

**Participatory Assessment of Climate and Disaster Risks
(PACDR) in Cambodia**

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PROJECT ANALYSIS REPORT

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Community Health and Agricultural Development (CHAD)

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Executive Summary

Climate change is one of the major threats humanity has faced today. Changing rainfall intensity and occurrence, rising temperature and change in sea elevation were the immediate consequences of climate change. This global phenomenon has increased the severity of flooding and drought in Cambodia. Climate change does not only affects the environment but it also affects society, its economy, people and even politics. Building resilience against climate change especially in the third world is difficult and is costly. The current effects of climate change challenges the development gains Cambodia had reach in the past decades.

The participatory assessment of climate and disaster risks (PACDR) analysis was conducted from February to May 2016 in 23 villages from 8 out of 11 provinces where CHAD is currently implementing its agricultural and health projects across Cambodia. Participant communities were located around Tonle Sap River (47.8%), communities situated in upland areas (30.5%) and along Mekong River (21.7%). A total of 537 participants were invited in the assessment comprised of 264 women (49.2%) and 273 men (50.8%).

In order to determine gender specific perspective to climate change, participants were divided into women and men group. Both groups identified that *drought* was the primary climate-related hazard affecting their source of livelihoods. Prolonged drought in the region resulted to increased labor migration of most participant communities. Moreover, both women and men group noted that the most vulnerable livelihood resources to drought were rice crops (a), water (b) and livestock (c).

During drought season, women group main coping strategy was to migrate outside the country while men group tends to work as laborer/construction worker in key cities within the country. During flood season, women group focuses on household chores while men group concentrate in crops and livestock as well as repairing damaged infrastructures.

PACDR analysis was conducted around key provinces in Cambodia to understand the current impact of climate change specifically drought and flood in the region. The participatory approach of the analysis was very helpful to many rural Cambodian farmers to identify the effects of climate change to different livelihoods source in their respective communities. The assessment also gave them tools on how to determine the affectivity of existing coping strategy thus, formulating future adaptation strategy to severe effects of drought and flood. Participant communities prioritized adaptation strategy as follows: WASH (1), Agriculture and Food Security (2), Income Generation (3) and Health Care & Hygiene (4).

2 Introduction

Climate change is one of the major threats humanity has faced today. Changing rainfall intensity and occurrence, rising temperature and change in sea elevation were the immediate consequences of climate change. This global phenomenon has increased the severity of flooding and drought in Cambodia. Climate change does not only affects the environment but it also affects society, its economy, people and even politics. Building resilience against climate change especially in the third world is difficult and is costly. The effects of climate change now challenges the development gains Cambodia had reach in the past decades.

3 Scientific Information of Climate Change and Disaster Risk in Cambodia

3.1 Past Trends of Climate in Cambodia

In order to understand climate change, we need to look into the past climate and weather pattern of Cambodia. From 1960 to 1990 it was reported that the general annual average climatic conditions of Cambodia were relatively constant and served as a baseline data (WBG, 2011).

Temperature. Temperature in Cambodia were almost consistent across the country at an annual average of 28° Celsius. April is hottest month with an average of 38°C while January is coolest time of the year at about 17°C (Heng, 2015).

Rainfall Pattern. The tropical monsoon of Cambodia is characterized by two major seasons. Wet season starts from May to October while dry season begins from April to November. Heavy rains, high humidity and strong winds were characterized by wet season while dry season was usually with little rain, low humidity and hot dry winds. The average annual rainfall in the coastal area was higher at about 4000 mm per year while the central plains received approximately 1400 mm of annual rainfall (Heng, 2015).

Cambodia also experienced the regular cycle of El Niño and La Niña. El Niño brings warmer and drier condition in the region while La Niña brings more humidity and cooler conditions (McSweeney, et. al. 2012). It was recorded that in the year 1987, 1992 and 1997 Cambodia experienced worst El Niño years (Rojas, et. al. 2014).

3.2 Projected Climate Trends in Cambodia

Climate change is already happening now in Cambodia and all around the world. If we will stay business as usual, burn more fossil fuels and clear massive forest cover were not a sustainable way to move forward. Below are the hard facts and data showing the climate change is real.

Temperature Change. It was observed that were about 0.8°C increase in Cambodia's average annual temperature since 1960. It was also documented that the average number of hot days has increased by 46 days while hot nights increased

by 63 days from 1960 to 2003. However, the projected temperature was expected to increase from 0.7°C to 2.7°C by 2060 and 1.4°C to 4.3°C by 2090 (McSweeney, et. al. 2012).

