# Building Resilience in Eastern Indonesia – Effectiveness Review
## *Full Technical Report*

**Oxfam GB**
**Adaptation and Risk Reduction Outcome Indicator**

**July, 2012**

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## Executive Summary

Under Oxfam Great Britain's (OGB) Global Performance Framework (GPF), sufficiently mature projects are being randomly selected each year and their effectiveness rigorously assessed. One of the projects randomly selected for an effectiveness review is entitled Building Resilience in Eastern Indonesia: Management and Technical Support (IDSC35). As its name implies, the overall aim of this project was to provide technical and operational support to the Building Resilience Programme in Eastern Indonesia. However, rather than assessing the effectiveness of this technical and operational support, it was considered of greater interest to examine the effectiveness of the actual work carried out by this programme. The review, in particular, focused on the work of three of OGB's partner organisations – Konsepsi, Koslata, and LP2DER – that implemented this programme in 30 villages located in three districts – Lombok Utara, Lombok Timur, and Bima – of Indonesia's Nusa Tenggara Barat (NTB) province.

To assess the effectiveness of the programme in promoting resilience, a quasi-experimental impact evaluation design was implemented. This involved administering surveys to representative samples of 242 households located in 23 sub-villages targeted by the programme and 363 other households located in 23 similar sub-villages in adjacent areas that were not. The households from the intervention and comparison sub-villages were then compared against various outcome measures. Propensity score matching (PSM) and multivariable regression (MVR) were used in the statistical analysis of the data to reduce bias. The key area of interest examined through this process is the extent the intervention and comparison households differ in relation to characteristics that are assumed important for successfully reducing risk and adapting to emerging trends and uncertainty. These characteristics fall under five dimensions – livelihood viability, innovation potential, access to contingency resources and support, ecosystem health, and social capability.

The Building Resilience in Eastern Indonesia Programme, as implemented by Konsepsi, Koslata, and LP2DER, was primarily focused on affecting the characteristics falling under the latter dimension. And there is evidence generated through this effectiveness review that it was significantly successful in doing so. In particular, both men and women from the intervention sub-villages were found to have a) greater awareness of their respective village's disaster management plans; b) participated more extensively in disaster preparedness meetings; and c) received more disaster preparedness information. That being said, significant numbers of men and women in the intervention sub-villages appear not to have been significantly affected by the programme's activities. There is also evidence that the performance of the three partners in bringing about these positive results differs.

Overall, there is little evidence that the programme was successful in positively affecting the characteristics of the livelihood viability, innovation potential, access to contingency resources and support, and ecosystem health dimensions. This is not surprising, given that this was not the focus of the programme. Nevertheless, there is evidence that one of the implementing partners – LP2DER – positively affected several characteristics falling under the dimensions of livelihood viability and innovation potential.

Based on the findings of this effectiveness review, the programme's stakeholders are encouraged to consider the following to strengthen their efforts in promoting resilience:

- Explore whether there are key differences in the way LP2DER implemented the programme and/or whether it carried out any complementary interventions that could be scaled-up elsewhere.
- Seek to understand why the effects of the programme under the social capability dimension are different for both men and women.
- Consider informing future programming decisions based on the current status of each characteristic examined through this effectiveness review.

## 1.0 Introduction and Purpose

Oxfam GB has put in place a Global Performance Framework (GPF) as part of its effort to better understand and communicate its effectiveness, as well as enhance learning across the organisation. This framework requires project/programme teams to annually report output data across six thematic indicator areas. In addition, modest samples of mature projects (e.g. those closing during a given financial year) relevant to each thematic indicator area are being randomly selected each year and rigorously evaluated. One key focus is on the extent they have promoted change in relation to relevant OGB global outcome indicators.

*The Effectiveness Review focused on assessing the effectiveness of the disaster preparedness work of three partners organisation – Konsepsi, Koslata, and LP2DER.*

The global outcome indicator for the adaptation and risk reduction ARR thematic area is based on the extent households in surveyed villages emulate characteristics assumed important for reducing risk and adapting to emerging trends and uncertainty. This indicator is explained further in Section 4.0 below, and the work that took place in Indonesia in March and April 2012 was part of an effort to capture data on this indicator. The project randomly selected for the effectiveness review is entitled Building Resilience in Eastern Indonesia: Management and Technical Support (IDSC35). The overall aim of this project is to provide technical and operational support to the Building Resilience Programme. However, rather than assessing the effectiveness of this technical and operational support, it was considered of greater interest to examine the effectiveness of the actual work carried by the Building Resilience Programme. This work is being undertaken through two AusAid funded projects that are being implemented in Papua and Papua Barat provinces (IDSC38) and Sulawesi Utara, Sulawesi Tengah, Nusa Tenggara Barat (NTB), and Nusa Tenggara Timur (NTT) provinces (IDSC39).

However – given time, security, and budget constraints – it proved impractical to carry out the assessment in all four provinces. Consequently, a decision was made to focus on NTB province, given that three of the programme's six implementing partners are located in this province and there were relatively few security issues preventing access to the supported sites. Prior to data collection, three of OGB's partner organisations – Konsepsi, Koslata, and LP2DER– had implemented disaster preparedness interventions in 30 villages located in three districts – Lombok Utara, Lombok Timur, and Bima.

This report, in particular, presents the results of a process where data were collected from both villages that were supported through the Building Resilience in Eastern Indonesia project and nearby, similar villages that were not. However, before doing so, Section 2.0 provides background information on this project. Section 3.0, Section 4.0, and Section 5.0 follow by presenting the conceptual framework underlying the indicator, the impact evaluation design that was used, and the methods of data collection and analysis, respectively. Section 6.0 is the longest section of this document. Its subsections present basic descriptive statistics, data on intervention exposure, and finally the overall differences between households in the intervention and comparison villages. Section 7.0 concludes the document with general conclusions and programme learning considerations.

## 2.0 Background Information on the Building Resilience Project in NTB Province

*The project was implemented in 16 districts, but the effectiveness review only focused on three districts, given security and logistical concerns.*

Funded by AUSAID, the Building Resilience in Eastern Indonesia project was a three year initiative that aimed to substantially reduce disaster-related loss, including human life and the social, economic, and environmental assets which the communities it targeted depend. This overall aim was to be achieved by strengthening the capacities of communities and relevant government institutions in disaster prone districts in four provinces of Eastern Indonesia, including Nusa Tenggara Timur (NTT), Nusa Tenggara Barat (NTB), Sulawesi Utara, and Sulawesi Tengah. The project's specific objectives included:

1. To strengthen government, civil society, and community action for disaster risk reduction in order to enable communities, government and CSOs to identify, plan and act for reducing the vulnerabilities of communities to disasters; and
2. To improve the capacity of Oxfam partners in implementing DRR projects through training and ongoing coaching in order to enable partners to work with the government, civil society and communities to plan and implement DRR models to reduce the vulnerabilities of the communities, particularly women.

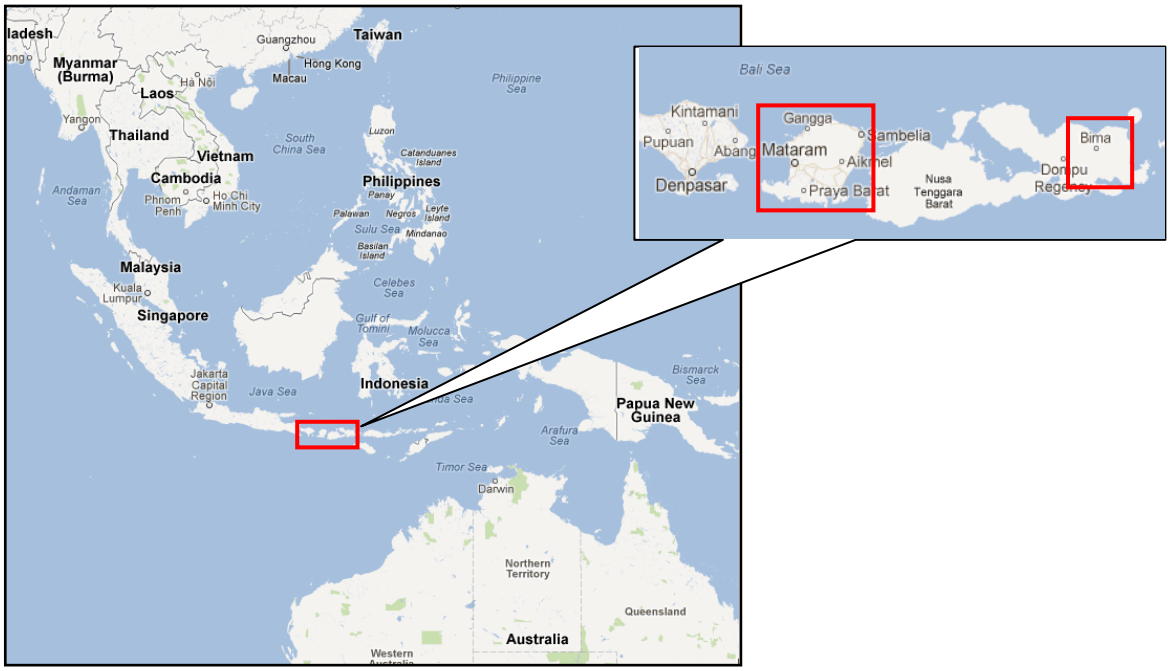



**FIGURE 2.1: Location of Sites for Effectiveness Review in NTB Province**

The effectiveness review focused on work carried out by three of Oxfam GB's partner organisations – Konsepsi, Koslata, and LP2DER – in Lombok Utara, Lombok Timur, and Bima districts of Indonesia's NTB Province (see Figure 2.1 above). Under the Building Resilience Project, each partner worked to increase the capacity of 10 villages to respond effectively to the key natural disasters they regularly face. Administratively, each of the 10 villages is made up of a number of sub-villages, and the partners focused the bulk of their direct

programmatic work on those sub-villages most susceptible to natural disasters. The nature of these disasters vary, but include flash floods, landslides, tsunamis, and hurricanes.

# 3.0 The ARR Outcome Indicator and Its Conceptual Underpinnings

## 3.1 Introducing the ARR Outcome Indicator

As part of Oxfam GB's (OGB) Global Performance Framework, efforts are being undertaken to develop an innovative approach to measuring the resilience of households to shocks and stress and their ability to adapt to change. This approach involves capturing data on various household and community characteristics falling under five interrelated dimensions presented in Figure 3.1.1. Scores are allocated for each household depending on how it is fairing on the characteristic in question. A household's overall score, then, is obtained by adding all these individual household characteristic scores. These overall scores can be used as a continuous outcome measure in statistical analysis. Alternatively, a binary outcome variable can be created by defining a cut-off point in the continuous score, with 1 indicated for households that have surpassed this threshold and 0 for those below it. For OGB's global Adaptation and Risk Reduction (ARR) outcome indicator, the binary version of this indicator is defined as follows:

*The "characteristic approach" assumes that households that are better able to cope with shocks and adapt to change possess particular attributes .*

- **% of targeted households demonstrating greater ability to minimise risk from shocks and adapt to emerging trends & uncertainty**

The term *greater ability* appears in the wording of the indicator because of how it is computed in practice. Specifically, a household is coded with 1 if it is above the medium of the comparison group and 0 if otherwise. Thus, households demonstrating greater ability are those who are above the typical household of the comparison group.

One reason why measuring concepts such as resilience and adaptive capacity is complicated is because we can only really assess whether a system has successfully coped or adapted after the fact.[1] In other words, we would have to wait until after a disaster has struck and/or climatic change has taken place in order to assess the effectiveness of our interventions. And, in order to do this credibly, we would also need to capture data from households in control or comparison communities that are similar to the intervention communities but did not benefit from our support.

The characteristic approach attempts to get around this issue by hypothesising that there are particular characteristics of households (and even communities, organisations, governments, etc.) that affect how well they are able to cope with shocks and positively adapt to change. A limitation, of course, is that we do not know for certain how relevant these characteristics actually are; rather, we assume they are important based on common sense, theory, and/or field experience. However, there is nothing preventing them from being informed by stronger empirical evidence, and it is recommended that they be

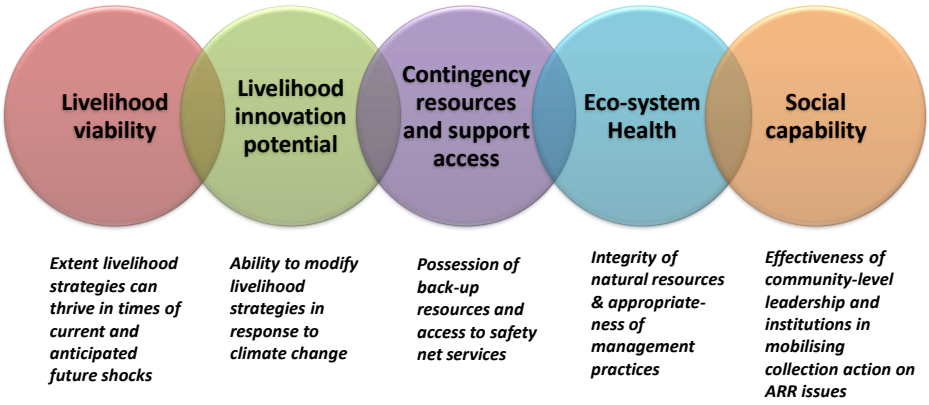
[1] Dodman, D., Ayers, J. and Huq, S. (2009), 'Building Resilience', Chapter 5, in World Watch Institute (ed), *'2009 State of the World: Into a Warming World*', Washington D.C: World Watch Institute, pp. 151-168.

continuously updated, as the body of research on the determinants of resilience and adaptive capacity grows.

