



**Regional Workshop on Climate Change  
and Local Action  
19-22 September 2011, Bratislava**

# **Climate Change Adaptation Planning at Local level**

**Albanian case study**

**Dr. Emirjeta Adhami, Prof. Dr. Eglantina Bruci  
UNDP Climate Change Programme, Albania  
Gjovalin Gjeloši – Deputy Head, Lezha Regional Council**

# Project area

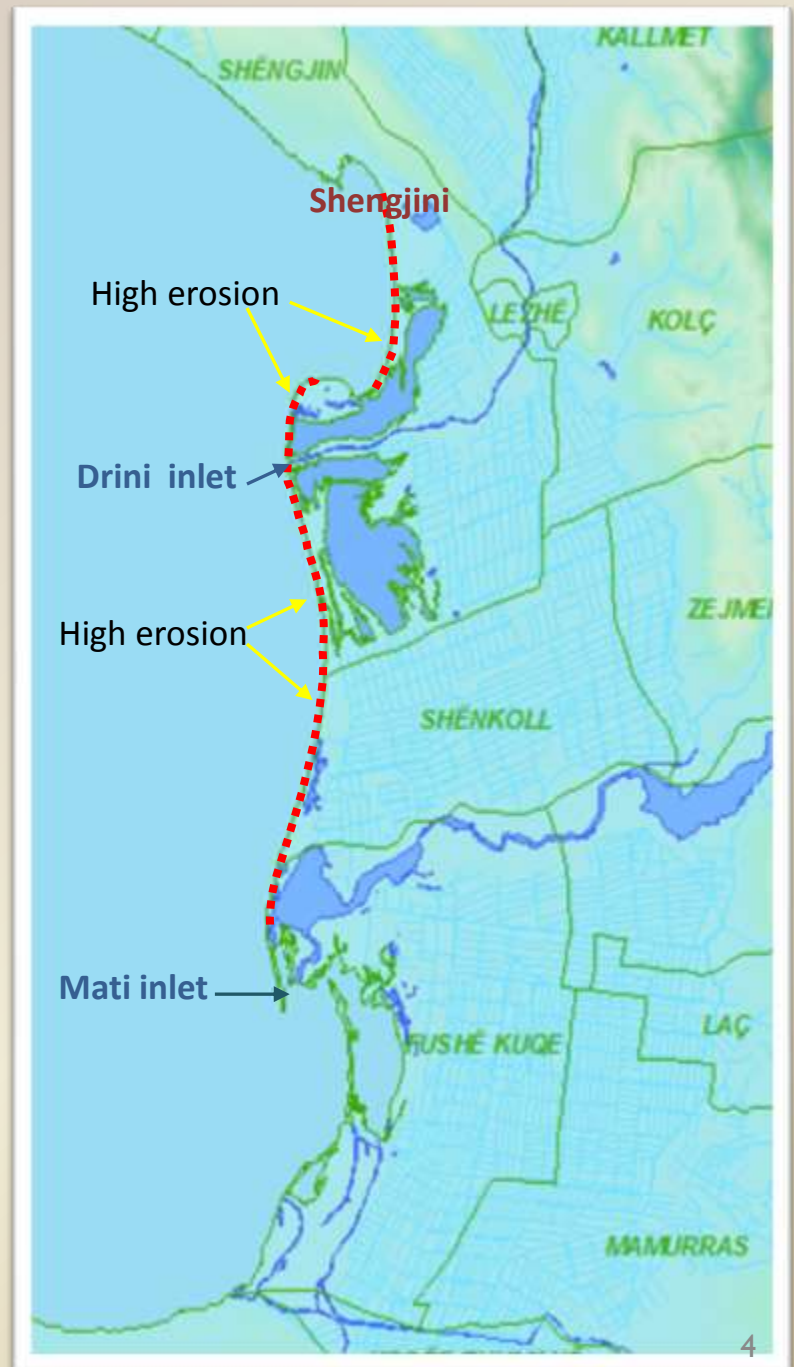




- DMRD is a wetland complex, one of the most important lagoon areas in Albania, composed by many different habitats, where the most important are: Kune – Vain and Patok Lagoons, Drini and Mati deltas, salt marshes, sand dunes, Mediterranean pine forests, riparian forests etc.
- They are home to diverse plant and animal communities and provide critical ecosystem services, such as coastal protection, water purification, and CO<sub>2</sub> absorption and food security.
- Three main types of habitat are found within the two delta systems:
  - (i) marine,
  - (ii) wetlands including estuarine, riverine, lacustrine and palustrine, and
  - (iii) non-wetland habitats including forests, shrubs and open fields where traditional agriculture is practiced.