Rainfall Change. Mean rainfall over Cambodia does not show any consistent increase or decrease since 1960. According to the PRECIS model used by Heng (2015) the projected mean annual rainfall in Cambodia will increase from 2010 to 2050. It was projected that the increase of rainfall will be observed during the wet season. However, the model also predicted that the average annual rainfall will decrease at 0.184% per year from 2070 to 2099 (Heng, 2015).

Sea Level Rise Forecast. Sea level rise will have a great impact with coastal and inland wetlands in North and Central America (Mitsch, 2013). In Cambodia, the expected sea level rise will be from 16cm by 2030 and 45cm by 2070 (MRC, 2010a). Also, based on projections by IPCC (2007), it was estimated that about 25,000 hectares of Cambodia's coastal area will be permanently submerged into seawater by 2100. The Ministry of Environment, Ministry of Economy and Finance and UNDP Cambodia were claiming that the estimate might be lower than what is expected (MoE, MEF & UNDP, 2011).

3.3 Effects of Temperature and Precipitation Change in Cambodia

The effects of temperature and precipitation were observed in the seasonal floods, droughts and storms in the country.

Floods. There were two major types of flood in Cambodia. These includes seasonal flood from the Mekong River and flash floods around Tonle Sap basin. The cumulative rainfall in upper Mekong during the rainy season causes water level to rise in the region while heavy rainfall in mountainous areas causes flash floods, respectively. These events cause damaged to many agricultural crops and infrastructure around the Tonle Sap basin and along Mekong River (Ros, et. al. 2011).

Flooding in Cambodia was reported as the natural swelling of Mekong River in the past few decades. The occurrence was reported in 1961, 1966, 1978, 1984, 1991 and 1996. However, since 1999 severe flooding has been occurring more frequently with accelerating intensity (Helmerts & Jegillos, 2004). Major floods were observed in 2000, 2001, 2009, 2011, and 2013. Flood during 2000, 2011 and 2013 were the ones recorded with strong severity and intensity (Leng, 2014). During the flood of 2000, Cambodia and Vietnam were worst hit and it was recorded that about 800 people died, over 13 Million were affected and leaving approximately \$400 million total cost of damage (MRC, 2012). In 2011, more than 1.7 million people were affected of which about 50,000 people lost their homes and 250 died. The flood also destroyed 220,000 hectares and an estimate damage of \$521 million (MRC, 2011). During the 2013 floods, around 20 provinces and 377,354 households were affected. It was recorded to kill about 168 people after the disaster (HRF, 2013).

Drought. Drought in Cambodia is now becoming one of the major problems in agricultural production. The severity and intensity is increasing each year. In 2015 alone, about 13 provinces were hit by El Nino, causing massive drought through out the country (David & Harfenist, 2015). In the last decade, Cambodia recorded worse occurrence of drought in 2001, 2004, 2009, 2010 and 2012. From 2001 to 2012 an average of 12 provinces were affected by severe drought and 2009 was the worst recorded year damaging 57,965 hectares of rice crops (Leng, 2014)

Extreme Events. Extreme weather events, such as storms or typhoons are generally not a major problem in Cambodia. However, prevalence of storms was becoming frequent. In 2009, Cambodia suffers from a devastating typhoon named Ketsana that causes death to 43 people and forced more than 49,000 families from their homes by floodwaters (Buth, 2010). Moreover, in the first 6 months of 2015, storms claimed at least 56 Cambodians, injured another 166 people and damaged more than 7,000 homes (Taing, 2015).

3.4 Impacts of Climate Change to Different Sectors Cambodia

Agriculture. Cambodia is predominantly an agricultural country. Most of their citizens are dependent on rice farming for their source of livelihood. Rampant poverty and traditional methods of farming coupled with low crop yield and crop failure due to droughts and floods exacerbate food security problems. Most farmers owned their land, however, they are only cultivating less than 1 hectare of land for rice production with an average yield of about 2.15 tons/hectare that is 4 times lower than their neighboring country like Vietnam and Thailand (Ros, et. al. 2011).

It was expected that yield in rice production will decrease by 10% for every 1 degree Celsius increase in temperature. The increase of temperature will also increase the incidence of pests and disease in agriculture that will have negative impact to the yield of production. The impacts of climate change on agriculture will place vulnerable groups at greater risk of hunger and malnutrition (IFAD, 2013).