The characteristics that inform the ARR indicator fall under the five dimensions presented in Figure 3.1.1. First, if we think about what a household would need in order to cope with current and future shocks, stresses, and uncertainly, a viable livelihood is likely one of them. If a shock happens, for instance, a household dependent on just one precarious livelihood activity will likely be more negatively affected than another that has one or more less sensitive alternatives to fall back on, *all other things being equal*. In addition, households that are on the margins of survival are less likely to be resilient than their relatively more wealthy counterparts. Where longer-term climatic trend prediction information exists, it is also important to assess how viable current livelihood strategies would be in the new climatic reality.

*The characteristics are context specific but informed by a framework comprising of five distinct dimensions.*

**FIGURE 3.1.1:**
**Dimensions affecting the ability of households and communities to minimise risks from shocks and adapt to emerging trends and uncertainty**




Livelihood innovation potential is different and hence separate. It is focused on a household's ability to positively adjust to change, whether anticipated or not. We can hypothesise that such potential is dependent on factors such as the knowledge and attitudes of relevant household members themselves, their ability to take risks, and their access to weather prediction and market information and relevant technology and resources.

Moreover, there will likely be times when even households with the most "resilient" and adaptive livelihood strategies will find it tough to get by. Access to contingency resources and external support – e.g. savings, food and seed reserves, social protection, kin and non-kin support networks, emergency services, etc. – are, therefore, likely to be critical in supporting households to cope with shocks and positively adjust to change.

It is further recognised that healthy ecosystems are better able to cope/adjust to climatic shocks/change than those that are relatively more degraded.[2] We may reasonably assume – again with all other things being equal – that households whose livelihoods are dependent on healthier ecosystems will be in a better position to adjust to climatic shocks/change than those that are not. The presence of appropriate infrastructure (e.g. pit latrines and roads) that is resilient to shocks and stresses (e.g. flooding) is equally important; if critical infrastructure no longer functions or collapses in times of shocks and stress, the livelihoods and/or health of community members can be negatively affected.

In most, if not all cases, it is necessary to look beyond the household level when examining resilience and adaptive capacity. Indeed, it is reasonable to assume that households are likely better able to adjust successfully to climatic shocks/change when they are part of larger coordinated efforts at the community level and beyond. The social capability dimension, in particular, is concerned with the effectiveness of informal and formal institutions in reducing risk, supporting positive adaptation, and ensuring equitable access to essential services in times of shock/stress. In the absence of this capability, we can assume that community-level duty bearers will be less effective in fulfilling their responsibilities in supporting community members to reduce risk and/or successfully adapt.

*Efforts must be undertaken to specify specific characteristics relevant to the context in question.*

Specific characteristics believed to influence both resilience and adaptation fall under each of the five dimensions. However, no "one size fits all"; that is, many of the characteristics appropriate for a particular population (e.g. slum dwellers in Mumbai, India) may not be so for another (e.g. Bolivian shifting cultivationists). As such, each particular suite of characteristics needs to be appropriately specified given nature of the population in question and the hazards and change processes to which it is likely to be subjected.

## 3.2 The Particular ARR Characteristics Used in the Building Resilience in Eastern Indonesia Effectiveness Review

As mentioned above, there is no one generic set of "resilience" characteristics that can be applied to all contexts. Given this, efforts were made to specify characteristics relevant to the project's context. These characteristics are presented in Table 3.2.1 by dimension.

There are several observations that deserve mention here. First, many of the characteristics falling under the Livelihood Innovation Potential dimension, e.g. farming extension support, should ideally also fall under the Livelihood Viability dimension. In other words, there are a number of characteristics that are relevant to both the Livelihood Viability and Livelihood Innovation Potential dimensions. Second, issues pertaining to several of the dimensions are difficult to comprehensively measure with household-level data. This applies particularly (but not exclusively) to the Social Capability dimension. Ideally, qualitative community-level assessments should have been undertaken in both the intervention and comparison sub-villages to assess

[2] Ibid.

community capacity to respond to disasters and support adaptation processes. However, given that the resulting data would be difficult to incorporate into the statistical analysis, this was not carried out.

*A total of 17 characteristics under the five dimensions were identified.*

**TABLE 3.2.1:**
**Specific ARR Characteristics Used for Indonesia's Building Resilience in Eastern Indonesia Project**

| Dimension | Characteristic |
|---|---|
| Livelihood Viability | • Livelihood diversification<br>• Relocation/modifications to home, fields, livestock shelter, or asset storage<br>• Access to seasonal forecast information<br>• Access to disaster preparedness information |
| Livelihood Innovation Potential | • Motivation to pursue alternative livelihood strategies<br>• Attitudes about climate change<br>• Credit access (formal and informal)<br>• Access to climate trend information<br>• Farming extension support<br>• Access to marking information & support<br>• Access to livelihood innovation support |
| Access to Contingency Resources and Support | • Social support system<br>• Contingency resources, i.e. savings & "convertible" assets |
| Eco-system Health | • Natural resource management practices |
| Social Capability | • Knowledge of disaster management plan<br>• Participation in flood preparation meetings<br>• Receipt of disaster preparedness information |

Scores were allocated to the interviewed households for each characteristic, depending on their responses to the questions asked. The way the scoring was done is presented in Table 3.2.2. A four-point scoring scale was used for each characteristic, and the greater a household emulates the characteristic in question, the higher the score it obtained. The scoring descriptor for access to various services and support, e.g. seasonal forecasting information and credit, are the same, so these have been considered together in the table. These raw scores were then added together and divided into the total possible scores to derive overall score and dimension-specific percentage scores for each of the five dimensions presented in Table 3.2.1.

It is important to bear in mind that the three partners – Konsepsi, Koslata, and LP2DER – through the Building Resilience in Eastern Indonesia Project did not attempt to affect all of the above characteristics. In fact, their work at the community level was primarily focused on supporting the sub-villages to develop preparedness plans to ensure effective evacuation of local residents to safety in times of natural disasters. As such, assessing the project's effectiveness in terms of affecting all these various characteristics is, from one perspective, not fair, given that it was not set up to do so. On the other hand, the data can be disaggregated in relation to those characteristics it did attempt to affect, and the results for the other characteristics can be used to inform future programming.

**TABLE 3.2.2:**
**Description of How Scores Were Given for Each Characteristic**

| Characteristic | Scoring Descriptor (4-point Scale) |
|---|---|
| • Livelihood diversification | Low scores given for households with high dependency on a limited number activities that are vulnerable to the primary disasters to which the sub-village in question is subjected; higher scores given for dependency on a greater variety of activities, particularly those that continue to function if the sub-village was hit by say a flash flood or landslide. |
| • Access to various services, e.g. seasonal forecasting information | Low scores given for no access or limited uptake; higher scores given with reportedly greater use and service satisfaction. |
| • Relocation of/modifications to home, fields, livestock shelter, or asset storage | Households given higher scores the more they reported having relocated their agricultural fields, livestock shelter, family home, and asset storage locations to safe locations or had made relevant improvements to increase their resilience. |
| • Motivation to pursue alternative livelihood strategies | Households were asked whether they are more interested in strengthening existing livelihoods or pursuing alternative livelihood strategies. Households were given higher scores if they expressed significant interest in pursuing the latter. |
| • Attitudes about climate change | Households were asked to state their level of agreement/disagreement to a set of eight positive and negative statements relating to climate change. The more positive their responses, the higher the scores. |
| • Social support system | Higher scores were given for more reported participation in community self-help groups and receipt of support from such groups. |
| • Contingency resources, i.e. savings & "convertible" assets | Higher scores were given the more months the household reported being able to survive off its savings or through the sale or trading of its "convertible" assets, e.g. mobile telephone |
| • Knowledge of disaster management plan | Low scores were given if the household reported not knowing whether the village in which it lives has a disaster management plan and/or the contents of this plan; higher scores were given the more reported knowledge the respondent has about the plan. (Men and women were interviewed separately.) |
| • Participation in disaster preparation meetings | The greater the reported participation in flood preparedness meetings, the higher the score. (Men and women were interviewed separately.) |
| • Receipt of disaster preparedness information | The more the household reported having had received such information, the higher the score. (Men and women were interviewed separately.) |

# 4.0 Impact Assessment Design

## 4.1 Limitations in Pursuing the 'Gold Standard'

*The Effectiveness Review attempted to get at what would have happened had the project never been implemented.*

A social programme's net effect is typically defined as the average gain participants realise in outcome (e.g. reduced asset loss) from their participation. In other words:

**Impact** = average post-programme outcome of participants – what the average post-programme outcome of these same participants would have been had they never participated

This formula seems straightforward enough. However, *directly* obtaining data on the latter part of the equation – commonly referred to as the counterfactual – is logically impossible. This is because a person, household, community, etc. cannot *simultaneously* both participate and not participate in

a programme. The counterfactual state can therefore never be observed directly; it can only be estimated.

The randomised experiment is regarded by many as the most credible way of estimating the counterfactual, particularly when the number of units (e.g. people, households, or, in some cases, communities) that are being targeted is large. The random assignment of a sufficiently large number of such units to intervention and control groups should ensure that the statistical attributes of the two resulting groups are similar in terms of a) their pre-programmes outcomes (e.g. both groups have the same average incomes); and b) their observed characteristics (e.g. education levels) and unobserved characteristics (e.g. motivation) relevant to the outcome variables of interest. In other words, randomisation works to ensure that the *potential outcomes* of both groups are the same. As a result – provided that threats such differential attrition and intervention spill-over are minimal – any observed outcome differences observed at follow-up between the groups can be attributed to the programme.

However, implementing an ideal impact assessment design like this is only possible if it is integrated into the programme design from the start, since it requires the introduction of some random element that influences participation. To evaluate an ongoing or completed programme – as in this effectiveness review – or one where randomisation is judged to be impractical, it is therefore necessary to apply alternative techniques to estimate the counterfactual as rigorously as possible.

### 4.2 Alternative Evaluation Design Pursued

There are several evaluation designs when the comparison group is non-equivalent that can – particularly when certain assumptions are made – identify reasonably precise intervention effects. One solution is offered by matching: Find units in an external comparison group that possess the same characteristics, e.g. ethnicity, age, and sex, relevant to the outcome variable as those of the intervention group and match them on the bases of these characteristics. If matching is properly done in this way, the observed characteristics of the matched comparison group will, on average, be identical to those of the intervention group.

*The evaluation design involved comparing households in villages targeted and not targeted by the project, while using statistical procedures to control for potentially confounding factors.*

The problem, however, with conventional matching methods is that, with large numbers of characteristics on which to match, it is difficult to find comparators with similar combinations of characteristics for each of the units in the intervention group. The end result, typically, is that only a few units from the intervention and comparison groups get matched up. This not only significantly reduces the size of the sample but also limits the extent the findings can be generalised to all programme participants. (This is referred to as the “curse of dimensionality” in the literature.)

Fortunately, matching on the basis of the propensity score – the conditional probability of being assigned to the programme group, given particular background variables or observable characteristics – offers a way out. The way propensity score matching (PSM) works is a follows: Units from both the intervention and comparison groups are pooled together. A statistical probability model is estimated, typically through logit or probit regression.

*Two popular methods were used to address selection bias – propensity score matching and multivariable regression.*

This is used to estimate programme participation probabilities for all units in the pooled sample. Intervention and comparison units are then matched within certain ranges of their conditional probability scores. Tests are further carried out to assess whether the distributions of characteristics are similar in both groups after matching. If not, the matching bandwidth or calliper is repeatedly narrowed until the observed characteristics of the groups are statistically similar. Provided that a) the dataset in question is rich and of good quality; b) the groups possess many units with common characteristics (i.e. there is a large area of common support); and c) there are no unobserved differences lurking among the groups, particularly those associated with the outcomes of interest, PSM is capable of identifying unbiased intervention effects.

Multivariable regression is another approach that is also used to control for measured differences between intervention and comparison groups. It operates differently from PSM in that it seeks to isolate the variation in the outcome variable explained by being in the intervention group *net of other explanatory variables* (key factors that explain variability in outcome) included in the model. In this way, multivariable regression controls for measured differences between the intervention and comparison group. The validity of both PSM and multivariable regression are founded heavily on the "selection on observables" assumption, and, therefore, treatment effect estimates can be biased if unmeasured (or improperly measured) but relevant differences exist between the groups.[3] Both PSM and multivariable regression were used during data analysis, and efforts were made to capture key explanatory variables believed to be relevant in terms of the assessed outcomes, e.g. sex and age of household head, educations levels, etc. (see Section 6.0 below).

While no baseline data were available, efforts were made, as explained above, to reconstruct it through respondent recall. This method does have limitations, e.g. memory failure, confusion between time periods, etc. However, for data that can be sensibly recalled, e.g. ownership of particular household assets, it can serve to enhance the validity of a cross-sectional impact evaluation design. The reconstructed baseline data were used in two ways. First, several of the variables included in the PSM and regression procedures were baseline variables constructed from recalled baseline data. One set of variables, for example, was related to the respondents wealth status at baseline, e.g. whether they were asset rich, asset poor, or somewhere in between. This was done in attempt to control for baseline wealth differences between the intervention and comparison groups.

The second way the reconstructed baseline data were used was to derive pseudo difference-in-differences (double difference) intervention effect estimates. With longitudinal or panel data, this is implemented by subtracting each unit's baseline measure of outcome from its endline measure of outcome (i.e. endline outcome status minus baseline outcome status). The intention here is to control for time invariant differences between the groups.

[3] One of the MVR procedures that was used attempted to control for possible unobserved differences between the groups. This is the Heckman Selection Model or 2-step Estimator. Here, efforts are made to directly control for the part of the error term associated with the participation equation that is correlated with both participation and non-participation. The effectiveness of this method, however, depends, in part, how well the drivers of participation are modelled.

Bearing in mind the limitations associated with recalled baseline data, using PSM and/or regression and the double difference approaches together is considered a strong impact evaluation design.

