Beung Kiat Ngong Ramsar Site, Lao PDR

Climate change vulnerability assessment and implication for management

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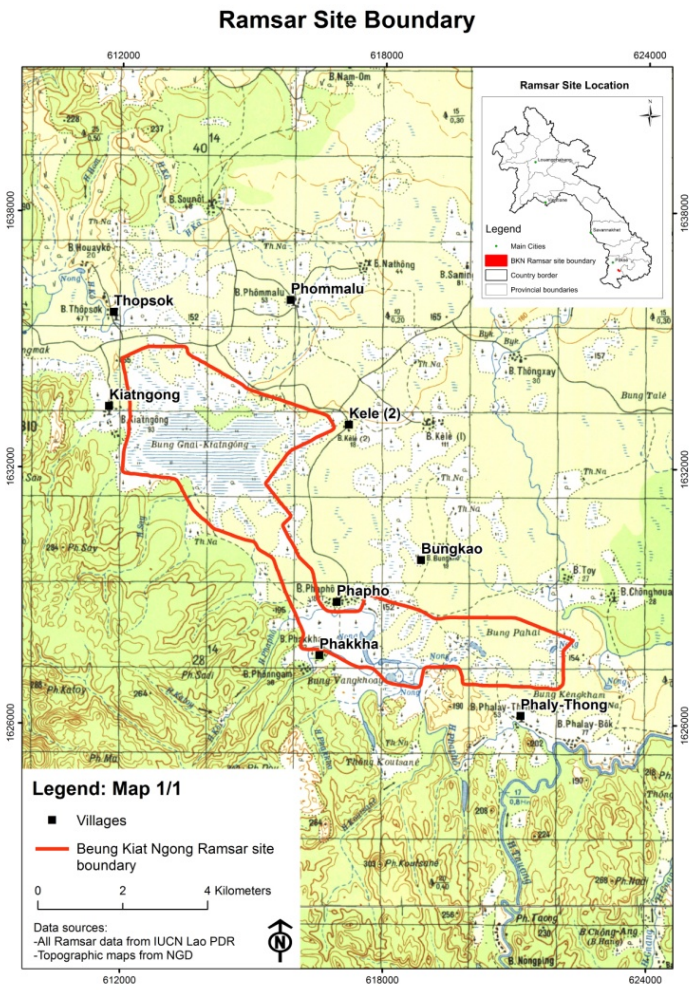
Location and key features



2,360 ha in Pathoumphone district in the southern Lao province of Champasak.

Designated as a **Ramsar site** on 16 June 2010 and lies partly within the **Xe Pian National Protected Area (NPA)**.

Includes 8 core villages

Management under the **Xe Pian NPA authorities** and the **Ramsar Provincial Committee of Champasak Province**.

Habitats include complex of peatlands, marsh, open water ponds, swamp forests and seasonally flooded grasslands

Main conservation values

- **Only place in Laos where peatlands can be found;**
- **Small and medium-sized water birds and for seed-eating birds**
- **Support vulnerable and endangered species (e.g** Malayan snail-eating turtle, Yellow headed temple turtle**);**

- **Refuge for black fish species** during the dry season**,**
- **Spawning and nursery habitats for white fish in-migration from Sekong river in wet season;**

