Rapid Vulnerability and Adaptation Assessments of six Local Communities in Timor-Leste

USP-EU Global Climate Change Alliance (GCCA)

Implemented by:
National Directorate for International Environmental Affairs and Climate Change

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Obrigada barak ba maluk sira nia ajuda hodi realiza relatorio ida ne'e.

Thanks a lot to all the people that helped to make this report.

Rapid Assessment Report – Community Engagement Component (Component 2)
USP-EU Global Climate Change Alliance (GCCA) Project

Pacific Centre for Environment and Sustainable Development (PACE-SD),
University of the South Pacific (USP)

National Directorate for International Environmental Affairs
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REPORT SUMMARY

Rapid assessments for the USP-EU Global Climate Change Alliance (GCCA) Project in Timor-Leste, were carried out over a period of 6 months in the six potential sites identified by the National Advisory Committee (NPAC). The potential sites where the rapid assessments were carried out include:

(1) Ulmera, Bazartete, Liquica
(2) Larisula, Baguia, Baucau
(3) Haupu, Letefoho, Ermera
(4) Laco-Mesac, Laclo, Manatuto
(5) Hera, Cristo Rei, Dili
(6) Saelari, Laga, Baucau

The sites identified as the USP-EU GCCA Project demonstration sites after the rapid assessment and the NPAC meeting held on April 11, 2013 are:

Site (1) Saelari, Laga, Baucau
Site (2) Laco-Mesac, Laclo, Manatuto
Site (3) Ulmera, Bazartete, Liquica

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1. INTRODUCTION

Timor-Leste as a new independent Nation has come a long way since its struggle for independence ended in 2002. In the eleven years since then, Timor-Leste had managed to develop itself, in terms of governance and economy. It has done all this in a relatively short amount of time considering that it usually takes one full generation to build a nation recovering from post-conflict situations (World Bank, 2011). Even though economic growth has been Timor-Leste's main priority, in the past 6 years it has done a lot in the area of environment and became a signatory to the three Rio Conventions: the United Nations Convention to Combat Desertification (UNCCD); the United Nations Convention on Biological Diversity (UNCBD); and the United Nations Framework Convention on Climate Change (UNFCCC).

Within the climate change sector it has also made great strides and has recently re-designated the National Directorate for International Environmental Affairs (DNAAI) within the Secretariat of State for Environment (SEMA) to become the National Directorate for International Environmental Affairs and Climate Change (DNAAIAC). Within this Directorate, several staff have been assigned to concern themselves with the Initial National Communication (INC) to the UNFCCC, which is a project aimed at making an inventory of all GHG emissions in the country but also on doing vulnerability and adaptation analyses. DNAAIAC also strives to coordinate implementation of the National Adaptation Programme of Action (NAPA), which was approved by the Council of Ministers in 2011. One of the ways in which DNAAIAC itself is actively involved in NAPA implementation is by becoming the lead implementing agency for the University of the South Pacific (USP) EU-Global Climate Change Alliance (GCCA) project.

The USP-EU-GCCA project is a community based Climate Change project that is being implemented in 15 Small Island Developing States (SIDS) in the Pacific, including Timor-Leste. Timor-Leste was one of the last countries to get an In-Country Coordinator (ICC) in place and working on the project, which means that project implementation has suffered severe delays.

In order to make up for some lost time and kick-start the project here, the Project Manager, Ms. Sarah Hemstock and a Research Assistant, Mr. John Walenenea Jr., convened the First National Project Advisory Committee (NPAC) meeting on the 27th of July 2012. The meeting was held in the Director's office and was led by the Director of DNAAI, at that time Mr. Augusto Manuel Pinto. The meeting was attended by stakeholders from civil society, local and international NGO's, government and universities. Though all of these sectors were adequately represented, the meeting was purposefully kept small since the In-Country Coordinator was not officially in place yet and there were no disbursements of funds for the project yet.

To expedite the process further, it was decided that those present in the NPAC meeting should suggest the villages that would qualify as possible beneficiary villages. More than six villages were suggested at this meeting, however the final six were chosen in a round-table discussion in DNAAIAC the week after the NPAC was held. The document confirming the six potential sites was sent to USP on August 8, 2012. After this first NPAC, things started moving quite quickly: the new ICC, Ms. Tessa Koppert, signed her contract on September 18, 2012, the Memorandum of Understanding (MOU) between DNAAI and USP was signed on November 30, 2012, and the first tranche disbursement was done on February 28, 2013.

The first activity under this project was a Rapid Assessment (RA) conducted in Larisula village, Baguia Sub-District, Baucau District, with a small DNAAI delegation on November 3, 2012, followed by the Rapid Assessment in Ulmera, Bazartete, Liquica District on November 10, 2013. However, the delay in the disbursement of funds and project equipment meant that the other Rapid Assessments had to be put on

hold for the time being. After the funds were received, the third Rapid Assessment was conducted on March 8 in Haupu village, Letefoho Sub-District, Ermera District, followed by the fourth Rapid Assessment in Hera village, Cristo Rei Sub-District, Dili District on March 15, 2013. The fifth Rapid Assessment was held one week later in Laco-Mesac village, Laclo Sub-District, Manatuto District on March 22, 2013, and finally the sixth Rapid Assessment was done in Saelari village, Laga Sub-District, Baucau District 2013 on March 26, 2013.

An overview of village characteristics and demographics of the six potential villages according to 2010 census data of Timor-Leste (NDS & UNFPA, 2011a), are shown in table 1:

Table 1. Population, area, density, and number of households by village

Village	Population						Households			
	Total	Male	Female	Sex Ratio	Area in Sq. km	Density	Private			Other
							Total	Male Headed	Female Headed	
Saelari	1696	850	846	100.47	17.78	95.41	344	270	74	0
Lari Sula	902	434	468	92.74	36.38	24.8	215	170	45	0
Hera	7376	4007	3369	118.94	41.24	178.88	1026	896	130	30
Haupu	4488	2266	2222	101.98	16.31	275.24	780	644	136	7
Ulmera	2916	1521	1395	109.03	39.02	74.72	465	407	58	4
Laco-Mesac	2857	1466	1391	105.39	131.31	21.76	485	428	57	2

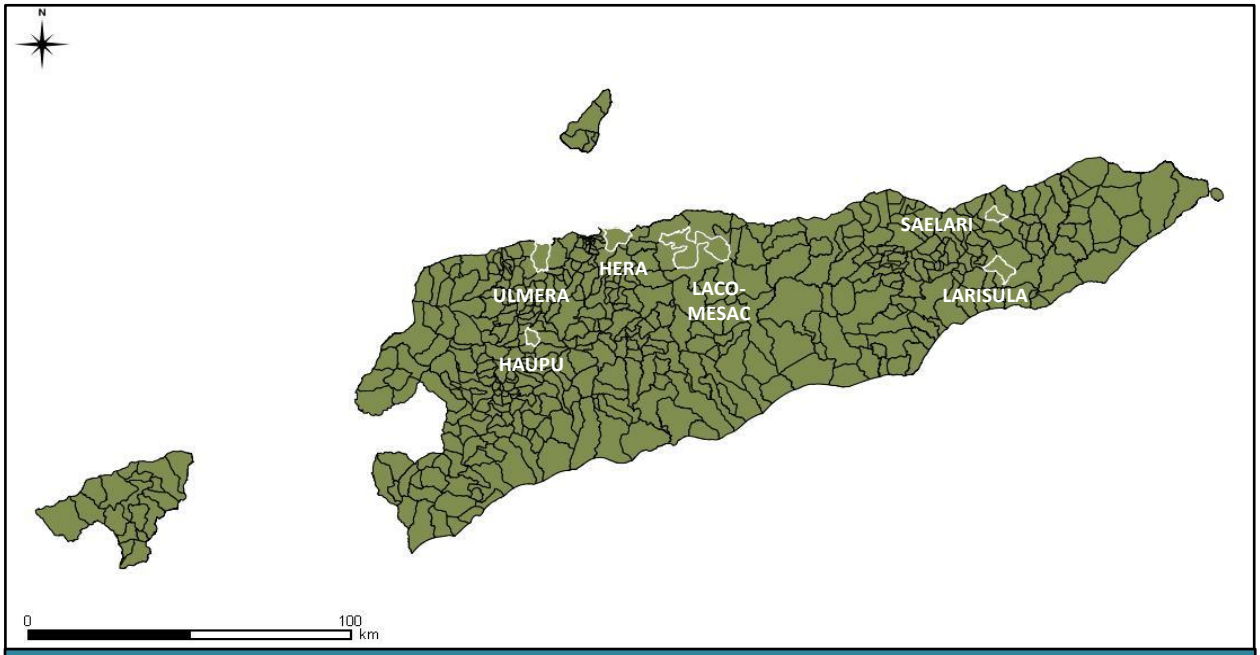
Source: Population and Household Census – Population Distribution by Administrative Areas, Volume 2, 2011

2. METHODOLOGY

The Rapid Assessment method that was used in Timor-Leste is mainly as per the PACE-SD Rapid Assessment 2012 manual prepared by Mr. Leone Limalevu. (Annex 1) The steps as outlined in the manual, were translated it into Indonesian and Tetun. We decided that the best way to do the Rapid Assessment was to use the questions in the PACE-SD Rapid Assessment manual as the basis of a Focus Group Discussion with about 10 community representatives from different sectors. The strategy was that we would ask this group the questions from the manual supplemented with other questions, verify their answers with visual observations and census 2010 data (NDS & UNFPA, 2011) and then rank the results accordingly.