### 4.3 The Comparison Population

A key factor in ensuring the validity of any non-randomised impact evaluation design is to use an appropriate comparison group. This is particularly true for ex-post, cross-sectional designs. Comparators who differ in relevant baseline characteristics and/or who are subjected to different external events and influences will likely result in misleading conclusions about programme impact. Identifying a plausible comparison group is therefore critically important and is, generally speaking, not an easy task in non-experimental work.

The challenge we confronted, then, was how to identify sub-villages that could be comparable with those where Konsepsi, Koslata, and LP2DER had implemented the project. The approach that was taken involved working with the partners to match each intervention sub-village with a similar comparison sub-village. Each comparison sub-village needed to be subjected to the same natural disasters, be in relatively close proximity to, and possess similar social, demographic, and ecological characteristics as its matched intervention sub-village. This purpose of this one-to-one sub-village matching process was to make the comparison and intervention villages as comparable as possible.

In some cases it was not possible to find an appropriate match for every intervention sub-village. For example, several of these sub-villages where subjected to hazards such as tsunamis, and it was not possible to identify plausible matches for them. Data were, consequently, not collected from these particular intervention sub-villages. This resulted in the collection of data from 23 out of the out of the 30 sub-villages and 23 purposively matched comparison sub-villages. The results of the effectiveness review, then, can only be generalised to these 23 sub-villages targeted by the project.

## 5.0 Methods of Data Collection and Analysis

#### 5.1 Data Collection

*Sampling was done in two stages. The first was based on the PPS method, while the latter involved systematic random sampling.*

A household questionnaire was developed by Oxfam staff and translated by the Consultant to capture data on both the characteristics and other outcome measures of interest presented in Section 3.0 above. Data for other key variables of the interviewed households, e.g. distance of village to nearest market centre, were also obtained to implement the evaluation design described in Section 4.0.

The 16 enumerators that administered the questionnaires were primary university students or recent university graduates, the majority of whom came from the municipality of Mataram. Approximately, 18 prospective enumerators completed the two-day training course, which was led by the Consultant but also supported by OGB staff. The second day involved a practice run at administering the questionnaire, followed by critical review of

the performance of the enumerators. Several of the enumerators subsequently dropped out of the exercise.

To select respondents in each of the 46 surveyed villages, a two-stage sampling method was used. In the first stage, village population statistics were used to identify the number of respondents to be interviewed in each village using the probability proportionate to size (PPS) method.[4] To identify the particular households to be interviewed in each village (the second stage), systematic random sampling was undertaken using household lists obtained from the headquarters of each village.

A total of 242 intervention households and 363 comparison households were successfully interviewed. The work of the enumerators was closely monitored and scrutinised by the Consultant and, on the first day of the survey, by OGB staff. The Consultant accompanied and supervised the enumerators for the duration of the data collection process.

### 5.2 Data Analysis

OGB developed data entry tools in Adobe Acrobat Pro, and the Consultant recruited and supervised data entry clerks to enter the data. After identifying and rectifying some minor errors in MS Excel, the data were then imported into Stata for analysis, the results of which are presented in the following sections. Most of the analyses involved group mean comparisons using *t*-tests, as well as PSM with the *psmatch2* module and various regression approaches.

*Data analysis was carried out centrally at OGB's head office using five different non-experimental estimation procedures.*

Kernel and nearest neighbour matching without replacement were used in implementing PSM. Variables used in the matching process were identified by using backwards stepwise regression to identify those variables that are correlated with programme participation at *p*-values of 0.20 or less. Covariate balance was checked following the implementation of each matching procedure to ensure that each covariate was balanced at *p*-values greater than 0.20. Boot-strapped standard errors enabled the generation of confidence intervals to assess the statistical significance of the effect sizes. Exact matching within each partner's programme catchment area was further imposed to avoid comparing intervention and comparison respondents from different districts.

All the covariates, as presented in Table 6.1.1 below, were included in the various regression approaches undertaken, i.e. regression with robust standard errors (to address issues of heteroskedasticity), robust regression (to reduce the influence of outliers), and regression with control functions (to attempt to control for relevant unobserved differences between the intervention and comparison groups). To control for unobservable district influences, fix effect models were used, with the variable "district" specified as a key fixed effect.

[4] link to PPS document

### 5.3 Main Problems and Constraints Encountered

Overall, despite the usual hardships encountered when undertaking such intensive work, the data collection process went well. However, one noteworthy challenge was encountered:

• *Observable differences between the intervention and comparison villages*
Despite the efforts made to purposively match the intervention and comparison sub-villages, some observable differences between the households residing in each were identified. While such observable differences are typically expected in non-experimental studies, they do have implications for data analysis and interpretation. This is elaborated upon in Subsection 6.1.

# 6.0 Results

*Several non-project related differences were identified between the households of intervention and comparison sub-villages.*

## 6.1 General Characteristics

Table 6.1.1 presents statistics for various household characteristics obtained through the administration of the questionnaires to the respondents from both the intervention and comparison villages. The stars beside the number indicate differences between the two groups that are statistically significant at a 95 percent confidence level or greater. As is evident, there are some noteworthy differences. Some of those that are the most relevant include:

- The household head and other adults in the intervention villages are, on average, more likely to possess secondary education.
- Households in the intervention villages were more likely to farm during the baseline period (particularly for the partner Konsepsi) but were less likely to operate off-farm income generating activities (IGAs).
- Households in the comparison villages are more likely to reside in mountainous locations than the intervention villages.

**TABLE 6.1.1: Descriptive Statistics: Intervention and Comparison Respondents Interviewed**

| | Sample Mean | Inter. mean | Compar. mean | Overall difference | *t*-stat. | Konsepsi difference | *t*-stat. | Koslata difference | *t*-stat. | LP2DER difference | *t*-stat. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Respondent head of HH | 0.69 | 0.72 | 0.66 | 0.059 | 1.54 | 0.029 | 0.42 | -0.053 | -0.82 | 0.20** | 3.01 |
| Elderly headed HH | 0.04 | 0.03 | 0.04 | -0.0055 | -0.35 | 0.0084 | 0.42 | 0.028 | 0.94 | -0.054 | -1.80 |
| Male headed HH | 0.90 | 0.91 | 0.90 | 0.014 | 0.55 | 0.014 | 0.28 | 0.017 | 0.65 | 0.0074 | 0.17 |
| # of productive adults | 2.65 | 2.66 | 2.64 | 0.022 | 0.21 | 0.16 | 0.95 | -0.11 | -0.58 | 0.018 | 0.10 |
| Number of children | 1.38 | 1.43 | 1.35 | 0.087 | 0.89 | 0.49** | 2.88 | -0.10 | -0.69 | -0.13 | -0.69 |
| Number of adults | 2.76 | 2.82 | 2.72 | 0.10 | 0.97 | 0.23 | 1.38 | -0.070 | -0.35 | 0.15 | 0.82 |
| HH size | 4.15 | 4.29 | 4.06 | 0.22 | 1.68 | 0.71** | 3.18 | -0.072 | -0.32 | 0.019 | 0.08 |
| HH Muslim | 0.94 | 0.94 | 0.94 | 0 | 0.00 | -0.012 | -1.23 | -0.14*** | -4.08 | 0.15*** | 3.56 |
| Ethnic Minority | 0.02 | 0.04 | 0.01 | 0.026* | 2.18 | 0.025 | 1.76 | -0.0045 | -0.25 | 0.058* | 2.09 |
| Age of Head | 44.75 | 44.53 | 44.89 | -0.36 | -0.32 | 1.67 | 0.91 | -1.50 | -0.78 | -1.25 | -0.61 |
| # of adults with secondary | 0.80 | 0.93 | 0.72 | 0.21* | 2.43 | 0.12 | 0.88 | 0.075 | 0.75 | 0.46* | 2.56 |
| Head has secondary | 0.21 | 0.26 | 0.18 | 0.079* | 2.32 | 0.076 | 1.47 | 0.044 | 1.09 | 0.12 | 1.70 |
| HH farms (baseline) | 0.64 | 0.70 | 0.60 | 0.11** | 2.71 | 0.28*** | 4.14 | -0.067 | -0.97 | 0.11 | 1.58 |
| HH rears livestock (baseline) | 0.53 | 0.54 | 0.52 | 0.023 | 0.56 | 0.100 | 1.40 | -0.23*** | -3.41 | 0.20** | 2.81 |
| HH fishes (baseline) | 0.02 | 0.04 | 0.00 | 0.034** | 3.28 | 0.012 | 1.23 | 0.012 | 1.21 | 0.079** | 2.86 |
| HH hunts (baseline) | 0.19 | 0.21 | 0.18 | 0.028 | 0.85 | 0.16*** | 3.35 | 0.13* | 2.30 | -0.21*** | -3.63 |
| HH off-farm IGA (baseline) | 0.13 | 0.09 | 0.16 | -0.069* | -2.46 | -0.14** | -2.67 | -0.13** | -2.98 | 0.059 | 1.19 |
| HH does unskilled labour (baseline) | 0.59 | 0.60 | 0.59 | 0.0096 | 0.24 | -0.049 | -0.72 | -0.0011 | -0.02 | 0.079 | 1.09 |
| HH does skilled labour (baseline) | 0.22 | 0.25 | 0.21 | 0.041 | 1.20 | -0.050 | -0.82 | -0.025 | -0.42 | 0.20*** | 3.55 |
| Asset index (baseline) | 0.00 | -0.21 | 0.14 | -0.36 | -1.45 | -0.24 | -0.56 | -0.71 | -1.64 | -0.13 | -0.30 |
| KM from municipality | 33.81 | 35.64 | 32.59 | 3.05 | 1.89 | 4.56 | 1.61 | -0.097 | -0.08 | 5.27** | 3.22 |
| KM from district road | 3.92 | 3.66 | 4.10 | -0.44 | -1.04 | -1.75*** | -4.83 | 3.42*** | 4.34 | -3.07*** | -5.25 |
| Household in mountainous area | 0.67 | 0.60 | 0.72 | -0.12** | -3.06 | -0.044 | -0.69 | -0.19** | -3.25 | -0.13 | -1.79 |
| **Observations** | **605** | **242** | **363** | **605** | | **204** | | **200** | | **201** | |

*t* statistics in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Given that there are differences between the households residing in the intervention and comparison villages, directly comparing them may very well result in biased estimations of the impacts of the disaster preparedness work that was undertaken. Consequently, it was critical to control for these differences during the analysis of the data.

## 6.2 Differences Between the Intervention and Comparison Households on the Outcome Measures

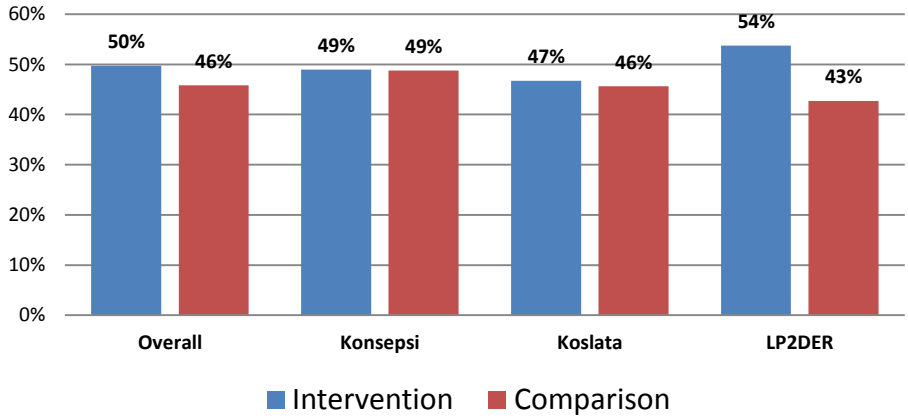
This subsection presents the results of analyses that compared the respondents from the intervention and comparison villages in relation to the characteristics presented in Subsection 3.2.

### *6.2.1 The Overall ARR Outcome Measure*

*The intervention and comparison households were first compared in relation to the overall characteristic score.*

The first analysis involved comparing the intervention and comparison households in relation to how they fair – overall – with respect to all the characteristics presented in Section 3.0. If the project was successful in supporting the households in the intervention villages to reduce risk and/or adapt to emerging trends and uncertainty, we would expect the intervention households to be better off in relation to these characteristics – *all other things being equal*. Figure 6.2.1.1 presents the results of a direct comparison of the two groups of households. There are a total of 17 characteristics, and, given that the maximum score obtainable for each characteristic is four, the maximum total possible score is 68. This maximum score was divided into the actual score computed for each household to derive percentage scores. These particular scores, then, reveal how well the households fair in relation the characteristics.

**FIGURE 6.2.1.1:**
**Comparison of Internvention and Comparison Communities in Relation to Overall Percentage Score (PSM - Kernel)**




As indicated in the graph, the intervention households obtained higher scores overall, and this difference is statistically significant. However, when the data are disaggregated by partner, the difference is only significant for LP2DER. Table 6.2.1.1 presents the results of all statistical procedures that were used to test for differences between the intervention and comparison households.

As is evident, the overall unadjusted, PSM, and MVR effect estimates are strongly statistically significant. However, when each partner is examined in isolation the adjusted results are only statistically significant for LP2DER.