- **Supports the livelihood of around 9,523 ppl in 8 core villages**
  - **Fisheries, Eels**
  - **NTFP collection –** snails, frogs, wetland vegetables, turtles
  - **Agriculture -** rainfed rice (1,387 ha), irrigated rice (50 ha)
  - **Livestock -** 991 buffalos, 2,611 cows and 12 elephants
  - **Tourism –** Phou Asa temple, elephant rides, birdwatching**,** homestay
- **Ecosystem service :** flood mitigation, ground water recharge and sediment trapping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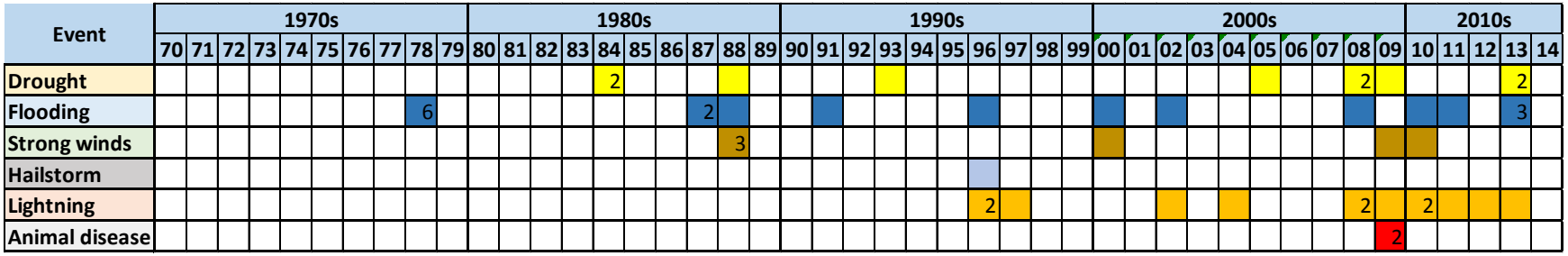
Extreme climatic events or climate changes affecting the PA



Event	1970s										1980s										1990s										2000s										2010s				
	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14
Drought															2																								2				2		
Flooding									6									2																									3		
Strong winds																			3																										
Hailstorm																																													
Lightning																											2												2				2		
Animal disease																																								2					

- Increased frequency and length of floods led to loss of rice production (around 40%);
- Drought leads to shortage of drinking water, rice seedling loss and increased death rate for cattle;

