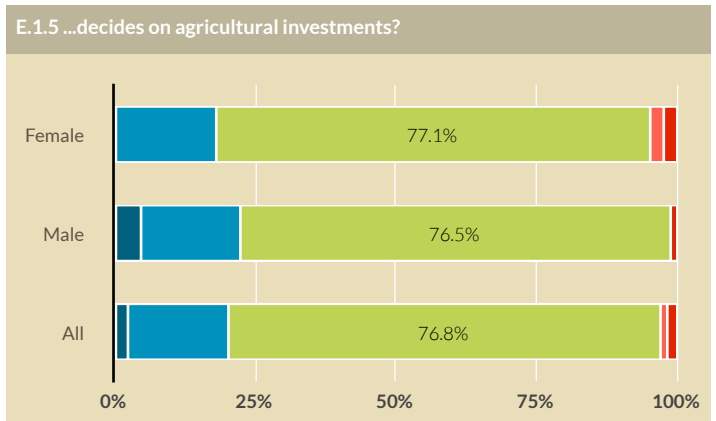
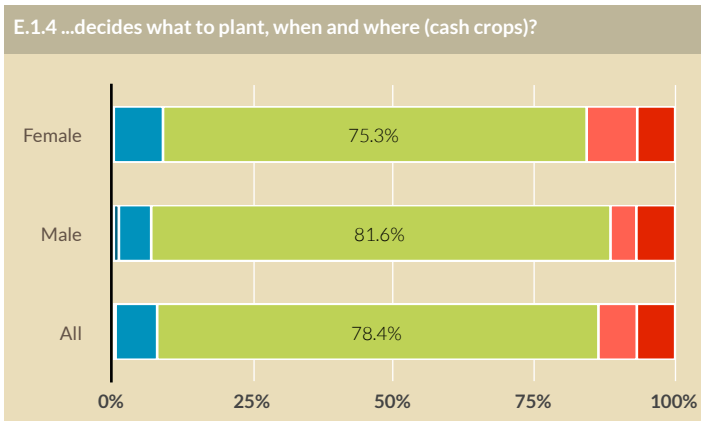
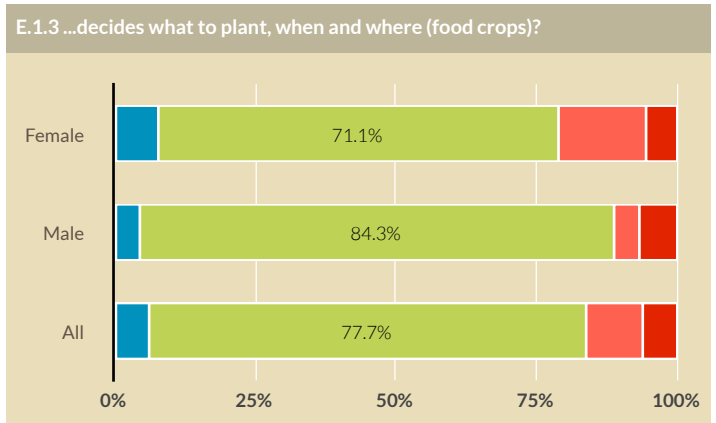
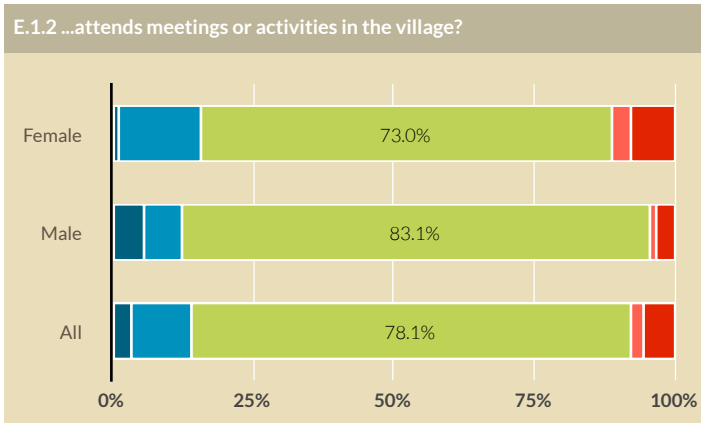
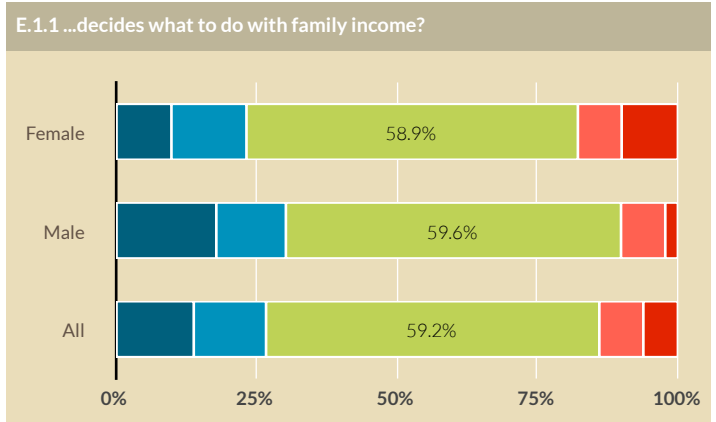
The graphs

B. Gender analysis

Household roles

- Only men
- Mostly men
- Equal shares
- Mostly women
- Only women

The charts on these two pages illustrate gender-related survey results. Questions E.1.1-E.1.5 show the balance of decision-making power in the household, while the last two questions serve as a tool for comparison and control. Questions E.4.1 - E.4.6 (overleaf) illustrate decision-making at the community level, while the last two questions serve as a comparison tool. All charts illustrate the gender balance as it is currently being perceived. For a discussion of change - and the impact the project has had, see chapter 6.3 on page 20.



Community roles

- Only men
- Mostly men
- Equal shares
- Mostly women
- Only women

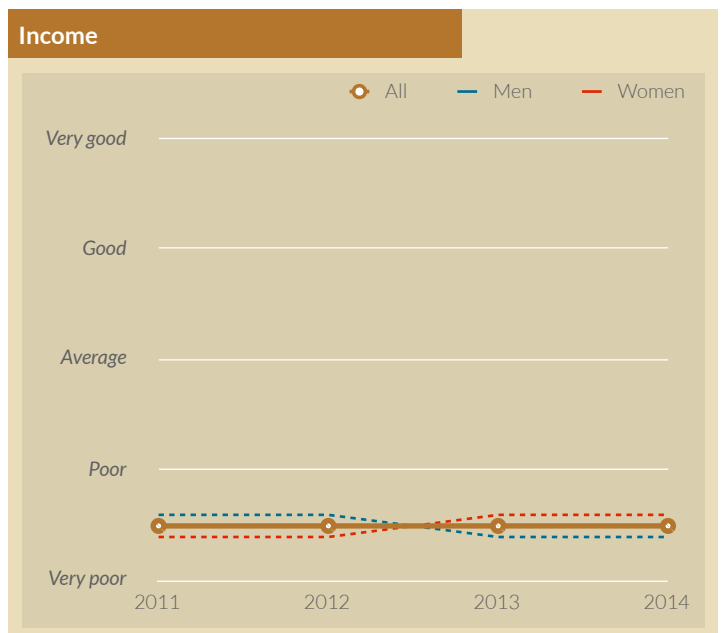
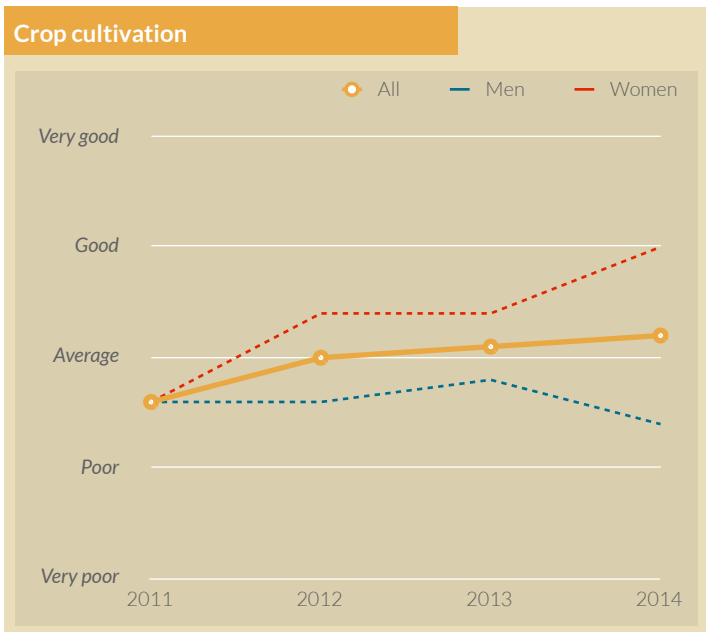


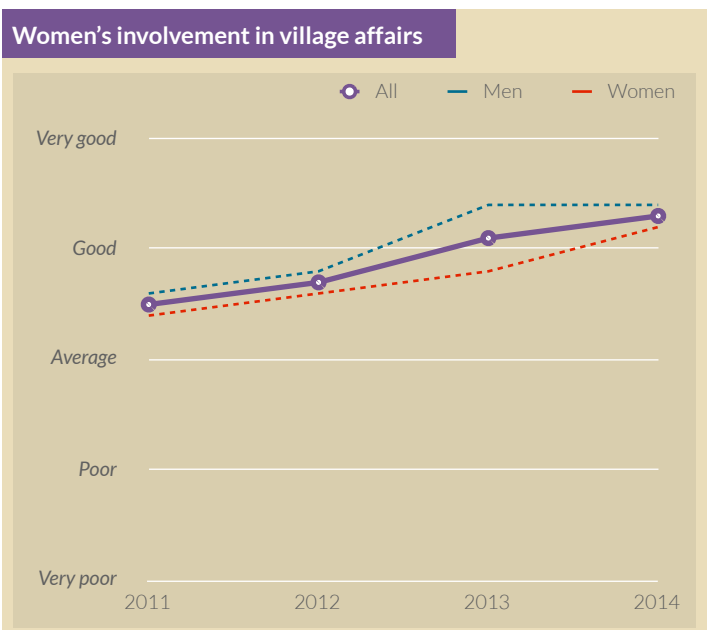
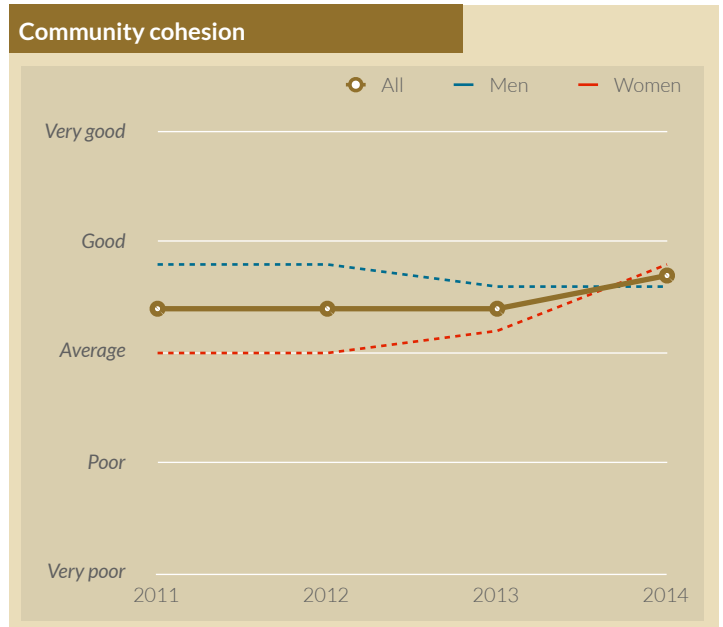
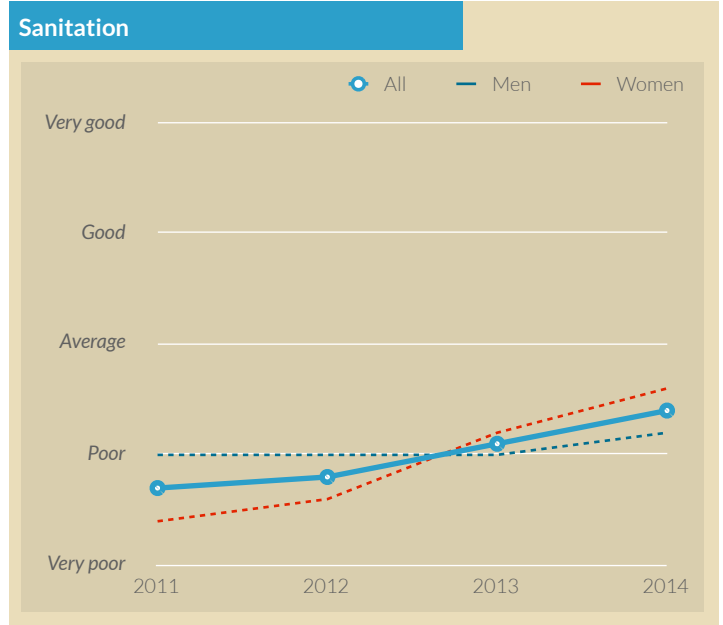
C. Trend analysis summary

The charts below summarise the results of the trend analysis exercise that was conducted in all five villages. In each village workshop, men and women formed two separate groups, who were asked to rate different aspects of their living conditions for each year between 2011 and 2014, on a scale from 1 to 5 (1=very bad, 2=bad, 3=normal, 4=good, 5=very good).