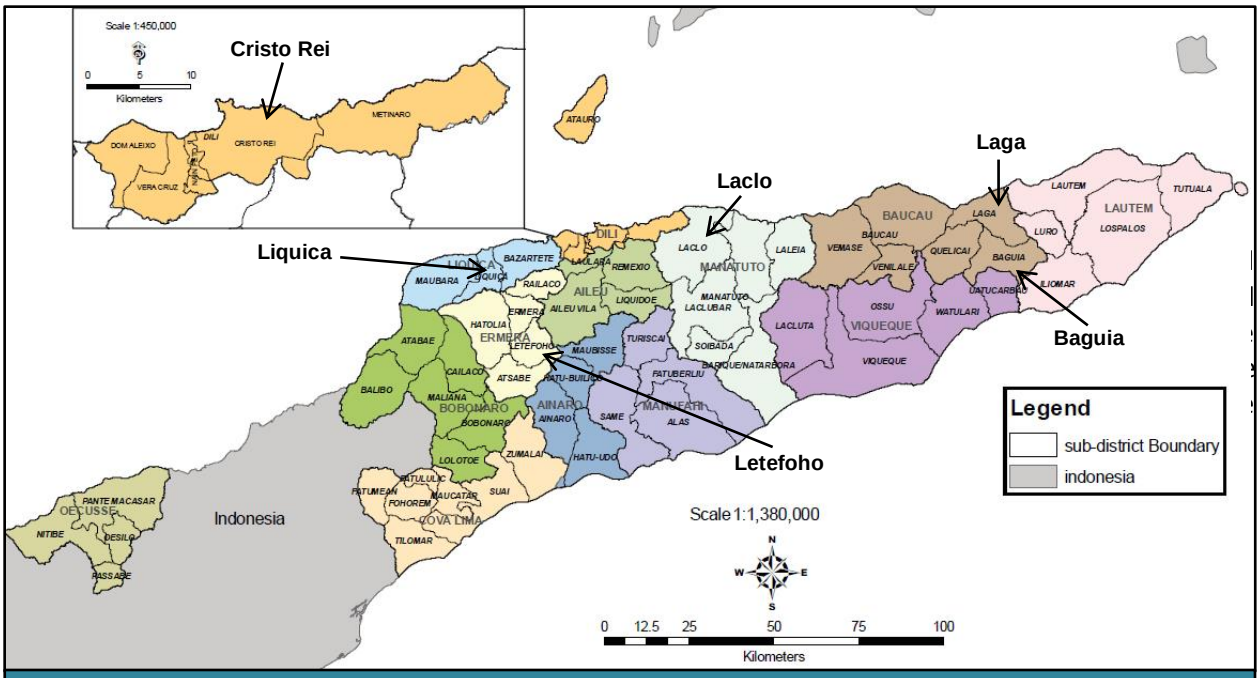
For each Rapid Assessment, an appointment with the village head was made at least one week before to make sure that they would be available on the selected date and time. He (all the village heads were males) was then asked, to invite representatives from the village council, the health sector, traditional leaders, the church, education, women's groups, and youth groups within the village. The village chiefs themselves were present in four of the six RAs, however the village chiefs in Hera and Laco-Mesac could not be present for the RA because they were required to participate in National Level meetings in Dili to which they were invited only one or two days before. At that time, it was too late to cancel the RA and therefore both of them had designated the Secretary of the village council to represent them instead.

It is customary in Timor-Leste when planning to conduct a meeting or a workshop in the village, to send letters on the proposed activities not only to the village chief, but also to the Sub-District and District administrator to inform them about the purpose, time, date and venue of activity. Letters in Tetun were sent to all of them and because of this system, the Sub-District Administrator of Letefoho even decided that he wanted to join the Focus Group Discussion for the Rapid Assessment in Haupu village. His Excellency the Secretary of State for Environment, Mr. Nominando Soares Martins "BURAS", was also always informed in writing about each of the Rapid Assessments prior to their implementation.



Map 1. Location of all the six Rapid Assessment sites.
Source: NDS & UNFPA, 2011

After we finished the Focus Group Discussion, we would usually drive or walk around the village with someone from the village, taking GPS waypoints and pictures of the most important village infrastructure. Infrastructure and buildings that were felt to be important are water sources, village office, hospital/ clinic, church, market place and schools. The GPS points were later uploaded to Google Maps and Google Earth, and pictures were added to the Panoramia website that enables pictures to be seen on Google Maps. However, for Ulmera and Larisula no waypoints were taken since at that time we did not have a GPS to our disposal. Therefore, the approximate locations for these villages were found by locating landmarks of the villages on Google maps. Map two, displays a map of the six Sub-districts in which the villages are located.



Map 2. Sub-district map of Timor-Leste.
Source: Population and Household Census – Suco Report, Volume 4, 2011

Once we had secured the USP handy cam, we also shot videos of the Focus Group Discussions for documentation purposes and perhaps to make a video in the future. For Larisula and Ulmera these videos do not exist since at the time of those Rapid Assessments, we did not have a handy cam yet.

3. RAPID ASSESSMENT FINDINGS

3.1 Current Level of Vulnerability Related to Livelihood Sectors

Below are all the questionnaire results averaged per sector and rated as per rapid assessment site analyses. However, after the total scores were tallied (bracketed figure in Table 2), the lowest final ranking number (number to the right of the hyphen in Table 2) was actually assigned to the most vulnerable community, so to the village with the highest total score. This was done because intuitively the village, which is most vulnerable and therefore most eligible for project implementation, should get the "first place". It was also presented like this to the NPAC, highlighting with a red border around those villages that were most vulnerable in each sector.

The results are discussed in descending order, according to the NAPA priorities, which state that Water and Food Security are the most important sectors to focus in Timor-Leste in the future, followed by Health and Sanitation and Energy Resources. (SEMA, 2011)

Table 2. Ranking results based on vulnerability in livelihoods sectors.

Ref	Rapid Assessment Site	Water Resources	Food Resources and Food Security	Health and Sanitation	Energy Resources and Energy Security
1	Ulmera, Bazartete, Liquica	(4)- 3	(12)- 4	(26)- 2	(7)- 3
2	Larisula, Baguia, Baucau	(4)- 3	(14)- 3	(21)- 4	(9)- **1**
3	Haupu, Letefoho, Ermera	(4)- 3	(15)- 2	(21)- 4	(8)- 2
4	Laco-Mesac, Laclo, Manatuto	(9)- **1**	(16)- **1**	(14)- 5	(7)- 3
5	Hera, Cristo Rei, Dili	(4)- 3	(14)- 3	(22)- 3	(7)- 3
6	Saelari, Laga, Baucau	(6)- 2	(14)- 3	(30)- **1**	(8)- 2

3.1.1 Water Resources

Since we were not able to reach the springs in each village and also because it was rainy season throughout Timor-Leste, we had to leave out the scores for discharge rates in order to calculate a fair average amongst all villages. The most vulnerable village according to ranking scores was the village of Laco-Mesac.

Table 3. Households by source of drinking water and suco

Village	Total House -holds	Pipe or pump indoors	Pipe or pump outdoors	Public tap	Tube well/ borehole	Protected spring	Rainwater collection	Bottle water	Not protected well or spring	Water vendor/ tank	River lake or stream	Other
Saelari	344	1 (0%)	5 (1%)	1 (0%)	5 (1%)	180 (52%)	-	-	108 (31%)	-	36 (10%)	8 (2%)
Lari Sula	215	-	-	4 (2%)	-	-	-	-	210 (98%)	-	1 (0%)	-
Hera	1026	49 (5%)	234 (23%)	409 (40%)	123 (12%)	81 (8%)	-	1 (0%)	30 (3%)	2 (0%)	75 (7%)	22 (2%)
Haupu	780	8 (1%)	32 (4%)	90 (12%)	1 (0%)	49 (6%)	2 (0%)	2 (0%)	469 (60%)	-	127 (16%)	-
Ulmera	465	-	58 (12%)	166 (36%)	37 (8%)	55 (12%)	-	-	80 (17%)	-	68 (15%)	1 (0%)
Laco-Mesac	485	16 (3%)	93 (20%)	186 (40%)	5 (1%)	6 (1%)	-	5 (1%)	46 (10%)	-	128 (28%)	-

Source: Population and Household Census – Suco Report, Volume 4, 2011

Unfortunately, the Census 2010 data as displayed in Table 3 was found to be inconsistent with visual observations made in the villages during the Rapid Assessments. One example was Larisula village, where a big part of the village actually has access to public taps, but in the Census, it said that only 2% had access to this (Table 2). Therefore, it was felt that this particular census data should not be used to verify Rapid Assessment results from the Focus Group Discussions. (NDS & UNFPA, 2011a)

3.1.2 Food Resources and Food Security

The extent to which the villages were Food Secure was mainly assessed by their answer to questions about basic subsistence sources of food, landownership, soil fertility and productivity of marine resources (if applicable). For the villages that did not have access to marine resources, the score that was given was 5. The reason for this was because it was felt that the coastal villages were less vulnerable in that they have access to both land (agriculture) and marine resources and in the event of a climate change impact can still rely on both of these resources, whereas inland communities only have access to their agricultural fields. Therefore, in terms of food security, the inland communities are justifiably more vulnerable, deserving a score of 5, which would be similar to a highly unproductive marine resource. After the scores were added up for all the villages, Laco-Mesac again was the village with the highest scores and therefore the most vulnerable.