Water resource. Cambodia is one of the 6 countries that depends its water resource from Mekong River. And based on the assessment report of UNEP (2009), Mekong River will be severely affected by climate change. This phenomenon will disturb the duration and intensity of rainfall thus affecting domestic and agricultural use of water. In terms of livelihood, many fishermen will loss their source of income and farmers will not be able to cultivate rice production.

Forest. Many rural Cambodians depend mainly on forest products such as wood as source of energy for daily cooking activities. Non-timber forest products also provides alternative source of income for those forest communities in the mountainous region (Ros, et. al. 2011).

Changing climate threatens biodiversity and productivity of forest resources in Cambodia. The projected increase in temperature will change the extent and composition of forest cover leading to consequences such soil erosion and land slides (MoE & UNDP, 2011a).

This will also have a negative consequence to the sources of livelihood income to many rural communities. This is because changes in seasons and rainfall patterns will lessens availability natural resources in the forest and there will be a high likelihood of forest fires (IFAD, 2013).

Fisheries. Change in season and rainfall pattern will affect fresh water fisheries in Cambodia. There is a big possibility that seasonal swelling of Mekong River will change and this event will affect fish migration. Shorter rainy season will reduce the spawning and breeding season thus leading to decreased catch for small fishermen. Increasing drought severity will also reduce fish habitat and will have a degrading effects to communities that use fish in their traditional rice farming system (MRC, 2004).

Human Health. Changing climate pattern will have a detrimental effect to human health. Research suggests that rising temperature will increase the incidence of vector-borne diseases such as malaria and dengue fever. In 2015, Cambodia experienced a 300% increase of people contracted dengue fever compared to 2014 (Kunther, 2015). Change in rainfall pattern and sea level rise will affect source of water for domestic consumption. This is one of the major problems faced in many rural communities in Cambodia. Lack of access to safe water source leads to increased incidence of diarrhea and typhoid. Also, droughts and floods is predicted to cause health problems, injuries and deaths all over the country (MoE & UNDP, 2011).

4 Participatory Assessment of Climate and Disaster Risk

4.1 Assessment Findings

General Description of Population Assessed. Table 1 shows that assessment was conducted in 23 villages from 8 out of 11 provinces where CHAD is currently implementing its agricultural and health projects in Cambodia. Participant communities were located around Tonle Sap River (47.8%), communities situated in upland areas (30.5%) and along Mekong River (21.7%). A total of 537 participants were invited in the assessment comprised of 264 women (49.2%) and 273 men (50.8%). Table 1 also shows that out of the 537 participants, there were 49 local authorities present during the PACDR analysis.

Table 1. Characteristics of population size and distribution.

	Frequency	Percentage	Overall
<i>Location of Sampled Population/Villages</i>			
Tonle Sap River	11	47.8	47.8
Upland Areas	7	30.5	78.3
Mekong River Tributaries	5	21.7	100
<i>Total</i>	23	100	
<i>Proportion of Population</i>			
Men	273	50.8	50.8
Women	264	49.2	100
<i>Total</i>	537	100	
<i>Local Authorities</i>			
Commune Chief	6	12.2	12.2
Village Chief	23	47.0	52.9
Police	7	14.3	73.5
Teacher	6	12.2	85.7
Monk	7	14.3	100
<i>Total</i>	49	100	

4.2 Climate Change and Hazard Analysis.

During the participatory assessment of climate and disaster risk, participants were divided into two groups (women and men group). This was done in order to determine the gender specific perspective on climate change in different villages of Cambodia.

Hazard Map. Based on the hazard map analysis, both women and men group identified drought as the primary climate-related hazard (Table 2). Moreover, table 2 also showed that there were 5 villages from women group (21.7%) and 2 villages from men group (8.7%) who identified that both drought and flood affects their communities.

Table 2. Frequency distribution of climate-related hazard

	Number of Villages	Percentage	Overall
<i>Hazard for Women</i>			
Drought	17	73.9	73.9
Drought and Flood	5	21.7	95.6
Flood	1	4.4	100
<i>Total</i>	23	100	
<i>Hazard for Men</i>			
Drought	20	87.0	87.0
Drought and Flood	2	8.7	95.7
Flood	1	4.3	100
<i>Total</i>	23	100	

Seasonal Calendar Discussion. Women group in different participant villages was able to associate that drought and flood increased labor migration (30.4%), increased human disease (17.4%) and resulted to frequent crop failure/damage (13.0%). Men group on the other hand, believed that drought and flood caused increased labor migration (30.4%) and frequent crop failure/damage (30.4%) as well as increase of insect infestation (17.4%). This data reflects that both gender identified drought and flood caused drastic labor migration.