*The overall results are only positive for one of the partner organisations – LP2DER .*

**TABLE 6.2.1.1:**
**Comparison of Intervention and Comparison Sites: Overall "Resilience" Score**

| | Overall | Konsepsi | Koslata | LP2DER |
|---|---|---|---|---|
| *Unadjusted:* | | | | |
| Sample mean | 0.47 | 0.47 | 0.47 | 0.47 |
| Intervention mean: | 0.50 | 0.51 | 0.46 | 0.55 |
| Comparison mean: | 0.45 | 0.45 | 0.48 | 0.42 |
| Unadjusted difference : | 0.0546*** | 0.0542*** | -0.0162 | 0.126*** |
| | (6.63) | (3.56) | (-1.18) | (10.56) |
| **Observations:** | **605** | **204** | **200** | **201** |
| *PSM (ATT)* | | | | |
| Post-matching difference: | 0.0384** | 0.00155 | 0.0109 | 0.110*** |
| (kernel) | (3.17) | (0.08) | (0.49) | (5.71) |
| **Observations:** | **550** | **189** | **182** | **179** |
| Post-matching difference: | 0.0404*** | 0.0136 | 0.0142 | 0.108*** |
| (no replacement) | (3.76) | (0.67) | (0.84) | (6.49) |
| **Observations:** | **550** | **189** | **182** | **179** |
| *Multivariable Regression:* | | | | |
| MVR coefficient (fe; robust): | 0.0410*** | 0.0177 | -0.0159 | 0.113*** |
| | (5.16) | (1.18) | (-0.94) | (8.00) |
| **Observations:** | **605** | **204** | **200** | **201** |
| MVR coefficient (fe; rreg): | 0.0382*** | 0.00854 | -0.0242 | 0.122*** |
| | (4.81) | (0.60) | (-1.53) | (8.43) |
| **Observations:** | **605** | **204** | **200** | **201** |
| MVR coefficient (fe; robust): | 0.0418*** | 0.0220 | -0.0128 | 0.114*** |
| with control functions | (5.26) | (1.46) | (-0.69) | (7.75) |
| **Observations:** | **605** | **200** | **199** | **201** |

*t* statistics in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
PSM estimates bootstrapped 1000 repetitions
Coefficients for covariates used not presented

**TABLE 6.2.1.2:**
**Comparison of Intervention and Comparison Sites in Relation to Oxfam's Global ARR Indicator: *% of supported households demonstrating greater ability to minimise risk from shocks and adapt to emerging trends & uncertainty***

| | Overall | Konsepsi | Koslata | LP2DER |
|---|---|---|---|---|
| *Unadjusted:* | | | | |
| Sample mean | 0.57 | 0.63 | 0.41 | 0.67 |
| Intervention mean: | 0.67 | 0.68 | 0.40 | 0.93 |
| Comparison mean: | 0.51 | 0.59 | 0.42 | 0.50 |
| Unadjusted difference : | 0.1584*** | 0.0855 | -0.0251 | 0.4209 *** |
| | (3.86) | (1.24) | (-0.35) | (6.03) |
| **Observations:** | **605** | **204** | **200** | **201** |
| *PSM (ATT)* | | | | |
| Post-matching difference: | 0.0853 | -0.142 | 0.0375 | 0.396*** |
| (kernel) | (1.48) | (-1.62) | (0.37) | (3.57) |
| **Observations:** | **550** | **189** | **182** | **179** |
| Post-matching difference: | 0.112* | -0.0758 | 0.0952 | 0.397*** |
| (no replacement) | (2.25) | (-0.83) | (1.07) | (5.00) |
| **Observations:** | **550** | **189** | **182** | **179** |
| *Multivariable Regression:* | | | | |
| MVR coefficient (fe; robust): | 0.1248** | -0.1600 | -0.1005 | 0.4261*** |
| | (2.64) | (-1.70) | (-0.79) | (4.97) |
| **Observations:** | **605** | **196** | **192** | **193** |
| MVR coefficient (fe; robust): | 0.1268** | -0.0974 | -0.0455 | 0.3775*** |
| with control functions | (2.68) | (-1.02) | (-0.34) | (5.24) |
| **Observations:** | **605** | **196** | **192** | **193** |

*t* statistics in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
PSM estimates bootstrapped 1000 repetitions
Coefficients for covariates used not presented

To assess whether these differing results at the partner level are statistically significant, a statistical interaction test was carried out by integrating interaction terms (partnerXparticipation) into the first MVR model. An *F*-test was then implemented to assess whether the coefficients of these interaction terms are statistically significant. The results of the test came back positive (*F*-statistic = 4.58; *p*-value = 0.0106). Consequently, the effectiveness of the project in relation to the overall characteristic score differs among the partners; LP2DER is the only partner for which there is a positive result.

Table 6.2.1.2 presents the results of the analyses of the same data in binary form. Here, households in the sample were coded with 1 if they were above the medium of the comparison households and 0 otherwise. As explained in Subsection 3.1, this is, in fact, Oxfam GB's global outcome indicator – *percentage of households demonstrating greater ability to reduce risk and adapt to emerging trends and uncertainty*. For this particular measure, the differences between the intervention and comparison communities are also statistically significant overall but only for LP2DER when the results obtained for each partner are examined separately.

There appears, then, to be evidence that the programme promoted positive change in relation to the characteristics assessed for LP2DER and not the other two partners. However, given that the data are non-experimental and cross-sectional in nature, it is possible that the results for LP2DER may be biased. Perhaps, for instance, the intervention villages for LP2DER were already better off in relation to characteristics to begin with, and the results are simply reflective of these initial baseline differences. Given this possibility, it is good practice in non-experimental studies such as this to carry out sensitivity analysis. This type of analysis asks: How much bias would be required in order to "explain away" the treatment effect estimate in question? The more of such bias that would be needed, the more we can be confident the that effect estimate identified something meaningful and vice-versa in cases where only a small amount of bias would render the result insignificant.

*Sensitivity analysis was carried out to assess how robust the results for LP2DER would be to the possible existence of unobserved bias.*

Rosenbaum sensitivity analysis is a popular method for carrying out sensitivity analysis for effect estimates derived through PSM one-to-one matching. It was implemented during the analysis of the data, and the results are presented in Table 6.2.1.3. These results pertain to the combined PSM no-replacement estimates presented in Table 6.2.1.1 above. As indicated in Table 6.2.1.3, the PSM no-replacement effect estimate for LP2DER is significantly robust to hidden bias: Such bias would need to be present in favour of the intervention population at a log odds ratio of over 3.4 in order to render the effect estimate statistically insignificant. In other words, the influence resulting from any unobserved differences between the intervention and comparison households in LP2DER's catchment area would need to be quite large to explain away the identified treatment effect. We can, consequently, be significantly confident that this particular partner affected at least some of the "resilience" characteristics.

*The overall PSM non-replacement effect estimate for LP2DER is considerably robust to unobserved bias.*

**TABLE 6.2.1.3:**
**Results of Rosenbaum Sensitivity Analysis Where Unobserved, Positive Bias is Assumed to Exist a Various Log Odds Ratios Among the Intervention Population**

| Log Odds Ratio of Hidden Bias | *p*-value of effect estimate with bias | Estimated effect estimate with bias | 95% confidence level – two tailed | |
|---|---|---|---|---|
| | | | CI+ | CI— |
| 1 | 2.20E-07 | 0.115132 | 0.078948 | 0.144737 |
| 1.2 | 3.90E-06 | 0.105263 | 0.069079 | 0.157895 |
| 1.4 | 0.000031 | 0.098684 | 0.059211 | 0.164474 |
| 1.6 | 0.000146 | 0.088816 | 0.046053 | 0.174342 |
| 1.8 | 0.000486 | 0.082237 | 0.039474 | 0.177631 |
| 2 | 0.001271 | 0.075658 | 0.032895 | 0.18421 |
| 2.2 | 0.002784 | 0.072369 | 0.026316 | 0.190789 |
| 2.4 | 0.005341 | 0.06579 | 0.019737 | 0.197368 |
| 2.6 | 0.009249 | 0.059211 | 0.013158 | 0.197368 |
| 2.8 | 0.014773 | 0.055921 | 0.006579 | 0.203947 |
| 3 | 0.022121 | 0.052632 | 4.10E-07 | 0.203947 |
| 3.2 | 0.031425 | 0.046053 | -0.00658 | 0.210526 |
| 3.4 | 0.042746 | 0.039474 | -0.00987 | 0.210526 |
| 3.6 | 0.056078 | 0.039474 | -0.01316 | 0.217105 |
| 3.8 | 0.071356 | 0.032895 | -0.01974 | 0.217105 |
| 4 | 0.088467 | 0.032895 | -0.01974 | 0.223684 |
| 4.2 | 0.107266 | 0.032895 | -0.02632 | 0.226974 |
| 4.4 | 0.127579 | 0.029606 | -0.02632 | 0.230263 |
| 4.6 | 0.149219 | 0.026316 | -0.0329 | 0.230263 |
| 4.8 | 0.171992 | 0.026316 | -0.03618 | 0.233553 |
| 5 | 0.1957 | 0.023027 | -0.03947 | 0.236842 |

Comparing the intervention and comparison households in the relation to the overall characteristic score gives an indication of how the programme performed in general. However, given that the data of each characteristic were pooled together, it is difficult to know the particular areas the programme generated impact and those it did not. The following subsections then disaggregate the results, first by dimension and then by each specific characteristic.

### *6.2.2 Livelihood Viability Dimension 1:*

As per the framework depicted in Section 3.0, the first dimension examined was livelihood viability. To what extent is there evidence that households in the intervention villages possess livelihoods that are more resilient to shocks than the comparison households? In other words, to what extent are they better off in relation to the characteristics assessed under the livelihood viability dimension? Table 6.2.2.1 presents the results of the relevant comparison. As indicated in this table, overall, all the adjusted effect estimates are statistically significant but this is only independently the case for LP2DER. Overall, a 17 to 20 percentage point difference was identified in favour of the households residing the sub-villages LP2DER targeted through the project.

Again, one may wonder whether the households in the intervention villages LP2DER targeted were already better off in relation to the livelihood viability characteristics to begin with. A stronger evaluation design would have involved collecting baseline data on both the intervention and comparison households and assessing whether the former experienced greater change in relation to the characteristics than those in the comparison villages. This impact evaluation design is known as the difference-in-differences or double difference design.

**TABLE 6.2.2.1:**
**Comparison of Intervention and Comparison Sites in Relation to Livelihood Viability Percentage Score**

| | Overall | Konsepsi | Koslata | LP2DER |
|---|---|---|---|---|
| *Unadjusted:* | | | | |
| Sample mean | 0.49 | 0.48 | 0.48 | 0.52 |
| Intervention mean: | 0.55 | 0.53 | 0.49 | 0.64 |
| Comparison mean: | 0.46 | 0.45 | 0.48 | 0.43 |
| Unadjusted difference : | 0.0987*** | 0.0768** | 0.00863 | 0.211*** |
| | (8.01) | (3.33) | (0.43) | (11.71) |
| **Observations:** | **605** | **204** | **200** | **201** |
| *PSM (ATT)* | | | | |
| Post-matching difference: | 0.0737*** | 0.0110 | 0.0374 | 0.184*** |
| (kernel) | (4.06) | (0.37) | (1.40) | (5.87) |
| **Observations:** | **550** | **189** | **182** | **179** |
| Post-matching difference: | 0.0695*** | 0.0256 | 0.0516* | 0.173*** |
| (no replacement) | (4.40) | (0.84) | (2.10) | (7.94) |
| **Observations:** | **550** | **189** | **182** | **179** |
| *Multivariable Regression:* | | | | |
| MVR coefficient (fe; robust): | 0.0793*** | 0.0294 | 0.0246 | 0.181*** |
| | (6.73) | (1.20) | (1.10) | (8.18) |
| **Observations:** | **605** | **204** | **200** | **201** |
| MVR coefficient (fe; rreg): | 0.0838*** | 0.0372 | 0.0341 | 0.199*** |
| | (6.79) | (1.52) | (1.29) | (9.12) |
| **Observations:** | **605** | **203** | **200** | **201** |
| MVR coefficient (fe; robust): | 0.0809*** | 0.0338 | 0.0229 | 0.178*** |
| with control functions | (6.86) | (1.40) | (0.93) | (7.77) |
| **Observations:** | **605** | **200** | **199** | **201** |

*t* statistics in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
PSM estimates bootstrapped 1000 repetitions
Coefficients for covariates used not presented

*Respondents were asked to recall information about the baseline period to assess whether the **magnitude of change** experienced by the intervention and comparison households differs.*

The double difference design could not be implemented in its pure form, given that data on the assessed characteristics were not collected in the baseline period. However, efforts were made to obtain these data through respondent recall. In particular, the respondent was first asked to provide information relevant to the characteristic in question, e.g. the number of livelihood activities their household is involved in. Using historical markers, the household was then asked what the situation was like during the baseline period, e.g. the number of livelihood activities the household was involved in this particular year. There are limitations to this method, of course, with measurement error resulting from recall bias being the key one. And the method is assumed to work better for some characteristics (e.g. livelihood diversification), as opposed to others (e.g. access to credit). However, even where the reliability of the recalled data is more suspect, the approach is assumed to, at the very least, effectively measure the respondent's current perceptions on how things have changed over time in relation to the characteristic in question.

For each characteristic, the difference between the baseline and endline scores was computed. The households of the intervention and comparison villages were then compared in relation to the differenced data. Table 6.2.2.2 presents the double difference effect estimates for the livelihood viability dimension. As indicated, statistically significant and positive differences between the intervention and comparison households were indentified overall across all the statistical adjustment procedures. However, only the results for LP2DER are independently statistically significant.