Table 4. Households, which involved in crop production by type of crop and suco

Village	Total House-holds	Rice	Maize	Cassava	Vege-tables	Fruit (temporary)	Fruit (permanent)	Coffee	Coconut	Other temporary crops	Other permanent crops
Saelari	344	118 34%	156 45%	120 35%	94 27%	103 30%	110 32%	4 1%	149 43%	140 41%	139 40%
Lari Sula	215	102 47%	108 50%	116 54%	60 28%	101 47%	95 44%	15 7%	117 54%	112 52%	111 52%
Hera	1026	152 15%	536 52%	534 52%	358 35%	493 48%	461 45%	65 6%	448 44%	469 46%	443 43%
Haupu	780	4 1%	437 56%	616 79%	229 29%	233 30%	146 19%	441 57%	71 9%	92 12%	39 5%
Ulmera	465	9 2%	386 83%	238 51%	193 42%	244 52%	237 51%	167 36%	251 54%	205 44%	210 45%
Laco-Mesac	485	120 26%	169 36%	129 28%	150 32%	152 33%	145 31%	51 11%	125 27%	141 30%	144 31%

Source: Population and Household Census – Suco Report, Volume 4, 2011

Table 5. Households involved in livestock rearing by type and suco

Village	CHICKEN		PIG		SHEEP		GOAT		HORSE		CATTLE/COW		BUFFALO	
	HH	Number of Chickens	HH	Number of Pigs	HH	Number of Sheep	HH	Number of Goats	HH	Number of Horses	HH	Number of Cattle/ Cows	HH	Number of Buffalos
Saelari	197 57%	932	200 58%	589	40 12%	293	84 24%	377	53 15%	82	6 2%	25	42 12%	228
Lari Sula	176 82%	1500	161 75%	380	1 0%	2	51 24%	182	86 40%	175	52 24%	268	78 36%	456
Hera	752 73%	5160	725 71%	1958	19 2%	42	432 42%	1748	90 9%	173	156 15%	1334	74 7%	299
Haupu	504 65%	1896	509 65%	1201	12 2%	22	96 12%	166	48 6%	70	110 14%	198	15 2%	33
Ulmera	399 86%	1848	390 84%	1088	7 2%	12	278 60%	896	25 5%	59	245 53%	628	25 5%	44
Laco-Mesac	402 86%	2137	408 88%	1354	13 3%	53	245 53%	937	146 31%	250	136 29%	475	124 27%	636

Source: Population and Household Census – Suco Report, Volume 4, 2011

As can be seen from the above tables (4&5) many households are self-sufficient since they plant staple crops, fruits and vegetables. And for their source of protein, many rear livestock, like chicken, pigs, cows, buffalos, sheep and goats. The only village producing cash crops on a large scale, was Haupu, however many of them also plant the staple crop cassava. The villages that planted the most rice were Saelari and Larisula. The village with the most impressive livestock was Hera village with 10,714 animals in 2010 with on average 10 animals per household, whereas Haupu had only 4.6 animals per household.

3.1.3 Health and Sanitation

In terms of health and sanitation, Saelari was the most vulnerable village, mainly because of the many cases of vector-borne and water borne diseases, which all recorded more than 10 cases a year according to the suco health representative and other community members that were present for the Focus Group Discussion.

Table 6. Households by type of human waste disposal and suco[1]

Village	Pit latrine with slab		Ventilated improved pit latrine (VIP)		Pour flush to septic tank/pit		Pour flush to elsewhere/DK		Pit latrine without slab/open pit		Hanging toilet/ latrine		No facility or bush		Other	
	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS
Saelari	1	1	0	0	0	7	0	0	0	1	7	297	0	20	2	8
	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%	2%	86%	0%	6%	1%	2%
Lari Sula	0	0	0	1	0	0	0	0	0	0	11	203	0	0	0	0
	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	94%	0%	0%	0%	0%
Hera	34	136	66	242	29	55	17	34	27	110	15	30	105	125	0	1
	3%	13%	6%	24%	3%	5%	2%	3%	3%	11%	1%	3%	10%	12%	0%	0%
Haupu	17	37	14	21	32	28	9	12	87	135	23	34	228	102	1	0
	2%	5%	2%	3%	4%	4%	1%	2%	11%	17%	3%	4%	29%	13%	0%	0%
Ulmera	21	44	12	19	30	47	11	26	21	40	1	9	44	138	1	1
	5%	9%	3%	4%	6%	10%	2%	6%	5%	9%	0%	2%	9%	30%	0%	0%
Laco-Mesac	28	77	2	42	4	13	1	1	3	1	3	43	7	250	0	10
	6%	17%	0%	9%	1%	3%	0%	0%	1%	0%	1%	9%	2%	54%	0%	2%

Source: Population and Household Census – Suco Report, Volume 4, 2011

Figure 1. Picture of Larisula Clinic
Source: Taken by Tessa Koppert, Nov. 2012

According to the 2010 Census data in Hera, many households have access to either shared or private flushed toilets (Table 6) as well as access to clean drinking water and other water sources (Table 3). And now Hera even has access to a fully operational desalination plant that supplies drinking water to the school and village center. However it seems that even though Hera has access to these facilities, the health of the village population is seemingly worse than Larisula and Haupu which scored almost the same in the RA (Table 1)

[1] *NB. S means "shared" while NS means facility is "not shared" with other households.*

but have much poorer access to these facilities. In all villages we visited the local health facility, which was usually just a clinic. Some of them were newly built; others were in deplorable conditions like the one in Larisula. (Figure 1)

3.1.4 Energy Resources and Energy Security

In terms of energy used for lighting and cooking in the 6 villages, Larisula was the most vulnerable. It was the only village in which none of the households were hooked up to the national electric grid. Most of the households in that village use kerosene lamps for lighting. And, because of the remoteness of the village, the only fuel used for cooking there is fuel wood. However, during the transect walk in Larisula it was observed that the surrounding forest was still in good condition and fairly dense.

Table 7. Households by source of energy for cooking and suco

Village	Total House-holds	Electricity	Cooking gas	Biogas	Kerosene	Wood	Other
Saelari	344	- 0%	- 0%	1 0%	9 3%	334 97%	- 0%
Lari Sula	215	- 0%	- 0%	- 0%	- 0%	215 100%	- 0%
Hera	1026	65 6%	4 0%	1 0%	24 2%	932 91%	- 0%
Haupu	780	5 1%	2 0%	3 0%	25 3%	745 96%	- 0%
Ulmera	465	16 3%	2 0%	1 0%	26 6%	419 90%	1 0%
Laco-Mesac	485	15 3%	1 0%	5 1%	13 3%	451 97%	0 0%

Source: Population and Household Census – Suco Report, Volume 4, 2011

Table 8. Households by source of energy for lighting and suco

Village	Total House-holds	Electricity	Biogas	Kerosene	Candle	Wood	Candle nut/ candle berry tree	Solar panel	Other
Saelari	344	1 0%	- 0%	301 88%	14 4%	9 3%	19 6%	- 0%	- 0%
Lari Sula	215	- 0%	- 0%	208 97%	- 0%	2 1%	5 2%	- 0%	- 0%
Hera	1026	770 75%	8 1%	172 17%	11 1%	59 6%	- 0%	1 0%	5 0%
Haupu	780	197 25%	16 2%	533 68%	2 0%	17 2%	- 0%	8 1%	7 1%
Ulmera	465	250 54%	4 1%	186 40%	3 1%	15 3%	1 0%	4 1%	2 0%
Laco-Mesac	485	152 33%	4 1%	308 66%	3 1%	14 3%	3 1%	1 0%	0 0%

Source: Population and Household Census – Suco Report, Volume 4, 2011

As can be seen from the tables above (Table 7 & 8), the census data largely verifies the results from the Rapid Assessment. What was interesting to note is that in Saelari, Larisula and Laco-Mesac some households still use the traditional means to light their houses: candlenut. Another conclusion that can be drawn from this table is that the potential for solar energy and biogas is scarcely utilized and could someday become a major source of energy for households in villages or village hamlets that are not

connected to the electric grid yet, like in Larisula and Saelari. Since the 2010 census was done, some village hamlets in Saelari do have electricity now, while some other hamlets there will not get electricity anytime soon.

3.2 Current Level of Adaptive Capacity Related to Livelihood Sectors

According to the PACE-SD Rapid Assessment Tool, the most vulnerable communities are the communities that receive a score of 5 for any given criteria. However, for the factor of household income, it seems like the opposite was assumed. The households with the lowest incomes should be the most vulnerable to adverse climate change impacts, because they do not have any financial means to augment their food resources in case their natural resource base is affected. Therefore, the table below (Table 9) has been modified in order to make it consistent with the ranking done with the other criteria, giving a score of '5' to those with the lowest incomes.