The groups were also asked to describe underlying factors, which are presented in detail for each village in appendix C. The charts indicate strong improvements in most aspects that relate to the project's theory of change, in particular vegetable production (+1.0 points), food security (+1.1), and women's involvement in village affairs (+0.8). Although the project did not provide assistance related to drinking water (in Pinepal however, there was a concurrent project), improvements are seen in this regard (+0.9). Women - who arguably benefitted more from kitchen gardens than men - also saw crop cultivation increased (+1.4).

Minor improvements are seen in terms of disaster preparedness, sanitation and community cohesion. Meanwhile, both income and links to local government flatlined at a low level, a reflection of the facts that very little sales are made, and that NDA and CoE have very little capacity to reach out to the villages across the two islands.





D.1 Mapiri village-level results

Background Located at the central part of Nissan island, Mapiri one to the two biggest villages in Nissan district, with its 154 households being spread out across several hamlets over a wide three-kilometer stretch of the atoll. Part of the Nehan village cluster, its population is largely made up by two main family clans. Traditionally, villagers have made a living by fishing and collecting crops, vegetables and fruits from the dense forest. There are very few items that are produced for sale - in fact, the women in the community workshop said that there they earn no income at all. Public services include a well-run primary school and a health centre.

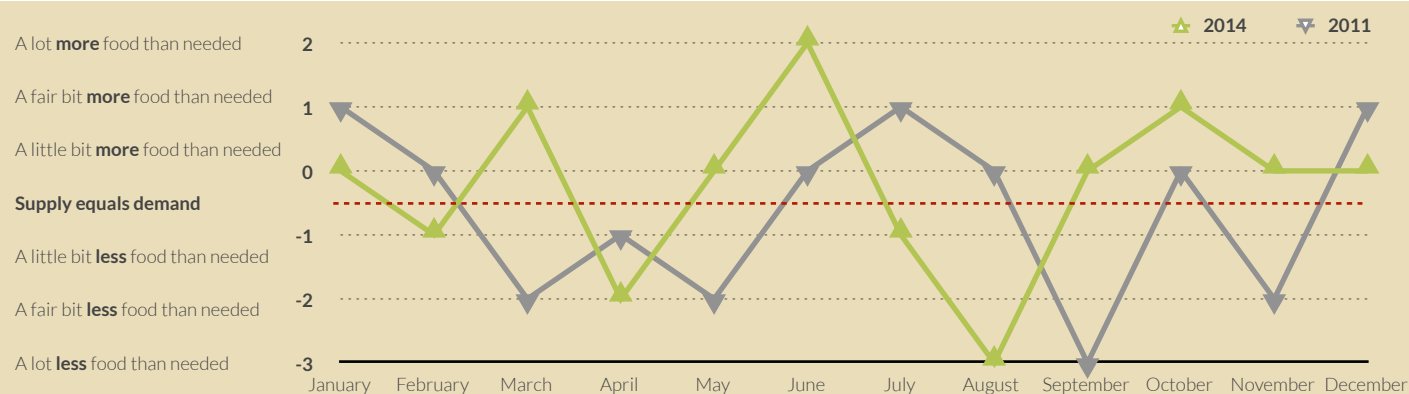
Prior to the arrival of CARE on Nissan, the villagers' main challenge had been the lack of sufficient and clean drinking water. The distribution of rainwater harvesting tanks through a previous CARE project is still much appreciated, although villagers stated that they still required additional tanks.

Activities When the CBA CC project first came to Mapiri, there had been great enthusiasm, and more than 40 villagers from Mapiri joined the newly-formed core group. Over time, this number shrank

Trend analysis: the women's view						
Aspect	2011	2012	2013	2014	Trend	Underlying reasons for trends
Crop cultivation	2	3	4	5	+3	Training and skills (CARE), Weather, Herbs (bush medicine promoted by CARE)
Vegetable production	2	3	4	5	+3	Training and skills (CARE), Weather, use of compost
Food security	4	4	4	5	+1	Drought, heavy rain as negative factors, plus Training and skills by CARE as positive factor
Income	-	-	-	-	n.a.	
Drinking water	3	4	4	4	+1	Drought, distribution of water tanks by CARE
Sanitation	1	1	4	4	+3	CARE training, bush toilets
Disaster preparedness	4	3	2	5	+1	Drought, shortage of food - but support from CARE
Community cohesion	4	4	4	5	+1	CARE training
Women's involvement in village affairs	3	4	4	5	+2	CARE training
Links to local government	2	2	2	2	0	

Trend analysis: the men's view						
Aspect	2011	2012	2013	2014	Trend	Underlying reasons for trends
Crop cultivation	3	3	3	4	+1	The training of CARE bought kitchen gardens, big hill planting of sweet potato, general knowledge enhanced - now lots of people apply new techniques
Vegetable production	3	3	3	4	+1	The training of CARE bought kitchen gardens, big hill planting of sweet potato, general knowledge enhanced - now lots of people apply new techniques
Food security	3	3	3	3	0	
Income	2	2	2	2	0	
Drinking water	2	3	4	4	+2	People have additional clean water - but number of water tanks is still not enough during the dry season. Dry season now comes more often
Sanitation	3	3	3	4	+1	
Disaster preparedness	2	2	2	2	0	
Community cohesion	3	3	4	5	+2	People work together more because they did so throughout the project (e.g. in setting up nurseries).
Women's involvement in village affairs	4	4	5	5	+1	Women are doing really important work on: participation in meetings, and leadership roles
Links to local government	2	2	2	2	0	

Food security throughout the seasons



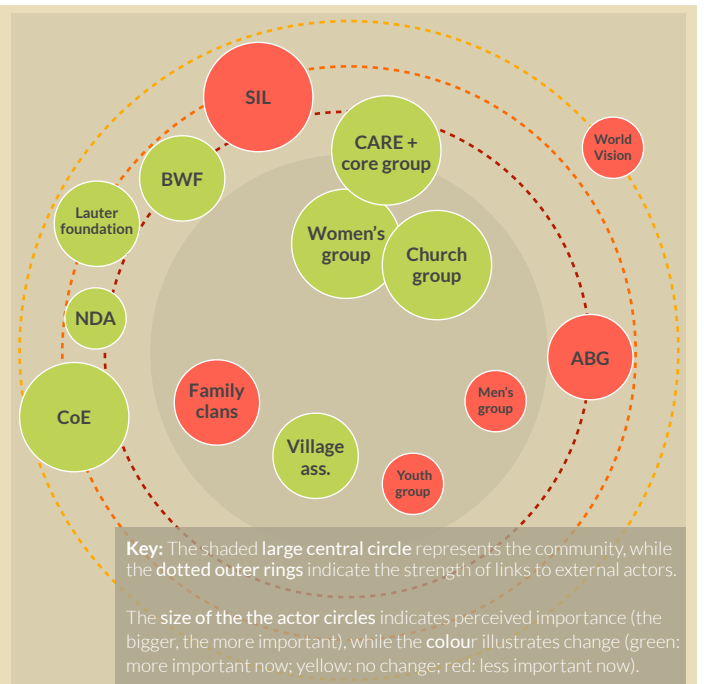
to 15 villagers, who learned about climate change and various new agricultural techniques. They included the

Outcomes Concerning

Lessons Thi



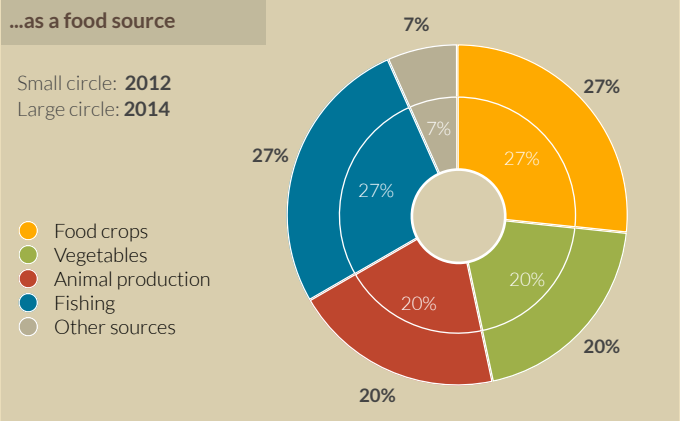
Community mapping



In Mapiri, workshop participants found that over the past three years, the core group, women's group, church group and village association have gained importance within the village (mainly due to the project).

Meanwhile, clan structures (two main clans) as well as the youth and men's groups have lost significance. Amongst external actors, it is notable that NDA and CoE (who partnered with CARE) are seen as having gained importance.

Perceived roles of livelihood activities...



D.2 Rogos village-level results

Background Home to 82 families across 47 households, Rogos village is the southernmost of three villages on Pinepal island. The village is home to the village cluster’s nursery

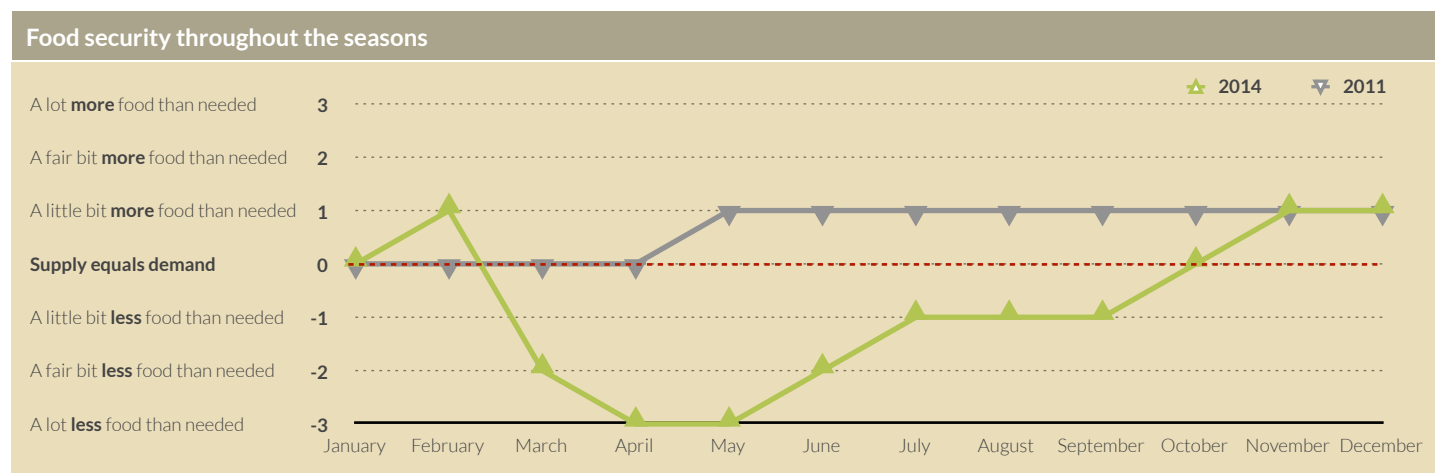
Activities Despite

Outcomes The core group successfully promoted kitchen gardens and various new techniques (composting, crop coverage, mulching) as well as planting of new drought-resilient crops such as Taro in kitchen gardens - to the extent that almost all households now have

several vegetable patches around their houses. Villagers are happy with the results - women in particular appreciate the reduced need for food collection in the forest. But while kitchen gardens have been taken up widely, they provide only an estimated 5% of vegetable and crops consumed. The discrepancy between trend analysis ratings for crop cultivation and vegetable production on the one hand and food security on the other is explained by this minor share: in different ways, both men and women expressed that while they had improved techniques, but that the related advances had been superseded by negative external factors such as extended droughts, sea spray, and