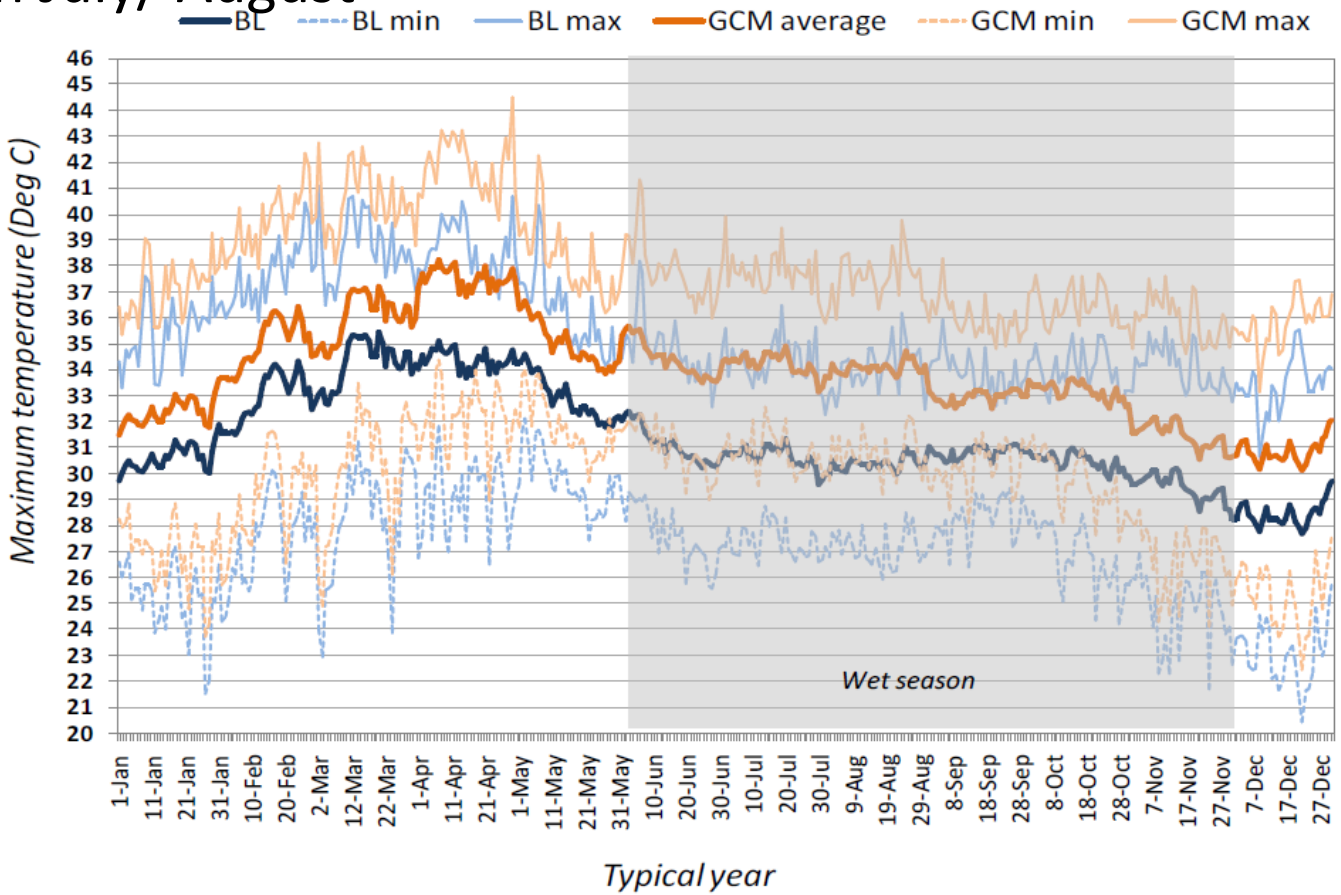
Projected increases in temperature

3-4 deg C rise in maximum temperatures

- from 34°C to 37°C in April,
- 30°C to 34°C in July/ August

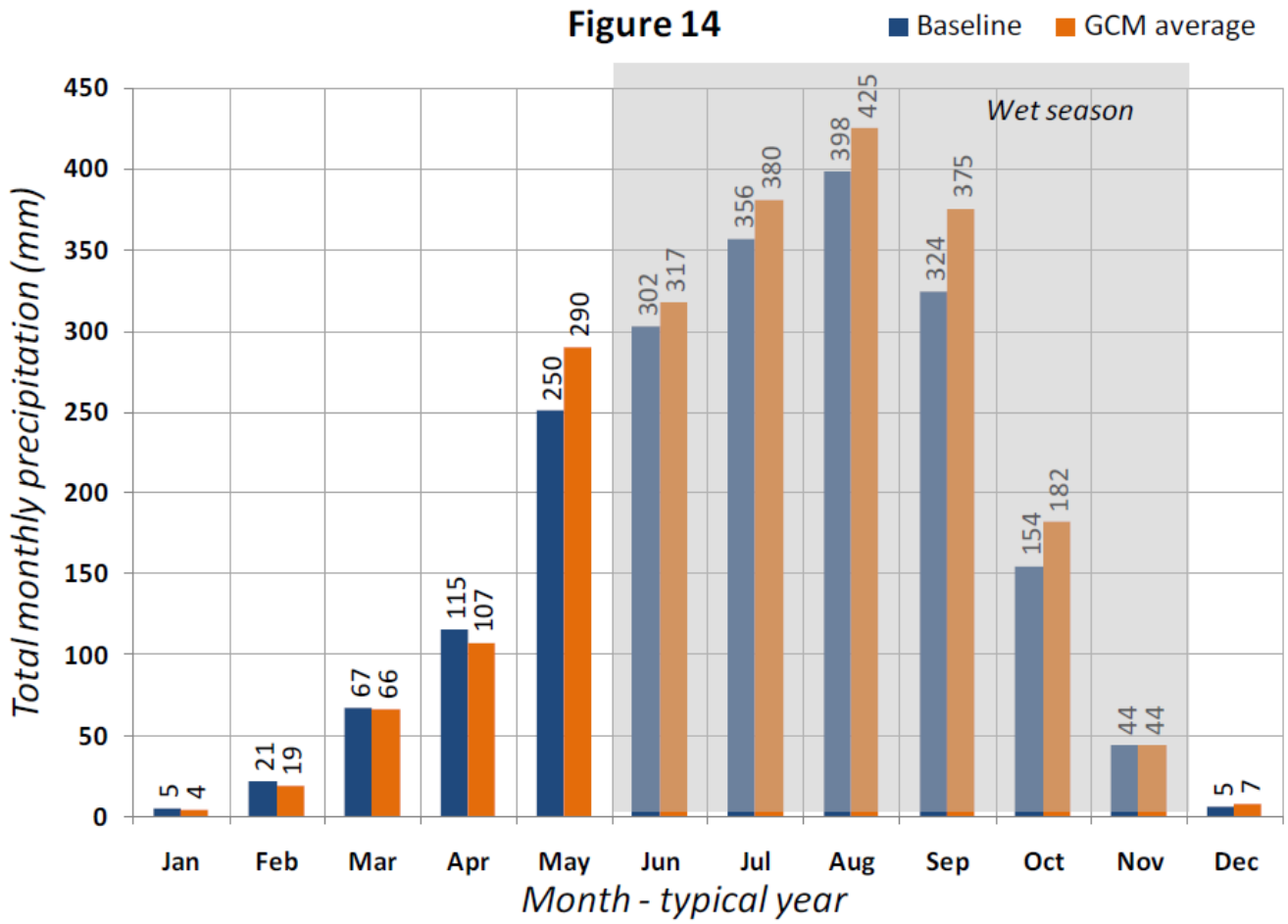
Climate change projections for Champasak province prepared for the USAID-funded Mekong ARCC project were used for the downscaled projections at BKN.