Table 9. Adaptive capacity related to Livelihood Sectors

Factors	Ulmera, Bazartete, Liquica	Larisula, Baguia, Baucau	Haupu, Letefoho, Ermera	Laco-Mesac, Laclo, Manatuto	Hera, Cristo Rei, Dili	Saelari, Laga, Baucau
(i) Level of income per household (estimated)	(5)-1	**(5)-1**	(5)-1	(5)-1	(5)-1	**(5)-1**
(ii) Predominant type of economic system either in the agriculture or fisheries sectors	(4)-2	**(5)-1**	(4)-2	(4)-2	(3)-3	**(5)-1**

All the villages reported an average local income of USD 50 or less per week per household. A frequently heard comment while asking this question was that many households probably earn much less than USD 50 dollars per week, relying mostly on their own produce for food. The only village that reported to be semi-commercial was Hera. The results from the Rapid Assessment showed that both Larisula and Saelari shared the first position as the most vulnerable village with the lowest adaptive capacity.

3.3 Level of Community Need

To assess the level of community need based on past community projects aimed at reducing climate change stresses was not easy. First of all, most of the villages and community representatives did not even know what climate change was, let alone have experience with climate change projects. The question was therefore changed to include other projects aimed at improving access to clean water and or sanitary facilities, agriculture projects, and any other projects intended to improve livelihoods and strengthen a community's ability to cope with stresses.

Table 10. Level of Community Need

Factors	Ulmera, Bazartete, Liquica	Larisula, Baguia, Baucau	Haupu, Letefoho, Ermera	Laco-Mesac, Laclo, Manatuto	Hera, Cristo Rei, Dili	Saelari, Laga, Baucau
(i) Level of community need related to community commitment to addressing climate-induced related stresses in past community projects	(3)-2	(3)-2	**(4)-1**	**(4)-1**	(3)-2	**(4)-1**

Table 10 illustrates that all of the communities showed commitment to projects implemented in the past, oftentimes offering their labor, skills and time to the project. However, three villages reported that they contributed a lot to previous projects and were very committed to those projects: Haupu,

Laco-Mesac and Saelari. These three villages recounted that some projects they had worked on only contributed materials, however construction and person-hours were provided by the villagers.

3.4 Level of Community Interest

There seems to be a fine line between community need and community interest. The previous criterion did not quite measure the level of community need, but rather the commitment of the community. Commitment can also be seen an expression of interest and it was therefore difficult to explain the difference between need or commitment and interest. It was also difficult to ask the question if they were interested in a proposed project, when it was not even sure yet in which specific sector the project would be implemented. Because of this, we relied mostly on our observations to assess the true level of community interest.

Most of the villages answered that they were very interested. Hera also answered that they were interested. However, Hera was the only village where we had made a face-to-face appointment with the village head one week before doing the Rapid Assessment. Even meeting him to make an appointment was difficult, since he was busy with another project. When we sat down with him, he admitted that he was quite busy with other projects. Despite his busy schedule, he agreed to make time for the Rapid Assessment one week later. When we went there for the Rapid Assessment, the village head was not present. Furthermore, when we arrived at the village office at the stipulated time, nothing had been set up and there were not many community members yet. We had to wait quite a while before we could start since there were not enough people. When we asked the question whether they would be interested in implementing this project, the answer that they were actually interested, came out rather hesitantly. Because of all of these factors and because of the apparent difference in attitude observed in this village and the other villages we had visited, to us justified a lowering of the original score of 4-"interested" to 3-"moderately interested".

Table 11. Level of Community Interest

Factors	Ulmera, Bazartete, Liquica	Larisula, Baguia, Baucau	Haupu, Letefoho, Ermera	Laco-Mesac, Laclo, Manatuto	Hera, Cristo Rei, Dili	Saelari, Laga, Baucau
(i) Level of interest shown for the proposed project	**(5)-1**	**(5)-1**	**(5)-1**	(4)-2	(3)-3	(4)-2

As is seen from table 11, Ulmera, Larisula and Haupu were the most interested. These results were also verified by our direct observations in the villages in gauging how enthusiastic and engaged the communities were.

3.5 Feasibility of the Project

Assessing the feasibility of the project based on just an estimation of funding for a pilot project was impossible to do. The community representatives had no idea of how much previous projects had cost, let alone predict how much one would cost in any random sector in the future. Despite this, some villages estimated that it should not cost more than around USD 20.000. Other villages like Haupu, Manatuto and Hera, honestly answered that they had no idea how much a project like this would cost. Table 12 below shows the responses by the six villages.

Table 12. Project Feasibility

Factors	Ulmera, Bazartete, Liquica	Larisula, Baguia, Baucau	Haupu, Letefoho, Ermera	Laco-Mesac, Laclo, Manatuto	Hera, Cristo Rei, Dili	Saelari, Laga, Baucau
(i) Approximate cost of funding a livelihood adaptation project related to project funding allocation per site or community	(4)-2	**(5)-1**	?	?	?	**(5)-1**

Even though the above table did not yield any conclusive results, it was decided that because this is such an important criterion, another way should be found to rank the feasibility. Therefore, the following table (Table 13) was made using information gathered through visual observations, information given by the villagers and key informants about previous projects, logistical information and plain common sense:

Table 13. Project Feasibility

Factors	Ulmera, Bazartete, Liquica	Larisula, Baguia, Baucau	Haupu, Letefoho, Ermera	Laco-Mesac, Laclo, Manatuto	Hera, Cristo Rei, Dili	Saelari, Laga, Baucau
(i) Feasibility based on logistical considerations, access to materials and cost estimations of previous projects	2	5	3	2	4	**1**

According to these ranking results, it would be most feasible to implement the project in Saelari. First of all since Saelari itself estimated the cost to be under USD 20.000 and they had experience with similar projects in the past, but secondly because they are only a one-hour drive from Baucau, which is stocked with all kinds of materials like bricks, cement, pipes, agricultural supplies etc.. They were also the only village that said that they really needed this project and that they would do the work if we supply the materials.

The villages that share rank 2 are Ulmera and Laco-Mesac. Ulmera did provide an estimate, however they estimated that the project might cost a little over USD 20.000. Still, this added cost would be offset by the close proximity to Dili, which can be reached in only 45 minutes. This short distance will reduce costs pertaining to fuel, car rental, accommodation, etc.. Laco-Mesac, even though it was unable to give us an estimate of the cost of a livelihood adaptation project, shared the same rank with Ulmera. First of all, because it was located rather close to Dili (2,5 hour) and even closer to Manatuto town (one hour), but second of all because of the good road conditions year round, this will enable access to the village and reduce probabilities of delays.

Haupu, which also was unable to provide an estimate for project funding cost, was ranked third behind Laco-Mesac and Ulmera, because of the considerable distance from Dili, but mainly because of poor road conditions. Because of the altitude and vegetation, it rains year round in Letefoho Sub-district. This rain coupled with the mountainous terrain, cause the road quality to decline and become extremely dangerous with its narrow turns and steep cliffs. Especially the road leading towards the village is not asphalted, therefore slippery, and very muddy most of the time. It would be a time consuming but also very risky undertaking to just access the village for meetings and monitoring visits, let alone supply materials to the village. When we went to the village for the Rapid Assessment, even though it was a dry and we drove a very strong 4WD car, we almost were stuck there ourselves.

Hera was ranked in the fourth place, not because of logistical costs or estimated project costs which would probably be lower than even Ulmera, because it is still in Dili District and takes only 30 minutes to reach. There are also no difficulties to be expected in supplying materials to the village and accommodation would be cheap, since V&A team members would be able to just sleep in Dili. The

reason this village shares the last place with Larisula is purely based on the estimation of project feasibility. There are too many projects underway in Hera, which would make it very difficult to ensure participation or instill ownership in the community, making it not feasible despite its logistical advantages.

The last place is for Larisula. Larisula is an even worse logistical choice than Haupu. It rains 8 to 9 months each year and when it does, the village becomes completely inaccessible by car or truck, necessitating a four-hour walk by foot from Baguia, the nearest town that can still be reached by car. It is also the farthest village from Dili taking an average of 6-7 hours to reach the village. The logistical costs would be far too high to expect a successful project considering the available budget. Time wise, it would also be very difficult to implement since the village is only accessible by car for a very short period each year, meaning that any delays would be disastrous for project implementation and could lead to total project failure.

4. ADDITIONAL CRITERIA

Even though, according to the PACE-SD Rapid Assessment methodology the criteria pertaining to vulnerability of communities to natural climate change induced disasters were supposed to be used as additional criteria, we decided to treat them as equally important criteria as the previous ones. The main reason for this is the importance that is given to Natural Disasters in the NAPA. Natural disasters are the fourth priority in the NAPA. (SEMA, 2011) Therefore, in the Timorese context vulnerability to natural disasters should be treated as equally important as the other criteria and not merely as additional criteria to be used to make a decision between sites.

