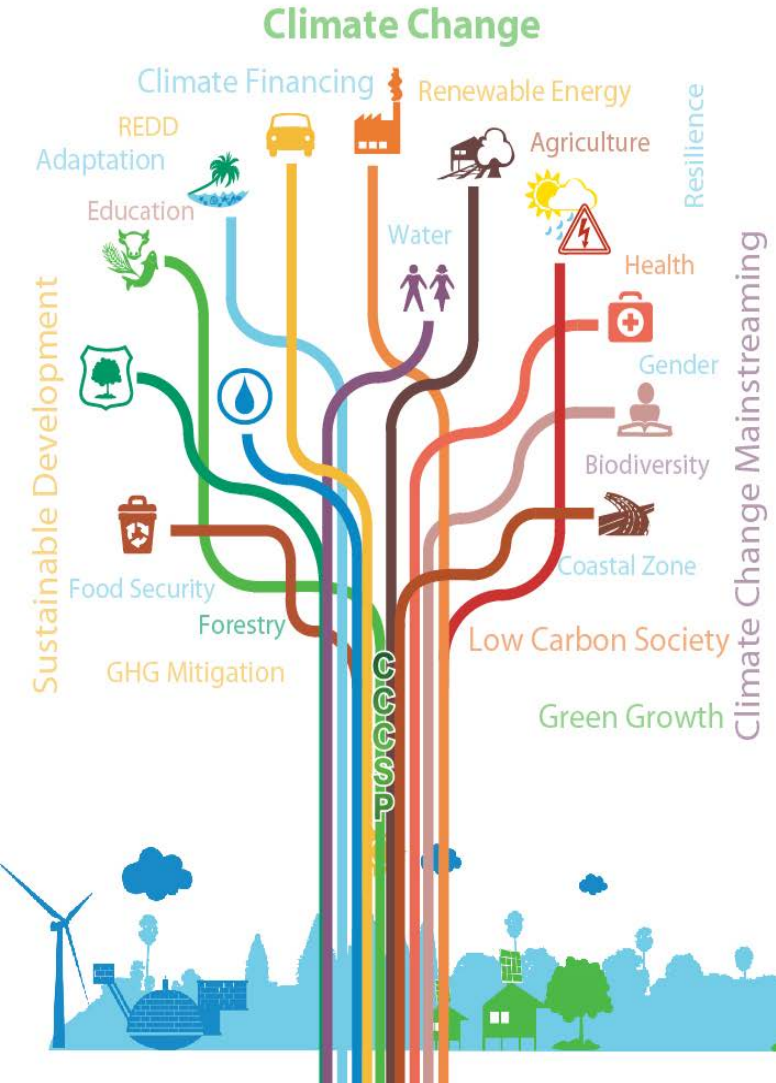
3rd National Forum on Climate Change

5 – 7 November 2013, Cambodia

"Taking Action for Sustainable Development in the Changing Climate"