Trend analysis: the women’s view						
Aspect	2011	2012	2013	2014	Trend	Underlying reasons for trends
Crop cultivation	3	5	4	4	+1	Sea spray, sun/drought, wind, pigs digging up gardens, CARE training
Vegetable production	1	1	3	4	+3	CARE training, composting
Food security	3	4	4	2	-1	Pest, rain
Income	1	1	1	1	0	
Drinking water	1	1	4	4	+3	Supply of water tanks from CARE
Sanitation	1	1	1	1	0	
Disaster preparedness	2	2	3	3	+1	CARE training
Community cohesion	3	3	3	3	0	
Women’s involvement in village affairs	3	3	3	3	0	
Links to local government	3	3	3	3	0	

Trend analysis: the men’s view						
Aspect	2011	2012	2013	2014	Trend	Underlying reasons for trends
Crop cultivation	3	2	2	1	-2	Pigs destroying gardens, drought, sea spray, extreme rainfall
Vegetable production	5	4	3	3	-2	Drought, no fertile soil
Food security	1	4	4	5	+4	Introduction of drought-tolerant crops, NARI training, use of mangroves and wild fruit
Income	1	1	1	1	0	
Drinking water	1	1	5	5	+4	Water tanks provided by CARE, awareness on wise water management
Sanitation	1	1	1	1	0	
Disaster preparedness	1	1	1	2	+1	Reduced risk by cutting of high trees around the village
Community cohesion	5	5	3	1	-4	Significant level of infighting between communities and clans
Women’s involvement in village affairs	1	2	3	3	+2	Males are encouraging women to participate, CARE gender training
Links to local government	3	3	3	3	0	



wild pigs. Thus, overall, there has been no reduction of food-insecure months - on the contrary, as 2014 saw an extended drought, the villagers were more food-insecure than they had been in 2011.

By far the biggest difference the project made to Rogos village was through the set-up of rainwater harvesting tanks (funded through independent CARE resources) - villagers were thus able to shift from salty groundwater to clean rainwater. With 72,000 liters capacity installed



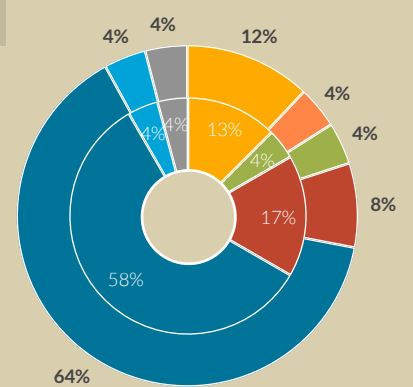
Lessons Thi

Perceived roles of livelihood activities...

...for income-generation

Small circle: 2012
Large circle: 2014

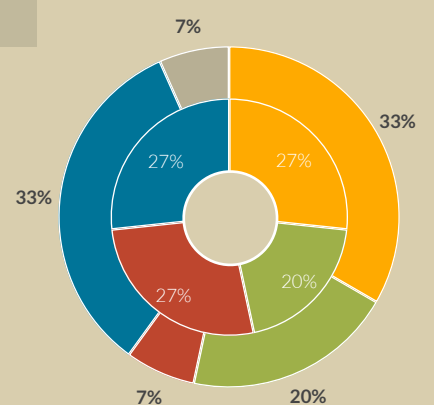
- Food crops
- Cash crops
- Vegetables
- Animal production
- Fishing
- Employment
- Small business
- Other sources



...as a food source

Small circle: 2012
Large circle: 2014

- Food crops
- Vegetables
- Animal production
- Fishing
- Other sources



D.3 Tanaheran village-level results

Background Home to 46 households, the village of Tanaheran sits on Nissan's south-western tip. About two kilometres long, the village is flanked by the ocean to its west and by mangroves to its east. Its geographical setting provides little land for crop cultivation. Tanaheran can be accessed only via shallow mangrove waters or the long road that connects it to the rest of Nissan atoll.

During strong storms, the entire village is affected by sea spray. The biggest problem though that villagers face is the lack of clean drinking water: traditionally, water from wells was used and then

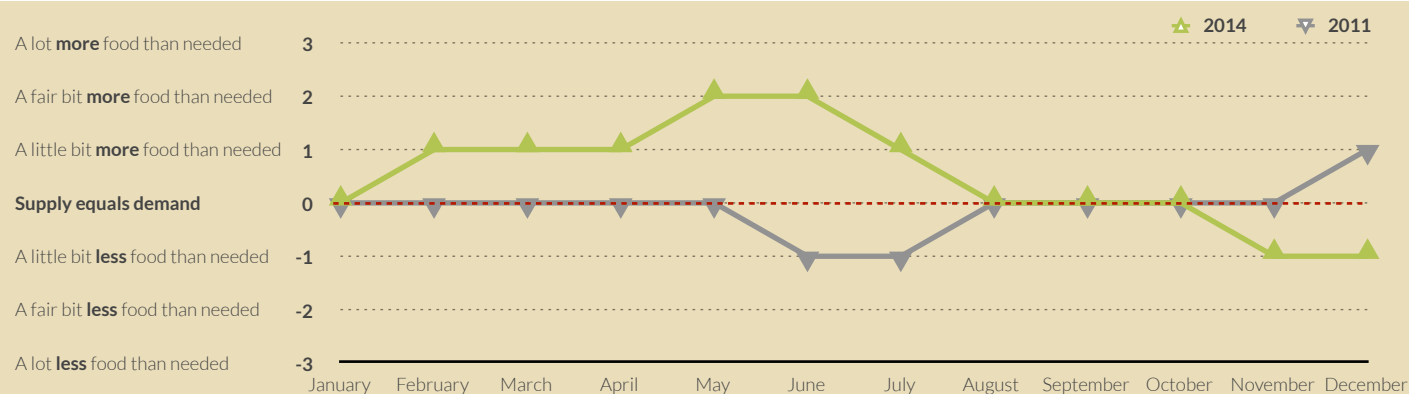
usually boiled - however, villagers said that water tasted salty and caused a high incidence of water-borne diseases. During the first CARE project here, five rainwater harvesting tanks had been installed - each of which now provides water to one stretch of the village.

Activities When the CBA CC project was launched, eight villagers stood up to become members of the Sirowatan village cluster core group (four women, four men). Under the DRR component, risks

Trend analysis: the women's view						
Aspect	2011	2012	2013	2014	Trend	Underlying reasons for trends
Crop cultivation	3	4	4	4	+1	CARE's introduction of food garden's increased food production - counteracting negative effects are drought and sea spray
Vegetable production	3	3	5	5	+2	Kitchen gardens and composting
Food security	3	3	4	4	+1	Food and water security training
Income	1	1	2	2	+1	Selling kitchen garden food (Taro) - but no proper access to markets
Drinking water	4	4	2	2	-2	Dry season 2013/14: despite CARE tanks earlier, drought so severe that tanks were not enough
Sanitation	3	4	4	3	0	
Disaster preparedness	3	3	2	3	0	
Community cohesion	3	3	4	5	+2	Cooperation of leaders with community members
Women's involvement in village affairs	3	3	4	4	+1	Training on gender equity; recognition of women's roles
Links to local government	2	2	2	2	0	

Trend analysis: the men's view						
Aspect	2011	2012	2013	2014	Trend	Underlying reasons for trends
Crop cultivation	2	3	4	5	+3	<ul style="list-style-type: none"> Improved crop cultivation methods after farming training People set up more gardens New ways of planting crops (e.g. 'big hill' taro cultivation)
Vegetable production	3	3	4	5	+2	Same as above - plus provision of seeds and planting material from CARE
Food security	1	2	3	4	+3	New ways of food preservation, drought-resilient crops
Income	1	1	1	1	0	
Drinking water	3	3	3	3	0	CARE helped the village - but more water storage is needed
Sanitation	1	1	1	1	0	
Disaster preparedness	1	1	1	1	0	
Community cohesion	3	3	3	4	+1	Community listen and works with leaders
Women's involvement in village affairs	3	3	4	4	+1	CARE Gender training
Links to local government	1	1	1	1	0	

Food security throughout the seasons



were assessed; findings formed the basis for a village action plan. This plan included the activities to maintain and strengthen the tree line along the ocean coast - which serves to reduce the risk of sea spray. The core group replanted trees and made fellow villagers aware of the important function - banning tree-cutting for firewood from this zone. Furthermore, as roaming pigs had been identified as a hazard (since they damage vegetable gardens), the villagers collectively erected a wall of almost one kilometer. Villagers also cut down high trees around houses to reduce the risk of storm damage. Regarding agricultural production, the core group effectively promoted new techniques amongst villagers - to the extent that almost all households now maintain kitchen gardens, plant drought-resilient crops and practice mulching and covering of crops. Finally, the distribution of efficient cooking stoves is appreciated by all villagers, requiring less wood and time, and producing less smoke.

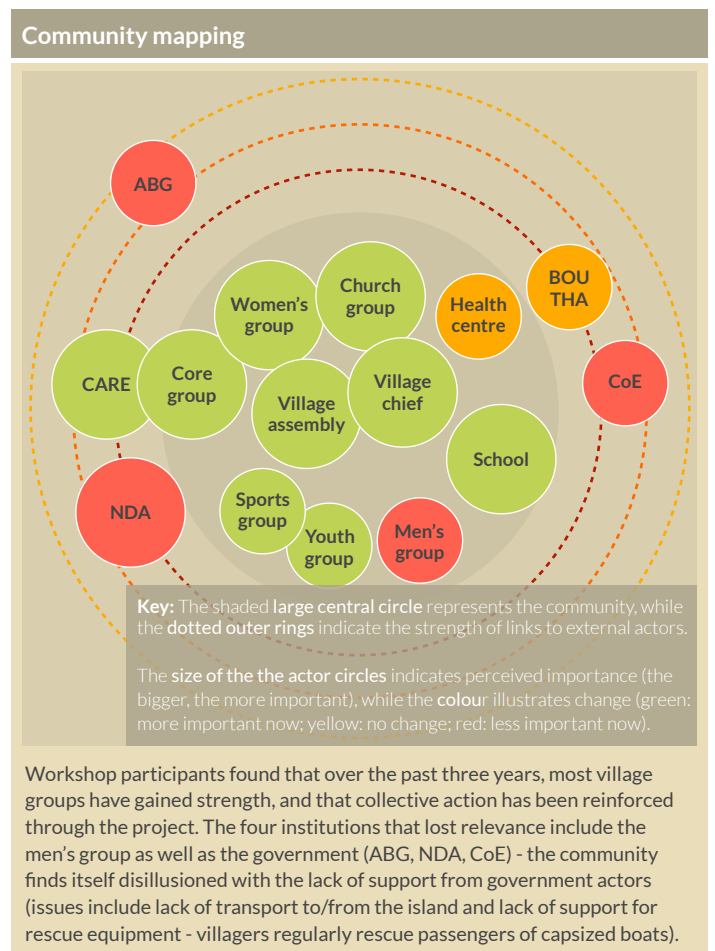
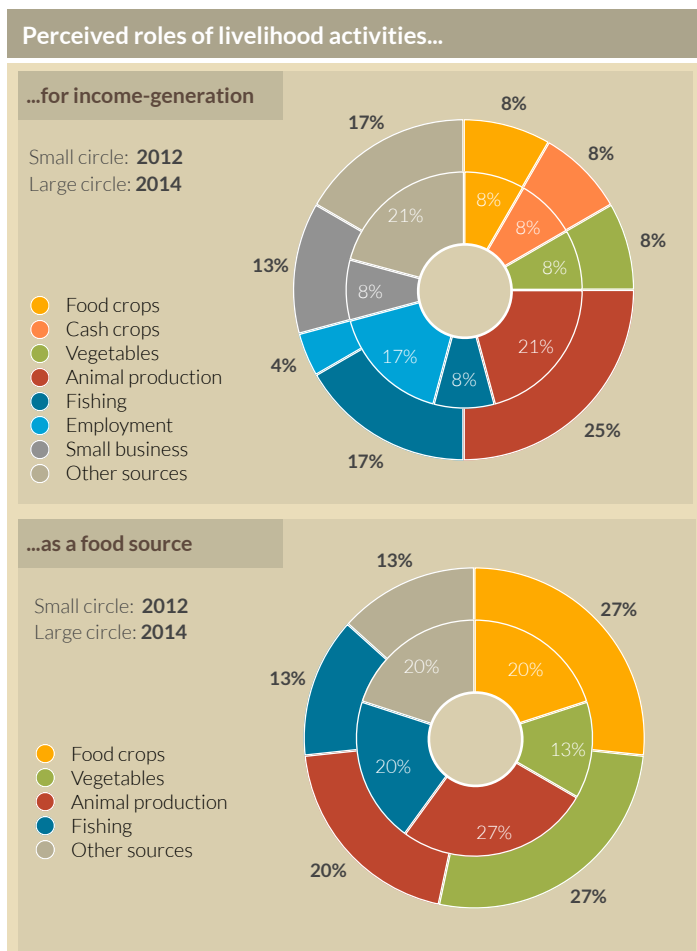
Outcomes Both men and women found that food security had increased as a result of the project - in fact, most of the food is now produced in gardens rather than collected from the forest. Not only did this lead to greater drought resilience, it also allowed for a small amount of food sales (mainly Taro).