**TABLE 6.2.2.2:**
**Comparison of Intervention and Comparison Sites in Relation to Follow-up Livelihood Viability Score Differenced From Baseline Score**

| | Overall | Konsepsi | Koslata | LP2DER |
|---|---|---|---|---|
| *Unadjusted:* | | | | |
| Sample mean | 0.82 | 0.75 | 0.70 | 1.01 |
| Intervention mean: | 1.33 | 1.10 | 0.89 | 2.01 |
| Comparison mean: | 0.48 | 0.51 | 0.58 | 0.36 |
| Unadjusted difference : | 0.848*** | 0.587* | 0.309 | 1.657*** |
| | (6.53) | (2.46) | (1.59) | (7.26) |
| **Observations:** | **605** | **204** | **200** | **201** |
| *PSM (ATT)* | | | | |
| Post-matching difference: | 0.813*** | 0.496 | -0.0304 | 2.091*** |
| (kernel) | (4.06) | (1.50) | (-0.12) | (5.85) |
| **Observations:** | **550** | **189** | **182** | **179** |
| Post-matching difference: | 0.754*** | 0.409 | 0.0635 | 2.069*** |
| (no replacement) | (4.62) | (1.48) | (0.33) | (6.82) |
| **Observations:** | **550** | **189** | **182** | **179** |
| *Multivariable Regression:* | | | | |
| MVR coefficient (fe; robust): | 0.855*** | 0.395 | 0.0359 | 2.126*** |
| | (5.96) | (1.49) | (0.17) | (7.04) |
| **Observations:** | **605** | **204** | **200** | **201** |
| MVR coefficient (fe; rreg): | 0.569*** | 0.265 | 0.0798 | 2.150*** |
| | (4.72) | (1.29) | (0.36) | (6.72) |
| **Observations:** | **605** | **203** | **200** | **201** |
| MVR coefficient (fe; robust): | 0.858*** | 0.500 | 0.126 | 2.208*** |
| with control functions | (5.98) | (1.91) | (0.54) | (7.02) |
| **Observations:** | **605** | **200** | **199** | **201** |

*t* statistics in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
PSM estimates bootstrapped 1000 repetitions
Coefficients for covariates used not presented

*The double difference effect estimates for the livelihood viability dimension are only statistically significant for LP2DER when each partner is examined in isolation.*

It is of further interest to look at each of the four characteristics under the livelihood viability dimension separately. Given that there are several characteristics, only one statistical adjustment procedure was implemented – PSM kernel. Table 6.2.2.3 presents the results. Overall, both the single and double difference estimates for the characteristics relating to access to seasonal forecasting and disaster preparedness information are statistically significant with, at the very least, a 95 percent level of confidence. Significant differences were also indentified for the asset relocation/improvement characteristic but we can be less confident in the statistical significance of these results.

When we shift to looking at the results of the three partners separately, we see, again, that it is only LP2DER where there is significant evidence of impact. This is particularly in relation to the last three characteristics. The strongest estimated effect of LP2DER's work is related to increasing access to disaster preparedness information; households in the villages that it supported were significantly more likely to report having better access to such information.

**TABLE 6.2.2.3:**
**HH Characteristic Scores: Livelihood Viability (by characteristic)**

| | Livelihood diversification | Relocation/ improvement score | Access to seasonal forecast info. | Access to disaster preparedness info |
|---|---|---|---|---|
| *Pre-matching* | | | | |
| Sample Mean | 2.56 | 1.46 | 2.18 | 1.80 |
| Intervention Mean | 2.53 | 1.69 | 2.41 | 2.35 |
| Comparison Mean | 2.57 | 1.30 | 2.03 | 1.44 |
| Difference | -0.0441 | 0.383*** | 0.383*** | 0.906*** |
| | (-0.52) | (5.46) | (4.02) | (10.60) |
| **Observations:** | **605** | **605** | **605** | **605** |
| *Matching – kernel* | | | | |
| Single Difference: | -0.147 | 0.242** | 0.363** | 0.814*** |
| | (-1.28) | (2.61) | (2.78) | (6.52) |
| **Observations:** | **550** | **550** | **550** | **550** |
| *Matching – kernel*: | | | | |
| Double Difference: | -0.0586 | 0.0929 | 0.325** | 0.454*** |
| | (-0.90) | (1.73) | (3.01) | (4.27) |
| **Observations:** | **550** | **550** | **550** | **550** |
| *Matching – kernel (Konsepsi)*: | | | | |
| Single Difference: | -0.501** | 0.435* | -0.157 | 0.593** |
| | (-2.61) | (2.24) | (-0.72) | (2.75) |
| **Observations:** | **189** | **189** | **189** | **189** |
| *Matching – kernel (Konsepsi)*: | | | | |
| Double Difference: | 0.00198 | 0.194 | 0.173 | 0.128 |
| | (0.02) | (1.58) | (0.96) | (0.71) |
| **Observations:** | **189** | **189** | **189** | **189** |
| *Matching – kernel (Koslata)*: | | | | |
| Single Difference: | -0.0260 | -0.0104 | 0.345 | 0.223 |
| | (-0.14) | (-0.10) | (1.73) | (1.08) |
| **Observations:** | **182** | **182** | **182** | **182** |
| *Matching – kernel (Koslata)*: | | | | |
| Double Difference: | -0.0854 | -0.0662 | 0.233 | -0.112 |
| | (-0.56) | (-0.89) | (1.66) | (-1.06) |
| **Observations:** | **182** | **182** | **182** | **182** |
| *Matching – kernel (LP2DER)*: | | | | |
| Single Difference: | 0.125 | 0.297 | 0.973*** | 1.708*** |
| | (0.64) | (1.64) | (3.92) | (10.18) |
| **Observations:** | **179** | **179** | **179** | **179** |
| *Matching – kernel (LP2DER)*: | | | | |
| Double Difference: | -0.0985 | 0.151* | 0.600* | 1.438*** |
| | (-1.18) | (1.99) | (2.51) | (7.06) |
| **Observations:** | **179** | **179** | **179** | **179** |

*t* statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
PSM estimates bootstrapped 1000 repetitions

*Significant differences were only identified for LP2DER, particularly in relation to access to seasonal forecasting and disaster preparedness information.*

### *6.2.3 Livelihood Innovation Potential*

Recall from Section 3.0 that data were obtained on a number of characteristics that were classified under the livelihood innovation potential dimension. Recall that these particular characteristics include:

- Motivation to pursue alternative livelihood strategies
- Attitudes about climate change
- Credit access
- Access to climate trend information
- Farming extension support

- Access to marking information
- Access to livelihood innovation support

As was the case with the livelihood viability dimension, the scores for each of the characteristics were pooled together and used to compute percentage scores. Table 6.3.3.1 presents the results of the comparisons that were made between the intervention and comparison households. As indicated, overall, no statistically significant differences were found between the intervention and comparison households across the various statistical adjustment procedures. LP2DER stands out, again, however, as an exception: There is a small difference in favour of the intervention households it targeted, and this difference is statistically significant at the 90 percent level or greater across the statistical adjustment procedures.

*Evidence supporting project impact for the livelihood innovation dimension was only identified for LP2DER.*

**TABLE 6.2.3.1:**
**Comparison of Intervention and Comparison Sites in Relation to Livelihood Innovation Potential Percentage Score**

| | Overall | Konsepsi | Koslata | LP2DER |
|---|---|---|---|---|
| *Unadjusted:* | | | | |
| Sample mean | 0.47 | 0.48 | 0.47 | 0.46 |
| Intervention mean: | 0.47 | 0.48 | 0.44 | 0.49 |
| Comparison mean: | 0.46 | 0.47 | 0.48 | 0.43 |
| Unadjusted difference : | 0.00639 | 0.00881 | -0.0421** | 0.0525*** |
| | (0.74) | (0.55) | (-2.78) | (4.22) |
| **Observations:** | **605** | **204** | **200** | **201** |
| *PSM (ATT)* | | | | |
| Post-matching difference: | -0.00572 | -0.0424* | -0.00107 | 0.0310 |
| (kernel) | (-0.47) | (-2.05) | (-0.04) | (1.76) |
| **Observations:** | **550** | **189** | **182** | **179** |
| Post-matching difference: | 0.00282 | -0.0286 | -0.00573 | 0.0441** |
| (no replacement) | (0.27) | (-1.42) | (-0.30) | (2.65) |
| **Observations:** | **550** | **189** | **182** | **179** |
| *Multivariable Regression:* | | | | |
| MVR coefficient (fe; robust): | -0.00204 | -0.0230 | -0.0360 | 0.0405* |
| | (-0.24) | (-1.42) | (-1.91) | (2.59) |
| **Observations:** | **605** | **204** | **200** | **201** |
| MVR coefficient (fe; rreg): | -0.00243 | -0.0281 | -0.0373 | 0.0393* |
| | (-0.28) | (-1.76) | (-1.95) | (2.19) |
| **Observations:** | **605** | **203** | **200** | **201** |
| MVR coefficient (fe; robust): | -0.00169 | -0.0202 | -0.0251 | 0.0428** |
| with control functions | (-0.20) | (-1.23) | (-1.26) | (2.69) |
| **Observations:** | **605** | **200** | **199** | **201** |

*t* statistics in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
PSM estimates bootstrapped 1000 repetitions
Coefficients for covariates used not presented

Double difference estimates were also computed using the recalled baseline data. Two of the characteristics, however – motivation to pursue alternative livelihood strategies and attitudes towards climate change – were not included in the construction of the differenced scores, given that recalling such data was considered inappropriate. Table 6.2.3.2 presents the resulting double difference estimates. As is evident, the differences are, yet again, only statistically significant for LP2DER.

**TABLE 6.2.3.2:**
**Comparison of Intervention and Comparison Sites in Relation to Follow-up Livelihood Innovation Potential Score Differenced From Baseline Score**

| | Overall | Konsepsi | Koslata | LP2DER |
|---|---|---|---|---|
| *Unadjusted:* | | | | |
| Sample mean | 0.82 | 0.91 | 0.82 | 0.72 |
| Intervention mean: | 0.87 | 0.99 | 0.40 | 1.23 |
| Comparison mean: | 0.78 | 0.86 | 1.11 | 0.38 |
| Unadjusted difference : | 0.0854 | 0.126 | -0.714* | 0.845** |
| | (0.47) | (0.40) | (-2.23) | (2.74) |
| **Observations:** | **605** | **204** | **200** | **201** |
| *PSM (ATT)* | | | | |
| Post-matching difference: | 0.306 | 0.101 | -0.458 | 1.368** |
| (kernel) | (1.10) | (0.24) | (-0.93) | (2.82) |
| **Observations:** | **550** | **189** | **182** | **179** |
| Post-matching difference: | 0.262 | -0.152 | -0.683 | 1.655*** |
| (no replacement) | (1.10) | (-0.37) | (-1.77) | (3.96) |
| **Observations:** | **550** | **189** | **182** | **179** |
| *Multivariable Regression:* | | | | |
| MVR coefficient (fe; robust): | 0.0903 | 0.0371 | -0.792 | 1.497*** |
| | (0.47) | (0.10) | (-1.87) | (3.35) |
| **Observations:** | **605** | **204** | **200** | **201** |
| MVR coefficient (fe; rreg): | 0.0683 | -0.0651 | -0.279 | 1.029** |
| | (0.45) | (-0.19) | (-0.88) | (2.99) |
| **Observations:** | **605** | **203** | **200** | **201** |
| MVR coefficient (fe; robust): | 0.0946 | 0.141 | -0.669 | 1.523** |
| with control functions | (0.49) | (0.36) | (-1.57) | (3.26) |
| **Observations:** | **605** | **200** | **199** | **201** |

*t* statistics in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
PSM estimates bootstrapped 1000 repetitions
Coefficients for covariates used not presented

*The double difference effect estimates are only statistically significant for LP2DER.*

How do the results differ for each of the specific characteristics that fall under the livelihood innovation potential dimension? Table 6.2.2.3 presents the results of the various analyses that were undertaken. Overall, statistically significant differences between the intervention and comparison households were only identified for the agricultural support characteristic. Moreover, when the partner specific results are examined, it is clear that the difference only applies to LP2DER. Both the single and double difference effect estimates for the access to livelihood innovation support characteristic are also statistically significant with a 90 percent degree of confidence for this partner.