4.1 Level of Vulnerability of a Community to the Impacts of Cyclones

The level of vulnerability to cyclones was based on the types of housing and its construction materials. Timor-Leste is rarely hit by cyclones but they definitely have an impact, sometimes houses are blown apart or even transported to another place. According to the NAPA the yearly occurrence of cyclones is around 0.10. (SEMA, 2011)

Table 14. Level of vulnerability of a community to the impacts of cyclones

Factors	Ulmera, Bazartete, Liquica	Larisula, Baguia, Baucau	Haupu, Letefoho, Ermera	Laco-Mesac, Laclo, Manatuto	Hera, Cristo Rei, Dili	Saelari, Laga, Baucau
(1) Categorization of the types of housing structures in the community	(4)- 2	(5)- **1**	(4)- 2	(4)- 2	(3)- 3	(5)- **1**

According to the Rapid Assessment results, Larisula and Saelari were most vulnerable to the impacts of cyclones (Table 14) because the houses there were made from mostly natural materials like palm trunks, thatch and other non-durable natural materials. This was substantiated by visual observations made in the village. It was also confirmed by the Census 2010 data (Table 15).

Table 15. Households by type of external wall material of house and suco

Village	Total Households	Concrete/ Brick	Wood	Bamboo	Corrugated iron/ Zinc	Clay	Palm trunk/ bebak	Rock	Others
Saelari	344	19 6%	11 3%	277 81%	6 2%	6 2%	19 6%	3 1%	3 1%
Lari Sula	215	1 0%	2 1%	162 75%	- 0%	- 0%	50 23%	- 0%	- 0%
Hera	1026	314 31%	16 2%	32 3%	34 3%	9 1%	600 58%	13 1%	8 1%
Haupu	780	198 25%	27 3%	528 68%	8 1%	3 0%	9 1%	3 0%	4 1%
Ulmera	465	49 11%	5 1%	88 19%	12 3%	6 1%	288 62%	17 4%	- 0%
Laco-Mesac	485	81 17%	17 4%	52 11%	5 1%	4 1%	324 70%	1 0%	1 0%

Source: Population and Household Census – Suco Report, Volume 4, 2011

Table 15 from the Census in 2010 that described the materials used to make the walls of houses, mostly confirms the Rapid Assessment results. In table 16 below, the materials that were used to construct the roofs are shown. This table also shows consistency with the answer obtained from the Rapid Assessment Focus Group Discussions. Another interesting thing to note is that according to the 2010

census, 10% of the roofs in Larisula contain asbestos. Though this has nothing to do with vulnerability to cyclones but could lead to serious health issues.

Table 16. Households by construction material for house roof and suco

Village	Total House-holds	Palm leaves/ thatch/grass	Corrugated iron/ Zinc	Tiles	Asbestos	Concrete	Bamboo	Others
Saelari	344	209 61%	134 39%	- 0%	- 0%	- 0%	1 0%	- 0%
Lari Sula	215	81 38%	90 42%	1 0%	43 20%	- 0%	- 0%	- 0%
Hera	1026	317 31%	679 66%	6 1%	16 2%	4 0%	2 0%	2 0%
Haupu	780	114 15%	597 77%	5 1%	5 1%	3 0%	56 7%	- 0%
Ulmera	465	107 23%	353 76%	2 0%	2 0%	1 0%	- 0%	- 0%
Laco-Mesac	485	368 79%	103 22%	1 0%	10 2%	1 0%	1 0%	1 0%

Source: Population and Household Census – Suco Report, Volume 4, 2011

And the final table, table 17, details the construction materials used for the floors. This table also confirms the data obtained from the Rapid Assessments in Larisula and Saelari where most houses are made in the traditional style, constructed from local materials and are therefore most vulnerable to strong winds and cyclones. On the other hand, they are easier and less costly to rebuild when they break and fatalities or injuries due to falling debris are less likely.

Table 17. Households by construction material for floor and suco

Village	Total House-holds	Concrete	Tile	Wood	Soil/Clay	Bamboo	Others
Saelari	344	6 2%	5 1%	- 0%	291 85%	27 8%	15 4%
Lari Sula	215	- 0%	- 0%	1 0%	213 99%	1 0%	- 0%
Hera	1026	395 38%	98 10%	8 1%	491 48%	6 1%	28 3%
Haupu	780	181 23%	8 1%	2 0%	575 74%	12 2%	2 0%
Ulmera	465	201 43%	8 2%	1 0%	253 54%	1 0%	1 0%
Laco-Mesac	485	95 20%	14 3%	13 3%	342 74%	18 4%	3 1%

Source: Population and Household Census – Suco Report, Volume 4, 2011

4.2 Level of Vulnerability of Coastal Communities to Inundation, Storm Surges and Projected Sea Level

The vulnerability to inundation, storm surges and sea level rise depends on the proximity to the coast. The only two coastal communities amongst the six potential project sites are Ulmera and Hera. The scores for each criterion were added up as shown in table 18 below. After adding up the total scores,

the most vulnerable village to these risks is Ulmera, mainly because of the absence of fringing and barrier reefs and lower quality mangroves.

Table 18. Level of Vulnerability of Coastal Communities to Inundation, Storm Surges and Projected Sea Level

Factors	Ulmera, Bazartete, Liquica	Larisula, Baguia, Baucau	Haupu, Letefoho, Ermera	Laco-Mesac, Laclo, Manatuto	Hera, Cristo Rei, Dili	Saelari, Laga, Baucau
(1) Foreshore Elevation (Estimation – above normal high tide)	5	-	-	-	5	-
(2) Village Elevation (Estimation – above normal high tide)	5	-	-	-	5	-
(3) Reef System	4	-	-	-	1	-
(4) Mangrove Protection	4	-	-	-	2	-
(5) Average distance of shoreline to nearest first row of houses along the shore (if substrate upon village is located is made of sedimentary materials or sand/coral rubble)	1	-	-	-	1	-
(6) Ease of relocation to higher ground without socio-economic and cultural constraints	1	-	-	-	2	-
Average (rounded to the nearest whole number)	***3***	**-**	**-**	**-**	***3***	**-**
Total	**(20)-1**	(0)-3	(0)-3	(0)-3	(16)-2	(0)-3

The inland communities of Larisula, Haupu, Laco-Mesac and Saelari all received the lowest rank, third place, since they were not vulnerable to any of these threats. The averages for Hera and Ulmera were the same for both villages, namely 3. Since the averages did not give any conclusive results, the total number was used instead to differentiate between the two, showing that Ulmera is the most vulnerable. All of the answers given in the Rapid Assessments regarding this criterion were later verified by visual observations on the ground and also by the reviewed satellite images on Google Earth.

4.3 Level of Vulnerability of Inland Communities to Riverbank Erosion, Inundation and Flooding

Most of the villages were actually vulnerable in some way to riverbank erosion, inundation and flooding even though some of them were located on the coast. Hera and Ulmera, which are both coastal communities, have rivers running through the village that swell quite a bit during the rainy season and sometimes cause floods and the destruction of roads, bridges and houses. The most vulnerable villages however, were the inland communities of Saelari, Laco-Mesac and Larisula. The least vulnerable according to Rapid Assessment is Haupu, because it is located at such a high elevation, it is not affected by flooding in any way.

One problem with this assessment criterion was the location on the river system. Since villages in Timor-Leste often span over a very big area, with hamlets located many kilometers apart, it is not possible to pinpoint the precise location of a village on a river system. Moreover, the village can be located on both sides of the river, making the distinction between convex and concave a difficult one. Haupu received a score of '0' on that particular factor, since it is located too high away from the river system to be vulnerable at all.

The average distance of the riverbank to the first row of houses was also a very difficult question to find any straight answer to. First of all, the houses are built randomly and are not built in any pattern that could be discerned as a row. Second of all, as was explained earlier, there are two river banks and

houses can be built on either side and still belong to one village, making it difficult to pick any house or riverbank. The third problem is that the rivers in Timor-Leste are not configured exactly like rivers in other countries like for instance Fiji that are mostly perennial, deep and meandering. Timorese rivers are mostly braided, shallow and intermittent or ephemeral, only flowing after rainfall. This means that the location of the river and its many channels often change position, thereby drastically shortening or lengthening the distance between any one particular house and the river from one season to the next.

Figure 2. Location of Laco-Mesac on the river system
Source: Google earth, 2013 Digital Globe

One good example of this is the braided river next to Laco-Mesac. According to villagers, the river has shifted so much lately, that it is now flooding the agricultural lands that lie beside it and have been cultivated for a long time. (Figure2) The community has written proposals, and has even received media exposure for the problem, requesting that the river be channelized so that it will not flood their crops any longer.

As can be seen in table 19 below, three villages were found to be equally vulnerable when adding up the total scores: Saelari, Laco-Mesac and Larisula. These are all inland communities and they shared many of the same characteristics making them vulnerable and less able to adapt in case of a climate change event.