Climate Change Actions in the Coastal Zone

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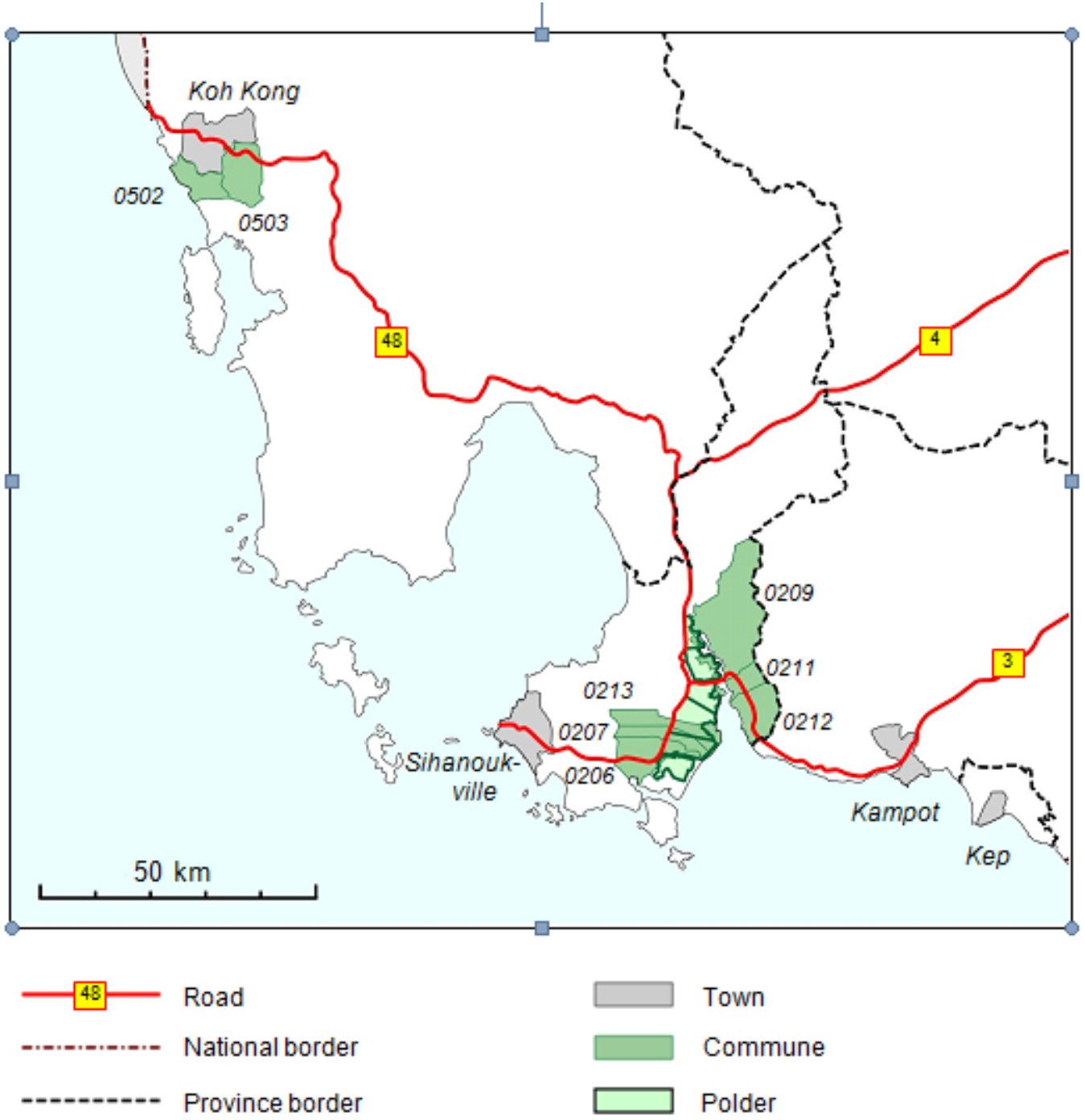
6 November 2013

CAMBODIA CLIMATE CHANGE ALLIANCE

Objectives and Outcomes

- The overall objective is to increase resilience of coastal communities and ecosystems to climate change through adaptation planning, demonstrated targeted local interventions.
- Outcomes:
  - Improved climate change knowledge integrated into land use and coastal development plans; and
  - Increased resilience of coastal communities and coastal ecosystem buffers to climate change and improved livelihoods.


Koh Kong
0502
0503
48
4
0209
0211
3
0213
0212
0207
Sihanouk-
ville
0206
Kampot
Kep
50 km
48
Road
National border
Province border
Town
Commune
Polder

Activities conducted to identify actions

1. Assessment of climate change action implementation capacity
2. Assessment of current coping strategies in target communities in relation to flooding, drought and extreme events
3. Vulnerability and risk assessment of community livelihoods in target districts
4. Analysis of the vulnerability of existing agricultural practices to the impacts of climate variability and climate change

Activities conducted to identify actions

5. Develop long-list of actions based on the above analyses and a participatory approach
6. Analysis of economic and social costs and benefits of options for modified agricultural practices
7. Detailed implementation plan for community adaptation actions
8. Development of land use planning guide by integrating climate change consideration for coastal area
9. Climate change actions integrated into the Commune Development Plans in targeted areas

Identification and Planning of Actions

- The identification and selection of actions for climate change adaptation have used a bottom-up approach which have been asssisted with relevant technical assistance in developing actions

Coastal Adaptation and Resilience Planning Component

Assessment of Coping Strategies in the Coastal Zone of Cambodia

Cambodia Climate Change Alliance (CCCA)

implemented by: supported by:

Ministry of Environment | European Union | UNDP | Danida | EMBASSY OF SWEDEN

June

2012

Koh Kong

Question 2 in ”Perception on Climate Change

“If yes (question 1), what consequences has the change had?”

Change in rainfall	84%
Changes in temperatures	54%
More drought	16%
More flooding	27%
More storms	74%
More seawater intrusion	86%
Pest on agriculture	24%
Base = All respondents	Multiple answers possible

Prey Nob

Question 2 in ”Perception on Climate Change”

“If yes (question 1), what consequences has the change had?”