4.3 Vulnerability and Capacity Analysis

After the identification of drought and flood as the primary and secondary climate-related hazards, women and men group were tasked to list all livelihood resources (natural, financial, physical, social and human resources) they believed to be vulnerable to drought and flood. Based on the analysis, drought affects mainly natural and financial resources while flood affects natural, financial and human resources as well as physical resources.

Vulnerability Matrix and Livelihood Resources. Table 3 shows the different livelihoods affected by drought in 23 participant villages around Cambodia. Both group identified that rice crops (a), water (b) and livestock (c) were the most vulnerable livelihood resources during prolonged drought season.

Table 3. Frequency distribution of vulnerable livelihoods to drought.

	Number of Villages	Percentage
<i>Vulnerable Livelihoods for Women</i>		
Crops/Rice	19a	82.6
Water	12b	52.2
Livestock (cow, chicken, pigs, fish)	8c	34.8
Seed	4	17.4
Human Health	2	8.7
<i>Vulnerable Livelihoods for Men</i>		
Crops/Rice	21a	91.3
Water	11b	47.8
Livestock (cow, chicken, pigs, fish)	7c	30.4
Infrastructure	2	8.7

Table 4, on the other hand, shows the different vulnerable livelihood resources to flooding. Both women and men group highlighted that rice crops (a) were the most vulnerable livelihood resource during flood. Moreover, women group focused on livestock (b) and human health (c) while men recognized that labor force (b) and infrastructure (c) were affected during flood season.

It is interesting to note that women group was able to associate the increase of human illness during drought and flood (Table 3 and Table 4). These diseases include Dengue, flu, skin rashes and diarrhea.

Table 4. Frequency distribution of vulnerable livelihoods to flood.

	Number of Villages	Percentage
<i>Vulnerable Livelihoods for Women</i>		
Crops/Rice	14a	60.9
Livestock (cow, chicken, pigs, fish)	12b	52.2
Human Health	8c	34.8
Community Participation/Cohesion	2	13.0
<i>Vulnerable Livelihoods for Men</i>		
Crops/Rice	7a	30.4
Labor Force	6b	26.1
Road/Canal/Bridge	5c	21.7
Livestock (cow, chicken, pigs, fish)	4	17.4
Community Participation/Cohesion	4	17.4

Hazard, Impact and Coping Strategy. This exercise was done in order to help participant communities determine the impact of natural hazards to their different livelihood resources and the effectiveness of their existing coping strategies.

Table 5 shows the impact of drought and flood to the community as well as women group coping strategies. Women group recognized that *drought* resulted to lack of water for domestic/agricultural use (91.3%), increased crop damage/failure (60.8%), increased human sickness (56.5%), increased livestock diseases (52.2%), lack of food (47.8%) and loss of family income (21.7%). Due to the prolonged drought women group tend to migrate to work outside Cambodia (73.9%), took loan from MFI/Middle men (56.5%), dig well/pond (47.8%), ask help from veterinarian (43.5%), buy food from market (39.1%), buy medicine (39.1%) and buy animal feeds (21.7%).

Based on Table 5, women group were able to pinpoint that *flood* caused damage to roads/bridges/schools (34.8%), increased human sickness (26.1%) and some drowning casualties (8.7%). During flood season, the coping strategy of women was to boil water/use water filter (30.4%), borrow rice from community (21.7%) and use boat (17.4%).

Table 5. Impact of drought and flood to the community and women group coping strategy.