The villagers also see collective action and community cohesion reinforced (see community mapping). The limited availability of drinking water however remains a problem, as installed capacity only lasts for around two weeks - much less than needed for rain-free periods that stretched over up to eight weeks in 2014.



Lessons Out of the visited villages, Tanaheran is arguable the place that saw the biggest uptake and change. In part, this is likely due to the fact that the project interventions were even more relevant - with limited land and nearby forest, the production of vegetables in gardens was seen as more beneficial than elsewhere. A second factor is likely to be the strength of local leadership and social dynamism that provided fertile ground for collective action.

While the village is now better-adapted to climate change, its main constraint to becoming more resilient is the insufficient capacity of rainwater tanks. Using the SPHERE benchmarks, Tanaheran would require not the current 45,000 liters but 232,000 liters of installed capacity to survive the longest rain-free period of 2014 - twenty additional tanks. In their absence, people continue to use contaminated ground water during droughts.



D.4 Gerei village-level results

Background Home to 82 families across 47 households, Rogos village is the southernmost of three villages on Pinepal island.

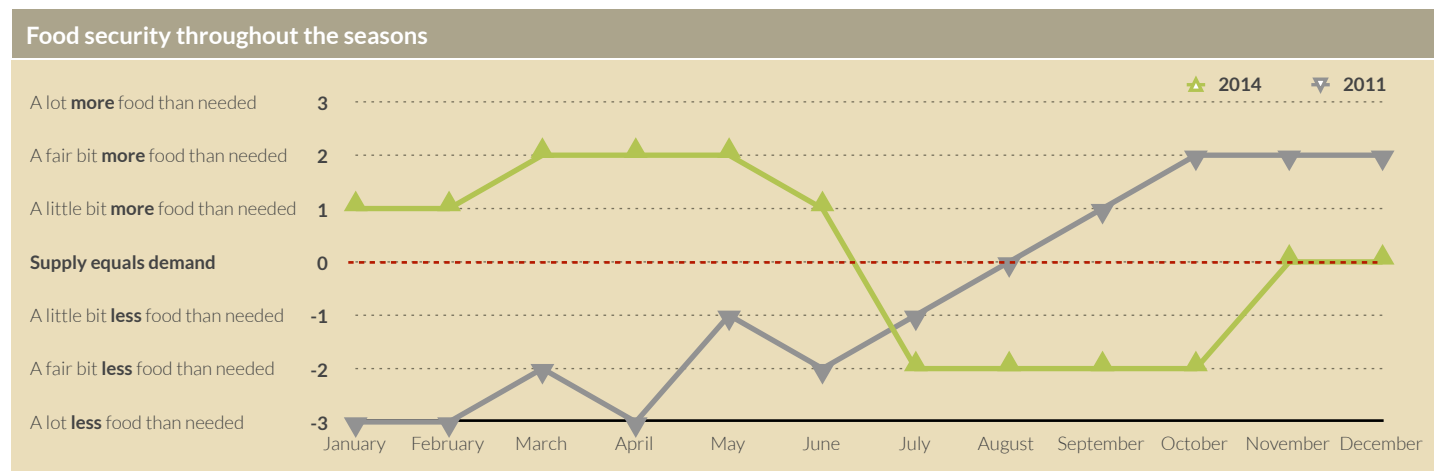
Activities Despite

Outcomes Concerning

Lessons Thi

Trend analysis: the women's view						
Aspect	2011	2012	2013	2014	Trend	Underlying reasons for trends
Crop cultivation	2	2	3	4	+2	CARE training and application of 'big hill' and kitchen gardens. Negative factor: drought and wind
Vegetable production	3	3	3	2	-1	Drought and wind
Food security	2	2	3	4	+2	Overall, the gains of new techniques are greater than weather-induced losses
Income	1	1	1	1	0	
Drinking water	2	2	3	3	+1	CARE distribution of tanks good, but 'unwise' use of water persists
Sanitation	1	1	1	2	+1	CARE training/awareness raising (this actually refers to the previous WASH project)
Disaster preparedness	3	3	3	3	0	
Community cohesion	3	3	3	3	0	
Women's involvement in village affairs	5	5	5	5	0	
Links to local government	1	1	1	1	0	

Trend analysis: the men's view						
Aspect	2011	2012	2013	2014	Trend	Underlying reasons for trends
Crop cultivation	2	2	3	1	-1	Drought causing crops wilting; strong winds and rain; pigs destroy food crops
Vegetable production	2	2	3	3	+1	Learning of new techniques from CARE/NARI training
Food security	3	3	3	3	0	
Income	1	1	1	1	0	
Drinking water	3	3	3	3	0	
Sanitation	3	3	3	3	0	
Disaster preparedness	1	1	1	1	0	
Community cohesion	3	3	3	3	0	
Women's involvement in village affairs	5	5	5	5	0	
Links to local government	1	1	1	1	0	



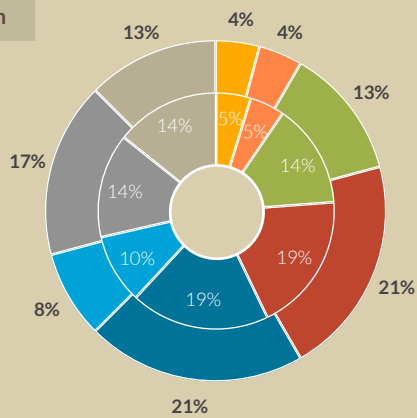


Perceived roles of livelihood activities...

...for income-generation

Small circle: 2012
Large circle: 2014

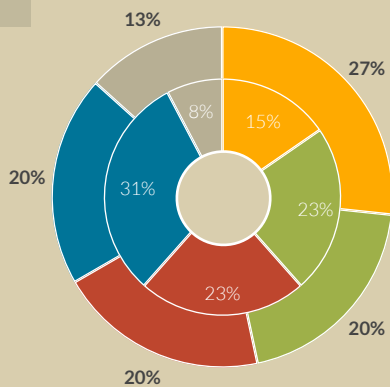
- Food crops
- Cash crops
- Vegetables
- Animal production
- Fishing
- Employment
- Small business
- Other sources



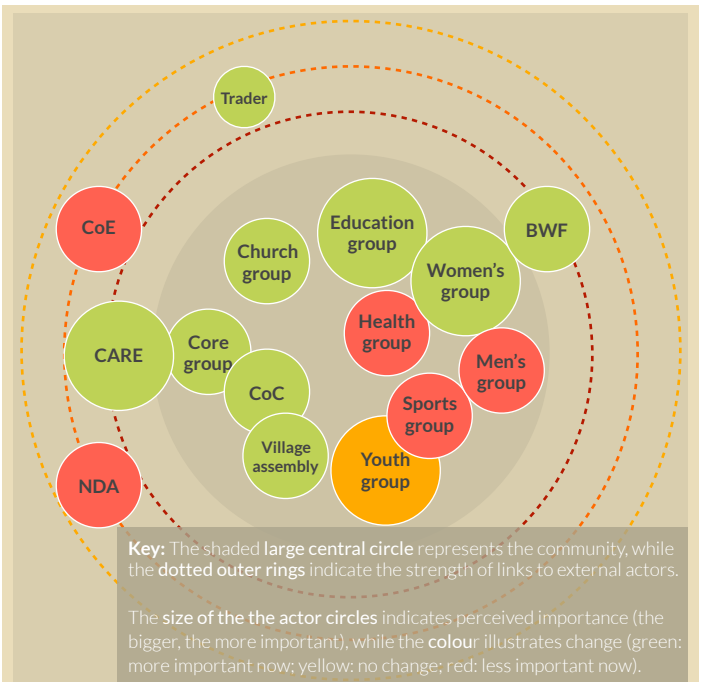
...as a food source

Small circle: 2012
Large circle: 2014

- Food crops
- Vegetables
- Animal production
- Fishing
- Other sources



Community mapping



Workshop participants in Gerei find that most internal groups have gained strength, with the exception of health, sports, youth and men's groups.

Amongst external actors, CARE and the Bougainville Women's Federation (BWF) are seen as closest and most supportive, while a Copra trading company has gained importance. The NDA and CoE are found unsupportive; the ABG is not even listed at all.

D.5 Lihon village-level results

Background Home to 153 households, Lihon is one of the main villages of Nissan. Located adjacent to the former airport and the Nissan district administration, it stretches over more than four kilometers and includes several hamlets. It features the main pier, a school, a shop; in its proximity is also the Nissan High School and the island's biggest church. Compared to all other visited villages, it is thus in a slightly better situation

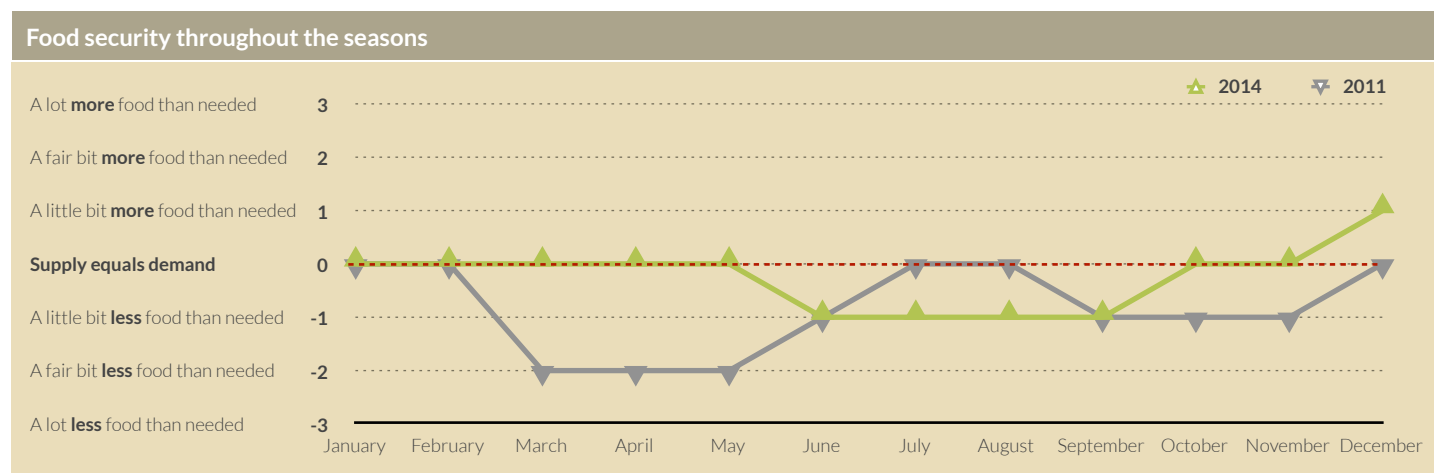
Outcomes Concerning

Lessons Thi

Activities Despite

Trend analysis: the women's view						
Aspect	2011	2012	2013	2014	Trend	Underlying reasons for trends
Crop cultivation	3	3	2	3	0	Drought (2013), use of "big hill" technique
Vegetable production	4	4	4	5	+1	Kitchen gardens and favourable weather conditions
Food security	3	3	2	3	0	
Income	3	3	3	3	0	
Drinking water	3	3	3	2	-1	Long dry season
Sanitation	1	1	1	3	+2	Water and sanitation training
Disaster preparedness	2	2	2	2	0	
Community cohesion	2	2	2	3	+1	Good cooperation - earlier, people had been lazy
Women's involvement in village affairs	3	3	3	4	+1	CARE training on gender equity
Links to local government	2	2	2	3	+1	Community members raise concerns and issues to NDA

Trend analysis: the men's view						
Aspect	2011	2012	2013	2014	Trend	Underlying reasons for trends
Crop cultivation	3	3	2	1	-2	2013: very long dry season ("our food died out"). 2014: lots of rain, food crops grow very well
Vegetable production	4	4	3	4	0	
Food security	2	2	3	3	+1	Core group members raise knowledge of drought-tolerant crops, and provide supplies to adapt.
Income	3	3	2	2	-1	Price of cocoa and copra very low; no training for cash crops
Drinking water	4	5	5	5	+1	Good water management. Tanks never empty
Sanitation	2	2	2	2	0	
Disaster preparedness	3	3	3	3	0	
Community cohesion	5	5	5	5	0	
Women's involvement in village affairs	5	5	5	5	0	
Links to local government	3	3	2	2	-1	Empty promises on relief supply



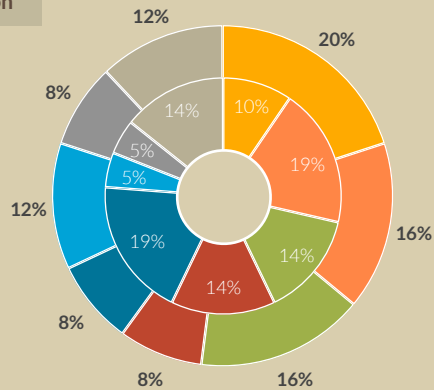


Perceived roles of livelihood activities...