Change in rainfall	94%
Changes in temperatures	62%
More drought	22%
More flooding	39%
More storms	91%
More seawater intrusion	56%
Pest on agriculture	66%
Base = 255 respondents	Multiple answers possible

Koh Kong

Question 3 ”Perception on Climate Change”

“Has these consequences had an impact on your livelihood?”

- Occupation 76%
- Income 88 %
- Health 61%

Base = All respondents multiple answers possible

Coastal Adaptation and Resilience Planning Component

Assessment of Community Vulnerability and Risks from Climate Change in the Coastal Zone of Cambodia

Cambodia Climate Change Alliance (CCCA)

implemented by: supported by:

Ministry of Environment | European Union | UNDP | Danida | EMBASSY OF SWEDEN

June

2012

Main source of income

	Prey Nob Generally	Tuek Thla	Tuek L'ak	Sameakki	Tuol Toteung	Ou Oknha Heng	Prey Nob
Crops	73%	80%	77%	75%	60%	65%	**80%**
Livestock	5%	5%	5%	7%	10%	0%	**0%**
Fisheries	8%	7%	5%	5%	5%	20%	**3%**
Wage (private and government)	8%	1%	10%	5%	15%	5%	**14%**
Remittances	0%	0%	0%	1%	0%	0%	**0%**
Other income (small business, garment, palm oil factories)	**5%**	**7%**	**3%**	**7%**	**5%**	**5%**	**3%**

Level of Poverty

No.	District	Commune	Poor 1	Percentage	Poor 2	Percentage	Not poor	Percentage	Total HH
1	Mondol Seima	Peam Krasaob	55	18%	103	33%	115	49%	277
		Tuol Kokir	52	18%	68	23%	127	59%	241
2	Prey Nob	Sameakki	162	17%	162	17%	635	66%	959
		Tuek L'ak	103	12%	127	15%	631	73%	861
		Tuek Thla	112	10%	218	19%	803	71%	1133
		Tuol Toteung	83	10%	212	25%	295	35%	855
		O. O. Heng	166	11%	244	16%	410	26%	1566
		Prey Nob	218	16%	142	10%	410	26%	1382

Coastal Adaptation and Resilience Planning Component

Vulnerability of existing agricultural practices

Cambodia Climate Change Alliance (CCCA)

Ministry of Environment | European Union | UNDP | Danida | EMBASSY OF SWEDEN

July

2012

Predicted climate change

Hazard	Impact	Current - 2019	2020-2039	2040-2059	2060-2100	2080-2100 (90%)
Sea Level Rise	• Coastal erosion • Loss of cultivable land • Salinity of water supply	5 cm	10 cm	18 cm	32 cm	56 cm
Average Temperature Change (Degrees C)	• Heat / Drought • Heat stress in humans , plants & livestock • Increase of pests and diseases	0.2	1 (0.8-1.2)	1.6 (1.4-1.9)	2.9 (2.2 -3.9)	4.1 (3.7-4.6)

Predicted climate change

Change in Rainfall in dry season(mm) (October-April)	• **Drought**	-	**-4.8 (-7.4--2.7)**	**-3.2 (-10.8-+10.5)**	**-2.5 (-10.4-+16.7)**	**14.5 (-1.9-+50.1)**
Change in rainfall in wet season (mm) (May-October)	• Flooding	-	0.3 (-10.9-+9.4)	8.8 (-4.2-+19.4)	14.3 (+3.2-+25.7)	49.7 (+27.5-+63.0)
Polder Sinking (cm) Prey Nob only	• Damage to crops • Damage to homes	12	52	72	?	?

Risk Assessment – Peam Krasoab

Component	Risk Scenario	Risk Category in relation to Period				
		Current -2019	2020-2039	2040-2059	2060-2100	2080-2100 (90%)
Crops	Destruction/loss of crops in wet season	L	L	L	M	M
	Destruction/loss of crops in dry season	L	L	L	L	L
Livestock	Loss of livestock	L	L	L	L	L
Fisheries	Change of aquatic ecosystems	M	M	H	H	H

Risk Assessment, Prey Nob

Component	Risk Scenario	Risk Category in relation to Period				
		Current -2019	2020-2039	2040-2059	2060-2100	2080-2100 (90%)
Crops	Destruction/loss of crops in wet season	M	M	H	H	E
	Destruction/loss of crops in dry season	L	M	M	M	M
Livestock	Loss of livestock	L	L	M	M	M
Fisheries	Change of aquatic ecosystems	L	M	M	M	M