# Pressure – erosion





Tale, Pumping station, breaking of dike



Tale, Pumping station, riconstruction of dike



**Extreme**  
**events** like storm  
surge, high tide,  
inundation.



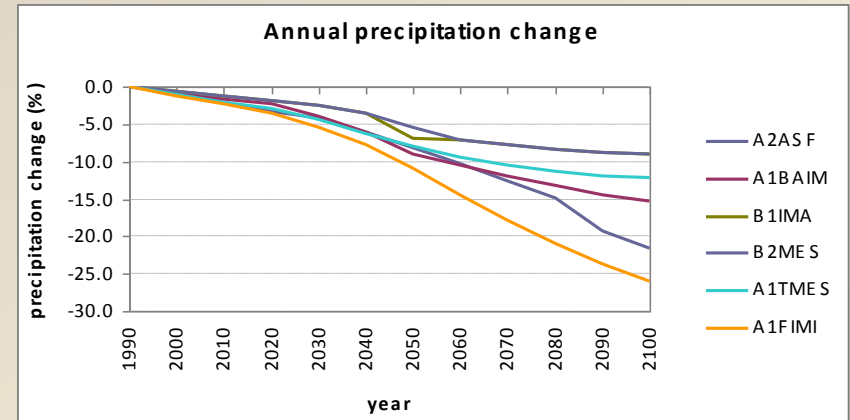
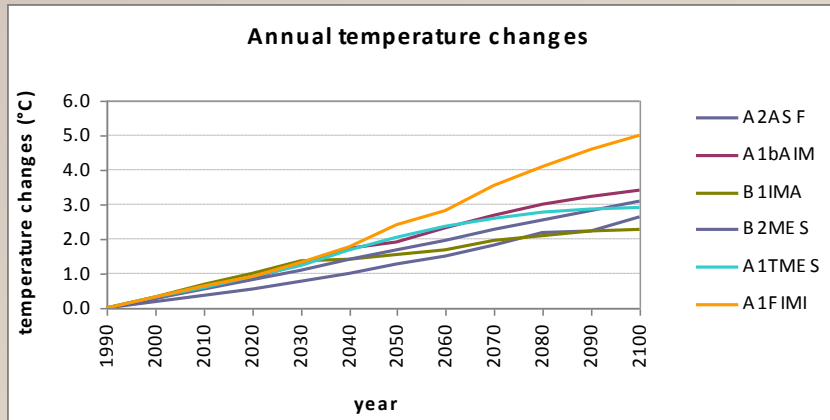
Level of water by inundation



Inundated of Barbulloja village



# Climate change scenarios – annual temperature and precipitation projections



Likely changes in annual temperature:

1.8°C (1.3-2.4°C);

2.8°C (2.1-4.1°C)

and 3.2°C (2.3-5.0°C) by 2050,  
2080 and 2100

Likely changes in annual precipitation:

-8.1% (-5.5 to -11%),

-12.9% (-8.4 to -21%),

-15.5% (-9.0 to -26.1%) by 2050;  
2080 and 2100



## Risk identification: Sea erosion+wind wave+C.Ch

The flooded area for the all the Sea setups of:

- +0.5m (blue);
- + 1.00m (Red);
- + 2.00m (green);
- + 3.00m (green transparent).

Sea level H Max	Sea Flooded area ( Ha )
+0.50	5330
+1.00	11470
+2.00	15050
+3.00	18060



# ***How the local community is involved in the adaptation planning?***

- A strategic risk assessment was undertaken to address the potential impacts of climate change in the DMRD region.
- The approach adopted at the workshops involved applying a risk assessment template (Microsoft Excel based tool), used by workshop participants to undertake the risk assessment.
- The effectiveness of the current controls in place to manage each of the identified risks, for example existing policy and operational procedures, were discussed and evaluated. A rating of 1 to 3 was assigned to each risk in keeping with the following scale:

1: No control

2: Measure but no action

3: Measure and action.