**TABLE 6.2.2.3:**
**HH Characteristic Scores – Livelihood Innovation Potential (by characteristic)**

| | Motivation to pursue alternatives | Attitudes to climate change | Formal credit access | Informal credit access | Climate trend information | Agricultural extension support | Access to marketing information | Access to marketing support | Livelihood innovation support |
|---|---|---|---|---|---|---|---|---|---|
| *Pre-matching* | | | | | | | | | |
| Sample Mean | 2.95 | 2.50 | 1.57 | 2.57 | 1.46 | 1.83 | 1.67 | 1.14 | 1.11 |
| Intervention Mean | 2.98 | 2.56 | 1.54 | 2.50 | 1.50 | 2.01 | 1.56 | 1.16 | 1.11 |
| Comparison Mean | 2.92 | 2.45 | 1.58 | 2.61 | 1.43 | 1.71 | 1.74 | 1.12 | 1.12 |
| Difference | 0.0634 | 0.107 | -0.0399 | -0.116 | 0.0661 | 0.295** | -0.180* | 0.0427 | -0.00826 |
| | (0.75) | (1.16) | (-0.47) | (-1.17) | (0.85) | (3.05) | (-2.00) | (0.91) | (-0.19) |
| **Observations:** | **605** | **605** | **605** | **605** | **605** | **605** | **605** | **605** | **605** |
| *Matching – kernel* | | | | | | | | | |
| Single Difference: | 0.0326 | -0.0425 | -0.0927 | -0.183 | -0.0584 | 0.243 | -0.177 | 0.0237 | 0.0485 |
| | (0.26) | (-0.30) | (-0.72) | (-1.38) | (-0.51) | (1.75) | (-1.52) | (0.48) | (0.91) |
| **Observations:** | **550** | **550** | **550** | **550** | **550** | **550** | **550** | **550** | **550** |
| *Matching – kernel*: | | | | | | | | | |
| Double Difference: | n/a | n/a | 0.0408 | 0.0181 | 0.0105 | 0.366*** | -0.0778 | -0.0413 | -0.0112 |
| | | | (0.42) | (0.16) | (0.12) | (3.54) | (-0.70) | (-0.73) | (-0.21) |
| **Observations:** | | | **550** | **550** | **550** | **550** | **550** | **550** | **550** |
| *Matching – kernel (Konsepsi)*: | | | | | | | | | |
| Single Difference: | | 0.187 | -0.278 | -0.350 | -0.293 | -0.199 | -0.169 | -0.474* | 0.0203 |
| | | (0.98) | (-1.32) | (-1.55) | (-1.34) | (-1.03) | (-0.68) | (-2.16) | (0.19) |
| **Observations:** | | **189** | **189** | **189** | **189** | **189** | **189** | **189** | **189** |
| *Matching – kernel (Konsepsi)*: | | | | | | | | | |
| Double Difference: | n/a | n/a | 0.0236 | 0.0736 | -0.0724 | 0.290 | -0.122 | -0.0903 | -0.00234 |
| | | | (0.13) | (0.40) | (-0.51) | (1.70) | (-0.68) | (-1.08) | (-0.05) |
| **Observations:** | | | **189** | **189** | **189** | **189** | **189** | **189** | **189** |
| *Matching – kernel (Koslata)*: | | | | | | | | | |
| Single Difference: | -0.0281 | 0.332 | -0.306 | 0.169 | -0.217 | 0.0571 | -0.00313 | -0.0302 | -0.0108 |
| | (-0.11) | (1.55) | (-1.63) | (0.68) | (-1.15) | (0.34) | (-0.01) | (-0.34) | (-0.09) |
| **Observations:** | **182** | **182** | **182** | **182** | **182** | **182** | **182** | **182** | **182** |
| *Matching – kernel (Koslata)*: | | | | | | | | | |
| Double Difference: | n/a | n/a | -0.145 | 0.154 | -0.0770 | 0.0892 | -0.187 | -0.135 | -0.157 |
| | | | (-1.78) | (1.25) | (-0.53) | (0.62) | (-0.79) | (-1.05) | (-1.25) |
| **Observations:** | | | **182** | **182** | **182** | **182** | **182** | **182** | **182** |
| *Matching – kernel (LP2DER)*: | | | | | | | | | |
| Single Difference: | -0.0774 | -0.181 | 0.432 | -0.441* | 0.274 | 0.915*** | -0.0295 | 0.0862 | 0.137 |
| | (-0.36) | (-0.64) | (1.81) | (-2.01) | (1.23) | (3.72) | (-0.17) | (1.36) | (1.68) |
| **Observations:** | **179** | **179** | **179** | **179** | **179** | **179** | **179** | **179** | **179** |
| *Matching – kernel (LP2DER)*: | | | | | | | | | |
| Double Difference: | n/a | n/a | 0.263 | -0.192 | 0.200 | 0.754*** | 0.0905 | 0.116 | 0.137 |
| | | | (1.27) | (-0.71) | (1.66) | (3.59) | (0.59) | (1.68) | (1.70) |
| **Observations:** | | | **179** | **179** | **179** | **179** | **179** | **179** | **179** |

*t* statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
PSM estimates bootstrapped 1000 repetitions

### *6.2.4 Access to Contingency Resources and Support*

As explained in Section 3.0, only two characteristics were examined under this dimension – strength of social support system and access to contingency resources. Table 6.2.4.1 presents the results of a comparison of the intervention and comparison groups for an aggregated percentage score of these two characteristics. The results, again, are only positive for LP2DER; the differences between the intervention and comparison households for this partner are statistically significant across all five statistical adjustment procedures. Table 6.2.4.2, however, presents the double-difference effect estimates. Now there are no positive statistically significant differences for any of the three partners. The households supported by LP2DER, in particular, seem to have already been better off than those in the comparison villages at baseline.

**TABLE 6.2.4.1:**
**Comparison of Intervention and Comparison Sites in Relation to Access to Contingency Resources and Support Percentage Score**

| | Overall | Konsepsi | Koslata | LP2DER |
|---|---|---|---|---|
| *Unadjusted:* | | | | |
| Sample mean | 0.60 | 0.59 | 0.64 | 0.57 |
| Intervention mean: | 0.60 | 0.58 | 0.59 | 0.63 |
| Comparison mean: | 0.60 | 0.60 | 0.67 | 0.53 |
| Unadjusted difference : | 0.00258 | -0.0184 | -0.0791* | 0.104*** |
| | (0.14) | (-0.57) | (-2.44) | (3.48) |
| **Observations:** | **605** | **204** | **200** | **201** |
| *PSM (ATT)* | | | | |
| Post-matching difference: | -0.0242 | -0.0978* | -0.0728 | 0.112** |
| (kernel) | (-0.95) | (-2.38) | (-1.56) | (2.60) |
| **Observations:** | **550** | **189** | **182** | **179** |
| Post-matching difference: | -0.0187 | -0.0625 | -0.0575 | 0.0776* |
| (no replacement) | (-0.80) | (-1.76) | (-1.37) | (2.06) |
| **Observations:** | **550** | **189** | **182** | **179** |
| *Multivariable Regression:* | | | | |
| MVR coefficient (fe; robust): | -0.00499 | -0.0684* | -0.103* | 0.115*** |
| | (-0.29) | (-2.10) | (-2.00) | (3.57) |
| **Observations:** | **605** | **204** | **200** | **201** |
| MVR coefficient (fe; rreg): | -0.00221 | -0.0554 | -0.126* | 0.0951** |
| | (-0.12) | (-1.57) | (-2.49) | (3.01) |
| **Observations:** | **605** | **202** | **200** | **201** |
| MVR coefficient (fe; robust): | -0.00525 | -0.0657 | -0.122* | 0.116*** |
| with control functions | (-0.30) | (-1.91) | (-2.10) | (3.40) |
| **Observations:** | **605** | **200** | **199** | **201** |

*t* statistics in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
PSM estimates bootstrapped 1000 repetitions
Coefficients for covariates used not presented

*The single difference estimates are positive for LP2DER but the double difference estimates are not, revealing the project likely did not affect the characteristics of this dimension.*

**TABLE 6.2.4.2:**
**Comparison of Intervention and Comparison Sites in Relation to Follow-up Contingency Resources and Support Differenced From Baseline Score**

| | Overall | Konsepsi | Koslata | LP2DER |
|---|---|---|---|---|
| *Unadjusted:* | | | | |
| Sample mean | 0.59 | 0.66 | 0.58 | 0.51 |
| Intervention mean: | 0.48 | 0.40 | 0.40 | 0.64 |
| Comparison mean: | 0.66 | 0.84 | 0.71 | 0.43 |
| Unadjusted difference : | -0.183 | -0.442* | -0.311 | 0.208 |
| | (-1.78) | (-2.51) | (-1.53) | (1.38) |
| **Observations:** | **605** | **204** | **200** | **201** |
| *PSM (ATT)* | | | | |
| Post-matching difference: | -0.0828 | -0.0345 | -0.146 | -0.0686 |
| (kernel) | (-0.64) | (-0.19) | (-0.63) | (-0.27) |
| **Observations:** | **550** | **189** | **182** | **179** |
| Post-matching difference: | -0.182 | -0.0909 | -0.540* | 0.0690 |
| (no replacement) | (-1.67) | (-0.50) | (-2.52) | (0.33) |
| **Observations:** | **550** | **189** | **182** | **179** |
| *Multivariable Regression:* | | | | |
| MVR coefficient (fe; robust): | -0.175 | -0.238 | -0.410 | -0.0170 |
| | (-1.57) | (-1.28) | (-1.60) | (-0.08) |
| **Observations:** | **605** | **204** | **200** | **201** |
| MVR coefficient (fe; rreg): | -0.0977 | 0.0562 | -0.170 | -0.179 |
| | (-1.13) | (0.36) | (-0.77) | (-1.11) |
| **Observations:** | **605** | **204** | **200** | **201** |
| MVR coefficient (fe; robust): | -0.179 | -0.156 | -0.715* | -0.0761 |
| with control functions | (-1.59) | (-0.87) | (-2.54) | (-0.35) |
| **Observations:** | **605** | **200** | **199** | **201** |

*t* statistics in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
PSM estimates bootstrapped 1000 repetitions
Coefficients for covariates used not presented

The intervention and comparison households were also compared in relation to the two characteristics that fall under the access to contingency resources and support dimension, and the results are presented in Table 6.2.4.3. Here, there are no statistically significant differences between the intervention and comparison households that are consistent across the estimation procedures, either overall or for any of the individual partner organisations.

*Not consistently significant effects were identified for either of the two characteristics, either overall or at partner level.*

**TABLE 6.2.4.3:**
**HH Characteristic Scores: Contingency Resources and Support (by characteristic)**

| | Social Support System | Contingency Resources |
|---|---|---|
| *Pre-matching* | | |
| Sample Mean | 2.29 | 2.49 |
| Intervention Mean | 2.35 | 2.45 |
| Comparison Mean | 2.25 | 2.52 |
| Difference | 0.0937 | -0.0730 |
| | (0.89) | (-0.89) |
| **Observations:** | **605** | **605** |
| *Matching – kernel* | | |
| Single Difference: | -0.155 | -0.0386 |
| | (-1.01) | (-0.35) |
| **Observations:** | **550** | **550** |
| *Matching – kernel*: | | |
| Double Difference: | -0.104 | 0.0215 |
| | (-1.12) | (0.25) |
| **Observations:** | **550** | **550** |
| *Matching – kernel (Konsepsi)*: | | |
| Single Difference: | -0.567* | -0.216 |
| | (-2.29) | (-1.20) |
| **Observations:** | **189** | **189** |
| *Matching – kernel (Konsepsi)*: | | |
| Double Difference: | -0.239 | 0.204 |
| | (-1.59) | (1.81) |
| **Observations:** | **189** | **189** |
| *Matching – kernel (Koslata)*: | | |
| Single Difference: | -0.375 | -0.207 |
| | (-1.31) | (-1.06) |
| **Observations:** | **182** | **182** |
| *Matching – kernel (Koslata)*: | | |
| Double Difference: | -0.0699 | -0.0764 |
| | (-0.49) | (-0.42) |
| **Observations:** | **182** | **182** |
| *Matching – kernel (LP2DER)*: | | |
| Single Difference: | 0.551* | 0.346 |
| | (2.06) | (1.86) |
| **Observations:** | **179** | **179** |
| *Matching – kernel (LP2DER)*: | | |
| Double Difference: | 0.0113 | -0.0799 |
| | (0.05) | (-0.61) |
| **Observations:** | **179** | **179** |

*t* statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
PSM estimates bootstrapped 1000 repetitions

### *6.2.5 Natural Resource Management*

As explained in Section 3.0, data were captured only in relation to household natural resource management practices for the ecosystem health dimension. The impact evaluation question is, therefore, as follows: To what extent do

the households in the intervention and comparison villages differ in relation to their undertaking of natural management practices assumed to be beneficial? To answer this question, respondents were asked if they have undertaken any of the following, both preceding and after the baseline period:

1. Planting trees to reduce the potential and negative impacts of floods and landslides
2. Planting crops within stands of already existing trees
3. Purposively leaving existing stands of trees in the household's farming area
4. Soil erosion or flood control measures, e.g. bunds, stones, contouring

The greater the household reported having had taken up these practices since the baseline period, the higher the score it was given. The results of a comparison of the intervention and comparison communities are presented in 6.2.5.1. The overall results are statistically significant across all the estimation procedures and for Konsepsi and LP2DER when viewed separately.

*The single difference effect estimates for both Konsepsi and LP2DER are consistently positive.*

**TABLE 6.2.5.1:**
**Comparison of Intervention and Comparison Sites in Relation to Natural Resource Management Characteristic**

| | Overall | Konsepsi | Koslata | LP2DER |
|---|---|---|---|---|
| *Unadjusted:* | | | | |
| Sample mean | 2.30 | 2.29 | 2.61 | 2.00 |
| Intervention mean: | 2.53 | 2.83 | 2.49 | 2.26 |
| Comparison mean: | 2.14 | 1.93 | 2.68 | 1.82 |
| Unadjusted difference : | 0.388*** | 0.892*** | -0.187 | 0.444** |
| | (3.84) | (5.16) | (-1.08) | (2.73) |
| **Observations:** | **605** | **204** | **200** | **201** |
| *PSM (ATT)* | | | | |
| Post-matching difference: | 0.378** | 0.502* | 0.133 | 0.501* |
| (kernel) | (2.69) | (2.18) | (0.53) | (1.97) |
| **Observations:** | **550** | **189** | **182** | **179** |
| Post-matching difference: | 0.262* | 0.561* | 0 | 0.379 |
| (no replacement) | (2.18) | (2.20) | (0.00) | (1.72) |
| **Observations:** | **550** | **189** | **182** | **179** |
| *Multivariable Regression:* | | | | |
| MVR coefficient (fe; robust): | 0.281** | 0.543** | -0.257 | 0.596** |
| | (3.03) | (3.24) | (-1.25) | (3.18) |
| **Observations:** | **605** | **204** | **200** | **201** |
| MVR coefficient (fe; rreg): | 0.279** | 0.585*** | -0.275 | 0.600** |
| | (2.80) | (3.58) | (-1.23) | (2.80) |
| **Observations:** | **605** | **204** | **200** | **201** |
| MVR coefficient (fe; robust): | 0.293** | 0.612*** | -0.290 | 0.581** |
| with control functions | (3.16) | (3.54) | (-1.37) | (2.99) |
| **Observations:** | **605** | **200** | **199** | **201** |

*t* statistics in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
PSM estimates bootstrapped 1000 repetitions
Coefficients for covariates used not presented

However, when the double difference estimates are examined (see Table 6.2.5.2), the overall and partner specific effect estimates are no longer statistically significant. It appears then that the households residing in the sub-villages that Konsepsi and LP2DER supported through the project were already more engaged in practicing the above natural resource management techniques than were those in the comparison villages at baseline.