Table 19. Level of Vulnerability of Inland Communities to Riverbank Erosion, Inundation and Flooding

Factors	Ulmera, Bazartete, Liquica	Larisula, Baguia, Baucau	Haupu, Letefoho, Ermera	Laco-Mesac, Laclo, Manatuto	Hera, Cristo Rei, Dili	Saelari, Laga, Baucau
(1) Foreshore Elevation (Estimation)	5	5	5	5	5	4
(2) Village Elevation (Estimation)	5	5	1	5	5	5
(3) Location on river system (proxy for bank erosion potential)	3	3	0	2	2	3
(4) Average distance of river bank to nearest first row of houses along the river	3	1	0	3	4	3
(5) Drainage	5	5	1	3	4	3
(6) Ease of relocation to higher ground without socio-economic and cultural constraints	1	4	0	5	2	5
Average (rounded to the nearest whole number)	***4***	***4***	***1***	***4***	***4***	***4***
Total	(22)-2	**(23)-1**	(7)-3	**(23)-1**	(22)-2	**(23)-1**

5. FINAL RECOMMENDATION

Based on the criteria discussed in this report, the following table (Table 20) displays all the villages and their respective ranks with regards to different sectors and criteria.

Table 20. Ranks of the six villages based on their score in each criteria

No.	Sector	Ulmera, Bazartete, Liquica	Larisula, Baguia, Baucau	Haupu, Letefoho, Ermera	Laco-Mesac, Laclo, Manatuto	Hera, Cristo Rei, Dili	Saelari, Laga, Baucau
1	Water Resources	3	3	3	1	3	2
2	Food Security	4	3	2	1	3	3
3	Health and Sanitation	2	4	4	5	3	1
4	Energy	3	1	2	3	3	2
5	Vulnerability to cyclones	2	1	2	2	3	1
6	Vulnerability to floods, inundation and riverbank erosion	2	1	3	1	2	1
7	Vulnerability to inundation, storm surges and projected sea level	1	3	3	3	2	3
8	Adaptive Capacity Related to Livelihoods	2	1	2	2	3	1
9	Level of Community Need	2	2	1	1	2	1
10	Level of Community Interest	1	1	1	2	3	2
11	Feasibility of a CC pilot project	2	5	3	2	4	**1**
Total Scores:		***24***	***25***	***26***	***23***	***31***	***18***
Rank:		3	4	5	2	6	**1**

These ranking results are technically speaking conclusive, showing that the communities in Saelari, Laco-Mesac and Ulmera were most vulnerable and had the least adaptive capacity to climate change. The vulnerabilities that were identified in the Rapid Assessments in the demonstration sites include Health and Sanitation, Water Resources, Agriculture and Food Security, and vulnerability to floods, inundation, cyclones and storm surges (Table 21). The vulnerabilities listed in the table below were derived by seeing in which sector the village was ranked as the most vulnerable (Table 20). However, this doesn't mean that these communities are not vulnerable in the other sectors that were assessed.

Table 21. Identified vulnerability for each suggested demonstration site

Demonstration Site	Vulnerability
Saelari	▪ Health and Sanitation ▪ Vulnerability to cyclones ▪ Vulnerability to floods, inundation and riverbank erosion
Laco-Mesac	▪ Water Resources ▪ Food Security ▪ Vulnerability to floods, inundation and riverbank erosion
Ulmera	▪ Vulnerability to inundation, storm surges and projected sea level

Sometimes these sites were also vulnerable in sectors that were not included in the Rapid Assessment. One of the vulnerabilities that was not included in this assessment was salt water intrusion, which

seems to be a problem in Ulmera. Another issue that was not included in this table is landslides, which is affecting the village of Saelari. This is probably caused by logging on steep hills, but this will need to be assessed further if we do the Vulnerability and Adaptation Assessment here. The Vulnerability and Adaptation assessment will most probably yield a more comprehensive list of climate change vulnerabilities in these communities.

The selected demonstration sites have the following locations as shown in Table 22:

Table 22. GPS Coordinates for Demonstration Sites

Ref	Identified Demonstration Site	GPS Readings	
		Longitude Reading	Latitude Reading
1	Saelari, Laga, Baucau	126°42'2.10"E	8°29'3.11"S
2	Ulmera, Bazartete, Liquica	125°27'53.13"E	8°34'16.11"S
3	Laco-Mesac, Laclo, Manatuto	125°55'7.22"E	8°33'17.40"S

These GPS readings were taken with the Garmin GPS device from the location of the village office or 'sede suku'. There were no readings for Ulmera and so coordinates of the village office were found by means of locating it on Google Maps. When we go to Ulmera for the Vulnerability and Adaptation Assessments we will take the GPS waypoints on location which will give a more accurate reading.

6. CONCLUSION

According to the ranking exercise done for the six potential sites, the three sites selected as demonstration sites are:

(i) Saelari, Laga Sub-District, Baucau District
(ii) Laco-Mesac, Laclo Sub-District, Manatuto District
(iii) Ulmera, Bazartete Sub-District, Liquica District

It is important to note that the ranking exercise, though helpful in coming to a final decision and to get to know the villages, was not the only consideration taken into account when choosing these final three sites. The main considerations for us were the logistical aspects and assumed feasibility of project implementation in the sites. If we would have used a weighted ranking method, logistics would have received more weight. The project here in Timor-Leste has already suffered delays, and even though it is a pilot project, the success of the project depends largely on if we can get it done with the time and money available for it. If we are not sure we can get it done within budget and before the deadline, it would be unwise to risk it. This project is already on quite a small scale, so the impact of the project needs to be as big as possible. It needs to be successful first and foremost, if it is to be replicated or up-scaled in anyway. Therefore, efforts, time and money should be maximized thereby increasing the chances of success.

Fortunately, the ranking results matched the overall impression we got as a team when we entered into each village. The results also matched with our feasibility expectations. We presented these final villages to the National Project Advisory Committee (NPAC) on April 11, 2013 and none of them shared any reservations about the suggested sites or requesting us to choose other sites. Prior to and following the NPAC meeting we had some informal meetings with the Interim Director for International Environmental Affairs and Climate Change, Mrs. Elisa Luisa Santa Pereira, the Focal Point for the UNFCCC, Mr. Adao Soares Barbosa and with the proposed new Director for International Environmental Affairs and Climate Change: Mr. Mario Francisco Correia Ximenes. In these meetings, we discussed the results in more depth and came to the same conclusions as have been outlined above.

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PACE-SD Rapid Assessment

2012

SITE SELECTION PROCESS AND CRITERIA

Developed by Leone Limalevu (PACE-SD Fellow)

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1.0 Introduction

The selection and prioritization of project sites for climate change adaptation initiatives foremost depends on the objective of the project. The objective can determine how communities are selected to participate in the project. For projects focused on assisting rural communities to adapt to current and projected future climate change, there are basically three main components, as follows:

a. Research;
b. Adaptation of highly vulnerable communities; and
c. Adaptation of representative vulnerable communities.

For the PACE-SD methodology, the primary focus is on the latest component. The main rationale for this is to be inclusive and therefore ensure future uptake by entire communities, as climate change impacts will be felt by all communities, though at different levels of severity and within different timeframes.

1.1 The PACE-SD Site Selection Approach

This site selection process and criteria, as a core component of the PACE-SD methodology, provides suggestions for the European Union Global Climate Change Alliance (EU-GCCA) in-country coordinators to consider in selecting their project sites. The assessment approach could be based on the following key factors, to be determined and agreed to by GCCA Project Management Team and the National Project Advisory Committee in each of the countries, categorized in relative terms:

- Level of vulnerability of the community;
- Level of adaptive capacity of the community;
- Level of need of the community;
- Level of interest of the community; and
- Feasibility of the project to adequately address the identified level of vulnerability within the funding capacity of the project.

Additional criteria can include:

- Level of vulnerability of the community to cyclones; and
- Level of vulnerability of the community to flooding, storm surges and/or projected sea level rise for coastal communities.

2.0 Methodology

2.1 Gathering Information and Short-listing Sites

The relevant stakeholders, namely the Provincial Offices, the Department of Environment, the Water Authority, and the Health Department are to be contacted to provide list of potential sites. It is important that the letter sent to these agencies be carefully drafted so that the response would be relevant to the information that is required for screening and selection of sites. From the number of sites submitted (for example 20 or more sites), the information gathered from correspondences with district and provincial offices plus from established networks can be used by the National Project Advisory Committee to screen the sites down to ten sites. Following on from this, the rapid assessment, based on the following criteria, is to be used to select the most vulnerable final three to six sites.

2.2 Field Visits

The PACE-SD Rapid Assessment is used to gather information from the short-listed communities (see Annex 1). It should take three to five hours at each site to undertake this assessment. Acquisition of data and information is through a number of key informant interviews (such as community leaders), discussions at informal village meetings and via rapid appraisal of the physical and built environment. The scores for each site are then decided on collectively by the people involved in the site assessment.

2.3 Site Assessment Method: Point Score System

A total score of one to five is made for each criterion. It is important to note that when tallying up the points, the vulnerability score ranges from one (‘very low vulnerability’) to five (‘very high vulnerability’). The table below indicates the key to be used. The opposite applies when assessing adaptive capacity. That is, the highest adaptive capacity (five) indicates the lowest vulnerability, while the lowest adaptive capacity (one) is the most vulnerable. Therefore

vulnerability scale is judged on the highest score to determine the most vulnerable, while the adaptive capacity scale is judged on the lowest score to determine the most vulnerable.