Hazard	Impact	Number of Villages	Percent	Coping Strategy	Number of Villages	Percent
Drought	Lack of water for domestic and agri use	21	91.3	Migrate to work outside Cambodia	17	73.9
	Crop damage/failure	14	60.8	Take loan from MFI/ middle men	13	56.5
	Increased human sickness	13	56.5	Dig well/ pond	11	47.8
	Increased livestock diseases	12	52.2	Ask help from veterinarian	10	43.5
	Lack of food	11	47.8	Buy food from market	9	39.1
	Loss of family income	10	43.5	Buy medicine/ go to hospital	9	39.1
	Lack of animal feeds	5	21.7	Buy rice bran/hay for animal feed	5	21.7
	Increased debt	3	13.0	Work as factory/ construction worker	4	17.4
Flood	Damage roads/ bridges/schools	8	34.8	Boil water/use water filter	7	30.4
	Increased human sickness	6	26.1	Borrow rice from the community	5	21.7
	Children and animal drowning	2	8.7	Use boats	4	17.4
	Crop damage/failure	2	8.7	Elevate crop and animal production	2	8.7
				Use short-term rice variety	2	8.7

Table 6 shows the impact of drought and flood to the participant communities as well as men coping strategy. Men group identified that *drought* resulted to crop damage/failure (65.2%), loss of income (65.2%), lack of water for domestic/agricultural use (56.5%), lack of food (52.2%), increased livestock disease (39.1%). The coping strategy of men group to *drought* includes working as factory/construction worker (47.8%), digging well/canal/pond (43.5%), buying food from market (43.5%), buying water from other village (39.1%), migrate to work outside Cambodia (34.8%) or taking loan from MFI/middle men (30.4%).

Men group understand that the impact of *flood* resulted to crop damage/failure (52.2%), damage roads/bridges/schools (39.1%), loss of income (13.0%), contaminate water source (8.7%) and increased transmission of disease (8.7%). During *flood*, men group coping strategies includes elevating crop and animal production (30.4%), repair damaged infrastructure (30.4%), use short-term rice/crop varieties (21.7%), replant rice crops (17.4%) and work as laborer (17.4%).

Table 6. The impact of drought and flood to the community and men group coping strategy.

Hazard	Impact	Number of Villages	Percent	Coping Strategy	Number of Villages	Percent
Drought	Crop damage/ failure	15	65.2	Work as factory/ construction worker	11	47.8
	Loss of income	15	65.2	Dig well/canal/ pond	10	43.5
	Lack of water for domestic and agri use	13	56.5	Buy food from market	10	43.5
	Lack of food	12	52.2	Buy water from other village	9	39.1
	Increased livestock diseases	9	39.1	Migrate to work outside Cambodia	8	34.8
	Increased human sickness	8	34.8	Take loan from MFI/ middle men	7	30.4
	Decreased labor force	5	21.7	Ask help from veterinarian	6	26.1
	Low community cohesion	5	21.7	Pump water from canal/ well	5	21.7
	Increased children vulnerability	2	8.7	Seek help from NGO	5	21.7
	Increased worry/ anxiety	2	8.7	Ask children to drop from school	2	8.7
Flood	Crop damage/ failure	12	52.2	Elevate crop and animal production	7	30.4
	Damage roads/ bridges/schools	9	39.1	Repair damage infrastructure	7	30.4
	Loss of income	3	13.0	Use short-term rice/vegetables	5	21.7
	Contaminated water source	2	8.7	Replant rice crops	4	17.4
	Increased transmission of disease	2	8.7	Work as laborer	4	17.4
				Boil water/use water filter	3	13.0

4.4 Adaptation Strategy

After identifying the different coping strategies to drought and flood, participants in different communities were instructed to write all coping strategies they believed to be affective and can used as an adaptation strategies to strengthen vulnerable livelihood resources.

Table 7 shows the different adaptation strategies to drought and flood. The different communities understand that they need to increase their access in health education (82.6%) in order to reduce illnesses and transmission. Both women and men group learned the value of forming savings group which serve as the financial mechanism and support during the onset of disaster and shock (73.9%). During the assessment, participants also learned that too much dependency to rice farming will cause problem to their food and income source, thus, they identified that training on agricultural techniques (69.8%) and animal and fish raising (56.5%) as well as growing drought/flood tolerant crops (43.5%) will provide them alternative source of food and income. Moreover, participant communities learned the importance of digging well (56.5%), digging pond (43.5%) and building community water system (43.5%) will improve access to safe water during drought and flood season.

Table 7. Identified adaptation strategy to drought and flood.