Figure 1



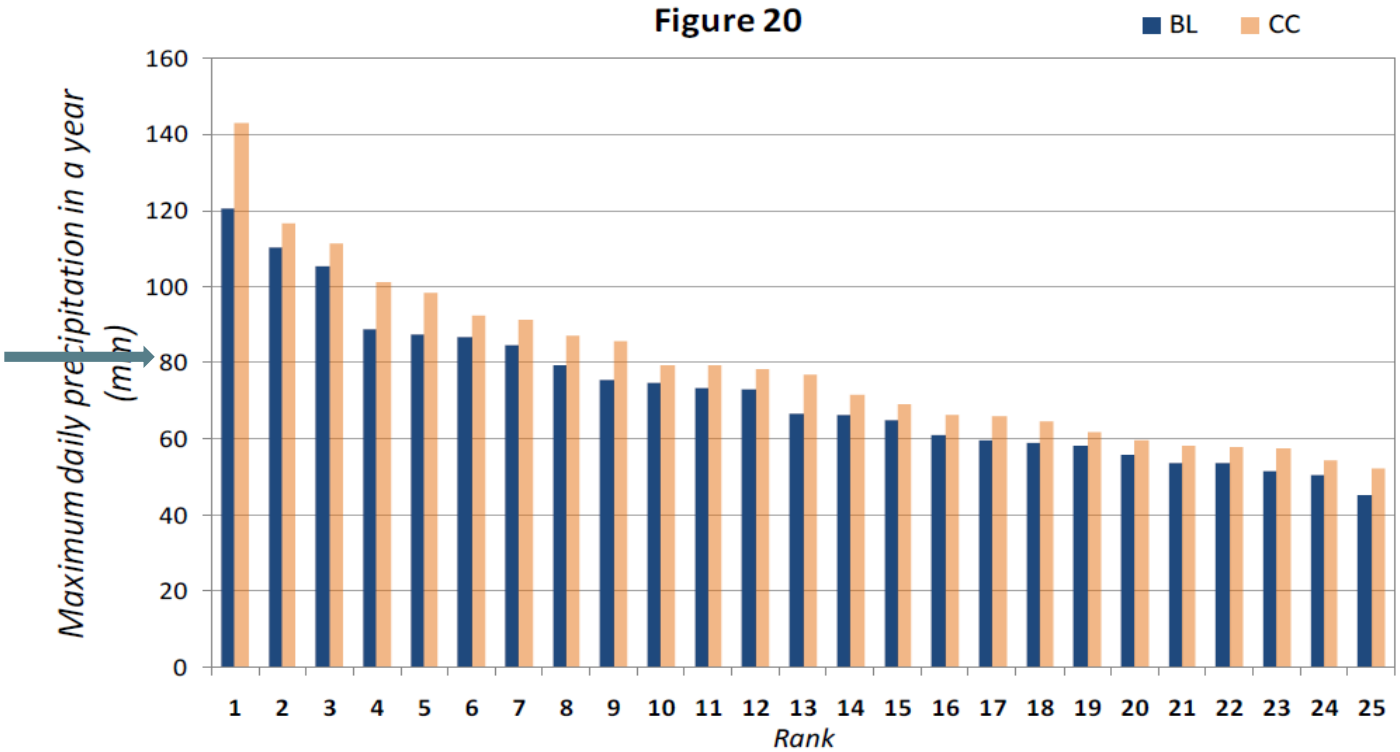
Projected monthly rainfall in typical year