...for income-generation

Small circle: 2012
Large circle: 2014

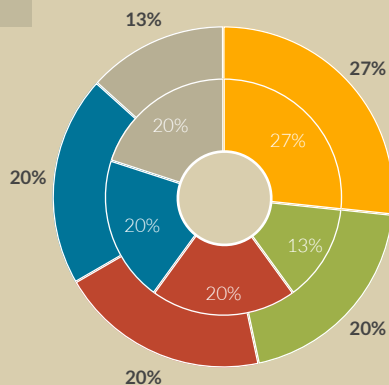
- Food crops
- Cash crops
- Vegetables
- Animal production
- Fishing
- Employment
- Small business
- Other sources



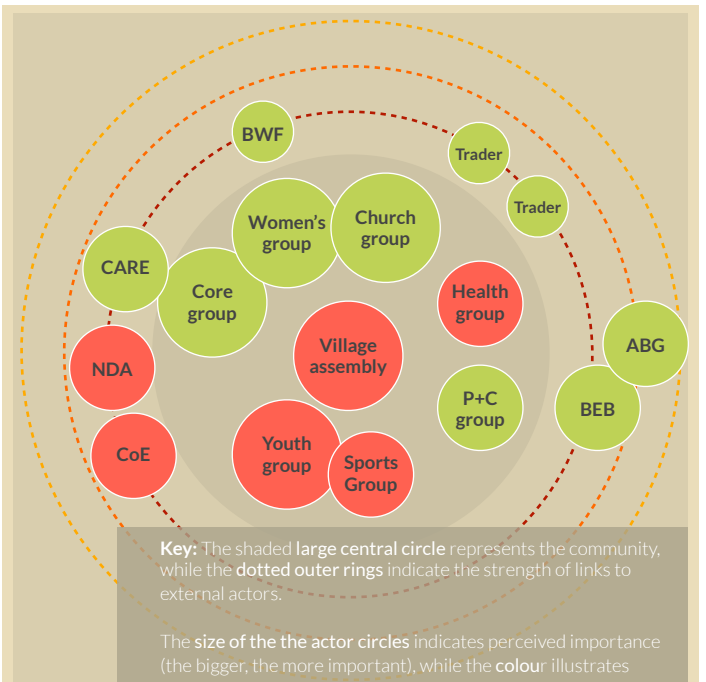
...as a food source

Small circle: 2012
Large circle: 2014

- Food crops
- Vegetables
- Animal production
- Fishing
- Other sources



Community mapping



Amongst community-internal groups in Lihon, the Core group, women's group and church group are perceived to have grown in importance over the past three years, along with the "parents and citizens (P+C) group, which works to enhance education standards. Concerning external actors, CARE, the Bougainville Women's Federation (BWF), the Bougainville Education Board (BEB), and the ABG have gained significance. Two trading companies are also featured amongst actors.

HOUSEHOLD SURVEY QUESTIONNAIRE	NUMBER (NOT TO BE FILLED OUT BY ENUMERATOR) : _____
FINAL EVALUATION OF THE CBA CC PROJECT	Note: <i>Questions marked by italics/underlined allow for multiple answers</i>

PART O | IDENTIFICATION

0.1 Add question in the local language in bold BUT leave the question in English underneath.

What is your enumerator code?

A <input type="checkbox"/>	D <input type="checkbox"/>	G <input type="checkbox"/>
B <input type="checkbox"/>	E <input type="checkbox"/>	H <input type="checkbox"/>
C <input type="checkbox"/>	F <input type="checkbox"/>	J <input type="checkbox"/>

0.2	In which village is this interview being conducted?	
1)	Mapiri	<input type="checkbox"/>
2)	Rogos	<input type="checkbox"/>
3)	Tanaheran	<input type="checkbox"/>
4)	Gerei	<input type="checkbox"/>
5)	Lihon	<input type="checkbox"/>
6)	Test run A	<input type="checkbox"/>
7)	Test run B	<input type="checkbox"/>

PART A | BASIC INFORMATION

<p>Toktok bai ridim igo long ol manmeri. Hello, nem bilong mi mi wok wantaim Care long luksave long ol samplela hevi insait long komunity. Dispel emi wampela hap bilong lukluk bek long CBA CC Projek we CBA CC ibin karim aut pinis long hia. Mi laik askim yu long ol askim long sait long family bilong yu, laifihuds o stap bilong yu, rere long ol taim nogut bai kamap na ol hevi istap insait long ples. dispela survey bai kisim olsem fopela 10 na 5 minits long wokim na ino inap putim yu long ples kila- emi minim olsem nem na edres bilong yu ino nap rekodim. sapos yu wokbung wantaim, yu ken tok kila long ansarim ol askim o stopim dispea intaviu. Yu tok orait long bai mipela intaviuim yu?yesNo (stopim intaviu).</p>	<p>STATEMENT TO BE READ TO POTENTIAL RESPONDENTS. Hello, my name is I am working with CARE to learn more about the conditions in your community. This is part of a review of the CBA CC project that was implemented here. I would like to ask you questions about your family, your livelihoods, disaster preparedness, and village affairs. The survey will take about 45 minutes to complete and is anonymous - which means that your name and address will not be recorded. If you participate, you can decide not to answer a question or to stop the interview at any time. Do you agree to be interviewed? _____ Yes _____ No (→TERMINATE INTERVIEW)</p>
---	---

A.1	Responden em man o Meri	What is the gender of the respondent?
1)	Meri	Female <input type="checkbox"/>
2)	Man	Male <input type="checkbox"/>

A.2	Amas manmeri stap long aus bilong yu?	How many people live in your household?
1)	Raitim namba igo daon	Write number _____

A.3	Het bilong Household em man o meri	What is the gender of the head of the household?
1)	Meri	Female <input type="checkbox"/>
2)	Man	Male <input type="checkbox"/>

PART B | INVOLVEMENT IN THE PROJECT

B.1	Yu bin save o harim CBA CC Projek we Care iwok long em?	Have you ever heard of the CBA CC project implemented by CARE?
1)	Yes	Yes <input type="checkbox"/>
2)	Nogat	No <input type="checkbox"/>

B.2	Yu, o wampela memba bilong aus istap olsem core grup memba we Care i wok long sapotim?	Are you, or is any member of your household, a member of core group supported by CARE?
1)	Yes	Yes <input type="checkbox"/>
2)	Nogat	No <input type="checkbox"/>
99)	Mi no save	I don't know <input type="checkbox"/>

B.3	Insait long tripela yia igo pinis, yu bin kisim sampela training ikam long care?	Over the past three years, have you received any training from CARE project?
1)	Yes, long ol wokman bilong Care.	Yes, from CARE staff <input type="checkbox"/>
2)	Yes, long ol core grup membas	Yes, from core group members <input type="checkbox"/>
3)	Nogat	No <input type="checkbox"/>
99)	Mi no save	I don't know <input type="checkbox"/>

B.4	Insait long tripela yia igo pinis, yu kisim sampela materials sapot ikam long Care?	Over the past three years, have you received any material support from CARE?
1)	Yes	Yes <input type="checkbox"/>
2)	Nogat	No <input type="checkbox"/>
99)	Mi no save	I don't know <input type="checkbox"/>

B.5	Lukluk bek long kamap bilong care CBA CC projek, wane mol toktok tambolo emi kilaiam involvemen o halivim bilong yu?	Considering the beginning of the CARE CBA CC project, which of the following statements best describes your involvement?
1)	Mi no bin involve long owokim asesmen o planim ol mitings.	I have not been involved in any assessments or planning meetings <input type="checkbox"/>
2)	Mi stap long miting tasol mi no bin halivim	I participated in meetings but did not contribute <input type="checkbox"/>
3)	Mi stap long miting na halivim long wokim ol planing	I participated in meetings and contributed to planning <input type="checkbox"/>
99)	Mi no save.	I don't know <input type="checkbox"/>

B.6 Long ol yias igo pinis, amas taim yu mitim ol wokman bilong Care?		How often in the past year have you met CARE project staff?	
1)	1-2 Taims	1-2 times	<input type="checkbox"/>
2)	3-4 Taims	3-4 times	<input type="checkbox"/>
3)	5 Taims	5 times or more often	<input type="checkbox"/>
4)	Nogat olgeta	Not at all	<input type="checkbox"/>
99)	Mi no save	I don't know	<input type="checkbox"/>

B.7 Long lukluk bilong yu, long ol yia igo pinis, amas taim yu bin mitim ol core grup membas?		On average, how often in the past year have you met core group members?	
1)	Mi o wanpela long ol hausol memba em core grup memba	I or one of my household members am/is a member of a core group	<input type="checkbox"/>
2)	Wanpla taim long wanpla mun, ino tumas	Once a month or less often	<input type="checkbox"/>
3)	Klostu olsem tupelo taim long insait long wanpela mun	About twice a month	<input type="checkbox"/>
4)	Tripela taim long wanpela mun	Three times a month or more often	<input type="checkbox"/>
5)	Nogat olgeta	Not at all	<input type="checkbox"/>
99)	Mi save	I don't know	<input type="checkbox"/>

PART C | CLIMATE-RESILIENT LIVELIHOODS.....