Impact Category	Risk ID	Consequence	Likelihood Rating	Consequence Rating	Risk Rating	Controls
Community	Illness, injury or death through heat stress	Adverse publicity and community concern	Almost certain	Major	Extreme	1
		Impact on livelihoods	Likely	Moderate	High	1
		Increased energy consumption, and electricity and fuel costs, resulting from air conditioner use (financial)	Almost certain	Moderate	High	2
	Reduced water quality and climatic conditions becoming favourable for a wider range of vector, food and water borne diseases leading to illness and disease	Impact on livelihoods	Likely	Major	High	2
		Health services unable to cope with increase in number of people requiring treatment	Possible	Moderate	Medium	3
	Illness, injury or death from flooding	Increased pressure to invest in up-grading infrastructure	Likely	Major	High	3
		Livelihoods affected resulting in inability to meet regional Millennium Development Goals (Mugs)	Possible	Moderate	Medium	2
	Floods and altered stream and river levels damaging or destroying sites of heritage importance	Loss or diminishment of heritage and heritage values	Possible	Moderate	Medium	1
	Deterioration of underground infrastructures (canalization, cables, etc.)	Increased infrastructure maintenance and repair costs (higher for heritage buildings than for other building types)	Possible	Moderate	Medium	1
	Physical changes to riverine environments leading to changed aesthetics	Community anger over loss of culturally significant sites and assets	Likely	Moderate	Medium	1
	Displaced populations resettling (local, regional, state, national and international)	Community anger over loss of culturally significant sites and assets	Possible	Moderate	Medium	1
		Increasing pressure for social services	Possible	Major	High	1
		Increased pressure to develop public open space to meet increasing housing pressures	Possible	Major	High	1

# Strategic Risk Assessment Results

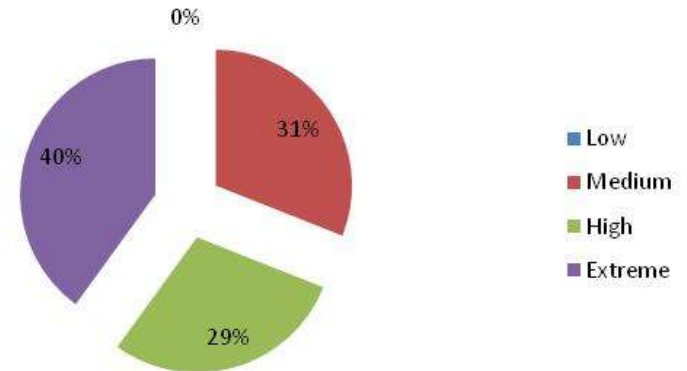
The objective of the risk assessment was three fold:

- ❖ Identify and prioritise the potential risks of climate change to the DMRD region
- ❖ Identify and prioritise adaptation strategies to address the identified impacts
- ❖ Build capacity of DMRD stakeholders (regional and local) to evaluate the impacts of climate change and develop adaptation strategies.

## Risks:

**Community**  
**Ecosystems**  
**Built environment**  
**Natural environment**

Risks (percentage acc. levels), total 42



# Adaptation Planning

- The process of adaptation planning involves reviewing how best to treat the identified risks, given existing controls in place and understanding of the barriers and opportunities to adaptation.
- Risk treatment consists of determining the most cost-effective option to be undertaken in response to the identified risks and implementation of those options through adaptation actions. For the purposes of the current assessment, **adaptation options** are defined as measures that can be taken to adapt, while **adaptation actions** are defined as specific tasks to complete the adaptation option.
- Adaptation options are classified into groups based on the specific objective or target area:
  - Those that Build Adaptive Capacity (BAC)
  - Those that Deliver Adaptation Action (DAA).



Adaptation planning was undertaken in a workshop setting. During this workshop, participants were separated into three groups based on the Communes.

Objectives:

**first workshop:** provide participants with an understanding of the adaptation planning process and commence identification and evaluation of adaptation options.