- In January – April – 6% decrease in rainfall
- In May – 11% increase in rainfall
- In wet season June to October – 10% increase



Extreme events - storms

- Storm events over 80 mm in a day increase from 7 per year to 9 per year
- Largest storm event increases from 120 mm/day to 142 mm/day



Likely impacts on species and habitats

- Drier and hotter dry season with greater evapotranspiration and wetter wet seasons
- In dry season, the wetted area will shrink faster
- From May, the rains and run-off will fill up the wetland area quickly – may actually increase in area
- Generally good resilience and high adaptive capacity of wetland habitats and biodiversity
- But note possibility of acid sulphate soil formation in peat soils
- Also note invasion of mimosa pigra

Threat	Exposure	Sensitivity	Impact Level	Adaptive capacity	Vulnerability
Increase of temperature especially at end of dry season	H	VH	VH	H	M
Irregular distribution of rainfall in dry season	H	H	H	H	M
Increase in rainfall in wet season	VH	L	H	H	M
Increased frequency and intensity of storms	H	L	M	H	M
Increased risk of flooding	M	L	M	H	M

Climate change impacts on species

- **Fish** –
  - "black fish" **highly resilient**,
  - "white fish" – come in only in wet season when least stress
- **Snails** – threat of invasion from golden apple snail **unlikely** to be increased by climate change – both native apple snail and golden apple snail equally resilient
- **Turtles** – **highly vulnerable** to increased temperature, because gender of young turtles is dependent on temperature

Climate change impacts on livelihoods

- **Rice production** – High vulnerability - risks for droughts and floods likely to increase causing reduced yields and sometimes complete loss of crop
- **Livestock** – High vulnerability increased temperatures in dry season will tend to reduce fodder availability and water, and cause stress and disease,
- **Malva nuts** – Highly vulnerable because of increased temperatures during flowering and fruiting, may decrease yields
- **Drinking water** – increased vulnerability during late dry season due to falling ground water levels
- **Fisheries** – low vulnerability except where low water levels in ponds in dry season increase access and thus fishing pressure

Awareness and capacity building

- **Adaptation time lag** - How to provide an incentive for uptake of adaptation measures when the climate change may not become critical to wetland community livelihoods for a decade or more – when project activities last only 3 – 5 years
- **Awareness Gaps** between scientific level and community level on developing a shared vision of CC
- **Lack of capacities** at local levels – provincial, district and community level - to understand and plan adaptation

Institutional challenges - Coordination

- CC related departments are all under MoNRE
  - Climate change and Disaster management
  - Hydrology and Meteorology – early warning systems
  - Water resources
  - Wetlands and Ramsar Convention

- MAF is critical to work on adaptation, e.g.
  - Agriculture – CC resilient rice varieties
  - Livestock – improved husbandry, forage crops, disease prevention
  - Agriculture research and extension

Challenges for implementing adaptation measures

- Wetland products and livelihoods make an important contribution to local communities and could become more significant if agriculture and livestock become more vulnerable – **wetlands as a climate resilient insurance**
- Projects focus on CC related threats and forget about non cc related threats – the **usual wetland management measures** are critical for ensuring the resilience of the wetlands
- Need to ensure **adequate water allocation** for wetland sustainability, when there will be increasing pressure upon water resources for development and livelihoods

Climate change adaptation measures in the PA

- Current Ramsar site management plan addresses the non climate change related threats
  - Peat extraction
  - Overharvesting of wetland products
  - Illegal hunting and fishing methods
  - Encroachment of agriculture fields
  - Water extraction for irrigated rice
  - Livestock grazing pressure
- This will increase resilience of the wetland ecosystem
- Supported an initial vulnerability assessment
- Upcoming project on **Climate Change adaptation on Wetlands Areas** (FAO, MoNRE, IUCN) will develop tools and capacities for CC assessment and adaptation planning
- Will support integrated CC adaptations for wetlands associated farming and livelihoods.

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