C.1/C.2BI ock	Mi laik askim yu long wanem ol samting o pasin yu save wokim long halivim sindaon bilong yu. Bai mi listim ol na askim yu, olsem wanem, yu wokim ol dispela strategis long yia 2014 na long yia 2011.	I would like to ask you about your livelihood strategies. I will list various strategies and then ask whether you applied the strategy in 2014, and in 2011.	C.1 Did your household practice this work in 2014? C.1 Olsem wanem haushol bilong yu practisim dispel strategis long 2014?	C.2 Did your household practice this work in 2011? C.2 Olsem wanem haushol bilong yu practisim dispel strategis long 2011?
On-farm work				
1)	Wokim gaden long kamapim kaikai bilong haus	Crop production for household consumption	<input type="checkbox"/>	<input type="checkbox"/>
2)	Wokim gaden long kamapim kaikai bilong salim na kisim moni	Crop production for sales/income-generation	<input type="checkbox"/>	<input type="checkbox"/>
3)	Lukautim animals na animal prodaks	Production of animals and animal products	<input type="checkbox"/>	<input type="checkbox"/>
4)	Ol narapela wok bilong on-fam	Other on-farm work	<input type="checkbox"/>	<input type="checkbox"/>
Off-farm work				
5)	Fising/hanting (painim ol wel abus long bus)	Fishing/hunting	<input type="checkbox"/>	<input type="checkbox"/>
6)	Ol liklik wok bisnis (maket long rot, stoa kipa)	Small business activities (street vending, shop keeping)	<input type="checkbox"/>	<input type="checkbox"/>
7)	Wokman bilong gavaman, NGO, praivet sekta	Formal employee (government, NGO, private sector)	<input type="checkbox"/>	<input type="checkbox"/>
8)	Wokim ol kaving usim diwai	Handicraft production	<input type="checkbox"/>	<input type="checkbox"/>
9)		Remittances (foreign, domestic)	<input type="checkbox"/>	<input type="checkbox"/>
10)	Salim ol paiawud o chakol	Wood/charcoal sales	<input type="checkbox"/>	<input type="checkbox"/>
11)		Non-timber forest products	<input type="checkbox"/>	<input type="checkbox"/>
12)	Ol narapela kain wok we ino wankain olsem wok gaden	Other off-farm work	<input type="checkbox"/>	<input type="checkbox"/>
C.3	Long yia 2014 on-farm (wok gaden o lukautim animal) na off-farm (wokman, wokim bisnis) i halivim sindaon bilong yu tu long sait bilong kaikai na moni?	In 2014, how much did on-farm and off-farm work contribute to your livelihood (food and income)?		
1)	Usim slida fangsen long sevei we left han emi soim 100% on-fam na rait han emi soim 100% off-fam wok	Use slider function in Survey, where the left side indicates 100% on-farm and the right 100% off-farm work		
C.3a	Lukluk bek long yia 2011, dispel emi narapela kain?	Back in 2011, was this mix different?	FLOW	
1)	Yes	Yes	<input type="checkbox"/>	→ C.3b
2)	Nogat	No	<input type="checkbox"/>	→ C.4
99)	Mi no asve	I don't know	<input type="checkbox"/>	→ C.4
C.3b	Long yia 2011, on-fam(wok gaden o lukautim animal) na off-fam(wokmanmeri, wokim bisnis) i halivim sindaon bilong yu utu long sait bilong kaikai na moni?	In 2011, how much did on-farm and off-farm work contribute to your livelihood (food and income)?		
1)	Usim slaida fangsen long sevei we lef han sait i soim 100% on-fam na rait han sait i soim 100% off-fam	Use slider function in Survey, where the left side indicates 100% on-farm and the right 100% off-farm work		
C.3c	Olsem wanem, Care Project i playim o wokim sampela samting inasit long dispel senis tu?	Has the CARE project played any role behind this change?	FLOW	
1)	Nogat, emi no wokim wanpela samting	No, it did not play a role	<input type="checkbox"/>	→ C.4
2)	Yes, emi wokim sampela gutpela samting	Yes, it played a positive role amongst others	<input type="checkbox"/>	
3)	Yes emi playim o wokim bikipela wok	Yes, it played the main role	<input type="checkbox"/>	
99)	Mi no save	I don't know	<input type="checkbox"/>	
C.4	Ol haus lain bilong yu i kisim sampela ol gutpela toktok long klaimet senis(sisinal/monthly/wikly fokast)?	Does your household have access to climate information (seasonal/monthly/weekly forecasts)?	FLOW	
1)	Yes	Yes	<input type="checkbox"/>	→ C.4a
2)	Nogat	No	<input type="checkbox"/>	→ C.5
99)	Mi no save	I don't know	<input type="checkbox"/>	→ C.5
C.4a	Olsem wane mol hauslain bilong yu bin usim dispela klaimet infomeisen?	Does your household use this climate information?	FLOW	
1)	Yes	Yes	<input type="checkbox"/>	→ C.5
2)	Nogat	No	<input type="checkbox"/>	
99)	Mi no save	I don't know	<input type="checkbox"/>	

C.5	Long ten pela krismas igo pinis yu bin expiriensim sampela senis long klaimet, kain olsem ren i no save pundaon long wankain time, senis long temtretsa, o ples i drai)?	<i>Over the past ten years, have you experienced any changes in the climate, such as different times of rain, changes in temperature, drought etc)?</i>		
1)	Yes	Yes		<input type="checkbox"/>
2)	No	No		<input type="checkbox"/>
99)	Mi no save	I don't know		<input type="checkbox"/>
C.6/ C.7 Block	Mi laik askim yu long adaptaisen stretagis. Bai mi listim ol kankain strategis. Biain bai mi askim yu, olsem wanem yu bin biainim tu ol dispel strategis long yia 2014, na olsem wanem yu introdusim long tripela yia igo pinis?	<i>I would like to ask you about your adaptation strategies. I will list various strategies. I will then ask whether you applied the strategy in 2014, and whether you introduced it over the past three years.</i>	C.6 Did your household apply this strategy in 2014?	C.7 Did you introduce this strategy over the past three years?
			C.6 Ol hauslain bilong yu i aplaim dispel strategi long yia 2014?	C.7 olsem wanem, yu introdusim dispel strategi long tripela yia igo pinis?
Climate adaptation				
1)	Planim ol kankain kaikai	Crop diversification	<input type="checkbox"/>	<input type="checkbox"/>
2)	Lukautim klaimet-resilien krops	Adoption of climate-resilient crops	<input type="checkbox"/>	<input type="checkbox"/>
3)	Senisim taim bilong planim kaikai	Adjustment of planting times	<input type="checkbox"/>	<input type="checkbox"/>
4)	Seivim sid na storim gut	Seed saving and storage	<input type="checkbox"/>	<input type="checkbox"/>
5)	Wokboi	Casual labour	<input type="checkbox"/>	<input type="checkbox"/>
6)	Gaden long peles	Home gardening	<input type="checkbox"/>	<input type="checkbox"/>
7)	Irigeisen	Irrigation	<input type="checkbox"/>	<input type="checkbox"/>
8)	Niu agrikalsa prektises	New agricultural practices	<input type="checkbox"/>	<input type="checkbox"/>
9)	Planim diwai	Tree replanting	<input type="checkbox"/>	<input type="checkbox"/>
10)	Kisim wara long ren/.....	Rainwater harvesting/impounding	<input type="checkbox"/>	<input type="checkbox"/>
11)	Putim gut wara bilong lukautim ol plants o kaikai	Storing water for plants	<input type="checkbox"/>	<input type="checkbox"/>
12)	Putim gut wara, bilong lukautim gut laifstok(Pik, Kakaruk)	Storing water for livestock	<input type="checkbox"/>	<input type="checkbox"/>
13)	Putim gut fodda o kaikai bilong laifstok	Storing fodder for livestock	<input type="checkbox"/>	<input type="checkbox"/>
14)	Rausim ol pikinini long skul	Removing children from school	<input type="checkbox"/>	<input type="checkbox"/>
15)	Kaikai ol wel kaikai o abus	Eating wild food	<input type="checkbox"/>	<input type="checkbox"/>
16)	Serim gut kaikai	Rationing food	<input type="checkbox"/>	<input type="checkbox"/>
C.8/ C.9 Block	Mi laik askim u long laiflihud strategis bilong yu. Bai mi listim sampela strategis na askim yu, olsem wanem yu biainim ol dispel strategis long yia 2014 o long yia 2011.	<i>I would like to ask you about your livelihood strategies. I will list various strategies and then ask whether you applied the strategy in 2014, and in 2011.</i>	C.8 Did your household apply this strategy in 2014?	C.9 Did your household apply this strategy in 2011?
Conservation farming				
1)	Fast hot komposting	Fast hot composting	<input type="checkbox"/>	<input type="checkbox"/>
2)	Layered komposting	Layered composting	<input type="checkbox"/>	<input type="checkbox"/>
3)	Inta-kroping	Inter-cropping	<input type="checkbox"/>	<input type="checkbox"/>
4)	Agro-forestri	Agro-forestry	<input type="checkbox"/>	<input type="checkbox"/>
5)	Small area menesmen	Small area soil management	<input type="checkbox"/>	<input type="checkbox"/>
6)	Integreited pest menesmen	Integrated pest management	<input type="checkbox"/>	<input type="checkbox"/>
7)	Kavaring of krops	Covering of crops	<input type="checkbox"/>	<input type="checkbox"/>
C.10/ C.11 Block	Hamas ol kankain krops na kumu ol hauslain bilong yu i planim	<i>How many different crops and vegetables did your household plant...</i>	C.10 ... in 2014?	C.11 ...in 2011?
Crop diversification				
1)	Namba bilong ol kankain kaikai/kumu	Number of different crops/vegetables		
C.12	Hau bai yu diskramim ability o wok bilong hauslain bilong yu we ol isave adresim klaimet risk olsem iregula na unprediktabel o ekstrim reinfal?	<i>How would you describe your household's ability to address climate risks such as irregular and unpredictable or extreme rainfall?</i>		FLOW
1)	Hai o antap	High	<input type="checkbox"/>	→ C.13
2)	Moderet o namel	Moderate	<input type="checkbox"/>	
3)	Lou o tambolo	Low	<input type="checkbox"/>	
99)	Mi no save	I don't know	<input type="checkbox"/>	
C.13	Long ol dispel toktok tambolo, wanem pela emi tokaut gut tru long ol hauslain bilong yu?	<i>Which of the following statements best describes your household?</i>		FLOW
1)	Mipela nau i save gut turu long klaimet senis na nau mipela i redi gut long ol hevi bilong klaimet risk, ino moa olsem fopela yia igo pinis.	☑We are now better-adapted and more prepared for climate risks than four years ago.	<input type="checkbox"/>	→ C.13a
2)	Bipo fopela yia igo pinis, inogat wanpela senis long lukluk na save bilong mipela long fasim klaimet risk.	→Over the past four years, there has been no change in our ability to face climate risks.	<input type="checkbox"/>	→C.14
3)	Mipela nau i redi gut turu long klaimet risk ino moa olsem fopela yias igo pinis.	☒We are now less prepared for climate risks than we were four years ago.	<input type="checkbox"/>	→ C.14
99)	Mi no save	I don't know	<input type="checkbox"/>	→ C.14
C.13 a	Long lukluk bilong yu, Care projek in bin playim bikpela role long bringim ol gutpela wok kamap, yu skelim olsem wanem, bikpela halivim o nogat.	<i>In your view, to what extent has the CARE project played a role behind this improvement?</i>		FLOW
1)	Main positive role	Main positive role	<input type="checkbox"/>	→ C.14
2)	Main positive role namel long ol narapela	Positive role amongst others	<input type="checkbox"/>	
3)	Nogat role	No role	<input type="checkbox"/>	
99)	Mi no save	I don't know	<input type="checkbox"/>	

C.14 Long hamas days insait long sevenpela days igo pinis yu bin kaikaim ol dispel kaikai (meksimem:7)? Plis yum as inkludim tu ol liklik amaunt we yu bin kaikai iem i wankain olosem wanpela tispun. On how many days over the past seven days have you eaten the following food items (maximum: 7)? Please exclude small amounts that equalled one teaspoon or less.		C.15 And four years ago, on how many days of a week would you normally have eaten from these food items? (max: 7)				
	C.14/15.1 Kaikai we umi save kaikaim olgeta taim, Rice, kon, tapiok na ol arapela kaikai olsem tuiba na rut krop Staples: Rice, corn, cassava, other roots and tubers					
	C.14/15.2 Animal protin: pis, narapela abus bilong solwara, poltri, pok(pik), red mit, wel abus, kiau Animal protein: Fish, other aquatic animals, poultry, pork, red meat, wild meat, eggs					
	C.14/15.3 Paises Galip, pau, bin ked Pulses: Pulses, nuts, bean curd					
	C.14/15.4 Kumu: aibika, pamkin tips na ol narapela kumu Vegetables: green leafy vegetables, bamboo, other vegetables					
	C.14.5 Ol gris kaikai Oils and fats					
	C.14.6 Pruts, olsem kalok, muli, kulau Fruits					
	C.14.7 Drinks, swit biskets Sugar and sweets					
	C.14.8 Susu Milk and milk products					
C.16	Long olgeta, stap bilong yu long sait bilong kamapim kainkain kaikai, emi i senis long fopela yia igo pinis o nogat?	Overall, has your situation in terms of food security changed over the past four years?	FLOW			
1)	Yes, mipela nau igat moa kaikai ino moa olsem fopela yia igo pinis	↗ Yes, we are now better off than four years ago	<input type="checkbox"/>	→ C.16a		
2)	Nogat, ino senis	→ No, it has not changed	<input type="checkbox"/>	→ C.17		
3)	Yes, mipela nau igo bagarap olgeta, ino moa olsem fopela yia igo pinis.	↘ Yes, we are now worse off than four years ago	<input type="checkbox"/>	→ C.16a		
99)	Mi no save	I don't know	<input type="checkbox"/>	→ C.17		
C.16 a	Long wanem wei ol dispela factas I playim biainim dipela senis? Makim olsem ino applicable sapos dispel facta ino stap long konteks bilong yu. Note: emi gutpela moa olsem ol enumaratas imas save long deferens namel long nogat-ifekt na ino aplikabel.	In what way did any of the following factors play a role behind this change? Mark "not applicable" if this factor does not exist in your context. NOTE: It is CRUCIAL that enumerators understand the difference between 'no effect' and 'not applicable'.	1) Not applicable	2) Positive effect	3) No effect	4) Negative effect
A1	Sampela senis long weda	Any changes in the weather	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A2	Sampela senis long maket. (rot/price)	Any changes in the market (access/prices)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A3	Sampela senis long wei bilong wokim gaden	Any changes in cultivation techniques	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A4	Sampela senis long wei bilong lukautim wara	Changes in water management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A5	Ol narapela factas (we I wok klostu wantaim Projek)	Any other factors (related to the project)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A6	Ol narapela factas (we I no wok klostu wantaim projek)	Any other factors (unrelated to the project)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C.17	Long sampela yias igo pinis, ol hauslain bilongn yu bin presevim sampela kaikai redi long taim nogut?	Over the past year, did your household preserve any food for bad times?				
1)	Yes	Yes			<input type="checkbox"/>	
2)	Nogat	no			<input type="checkbox"/>	
99)	Mi nosave	I don't know			<input type="checkbox"/>	
C.18	Na fopela yias igo pinis, ol hauslain bilong yu isave presevim kaikai long redim long taim nogut?	And four years ago, did your household usually preserve any food for bad times?				
1)	Yes	Yes			<input type="checkbox"/>	
2)	Nogat	no			<input type="checkbox"/>	
99)	Mi no save	I don't know			<input type="checkbox"/>	
C.19	Long tenpela yias igo pinis, ol hauslain bilong yu i presevim sampela wara redim long bungim taim nogut?	Over the past year, did your household keep any water reserves for emergencies?				
1)	Yes	Yes			<input type="checkbox"/>	
2)	Nogat	no			<input type="checkbox"/>	
99)	Mi no save	I don't know			<input type="checkbox"/>	
C.20	Na fopela yias igo pinis, ol hauslain bilong yu ibin presevim sampela wara redim long bungim taim nogut?	And four years ago, did your household keep any water reserves for emergencies?				
1)	Yes	Yes			<input type="checkbox"/>	
2)	Nogat	no			<input type="checkbox"/>	
99)	Mi no save	I don't know			<input type="checkbox"/>	