*The double difference estimates reveal that the sub-villages targeted by Konsepsi and LP2DER were likely already better off in relation to the characteristic even before the project began.*

**TABLE 6.2.5.2:**
**Comparison of Intervention and Comparison Sites in Relation to Natural Resource Management Characteristic Differenced From Baseline Score**

| | Overall | Konsepsi | Koslata | LP2DER |
|---|---|---|---|---|
| *Unadjusted:* | | | | |
| Sample mean | 0.18 | 0.13 | 0.29 | 0.11 |
| Intervention mean: | 0.18 | 0.12 | 0.17 | 0.25 |
| Comparison mean: | 0.17 | 0.14 | 0.37 | 0.02 |
| Unadjusted difference : | 0.00826 | -0.0148 | -0.197 | 0.233* |
| | (0.14) | (-0.18) | (-1.61) | (2.51) |
| **Observations:** | **605** | **204** | **200** | **201** |
| *PSM (ATT)* | | | | |
| Post-matching difference: | -0.0669 | -0.0319 | -0.115 | -0.0547 |
| (kernel) | (-0.81) | (-0.29) | (-0.74) | (-0.34) |
| **Observations:** | **550** | **189** | **182** | **179** |
| Post-matching difference: | -0.0428 | 0 | -0.222 | 0.138 |
| (no replacement) | (-0.57) | (0.00) | (-1.57) | (1.03) |
| **Observations:** | **550** | **189** | **182** | **179** |
| *Multivariable Regression:* | | | | |
| MVR coefficient (fe; robust): | -0.0371 | -0.0570 | -0.348* | 0.174 |
| | (-0.61) | (-0.51) | (-2.16) | (1.44) |
| **Observations:** | **605** | **204** | **200** | **201** |
| MVR coefficient (fe; robust): | -0.0331 | -0.0271 | -0.490** | 0.0918 |
| with control functions | (-0.54) | (-0.23) | (-2.78) | (0.71) |
| **Observations:** | **605** | **200** | **199** | **201** |

*t* statistics in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
PSM estimates bootstrapped 1000 repetitions
Coefficients for covariates used not presented

### *6.2.6 Social Capability*

As mentioned in Section 2.0, the Building Resilience in Eastern Indonesia project was primarily focused on preparing the targeted sub-villages to effectively respond to the primary natural disasters they face. Arguably, then, if the project was effective in this regard, there should be evidence that it affected the characteristics associated with the social capability dimension. Three characteristics under this dimension, in particular, were examined – *knowledge of village disaster management plan*, *participation in flood preparation meetings*, and *receipt of disaster preparedness information*. Collecting data on these characteristics involved interviewing the senior man and senior woman of each household separately. They were asked about: a) whether their village had a disaster management plan and, if so, the extent of their knowledge about its contents; and b) whether they participated in any disaster preparedness meeting and/or received any disaster preparedness information during the previous year and, if so, the number of times. The respondents were also asked to recall what the situation was like during the baseline period.

Given the relevance of this dimension to the work of the project – coupled by its emphasis on mainstreaming gender issues – it is worth examining the data associated with this dimension in considerable detail. The first analysis that was carried out was to assess the extent to which both men and women from the intervention and comparison sub-villages knew whether their village has a disaster management plan. The results are presented in Figure 6.2.6.1 below. As is clear, significantly higher percentages of both men and women from the intervention sub-villages reported having such knowledge. However, there are three noteworthy observations: First, popular knowledge about the existence of

the village disaster management plans is far from complete in the intervention sub-villages, given that a significant number of both men and women in the intervention villages (where such plans actually do exist) reported not knowing about them.

The second noteworthy observation is that there is a considerable difference in the knowledge levels of men and women in the intervention villages. Indeed, more men reported knowledge about whether their village had a disaster management plan than women. The final important observation is the differences existing at the partner level. Koslata, in particular, stands out as having the lowest levels of popular knowledge about the existence of the intervention villages' disaster management plans.

*While the intervention sub-villages are better off in relation to the characteristics of the social capability dimension, there is room for improvement.*

**FIGURE 6.2.6.1:**
**Percentage of Men and Women in Intervention and Comparison Sub-villages Who Reported Knowing about Existence of Village Disaster Management Plan**

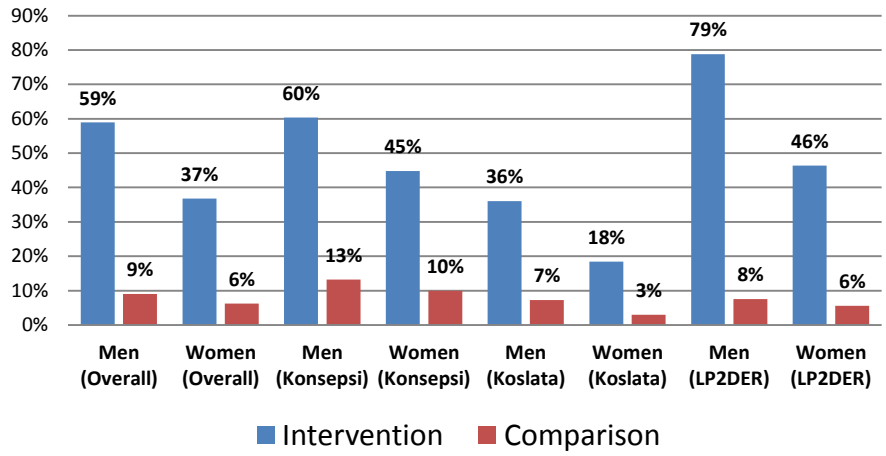



**FIGURE 6.2.6.2:**
**Percentage of Men and Women in Intervention and Comparison Sub-villages Who Reported Participating in a Disaster Prepardeness Meeting in Last 12 Months**

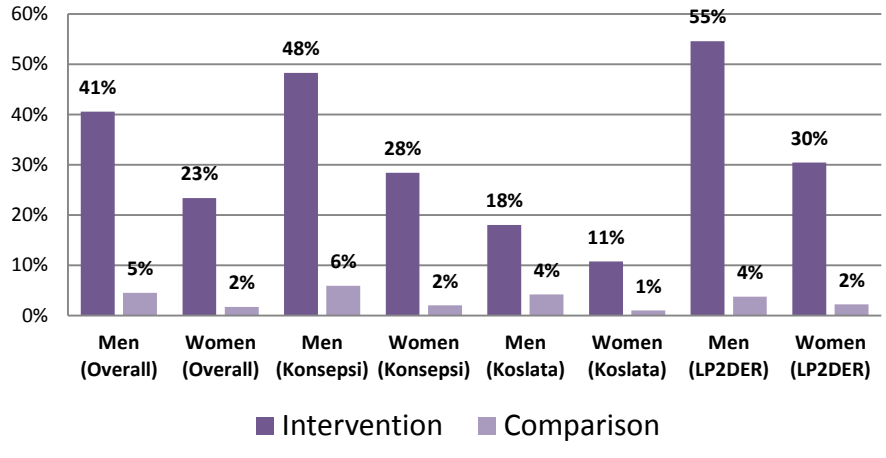
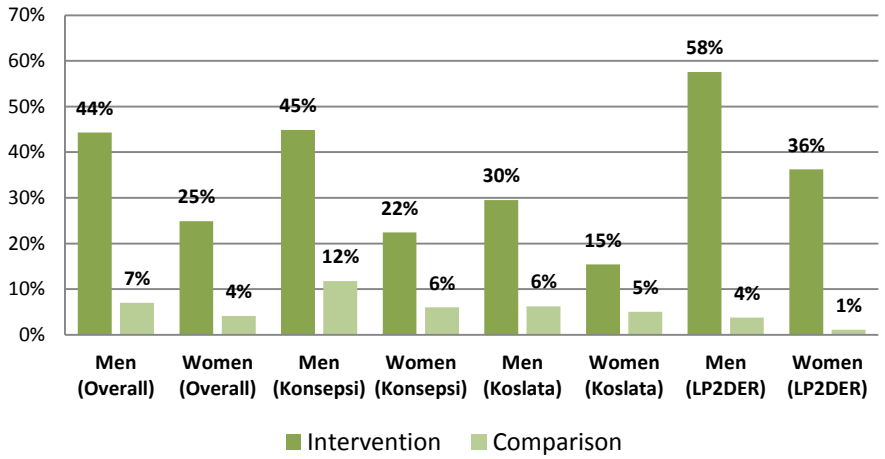


Figure 6.2.6.2 and Figure 6.2.6.3 present similar statistics, but in relation to participation in disaster preparedness meetings and receipt of disaster preparedness information in the last 12 months. Similar patterns can be observed in the results: Significant differences between the intervention and comparison households exist. However, good numbers of respondents in the intervention sub-villages reported not having participated in disaster preparedness meetings or receiving related information. There are also considerable differences in the results for the three implementing partners and among men and women.

*The project appears to have had more of an effect on men than women in terms of in terms of the characteristics falling under the social capability dimension.*

**FIGURE 6.2.6.3:**
**Percentage of Men and Women in Intervention and Comparison Sub-villages Who Reported Receiving Disaster Prepardeness Information in Last 12 Months**




Scores were also compiled for each characteristic based on the responses of the interviewed men and women to the main questions and corresponding follow-up questions. For example, if a respondent reported participating in one or more disaster preparedness meetings in the last 12 months, s/he was then asked the number of times. Higher scores were given to those who reported more extensive participation. The lowest possible score was given if the respondent reported not knowing about whether their village had a disaster preparedness plan or had not participated in any meetings or received any information in the previous 12 months.

Table 6.2.6.1 presents the results of a comparison between the intervention and comparison households in relation the overall scores compiled for the social capability dimension. As evident from the table, the intervention households scored more highly – 43 percent, on average, compared with 27 percent for the comparison households. This difference is highly statistically significant and holds across all the various estimation procedures. However, the effect estimates differ among the three partners, with the estimated effect being greater for LP2DER. A statistical interaction test was carried out and confirmed that the effect estimates among the partners differ in statistical significance.

*There is evidence that the project has positively affected the characteristics of the social capability dimension, both overall and by partner.*

**TABLE 6.2.6.1:**
**Comparison of Intervention and Comparison Sites in Relation to Social Capability Percentage Score**

| | Overall | Konsepsi | Koslata | LP2DER |
|---|---|---|---|---|
| *Unadjusted:* | | | | |
| Sample mean | 0.33 | 0.34 | 0.30 | 0.36 |
| Intervention mean: | 0.43 | 0.43 | 0.35 | 0.51 |
| Comparison mean: | 0.27 | 0.28 | 0.27 | 0.27 |
| Unadjusted difference : | 0.157*** | 0.152*** | 0.0804*** | 0.240*** |
| | (14.05) | (7.32) | (4.87) | (13.42) |
| **Observations:** | **605** | **204** | **200** | **201** |
| *PSM (ATT)* | | | | |
| Post-matching difference: | 0.139*** | 0.130*** | 0.0651* | 0.231*** |
| (kernel) | (8.48) | (4.42) | (2.36) | (9.22) |
| **Observations:** | **550** | **189** | **182** | **179** |
| Post-matching difference: | 0.140*** | 0.124*** | 0.0780*** | 0.225*** |
| (no replacement) | (9.05) | (4.27) | (3.61) | (8.97) |
| **Observations:** | **550** | **189** | **182** | **179** |
| *Multivariable Regression:* | | | | |
| MVR coefficient (fe; robust): | 0.137*** | 0.136*** | 0.0734*** | 0.210*** |
| | (11.34) | (5.17) | (3.53) | (11.53) |
| **Observations:** | **605** | **204** | **200** | **201** |
| MVR coefficient (fe; rreg): | n/a | n/a | n/a | n/a |
| **Observations:** | | | | |
| MVR coefficient (fe; robust): | 0.138*** | 0.139*** | 0.0717*** | 0.221*** |
| with control functions | (11.51) | (5.32) | (3.37) | (11.82) |
| **Observations:** | **605** | **200** | **199** | **201** |

*t* statistics in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
PSM estimates bootstrapped 1000 repetitions
Coefficients for covariates used not presented

**TABLE 6.2.6.2:**
**Comparison of Intervention and Comparison Sites in Relation to Follow-up Social Response Capability Score Differenced From Baseline Score**

| | Overall | Konsepsi | Koslata | LP2DER |
|---|---|---|---|---|
| *Unadjusted:* | | | | |
| Sample mean | 0.61 | 0.44 | 0.49 | 0.90 |
| Intervention mean: | 1.37 | 0.90 | 1.07 | 2.14 |
| Comparison mean: | 0.10 | 0.14 | 0.10 | 0.07 |
| Unadjusted difference : | 1.264*** | 0.757*** | 0.971*** | 2.074*** |
| | (11.40) | (4.75) | (5.34) | (9.72) |
| **Observations:** | **605** | **204** | **200** | **201** |
| *PSM (ATT)* | | | | |
| Post-matching difference: | 1.152*** | 0.635*** | 0.877** | 2.040*** |
| (kernel) | (7.28) | (3.62) | (3.08) | (6.30) |
| **Observations:** | **550** | **189** | **182** | **179** |
| Post-matching difference: | 1.176*** | 0.591** | 0.913*** | 2.129*** |
| (no replacement) | (7.95) | (3.16) | (3.73) | (6.81) |
| **Observations:** | **550** | **189** | **182** | **179** |
| *Multivariable Regression:* | | | | |
| MVR coefficient (fe; robust): | 1.133*** | 0.601** | 0.902*** | 1.964*** |
| | (9.01) | (3.25) | (3.90) | (8.07) |
| **Observations:** | **605** | **204** | **200** | **201** |
| MVR coefficient (fe; rreg): | n/a | n/a | n/a | n/a |
| **Observations:** | | | | |
| MVR coefficient (fe; robust): | 1.140*** | 0.675*** | 0.916*** | 2.083*** |
| with control functions | (9.08) | (3.55) | (3.77) | (8.26) |
| **Observations:** | **605** | **200** | **199** | **201** |

*t* statistics in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
PSM estimates bootstrapped 1000 repetitions
Coefficients for covariates used not presented

Table 6.2.5.2 presents the results of the double difference estimates, and these are also highly statistically significant across the estimation procedures and partners. Table 6.2.5.3 follows by presenting disaggregated results for each of the three characteristics. The differences are statistically significant for all the three characteristics across all the estimation procedures. The results are also statistically significant at the partner level, save for Koslata with respect to participation in disaster preparedness meetings. The effect estimates are furthermore more significant for LP2DER, indicating that this partner has been more successful in affecting the three characteristics.