Long List of Actions Developed

- Actions included both on-farm and off-farm activities
- Small scale climate change investments in commune
- Large- and medium-scale projects – dyke rehabilitation, expansion of water reservoirs
- Ranking provided by communes for suggested actions

Potential Off-Farm Changes	Please rank from 1 to 5. 5: very important 1: minor effect										
	Mondul Seima, Koh Kong		Prey Nob, Sihanouk						Average		Response
Communes/	Peam Krasoab	Toul Kokir	Touk Laak	Samaki	Toek Thla	Prey Nob	Toul Toteng	O'Okna Heng	Mondul Seima	Prey Nob	
1. Raising and extension of existing protective dyke systems as well as consideration of drainage and pumping requirements for the polder areas. A technical and financial feasibility study by MoWRAM or others may be indicated.	5	5	4	1	4	4	4	4	5.0	3.5	Included in demonstration activity 6.
2. Planting of mangrove forest and protective trees for dyke systems	3	1	1	3	1	4	1	2	2.0	2.0	
3. Development of Eco- and/or Agro-tourism.	4	4	2	3	2	2	1	3	4.0	2.2	Partly covered in activity 2
4. Integrated Farming Training Programme for (a) agricultural /fisheries extension staff and (b) households / families in multi-scale climate change adaptation strategies and integrated farming (integration of crops, livestock, fish, water).	2	2	4	1	4	3	4	3	2.0	3.2	Included in activity 1

Coastal Adaptation and Resilience Planning Component

FINAL REPORT

Analysis of Costs & Benefits of modifying Agricultural Practices for Climate Change at the Coast

Cambodia Climate Change Alliance (CCCA)

Implemented by: Ministry of Environment

Supported by: European Union, UNDP Empowered lives. Resilient nations., Danida, SWEDEN

November

2012

Comparison of Economic Benefits

Demo Activity	Directly benefiting households	Internal Rate of Return	Net Present Value of Investment	Benefit per household
1 and 3: FFS	1200	193 %	$1.7 million	$1417
2:Peam Krasoab	277	60%	$0.5 million	$1806
4: Livestock	600	31%	$0.3 million	$500
5: Water Harvesting	200	56%	$0.1 million	$500

Proposed Demonstration Actions

Action	Description
Action 1	Farmer Training Programme in climate resilient integrated farming in 8 communes including demonstration on water conservation, water harvesting and small-scale irrigation. Approx. 800 HH
Action 2	Community Fisheries project for Peam Krasaob, Koh Kong. Approx. 170 HH
Action 3	On Farm Field Trials for Seed Varieties, demonstration and training in seed selection in 8 communes. 30 HH
Action 4	Livestock Revolving Stock Scheme in 8 communes. 310 HH
Action 5	Awareness raising and resistant CC irrigation training Approx. 2000 HH
Action 6	Adaptation measures integrated in Commune Investment Plans in 8 communes – mainly rain water harvesting. 350 HH

Proposed Demonstration Actions

Action	Description
Action 7	Dyke rehabilitation – a substantial part of the rice growing area is threathened by salt water flooding. Seven km of dyke has been selected for rehabilitation and providing security for approx 2500 rice farmers HH in the Prey Nob district.
Action 8	Reservoir expansion/restoration. A major issue in the coastal area is freshwater availability and in Toul Kokir a reservoir will be expanded for domestic, livestock and irrigation purposes. Approx. 300 HH
Action 9	Ecosystem based climate change adaptation. Mangroves will be restored in areas to reduce impacts of climate change. 60 ha of mangrove will be rehabilitated.

Status

- Actions under implementation in selected communities
- Actions included in Commune Investment Plans and presented at DIW
- More than 1500 households involved in climate resilient livelihood training options
- 2000 households under training in climate awareness
- Specific training in CC integration in CDP development and climate resilient irrigation
- Actions under implementation in vulnerability assessment and adaptation planning at sub-national levels

Conclusion

- Demonstration actions will be suitable as models for adaptation in other areas
- Essential experience have been obtained from the demonstration actions so upscaling to other districts and coastal provinces could be done efficiently and cost effectively
- An efficient work team has been established at national and sub-national level which will also be available for continued actions on climate change adaptation.
- Call for donors' continued support to coastal adaptation to climate change.

Thank You !

Coastal Coordination Unit

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CAMBODIA CLIMATE CHANGE ALLIANCE

Implemented by: Ministry of Environment

Supported by: European Union, UNDP Empowered lives. Resilient nations., Danida, SWEDEN