PART D | DISASTER RISK REDUCTION

D.1	Insait long fivpela yia igo pinis, haushold (fameli) bilong u i kisim bagarap?	In the past five years, has your household been affected by a hazard?	FLOW		
1)	Yes	Yes	<input type="checkbox"/>	→ D.2	
2)	No	No	<input type="checkbox"/>	→ D.6	
99)	Mi no save	I don't know	<input type="checkbox"/>	→ D.3	

D.2	Wanem kain bagarap haushold/fameli bilong u bin kisim?	What types of hazard has your household been affected by?	FLOW		
1)	Longpela sun/draut	Drought	<input type="checkbox"/>	→D.3	
2)	Flad	Flood	<input type="checkbox"/>		
3)	Strongpela win na rain	Storm	<input type="checkbox"/>		
4)	Sik bilong ol animol	Animal disease	<input type="checkbox"/>		
5)	Binatang i bagarapim kaikai	Pest	<input type="checkbox"/>		
6)	Arapela samting	Other	<input type="checkbox"/>		
D.3	Insait long fapela yia igo pinis, i bin gat wangepa meri/man/pikiniini in long haus/femeli i kisim bagarap o sik long bikos long dispela bagarap?	In the past five years, has anybody in your household been harmed or fallen sick as a result of a hazard?	FLOW		
1)	Yes	Yes	<input type="checkbox"/>	→ D.3a	
2)	No	No	<input type="checkbox"/>	→D.4	
99)	Mi no save	I don't know	<input type="checkbox"/>	→ D.4	
D.3a	Haushold/femeli bilong u bin kisim bagarap olsam wanem?	How have household members been harmed by a hazard?	FLOW		
1)	Ino bikipela bagarap long skin (mi no go long hausik long kisim marasin)	Minor injuries (did not seek medical attention)	<input type="checkbox"/>	→D.4	
2)	Bikipela bagarap long skin (mi go long hausik long kisim marasin)	Major injuries (required medical attention)	<input type="checkbox"/>		
3)	Sik i kam bikos long disasta/bagarap	Diseases linked to disaster	<input type="checkbox"/>		
4)	Dai	Death	<input type="checkbox"/>		
5)	Arapela samtin	Other	<input type="checkbox"/>		
99)	Mi no save	I don't know	<input type="checkbox"/>		
D.4	Insait long fapela igo pinis, i bin taim we haushold/femeli i hat long kisim moni bikos long bagarap?	In the past five years, has your household been affected economically by a hazard?	FLOW		
1)	Yes	Yes	<input type="checkbox"/>	→ D.4a	
2)	No	No	<input type="checkbox"/>	→ D.5	
99)	Mi no save	I don't know	<input type="checkbox"/>	→D.5	
D.4a	Hauhold/femeli i hat long kisim moni olsam wamen?	How has your household been affected economically?	FLOW		
1)	Propati i demag/bagarap	Property damage	<input type="checkbox"/>	→D.5	
2)	Rot long kisim i bagarap	Disruption or loss of income	<input type="checkbox"/>		
99)	Mi no save	I don't know	<input type="checkbox"/>		
D.5	Haushold/femel bilong u i redi long taim bilong?	How prepared is your household to handle a disaster?	FLOW		
1)	Redi stret	[++]Very prepared	<input type="checkbox"/>	→ D.6	
2)	Ino redi tru	[+]Somewhat prepared	<input type="checkbox"/>		
3)	ino redi	[-]Somewhat unprepared	<input type="checkbox"/>		
4)	Ino redi stret	[--]Very unprepared	<input type="checkbox"/>		
99)	Mi no save	I don't know	<input type="checkbox"/>		
D.6	Komperim wantaim fopela yia igo pinis, haushold/femeli bilong u long nau i redi long handelim disasta o ino tumas?	Compared to four years ago, is your household today more or less able to handle a disaster?	FLOW		
1)	Inap tru	↗More able	<input type="checkbox"/>	→D.7	
2)	No gat senis	→No change	<input type="checkbox"/>	→D.8	
3)	Ino tumas	↘Less able	<input type="checkbox"/>	→D.8	
99)	I mi no save	I don't know	<input type="checkbox"/>	→D.8	
D.7	Long lukluk na tingting bilong u, projek CARE i wokim i plaim rol long improvim?	In your view, to what extent has the CARE project played a role behind this improvement?	FLOW		
1)	Main positive rol	Main positive role	<input type="checkbox"/>	→ D.8	
2)	Positiv rol long ol narapela lain	Positive role amongst others	<input type="checkbox"/>		
3)	Nogat rol	No role	<input type="checkbox"/>		
99)	mi no save	I don't know	<input type="checkbox"/>		
D.8	Wanem ol satment andanit i diskribim gut haushold/femeli bilong u?	Which of the following statements best describes your household?	FLOW		
1)	Mipela no wokim wangepa samtin long redi long taim bilong disasta/bagarap o emegensi na mipela save no plan tu	We have not done anything to prepare for a disaster or emergency <i>and we do not plan to</i>	<input type="checkbox"/>	→D.9	
2)	Mipela no wokim wangepa samtin long redi long taim bilong disasta/bagarap o emegensi tasol mi bai wokim plan long mun i bai kam bihain	We have not done anything to prepare for a disaster or emergency <i>but we plan to in the coming months</i>	<input type="checkbox"/>		
3)	Mipela nau tasol wok long wokim plan bilong disasta o emegensi	We just recently began preparing for a disaster or emergency	<input type="checkbox"/>		
4)	Mipela pripe long disasta o emegensi	We are prepared for a disaster or emergency	<input type="checkbox"/>		
D.9	Block		1) Yes	2) No	99) I don't know
D.9.1	Oi peles save i kisim toksave/wonin pas bifo bikipela win na rain bai kam	Are villagers usually warned ahead of a storm?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D.9.2	Peles bilong u gat disasta rispons o emegensi plan?	Does your village have a disaster response or emergency plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D.9.3	Peles bilong u gat wangepa organis grup we save go pas long taim bilong disasta o emegensi	Does your village have an organized group that decides what to do in disasters or emergencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D.9.4	Oi peles meri/man ol kisim trainin long helivim ol arapela taim long disasta?	Have villagers been trained to assist others in the event of a disaster?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D.9.5	Peles bilong u gat hap long ron no wai i stap?	Does your community have evacuation routes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D.9.6	Peles bilong u gat hap long kisim shelta we ol meri/man/pikiniini ken go na hat long taim bilong disasta?	Does your community have a shelter identified where people can go in the event of a disaster?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D.10	Ovarol, komunit bilong u i redi inap long taim bilong disasta?	<i>Overall, how prepared is your community to handle a disaster?</i>	FLOW
1)	Redi tru	[++] Very prepared	→ D.11
2)	Redi liklik	[+] Somewhat prepared	
3)	Ino redi tumas	[-] Somewhat unprepared	
4)	Ino redi olgeta	[--] Very unprepared	
99)	Mi no save	I don't know	
D.11	Komperim wantaim fopela yia igo pinis, haushold/femeli bilong u long nau i redi long handelim disasta o ino tumas?	<i>Compared to four years ago, is your community today more or less able to handle a disaster?</i>	FLOW
1)	Inap tru	↗ More able	→ D.12
2)	No gat senis	→ No change	→ E.0
3)	Ino tumas	↘ Less able	→ E.0
99)	I mi no save	I don't know	→ E.0
D.12	Long lukluk na tingting bilong u, projek CARE i wokim i plaim rol long improvement?	<i>In your view, to what extent has the CARE project played a role behind this improvement?</i>	FLOW
1)	Main positive rol	Main positive role	→ E.0
2)	Positiv rol long ol narapela lain	Positive role amongst others	
3)	nogat rol	No role	
99)	mi no save	I don't know	
D.13	<i>Did your household receive a cooking stove from CARE?</i>	<i>Did your household receive a cooking stove from CARE?</i>	FLOW
1)	Yes	Yes	→ D.13a
2)	No	No	→ E.0
D.13 a		<i>Have you experienced any benefits from this new stove? Please select all applicable.</i>	FLOW
1)	Less wood needed	Less wood needed	→ E.0
2)	Less time need to collect wood	Less time need to collect wood	
3)	Less time needed to cook	Less time needed to cook	
4)	Less smoke	Less smoke	
5)	Narapela: _____	Other: _____	

PART E | GENDER

E.0	U maret, singol, wido o divos?	<i>What is your civil status?</i>	FLOW
1)	Maret	Married	→ E.1
2)	Singo, wido o divos	Single, widowed or divorced	→ E.4
E.1 Block	Husat istap long haus bilong yu...	<i>Who in your household...</i>	
		1) Ol man tasoil	
		2) Planti em ol man	
		3) Man na meri wankain	
		4) Planti em ol meri	
		5) Ol meri tasoil	
		99) Mi no save	
E.1.1	...disaid long wai long usim moni bilong femeli?	...decides what to do with family income?	
E.1.2	...atendim mitin o ektaviti insait long peles?	...attends meetings or activities in the village?	
E.1.3	...disaid wanem samtin long planim, long taim na wanem hap (kaikai)?	...decides what to plant, when and where (food crops)?	
E.1.4	...disaid wanem samtin long planim, long taim na wanem hap (kes krop)?	...decides what to plant, when and where (cash crops)?	
E.1.5	...disaid long investment long agrikalisa?	...decides on agricultural investments?	
E.1.6	...preperim kaikai?	...prepares food?	
E.1.7	...lukautim ol pikinini?	...cares for children?	
E.2	Wamen ol statement aplie stret long haushold/femeli bilong u?	<i>Which of the following statements best applies to your household?</i>	FLOW
1)	Insait long tripela yia, ol men igat bikpela influens long disisen insait long haus/femeli.	Over the past three years, men have gained more influence in household decisions.	→ E.3
2)	Insait long tripela yia, ino gat senis i kamap long wai men na meri i wokim disisen bilong haus/femeli.	Over the past three years, there has been no change in the way men and women make household decisions	→ E.4
3)	Insait long tripela yia, ol meri igat bikpela influens long disisen insait long haus/femeli.	Over the past three years, women have gained more influence in household decisions.	→ E.3
99)	Mi no save	I don't know	→ E.4
E.3	Wanem em bikpela rison bilong dispela senis? (NOKEN RIDIM OPSEN)	<i>What is the main reason for this change? (DO NOT READ OPTIONS)</i>	FLOW
1)	Fekta i rilate long projek bilong CARE	Factors related to the CARE project	→ E.4
2)	Narapela ol samtine	Other factors	
99)	Mi no save	I don't know	