Description	Very low vulnerability	Low vulnerability	Moderate vulnerability	High vulnerability	Very high vulnerability
Value	1	2	3	4	5

3.0 Site Selection Criteria

Criteria 1: Current Level of Vulnerability Related to Livelihood Sectors

The assessment of this criterion needs to be conducted in a more objective and systematic way based on the factors relating to community vulnerability. This assessment is focused on the impacts of climate change on three climate-sensitive livelihood sectors. The sectors include: (i) water resources; (ii) health and sanitation; and (iii) food resources and food security. The points scale system to be used for each of the livelihood sectors is as follows: 1 = very low vulnerability; 2 = low vulnerability; 3 = moderate vulnerability; 4 = high vulnerability; and 5 = very high vulnerability.

(1) Water Resources

Factors	Point System	Points
(i) Estimated rain-months per year that occur in the area	9 - 12 months	1
	6 - <9 months	2
	3 - <6 months	3
	1 - <3 months	4
	Less than 1 month	5
(ii) Presence of water sources	Flowing river/s	1
	Stream/s	2
	Medium to large spring/s	3
	Small spring/s	4
	Well/s	5
(iii) Discharge rates of springs (To be measured preferably during the dry month or season)	1.5 L/second and above	1
	1.0 - < 1.5 L/second	2
	0.5 - < 1.0 L/second	3
	0.25 - < 0.5 L/second	4
	< 0.25 L/second	5

Notes:

(i) If the community has wells as well as small springs, the point score would be 4.

(ii) Community relying solely on a bore-hole as a source of water receives a point score of 5.

(iii) The discharge rates can be calculated using improvised materials, if proper measuring cylinder and stop watches are not available. The use of a wrist watch for clocking the time and any container with known volume is adequate for calculating an estimated discharge rate of a spring.

(2) Health and Sanitation

(a) Level of incidence of vector-borne diseases occurring in the community

Factors	Point System	Points
(i) Dengue (number of cases per year)	None 1 - 3 4 - 7 8 - 10 >10	1 2 3 4 5
(ii) Malaria (number of cases per year)	None 1 - 3 4 - 7 8 - 10 >10	1 2 3 4 5

Notes:

(i) The point system needs to be adjusted to reflect the level of occurrences of vector and water borne diseases occurring in the study areas. For example, if occurrences range between 8 to 30 in the communities, the scale of the point system should be adjusted to cater for the high incidences.

(ii) To decide on the higher level of vulnerability between two sites if their point scores are in the same range, e.g. 8 - 10 scale, then the actual number of incidence should be the decider.

(b) Level of incidence of water-borne diseases occurring in the community.

Factors	Point System	Points
(i) Diarrhoea (number of cases per year)	None 1 - 3 4 - 7 8 - 10 >10	1 2 3 4 5
(ii) Skin diseases (number of cases per year)	None 1 - 3 4 - 7 8 - 10 >10	1 2 3 4 5
(iii) Typhoid	None 1 - 3 4 - 7 8 - 10 >10	1 2 3 4 5

(iv) Cholera	None	1
	1 - 3	2
	4 - 7	3
	8 - 10	4
	>10	5

(3) Food Resources and Food Security

Factors	Point System	Points
(i) Basic subsistence sources of food	Derive 100% of food needs from both land and marine-based food resources	1
	Derive less than 75% of food needs from both land and marine resources	2
	Derive less than 50% of food needs from both land and marine resources	3
	Derive less than 25% of food needs from both land and marine resources	4
	Derive less than 25% of food needs from either land or marine resources	5
(ii) Total land area per person	≥7 hectare/per person	1
	5 - <7 hectare/per person	2
	3 - <5 hectare/per person	3
	1 - <3 hectare/per person	4
	<1 hectare/per person	5
(iii) Relative soil fertility	Highly fertile soils	1
	Fertile soils	2
	Moderate fertility	3
	Low fertility or degraded soils	4
	Poor or highly degraded soils	5
(iv) Relative productivity of marine resources	Highly productive marine resource	1
	Productive marine resource	2
	Moderately productive	3
	Low productive or degraded resource	4
	Poor or highly degraded resource	5

(4) Energy Resources and Energy Security

Factors	Point System	Points
(i) Basic energy sources for lighting	Multiple sources, including solar	1
	Connected to a main power grid	2
	Electrical generator	3
	Kerosene lamp	4
	Candle, fuel wood or others	5

(ii) Basic energy sources for cooking	Multiple sources, including electric	1
	Fuel wood, kerosene and gas	2
	Fuel wood and either kerosene or gas	3
	Solely kerosene	4
	Solely fuel wood	5

Criteria 2: Current Level of Adaptive Capacity Related to Livelihood Sectors

This criterion is mainly based on the approximate aggregate income of the community per year. This amount is then divided according to the number of households to calculate the income per household per year, and then further calculated to a daily basis. The points system to be used equivalent in actual weekly earnings is as follows: 1 = income per household is below poverty line; 2 = poverty line; 3 = marginally above poverty line; 4 = income that adequately meets the basic family needs; and 5 = earning disposable income. According to the United Nations definition of poverty, people well below the poverty line are earning less than US$1 per day. Each of the in-country coordinators needs to check their own country-specific definition of poverty. If the level of income is difficult to derive, then the type of economic system, such as agriculture system or fisheries could be used. The point system to be used is: 1 = purely subsistence; 2 = semi-subsistence; 3 = semi-commercial; 4 = commercial; 5 = highly commercial.

Factors	Point System	Points
(i) Level of income per household (estimated)	≤$50 per week	1
	$51 - $100 per week	2
	$101 - $200 per week	3
	$201 - $300 per week	4
	>$300 per week	5
(ii) Predominant type of economic system either in the agriculture or fisheries sectors	Predominantly subsistence	1
	Subsistence to semi-commercial	2
	Semi-commercial	3
	Commercial	4
	Highly commercial	5

Criteria 3: Level of Community Need

This criterion is related to the level of commitment the community has shown related to past projects addressing key livelihood sectors that are climate sensitive. The point system related to this criterion is as follows: 1 = climate change related impacts not an issue; 2 = entirely externally-driven projects; 3 = externally-driven projects with some contribution from the community; 4 = externally driven projects with equal level of contribution from the community; and 5 = community had embarked on project/s which tried to address impacts of climate change on their own.

Factors	Point System	Points
(i) Level of community need related to community commitment to addressing climate-induced related stresses in past community projects	Climate change related stresses not an issue	1
	Entirely externally-driven projects	2
	Externally-driven projects but with some contributions from the community	3
	Externally-driven projects with equal contributions from the community	4
	Entirely community-driven projects	5

Criteria 4: Level of Community Interest

The points system related to this criterion relating to community interest is: 1 = not interested; 2 = moderately interested but has reservations; 3 = moderately interested; 4 = interested; and 5 = very interested.

Factors	Point System	Points
(i) Level of interest shown for the proposed project	Not interested	1
	Moderately interested but have reservations	2
	Moderately interested	3
	Interested	4
	Very interested	5

Criteria 5: Feasibility of the Project

The fifth criterion involves assessing the relative feasibility of the project. The points system for this criterion is as follows: 1 = not feasible; 2 = low feasibility; 3 = moderately feasible; 4 = feasible; 5 = highly feasible. To consider, the funding level of the Fiji climate change adaptation projects was approximately F$30,000-$40,000 per site or approximately US$20,000-$30,000 per site. To evaluate the project feasibility in implementing adaptation projects related to livelihood sectors, this criterion is simply best determined by the population size. If you intend to work in a site that requires greater funding than that allocated by the project, then you need to be very skillful in sourcing additional funds from relevant stakeholders or other funding agencies including the national government. In this regard, adaptation measures such as coastal protection works, planned relocation, and major infrastructural developments such as construction of flood gates are best left with national governments to address.

Factors	Point System (In Fijian (F) dollars)	Points
(i) Approximate cost of funding a livelihood adaptation project related to project funding allocation per site or community	≥F$100,000 (i.e. approx. >US$50,000)	1
	F$80,000 - F$99,000	2
	F$60,000 - F$79,000	3
	F$40,000 - F$59,000	4
	<F$40,000 (i.e. approx. <US$20,000)	5

Note: this criterion is only applicable if the amount of funding allocated per site or community is between F$30,000 and F$80,000.

4.0 Additional Criteria

The following two criteria (or whichever is applicable) are only applied to decide between two sites that are equal in the points tally:

- Criteria 6: Vulnerability of the community to cyclones; and
- Criteria 7: Vulnerability of the community to flooding and or storm surges and projected sea level rise for coastal communities.

It is important to note that Pacific Island countries that are located near the equator are not directly affected by cyclones, while inundation from king tides and storm surges may be the main hazards.