**Second workshop:** Finalization of adaptation toolkit and provision of preliminary set of adaptation measures/actions

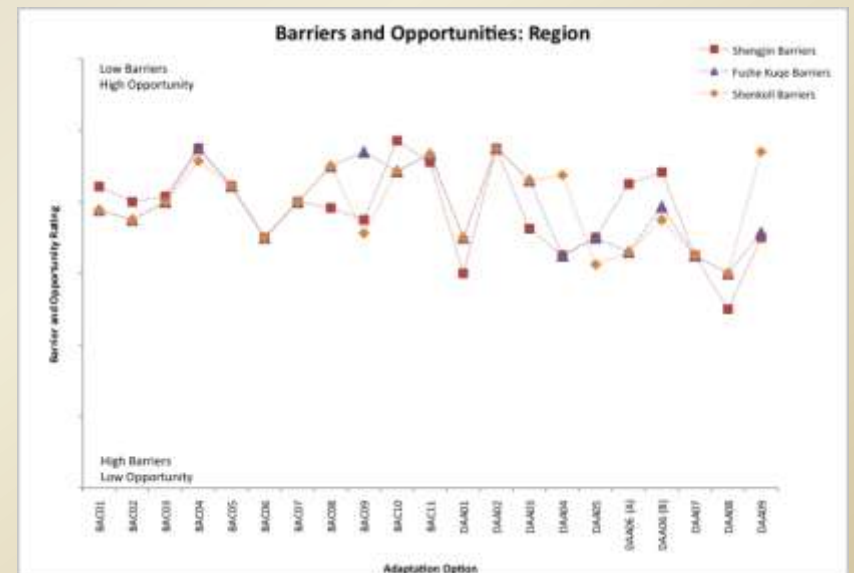
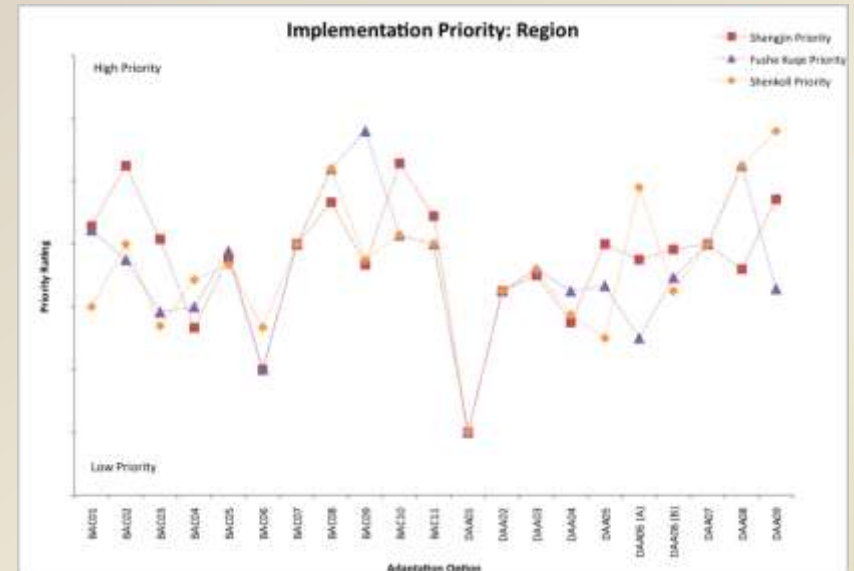
**Follow-up workshops in communes:** identifying and evaluating any additional options and actions that were required, together with local stakeholders and Commune representatives.



Adaptation Measures	Adaptation Action	Lead Department	Partners	Criteria						Total
				No regrets	Statutory	Community	Environmental	Budget	Cost benefit	
Develop and Deliver Community Education Campaign related to climate change problems	Address to the Department of Health to request engagement in campaign on climate change and health impacts	MoEFWA	MoES, Lezha Council, MoH	1	2	2	3	2	1	11
	Ensure health issues are included in the Project's communication strategy	UNDP	MoEFWA, MoH	1	2	3	3	3	3	15
	Ensure water quality issues are included in the Project's communication strategy	UNDP	MoEFWA, MoH	1	3	3	3	3	3	16
	Ensure flooding issues are included in the Project's communication strategy	MoEFWA	MoES, Lezha Council, Local experts	2	2	3	3	2	2	14
	Ensure potential species loss are included in the Project's communication strategy	GEF / UNDP/ METE	Local Government	2	3	3	3	1	1	13
	Include the Climate Change issues in Education Curricula	MoETE / MoEFWA / UNICEF		2	3	3	3	3	3	17
	Ensure tourists and visitors are included in communication activities	UNDP	MoEFWA, MoH	1	3	3	3	2	3	15