E.4 Block	Husait i komuniti bilong u...	Who in your community...	1) Ol man tasol	2) Planti em ol man	3) Man na meri wankain	4) Planti em ol meri	5) Ol meri tasol	99) Mi no save
E.4.1	...take pat long ol mitin bilong peles?	...takes part in village meetings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E.4.2	...toktok long taim bilong mitin bilong peles?	...speaks during village meetings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E.4.3	...influensim disisen bilong wok bilong peles?	...influences decisions about village affairs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E.4.4	...mekim disisen bilong wok bilong peles?	...makes decisions about village affairs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E.4.5	...ripresentim peles insait long govavmen?	...represents the village vis-à-vis the government?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E.4.6	...kontrolim funds bilong peles?	...controls village funds?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E.4.7	...kondaktim volenta wok?	...conducts volunteer work?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E.4.8	...involv long organisasen insait long peles?	...is involved in village-based organisations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E.5	Wamen ol statement aplie stret long komuniti bilong u?	Which of the following statements best applies to your community?					FLOW	
1)	Insait long tripela yia, ol men igat bikpela influens long disisen insait long haus/femeli.	Over the past three years, men have gained more influence in community decisions.	<input type="checkbox"/>					→ E.6
2)	Insait long tripela yia, ino gat senis i kama long wai men na meri i wokim disisen bilong haus	Over the past three years, there has been no change in the way men and women make community decisions	<input type="checkbox"/>					→ F.1
3)	Insait long tripela yia, ol meri igat bikpela influens long disisen insait long haus/femeli.	Over the past three years, women have gained more influence in community decisions.	<input type="checkbox"/>					→ E.6
99)	Mi no save	I don't know	<input type="checkbox"/>					→ F.1
E.6	Wanem em bikpela rison bilong dispela senis? (NOKEN RIDIM OPSEN)	What is the main reason for this change? (DO NOT READ OPTIONS)					FLOW	
1)	Fekta i rilate long projek bilong CARE	Factors related to the CARE project	<input type="checkbox"/>					→ F.1
2)	Narapela ol samtine	Other factors	<input type="checkbox"/>					
99)	Mi no save	I don't know	<input type="checkbox"/>					

PART F | COMMUNITY CAPACITY

F.1	Sapos peles bilong u bai wokim/implementim wangepa aktiviti we bai benifitim ovarol welfe na kondisen bilong peles – tasol em ino nap benifitim haushold/femeli bilong u. Bai u sapotim dispela projek tu o?	<i>Suppose your village were to implement an activity that would benefit the overall welfare and conditions of the village - but that would not bring direct benefits to your household. How likely is it that you would support this activity?</i>		
1)	Sapotim stret	Very likely	<input type="checkbox"/>	
2)	sapotim liklik	Likely	<input type="checkbox"/>	
3)	Sapotim o nogat	Unlikely	<input type="checkbox"/>	
4)	No nap sapotim	Very unlikely	<input type="checkbox"/>	
99)	Mi no save	I don't know	<input type="checkbox"/>	
F.2	Long wanmen level ol pipol long dispela peles save kontribut igo long long wokim peles i gutpela hap long stap	<i>To what extent do people in this village contribute towards making the village a better place to live?</i>		
1)	Bikpela kontributsen stret	To a great amount	<input type="checkbox"/>	
2)	Kontribusen inap long skel	To a considerable amount	<input type="checkbox"/>	
3)	Liklik tasol	To a small amount	<input type="checkbox"/>	
4)	Nogat tru	Not at all	<input type="checkbox"/>	
99)	Mi no save	I don't know	<input type="checkbox"/>	
F.3	Ol menmeri long peles save bung amaspela taim long askim gavamen o politisen lida long wokim ol samtin (projek)?	<i>How often do villagers get together to jointly request government officials or political leaders with requests for action?</i>		
1)	Wangepa taim long wanwan mun o planti taim	Once a month or more often	<input type="checkbox"/>	
2)	planti taim long wangepa yia	Several times a year	<input type="checkbox"/>	
3)	Wangepa taim long wangepa yia	About once every year	<input type="checkbox"/>	
4)	nogat tru	Less than once a year or never	<input type="checkbox"/>	
99)	Mi no save	I don't know	<input type="checkbox"/>	
F.4	Long lukluk na tingting bilong yu ol manmeri long peles i wok hat long kisim govaman long wokim samting long peles?	<i>Overall, how effective do you feel that engagement of villagers has been in terms of getting the government to take the desired action?</i>		
1)	Hih	High	<input type="checkbox"/>	
2)	Namel	Moderate	<input type="checkbox"/>	
3)	Lou	Low	<input type="checkbox"/>	
99)	Mi no save	I don't know	<input type="checkbox"/>	
F.5	Wanem ol statmen long andanit i best aplie long kimuniti bilong u?	Which of the following statements best applies to your community?	FLOW	
1)	Ol menmeri long peles i wok wantaim moa den tripela yia igo pinis	↗ Villagers here are now working together more than three years ago.	<input type="checkbox"/>	→ F.6
2)	Ol menmeri long peles i wok wantaim les den tripela yia igo pinis	↘ Villagers here are now working together less than three years ago.	<input type="checkbox"/>	→ F.6
3)	Insait long tripela yia igo pinis, wok bung wantaim ol menmeri long peles ino senes	→ Over the past three years, the extent to which villagers work together has not changed	<input type="checkbox"/>	→ G.1
99)	Mi no save	I don't know	<input type="checkbox"/>	→ G.1
F.6	Wanem em bikpela rison bilong dispela senis? (NOKEN RIDIM OPSEN)	What is the main reason for this change? (DO NOT READ OPTIONS)		
1)	Fekta i rilate long projek bilong CARE	Factors related to the CARE project	<input type="checkbox"/>	→ G.1
2)	Narapela ol samtin	Other factors	<input type="checkbox"/>	
99)	Mi no save	I don't know	<input type="checkbox"/>	

PART G | PROJECT REVIEW

G.1	Long lukluk na tingting bilong u, hausait benefit long projek?	<i>In your view, who benefitted from the project?</i>	FLOW
1)	Olgeta haushold/femeli insait long peles	All households in the village	<input type="checkbox"/> → G.2
2)	Planti haushold/femeli liklik insait long peles	Most households in the village	<input type="checkbox"/> →G.1a
3)	Ino planti tumas haushold/femeli insait long peles	A few households in the village	<input type="checkbox"/> → G.1a
4)	Nogat wanpela manmeri insait long peles	Nobody in the village	<input type="checkbox"/> → G.2
99)	Mi no save	I don't know	<input type="checkbox"/> → G.2
G.1a	Yu save kraiteria/rot long hau ol lain i benefit i ol makim ol?	<i>Do you know the criteria on which beneficiaries were selected?</i>	FLOW
1)	Yes	Yes	<input type="checkbox"/> → G.1b
2)	No	No	<input type="checkbox"/> →G.2
G.1b	Long lukluk na tingting bilong yu dispela ol kraiteria i fae?	<i>Do you think that these criteria were fair?</i>	FLOW
1)	Yes	Yes	<input type="checkbox"/>
2)	No	No	<input type="checkbox"/> → G.2
99)	Mi no save	I don't know	<input type="checkbox"/>
G.2	Tripela via igo pinis, yu lainim niu pela samtin long projek bilong CARE?	<i>Over past three years, have you learned anything new from the CARE project?</i>	FLOW
1)	Yes	Yes	<input type="checkbox"/> →G.3
2)	No	No	<input type="checkbox"/> →G.4
99)	Mi no save	I don't know	<input type="checkbox"/> →G.4
G.3	Long wanem levul yu have aplim wanem samtin yu lainim long nau?	<i>To what extent do you currently apply what you have learned?</i>	FLOW
1)	Mi save aplim logeta samtin u lainim	I apply everything I have learned	<input type="checkbox"/> → G.5
2)	Mi save aplim planti liklik ol samtin mi lainim	I apply most of what I have learned	<input type="checkbox"/> →G.4
3)	Mi no save aplim wanmen ol samtin mi lainim, tasol mi plan long wokim long behain taim.	I do not yet apply what I have learned, but plan to do so in the future	<input type="checkbox"/> →G.4
4)	Mi save aplim ol samtin mi lainim	I do not apply anything I have learned	<input type="checkbox"/> →G.4
99)	Mi no save	I don't know	<input type="checkbox"/> →G.4
G.4	Wanem as tru na yu no save aplim sampela ol samtin yu lainim? (NOKEN RIDIM OPSEN)	<i>What are the reasons why you did not apply some of the things you have learned? (DO NOT READ OPTIONS)</i>	
1)	Mi nogat risos long wokim/implimentim ol senis	I do not have the resources to implement the changes	<input type="checkbox"/>
2)	Mi no pilim konfidont long aplim niupela ol teknik	I do not feel confident in applying new techniques	<input type="checkbox"/>
3)	Mi les long putim livlihud long risk	I do not want to put my livelihood at risk	<input type="checkbox"/>
4)	Mi no save husait long kontetim sapos mi gat problem wantaim niupela teknik	I do not know who to contact if I have problems with the new technique	<input type="checkbox"/>
5)	Mi no lukim wanpela gutpela samtin insait long niupela teknik (s)	I see no advantage in the new technique(s)	<input type="checkbox"/>
6)	Narapela: _____	Other: _____	<input type="checkbox"/>
G.5	Long tingting bilong u dispela niupela teknik/stretegi yu lainim bai yu aplim long bihain taim	<i>Do you think that the new techniques/strategies that you have learned are worth applying into the future?</i>	FLOW
1)	Yes, olgeta bilong ol	Yes, all of them	<input type="checkbox"/> → G.5b
2)	Yes, sampela bilong ol	Yes, some of them	<input type="checkbox"/> →G.5a
3)	No	No	<input type="checkbox"/> →G.5a
99)	Mi no save	I don't know	<input type="checkbox"/> →G.6
G.5a	OPTSENL: Inap yu givim me wanpela eksampol bilong teknik/stretegi bai u no nap aplim? Wai an bai yu nonap aplim?	<i>OPTIONAL: Can you give me an example of a strategy not worth applying? Why is it not worth to be applied?</i>	
1)	Raitim long hia:	Write here:	<input type="checkbox"/>
G.5b	OPTSENL: Inap yu givim me wanpela eksampol bilong teknik/stretegi bai u aplim? Wai an bai yu aplim?	<i>OPTIONAL: Can you give me an example of a strategy worth applying? Why is it worth to be applied?</i>	
1)	Raitim long hia:	Write here:	<input type="checkbox"/>
G.6	Tingting long teknik/stretegi we i impotent stret long yu, yu ting yu bai inap long aplim long bihain taim?	<i>Thinking of the most technique/strategy that is most important to you, do you think you will be able to apply it into the future?</i>	
1)	Yes, mi yet bai wokim	Yes, on my own	<input type="checkbox"/>
2)	Yes, wantaim sapot bilong ol arapela lain	Yes, with support from others	<input type="checkbox"/>
3)	No	No	<input type="checkbox"/>
99)	Mi no save	I don't know	<input type="checkbox"/>
G.7	Igat sampela samtin long projek yu laik serim – olsam, wanem ol samtin i kamap gut stret, or sampela ol projek yumi ken wokim gutpela liklik?	<i>Is there any feedback on the project that you would like to share – for instance, what went particularly well, or ways how similar projects could be carried out better?</i>	
1)	Raitim long hia	Write here:	

Thank you for your participation in this survey.



The project 'Community-based Adaptation to Climate Change in Nissan District (CBA CC)' was launched in mid-2012 to increase the islanders' adaptive capacity and resilience to existing hazards and the impacts of climate change. Three years on, this evaluation shows that the project indeed raised capacity and resilience - it notes a strong positive impact on food security, organizational capacity, as well as towards more equitable gender relations in particular. The project's implementation approach through core groups, who were trained and passed on their knowledge across all villages is seen as being very effective. The merit of these groups is recognized by the local government, who plans to integrate them into formal governance structures.

The evaluation also shows that the process of adaptation to both climate change and challenges in natural resource management is long; while the project provided solid groundwork, further efforts are required to sustain the lives and livelihoods of the people on Nissan and Pinepal islands into the future. This concerns both structural measures (additional rainwater tanks) as well as organizational strengthening. Capacity-building of the Nissan District Administration (NDA) is seen as particularly crucial to further raise the islanders' adaptive capacity.