Criteria 6: Level of Vulnerability of a Community to the Impacts of Cyclones

Factors	Point System	Points
(1) Categorisation of the types of housing structures in the community	≥80% are of modern cement or properly constructed wooden houses	1
	≥60 - <80% are of modern cement or properly constructed wooden houses	2
	≥40 - <60% are of modern cement or properly constructed wooden houses	3
	≥20 - <40 % are of modern cement or properly constructed wooden houses	4
	≤20% are of modern cement or properly constructed wooden houses	5

Criteria 7a: Level of Vulnerability of Coastal Communities to Inundation, Storm surges and Projected Sea Level

Factors	Point System	Points
(1) Foreshore Elevation (Estimation – above normal high tide)	>9m	1
	7 - <9m	2
	5 - <7m	3
	3 - <5m	4
	<3m	5
(2) Village Elevation (Estimation – above normal high tide)	>50%(>9m)	1
	>50%(7 - <9m)	2
	>50%(5 - <7m)	3
	>50%(3 - <5m)	4
	>50%(<3m)	5
(3) Reef System	Presence of fringing and barrier reefs	1
	Presence of barrier reef only	2
	Presence of fringing reef only	3
	Reefs are disconnected or isolated	4
	Presence of open passages to shore or no barrier and no fringing reefs	5
(4) Mangrove Protection	Heavily Dense	1
	Moderately Dense	2
	Dense	3
	Scattered	4
	None or isolated stands	5
(5) Average distance of shoreline to nearest first row of houses along the shore (if substrate upon village is located is made of sedimentary materials or sandy/coral rubble)	> 20m	1
	15 - < 20m	2
	10 - < 15m	3
	5 - < 10m	4
	1 - < 5m	5
(6) Ease of relocation to higher ground without socio-economic and cultural constraints	Easily	1
	Limiting factor is only finance	2
	Some geographical constraints	3
	Major constraints	4
	No land to relocate to at all	5

Criteria 7b: Level of Vulnerability of Inland Communities to Riverbank Erosion, Inundation and Flooding

Factors	Point System	Points
(1) Foreshore Elevation (Estimation)	>9m	1
	7 - <9m	2
	5 - <7m	3
	3 - <5m	4
	1 - <3m	5
(2) Village elevation (Estimation)	>50%(>9m)	1
	>50%(7 - <9m)	2
	>50%(5 - <7m)	3
	>50%(3 - <5m)	4
	>50%(1 - <3m)	5
(3) Location on river system (proxy for bank erosion potential)	Convex	1
	Moderately Convex	2
	Straight	3
	Moderately Concave	4
	Concave	5
(4) Average distance of river bank to nearest first row of houses along the river	> 9m	1
	7 - < 9m	2
	5 - < 7m	3
	3 - < 5m	4
	1 - < 3m	5
(5) Drainage	Good	1
	Moderate to Good	2
	Moderate	3
	Poor to Moderate	4
	Poor	5
(6) Ease of relocation to higher ground without socio-economic and cultural constraints	Easily	1
	Limiting factor is only finance	2
	Some geographical constraints	3
	Major constraints	4
	No land to relocate to at all	5

Annex 1

PACE-SD Rapid V&A Assessment Approach [Questionnaire]

For Prioritisation and Selection of Sites

[Updated on 21st May 2012]
[Ref. L. Limalevu, Fellow (PACE-SD), USP]

Note: (i) This is a rapid V&A Assessment used to screen and select which communities are vulnerable to the current and projected impacts of climate change and therefore should be prioritised for adaptation projects.
(ii) The assessment should take approximately one day per community to complete, depending on the weather condition and availability of community representatives as key informants for the interview.
(iii) The PACE-SD Rapid Assessment points scoring system is then used to assess the relative vulnerability and adaptive capacity of the community to the impacts of climate change.

A. Introduction

- Visit the community/village according to the proper cultural protocol, for example, in Fiji, the presentation of the 'sevusevu' is the norm
- Brief the community elders or representative/s on the purpose of the visit
- Provide a briefing on the rapid assessment approach (i.e. key informant interviews, followed by observations from a brief tour around the village and surrounding environment)
- Briefing on how the survey findings and procedure for determining the selection of the project sites
- Note: the team should ensure not to raise any expectations of the community; therefore their approach should be honest and 'straight to the point'

B. Physiographic Characteristics - Visual Observation (site and surrounding areas)

- Geomorphology
- Drainage Patterns
- Vegetation cover
- Land use types and pattern
- Note: you need to have background information at hand from your literature search and information networks (if available) to support your visual observations on the site and surrounding environment

C. Interview of Key Informants

- This should take 1 hour to a maximum of 3 hours
- The key persons that should comprise the key informants for the interview should be the community representative/s, a village nurse or community health worker, a representative from the village development committee (if there is one such committee) and a representative from the women's committee

1.0 Basic Socio-economic Information

1.1 What is the population and population distribution (total number, approximate gender distribution)?

1.2 What is the community management (governance) structure?

1.3 What is the total land area owned by the community?

1.4 What is the approximate proportion of flat 'arable' land to hilly/mountainous land or degraded (e.g. through salt-water intrusion)?

1.5 What are the main sources of income?

1.6 What is the main farming system practised by the community (i.e. subsistence, subsistence/semi-commercial, semi-commercial, semi-commercial/commercial, entirely commercial)?

1.7 What is the main fisheries system practised by the community (i.e. subsistence, subsistence/semi-commercial, semi-commercial, semi-commercial/commercial, entirely commercial)?

1.8 What is the aggregated weekly/monthly/annual income of the community derived from sale of natural resources?

1.9 Are there are paid employees/workers residing in the community? If so, what is the aggregate weekly/monthly/annual income of these workers?

1.10 Are there any village development plans?

1.11 What were the types of development projects implemented in the last 30 years

1.12 Are there any natural resources development plans?

1.13 What were the types of natural resources management projects implemented in the last 30 years?

1.14 Are there any community investment/business plans?

1.15 What were the types of investment/business projects implemented in the last 30 years?

1.16 Has a climate change adaptation project been implemented previously by the community?

2.0 Water Resources and Supply

2.1 What is the most prominent source of water (well, spring, borehole, rainwater, stream, etc.)?

2.2 What is the water availability throughout the year (i.e. annual rainfall distribution – number of dry months per year)?

2.3 What is the water quality (if sources are from wells, spring, borehole or stream)?

2.4 What is the water distribution system?

2.5 What are the types and capacity of storage for the whole community?

2.6 What are the types and capacity of storage at the household level (e.g. if there are no communal storage tanks)?

3.0 Health and Sanitation

3.1 What is the availability or presence of health services facilities?

3.2 How far is the nearest health centre?

3.3 What range of services does the nearest health centre provide?

3.4 What is the incidence of water borne diseases (diarrhoea, skin diseases, leptospirosis, etc.)?

3.5 What is the incidence of vector borne diseases (dengue, malaria, etc.)?
3.6 Are there any other diseases prevalent in the community?
3.7 Obtain a health report and health data from village nurse or health worker (note: treat with utmost confidence)
3.8 Is there a health committee? If so, are there any planned activities?
3.9 Record planned health committee or community health-related activities
3.10 If possible, you need to confirm the response to 3.2, 3.3 and 3.4 from the nearest district health centre (note: treat with utmost confidence)

4.0 Food Resources and Food Security

4.1 What is the total land availability (approximate total size/area of farming land for the community)?
4.2 List, according to importance, types of food sources: (i) root crops; (ii) vegetables; and (iii) trees crops
4.4 What are the relative productivity levels of the following: (i) root crops; (ii) vegetables; and (iii) tree crops?
4.5 What is the estimated area of fishing ground owned by the community?
4.5 List, according to importance, the main fish types as food sources
4.6 List, according to importance, the main non-fin fish types as food sources (e.g. crabs, prawns, octopus, etc.)
4.7 What is the relative productivity level of fin-fish resources?
4.8 What is the relative productivity level of non-fin fish resources?

5.0 Energy Sources

5.1 List he key energy sources for cooking and priorities list (e.g. fuel wood, kerosene, gas, electricity)
5.2 List the key energy sources for lighting (e.g. kerosene, diesel generators, solar, electricity from mini hydro dam, electricity from main grid)

6.0 Disaster Risk Management (DRM)

Note: Limit DRM to climate-induced disasters, e.g. cyclones, droughts, floods, and cyclone-induced high waves or storm surges
6.1 Categorise the types of infrastructures in the community (i.e. % of traditional, lean-to (i.e. corrugated iron walls and roofing), wooden, wooden with cement base, cement/block house)
6.2 Is there a disaster management plan?
6.3 If there is one, how effective is the plan?
6.4 Is there an evacuation centre (inspect the statues and condition of the evacuation centre)?

7.0 Community Needs Assessment

7.1 List the number of projects currently being implemented by the community by themselves and those through external assistance
7.3 Gauge their willingness to participate in the EU-GCCA project if their community gets selected?
7.3 What level of in-kind contribution would they be willing to provide for the project (e.g. labour, meals for the workers, etc.)?

7.4 What level of cash contribution would they be willing to provide for the project?
D. Field Assessment ➢ This should take 1-3 hours ➢ The team will take a brief tour around the village and its surroundings making observations and verifying issues that are related to the questions asked during the interview
E. Concluding Remarks ➢ The team spokesperson would then make some concluding comments and then reiterate how the findings would then be used for the final selection process ➢ The team then thank the community representatives for their time and then an official request to leave is performed, e.g. for Fiji an 'itatau' is presented