Theme	Adaptation Strategy	Number of Villages	Percentage
Health Care and Hygiene	Health Education	19	82.6
	Boil water/use water filters	8	34.8
	Proper food preparation/hygiene	5	21.7
Income Generation	Form savings group	17	73.9
	Form community development committee	5	21.7
	Expand small business	4	17.4
Agriculture and Food Security	Training on agricultural techniques (IFS)	16	69.6
	Animal and fish raising	13	56.5
	Grow flood/drought tolerant crops	10	43.5
	Home gardening	9	39.1
	Establish rice seed association	3	13.0
	Use proper rice seed storage	2	8.7
	Family composting	2	8.7
WASH	Dig well	13	56.5
	Dig pond	10	43.5
	Build community water system	10	43.5
	Dig new canal system	7	30.4
	Build water storage	4	17.4
	Buy water pump	3	13.0
	Build latrines	3	13.0

The different adaptation strategies were categorized into different themes. Participants were given two stickers to represent their vote. After the presentation of different adaptation strategies, participants were called to select which adaptation strategy they believed to be applicable, effective and can be sustained to their current situation to climate impacts.

Table 8 shows the result of the priority projects after voting. There were 11 villages that planned to focus in WASH projects (47.8%), 8 villages in Agriculture and Food Security (34.8%), 5 villages in Income Generation (21.7%) and 3 villages in Health Care and Hygiene (13.0%).

Table 8. Priority projects of different participant communities.

Priority Theme/Adaptation Strategy	Number of Villages	Percentage
WASH	11	47.8
Agriculture and Food Security	8	34.8
Income Generation	5	21.7
Health Care and Hygiene	3	13.0

5 Discussion

We observed that both women and men groups were able to identify *drought* as the primary climate-related hazard affecting their community. Both groups also recognized that longer duration of drought increased labor migration, caused crop failure, contamination of water and loss of livestock. However, the assessment also provides clear information regarding the difference between gender specific perspectives to climate change. During drought season, the main coping strategy of women group was to migrate outside the country to find better source of income while men group tends to work as laborer/construction worker in key cities within the country. This difference was also observed during the onset of flooding, women group focuses on household chores like boiling/filtering water for domestic consumption and borrowing rice in the community for cooking while men group concentrate in elevating crops and animals as well as repairing damaged infrastructures. It was also observed that only women group was able to correlate the increase of human sickness during drought and flood.

The impact climate change in Cambodia was observed in agriculture sector and water resource of the country. The PACDR assessment validates the severe effect of drought and flood in many rural farming communities. The prioritization of the different adaptation strategies was mainly based on current impact of drought to participant communities. The main problem was the lack of water for domestic and agricultural use. Because water resource was unavailable, many left their rice farming activities and migrated to other places to find stable source of income to provide enough food their families. Participant communities prioritized adaptation strategy as follows: WASH (1), Agriculture and Food Security (2), Income Generation (3) and Health Care & Hygiene (4). WASH projects will address the effects of drought and flood to water source intended to both domestic and agricultural use. Agriculture and Food Security projects will address food and income source other

than rice farming while Income Generation projects will create alternative source of income to participant communities. Lastly, Health Care and Hygiene projects will help families to prevent spread of diseases in the community.

6 Follow-up and Monitoring

Report on Toul Kpos village. Community Assessment on climate change and disaster risk organized by Bread for All together with CHAD team held on November 2014 at Toul Kpos village. The participatory assessment provides best learning opportunity for community to see how poverty was exacerbated by the growing trend in global warming. Shortly after the assessment training, under CHAD facilitation, follow-up and monitoring activity, community gathered together for meeting to seek strategies that can adapt to the hazard of their lives. The meeting enabled community to determine action plan to cope with their source of income that previously dependent on rice farming that were badly affected by the climate change. They decided to strengthen the existing projects of rice bank and cow raising as well as establishing income generating projects of chicken production and craft-work of mat weaving.

CHAD Action Plan for 2017. The different identified adaptation strategies shown in Table 7 were the action plan to be given priority for PACDR participants to implement as adaptation projects in their respective communities.

7 Recommendations and Conclusion

Increasing community resilience to climate change means strengthening different livelihood resources and adaptation capacities to natural hazards (Drought and flood). Participants understand the need to increase their access in health education/hygiene in order to reduce illnesses and transmission. The group also learned the value of forming savings group that would serve as a financial mechanism and support during the onset of disaster and shock. During the assessment, participants also learned that too much dependency to rice farming will cause problem to their food and income source, thus, they identified that training on agricultural techniques, animal and fish raising as well as growing drought/flood tolerant crops will provide them alternative source of food and income. Moreover, participant communities learned the importance of digging well/pond and building community water system would improve access to safe water during drought and flood season.

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