*While there is evidence of impact for each of the three partners, the effect estimates for LP2DER stand out as being more significant.*

**TABLE 6.2.6.3:**
**HH Characteristic Scores: Contingency Resources and Support (by characteristic)**

| | Knowledge of Village Disaster Management. Plans | Participation in Disaster Preparedness Meetings | Receipt of Disaster Preparedness Information |
|---|---|---|---|
| *Pre-matching* | | | |
| Sample Mean | 1.54 | 1.23 | 1.24 |
| Intervention Mean | 2.11 | 1.54 | 1.50 |
| Comparison Mean | 1.17 | 1.03 | 1.06 |
| Difference | 0.940*** | 0.501*** | 0.443*** |
| | (13.90) | (11.10) | (10.69) |
| **Observations:** | **605** | **605** | **605** |
| *Matching – kernel* | | | |
| Single Difference: | 0.830*** | 0.429*** | 0.414*** |
| | (8.60) | (6.57) | (6.99) |
| **Observations:** | **550** | **550** | **550** |
| *Matching – kernel*: | | | |
| Double Difference: | 0.566*** | 0.279*** | 0.308*** |
| | (6.73) | (5.20) | (6.76) |
| **Observations:** | **550** | **550** | **550** |
| *Matching – kernel (Konsepsi)*: | | | |
| Single Difference: | 0.685*** | 0.475*** | 0.396** |
| | (4.96) | (4.16) | (3.11) |
| **Observations:** | **189** | **189** | **189** |
| *Matching – kernel (Konsepsi)*: | | | |
| Double Difference: | 0.218* | 0.188** | 0.229** |
| | (2.13) | (2.96) | (3.08) |
| **Observations:** | **189** | **189** | **189** |
| *Matching – kernel (Koslata)*: | | | |
| Single Difference: | 0.396* | 0.130 | 0.255** |
| | (2.22) | (1.22) | (2.96) |
| **Observations:** | **182** | **182** | **182** |
| *Matching – kernel (Koslata)*: | | | |
| Double Difference: | 0.449** | 0.154 | 0.273*** |
| | (2.81) | (1.60) | (3.51) |
| **Observations:** | **182** | **182** | **182** |
| *Matching – kernel (LP2DER)*: | | | |
| Single Difference: | 1.466*** | 0.700*** | 0.606*** |
| | (9.54) | (6.65) | (6.86) |
| **Observations:** | **179** | **179** | **179** |
| *Matching – kernel (LP2DER)*: | | | |
| Double Difference: | 1.089*** | 0.517*** | 0.434*** |
| | (6.73) | (4.75) | (5.25) |
| **Observations:** | **179** | **179** | **179** |

*t* statistics in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
PSM estimates bootstrapped 1000 repetitions

A comparison between the levels of disaster preparedness awareness and participation was also undertaken separately for men and women. The results of the analysis are presented in Table 6.2.6.4 below. Overall, statistically significant differences in favour of the intervention household were identified for *both* men and women for all three of the characteristics. This is also the case for both Konsepsi and LP2DER. The results are mixed for Koslata.

*Overall, there is evidence of project impact for the three characteristics falling under the social capability dimension for both men and women.*

**TABLE 6.2.6.4:**
**HH Characteristic Scores: Contingency Resources and Support (by characteristic)**

| | Knowledge of Village Disaster Management. Plans | | Participation in Flood Preparedness Meetings | | Receipt of Disaster Preparedness Information | |
|---|---|---|---|---|---|---|
| | **Men** | **Women** | **Men** | **Women** | **Men** | **Women** |
| *Pre-matching* | | | | | | |
| Sample Mean | 1.68 | 1.41 | 1.30 | 1.17 | 1.32 | 1.18 |
| Intervention Mean | 2.28 | 1.81 | 1.60 | 1.39 | 1.61 | 1.35 |
| Comparison Mean | 1.21 | 1.13 | 1.07 | 1.02 | 1.09 | 1.05 |
| Difference | 1.069*** | 0.675*** | 0.530*** | 0.377*** | 0.515*** | 0.301*** |
| | (11.84) | (8.90) | (8.51) | (7.85) | (8.66) | (6.40) |
| **Observations:** | **439** | **484** | **439** | **485** | **439** | **485** |
| *Matching – kernel* | | | | | | |
| Single Difference: | 0.826*** | 0.611*** | 0.410*** | 0.365*** | 0.450*** | 0.342*** |
| | (5.89) | (5.59) | (3.98) | (5.40) | (5.45) | (5.03) |
| **Observations:** | **393** | **439** | **393** | **440** | **393** | **440** |
| Matching – kernel | | | | | | |
| Double Difference: | 0.658*** | 0.329*** | 0.270** | 0.219*** | 0.337*** | 0.232*** |
| | (5.46) | (3.35) | (3.19) | (4.26) | (5.97) | (4.38) |
| **Observations:** | **393** | **439** | **393** | **440** | **393** | **440** |
| *Matching – kernel (Konsepsi)* | | | | | | |
| Single Difference: | 0.718*** | 0.588*** | 0.528*** | 0.449*** | 0.424** | 0.425** |
| | (3.92) | (3.78) | (3.80) | (3.86) | (2.91) | (3.15) |
| **Observations:** | **141** | **167** | **141** | **167** | **141** | **167** |
| *Matching – kernel (Konsepsi)* | | | | | | |
| Double Difference: | 0.376* | 0.0465 | 0.138 | 0.221** | 0.177* | 0.254** |
| | (2.44) | (0.48) | (1.39) | (2.94) | (2.20) | (2.67) |
| **Observations:** | **141** | **166** | **141** | **166** | **141** | **167** |
| *Matching – kernel (Koslata)* | | | | | | |
| Single Difference: | 0.207 | 0.293 | -0.0823 | 0.176 | 0.274* | 0.134 |
| | (0.74) | (1.72) | (-0.42) | (1.74) | (2.04) | (1.74) |
| **Observations:** | **141** | **149** | **141** | **149** | **141** | **149** |
| *Matching – kernel (Koslata)* | | | | | | |
| Double Difference: | 0.395 | 0.351 | 0.128 | 0.140 | 0.352*** | 0.149 |
| | (1.48) | (1.92) | (0.70) | (1.42) | (3.50) | (1.89) |
| **Observations:** | **139** | **146** | **140** | **147** | **141** | **146** |
| *Matching – kernel (LP2DER)* | | | | | | |
| Single Difference: | 1.686*** | 1.038*** | 0.811*** | 0.462*** | 0.689*** | 0.463*** |
| | (8.57) | (4.41) | (5.46) | (4.30) | (6.25) | (4.82) |
| **Observations:** | **111** | **123** | **111** | **124** | **111** | **124** |
| *Matching – kernel (LP2DER)* | | | | | | |
| Double Difference: | 1.353*** | 0.748*** | 0.615*** | 0.308** | 0.542*** | 0.293*** |
| | (7.45) | (3.33) | (4.28) | (2.66) | (5.07) | (3.30) |
| **Observations:** | **111** | **123** | **111** | **124** | **111** | **124** |

*t* statistics in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
PSM estimates bootstrapped 1000 repetitions

# 7.0 Conclusions and Learning Considerations

## 7.1 Conclusions

The Building Resilience in Eastern Indonesia Project, as implemented by Konsepsi, Koslata, and LP2DER, was primarily focused on preparing the sub-villages that were targeted to effectively respond to natural disasters, with the principal aim of preserving life and, to a lesser extent, assets. It is important to re-emphasise that the project was never set up to affect many of the characteristics examined under this effectiveness review. Consequently, lack of evidence of impact in relation to these characteristics is to be expected and should, by no means, be taken as an indication of programme failure. In fact, it is hoped that the results will aid in informing future programming.

*There is evidence that the project was effective in what it was set-up to do, but there is room for improvement.*

There is evidence that the Building Resilience in Eastern Indonesia Project successfully affected the characteristics falling under the social capability dimension. Both men and women from the intervention sub-villages reported greater awareness of their villages' disaster preparedness plans and reported significantly greater involvement in disaster preparedness meetings and having received more in the way of disaster preparedness information. That being said, there is still room for improvement: Significant numbers of men and women, in particular, reported low levels of awareness of, as well as participation in, the disaster preparedness initiatives that take place in intervention sub-villages.[5] In addition, there is evidence that the effectiveness of the three partners under the social capability dimension was not uniform. Indeed, LP2DER stands out as having had generated greater impact.

This is also the case with respect to the overall resilience score, i.e. when the scores for each individual characteristic of each of the five dimensions are combined. LP2DER, in particular, is the only partner where a statistically significant difference between the intervention and comparison households was identified for this overall measure. This result was additionally found to be significantly robust to unobserved bias. Moreover and surprisingly (given the focus of the project), positive results were also identified for this particular partner with respect to the livelihood viability and livelihood innovation potential dimensions. There is strong evidence that LP2DER positively affected the following characteristics in particular: access to seasonal forecast and disaster preparedness information and agricultural extension support.

### 7.2 Programme Learning Considerations

Based on the findings of this effectiveness review, there are a number of points the programme's stakeholders can consider to strengthen their efforts in promoting resilience:

- *Explore whether there are key differences in the way LP2DER implemented the programme and/or whether it carried out any complementary interventions that could be scaled-up elsewhere.*

As presented above, there is evidence that LP2DER affected many of the characteristics assessed in the review to a greater extent than the other partners. Did it implement the project's interventions differently and/or did it carry out any other interventions in the targeted sub-villages, perhaps through another project? Understanding whether and, if so, how the approach and/or focus of LP2DER differed from the other partners would be valuable for programme learning purposes. However, if no such differences are identified, one possible explanation for the differing results may be related to context: Bima is more remote than the districts in which Konsepsi and Koslata implemented the project and, possibly, more conducive for achieving results.

Unfortunately, Koslata appears to be the partner that generated the least effects through the project. How did it deliver the interventions differently

[5] It deserves mention that the culture of the region understudy is highly patriarchal. As such, the participation levels of women in the intervention sub-villages may have been even lower if the project's gender mainstreaming interventions were never implemented.

from the other partners? Is there a way it can strengthen the way it carries out similar types of projects in the future?

- *Seek to understand why the effects of the project under the social capability dimension are different for men and women.*

The project explicitly sought to ensure that women meaningfully participated and benefited from its core activities. However, there is evidence that men were more aware of and involved in the fruits of the project's work. What are the principal reasons for this? Did partner field staff really take sufficient action to engage women meaningfully in the project?

*Future resilience promotion work can possibly be strengthened by acting on several important learning considerations.*

It is important to note, however, the different results for men and women do not necessarily mean that the attempts made by the project to mainstream gender totally failed. If meaningful work was actually undertaken, it is quite possible that the situation could have been worse, i.e. the engagement of women in the project could have actually been much less if such efforts had not been undertaken.

- *Consider informing future programming decisions based on the current status of each characteristic examined through this effectiveness review.*

As also mentioned above, the effectiveness review examined many characteristics the project was not intentionally attempting to affect. It is hoped that this examination can be used to inform future programmatic work. Below is a list of all the characteristics assessed in the review. A rating of the status of each characteristic is then provided – good, fair, or poor. The rating is based on the characteristic scores for the intervention sub-villages only, as are presented throughout this document. The higher the characteristic score, the better the rating. Oxfam GB's Eastern Indonesia programme team and the three partners are encouraged to consider whether tackling any of the characteristics with a poor and even fair rating may be important in future programmatic work. This, of course, does not mean that doing so is all that is required to promote resilience, but doing so may complement other initiatives and enhance overall impact.

The reader may be perplexed why the last two characteristics were given a poor rating, given that there is strong evidence that the project significantly affected these characteristics. While participation in disaster preparedness meetings and receipt of related information was certainly higher among the households in the intervention sub-villages, it was, by no means, extensive. Many respondents from these villages reported not having participated in such meetings or having received such information, while others stated that they only attended one meeting or received information on one occasion only.

**Status of Individual Characteristics among the Households of the Intervention Sub-villages**

| Dimension | Characteristic | Status |
|---|---|---|
| Livelihood Viability | • Livelihood diversification | Fair |
| | • Relocation/modifications to home, fields, livestock shelter, or asset storage | Poor |
| | • Access to seasonal forecast information | Fair |
| | • Disaster preparedness information | Fair |
| Livelihood Innovation Potential | • Motivation to pursue alternative livelihood strategies | Good |
| | • Attitudes about climate change | Fair |
| | • Credit access (formal and informal) | Poor (formal); Fair (informal) |
| | • Access to climate trend information | Poor |
| | • Farming extension support | Fair |
| | • Access to marking information & support | Poor |
| | • Access to livelihood innovation support | Poor |
| Access to Contingency Resources and Support | • Social support system | Fair |
| | • Contingency resources, i.e. savings & "convertible" assets | Fair |
| Eco-system Health | • Natural resource management practices | Fair |
| Social Capability | • Knowledge of disaster management plan | Fair |
| | • Participation in disaster preparation meetings | Poor |
| | • Receipt of disaster preparedness information | Poor |