# Adaptation Planning

- The regional adaptation plan was developed based on adaptation planning undertaken at the Commune level.
- The outputs of the adaptation planning for Shëngjin, Fushë Kuge and Shënkoll Communes were evaluated to identify regional priority adaptation options.
- Comparing outcomes revealed little difference between the three Communes in terms of priority adaptation actions and options. A total of 25 risks were identified with 114 corresponding adaptation options and 183 adaptation actions.
- However, the priority rating assigned to each adaption option and the barriers to implementation varied between Communes due to selection of different adaptation actions to treat identified risks and the different ratings assigned in the barrier analysis.



Adaptation Option	Adaptation Actions	Risks Treated
DAA09: Enhance adaptation technology development'	<ul style="list-style-type: none"> <li>Investigate alternative design options to enhance the resilience of infrastructure Increase the capacity of water deposits (reservoirs, deposits etc.)</li> <li>Investigate low water use industry development</li> <li>Support schemes for organic agriculture: Stimulation of organic agriculture</li> <li>Support schemes for organic agriculture: Financial schemes to support drop irrigation</li> <li>Support schemes for organic agriculture: Enhance the use of agro forestry practices</li> <li>Examine technological options to build resilience of ecosystems to increased levels of salinity</li> </ul>	<ul style="list-style-type: none"> <li>Reduced capacity of reservoirs due to accretion</li> <li>Increases in ecological disturbances</li> <li>Reduction of fresh water quantity because of salt water intrusion into wetlands and ground water sources.</li> <li>Saltwater intrusion of wetlands and groundwater</li> </ul>
BAC08: Update regulations to ensure effective management under a changing climate'	<ul style="list-style-type: none"> <li>Review the effectiveness of current enforcement mechanisms that address groundwater management</li> <li>Address any identified gaps that may hinder adaptive management</li> <li>Improve prohibition of opening illegal wells</li> <li>Prohibit removal of sediments from river systems</li> <li>Regulation of the river banks and transversal protection works in Mati River</li> <li>Water management in Lagoons</li> <li>Control for herbicides, conservants, pesticides</li> <li>Use certified materials</li> <li>Reduce sand mining in rivers to increase sediment supply</li> </ul>	<ul style="list-style-type: none"> <li>Salt water intrusion into wetlands and ground water sources</li> <li>Damage to hydroelectric infrastructure from flooding</li> <li>Population and species extinctions</li> </ul>
BAC09: Review and amend design specification	<ul style="list-style-type: none"> <li>Review and amend design specifications for new assets to: (i) ensure that mosquito breeding is addressed; (ii) reduce vulnerability to salt water intrusion; (iii) reduce risk in areas subject to ground subsidence; (iv) assist in cooling during extreme heat events; (v) reduce vulnerability of underground infrastructure; Review and amend building design specifications with respect to key river infrastructure</li> <li>Review and amend dam design specifications</li> </ul>	<ul style="list-style-type: none"> <li>Reduced resilience of ecosystem to stress</li> <li>Increase in areas suitable for mosquito breeding leading to an increase in vector born diseases.</li> <li>Saltwater intrusion of wetlands and groundwater</li> <li>Ground subsidence</li> <li>Reduction of freshwater as a result of salt water intrusion of aquifers; and Illness, injury or death through heat stress;</li> <li>Reduction of freshwater</li> <li>Deterioration of underground infrastructure</li> <li>Damage of infrastructure i.e. bridges within the riparian zone due to flooding</li> <li>Increased incidence of dams being constructed or modified without development approvals;</li> <li>Reduced capacity of reservoirs due to accretion</li> </ul>



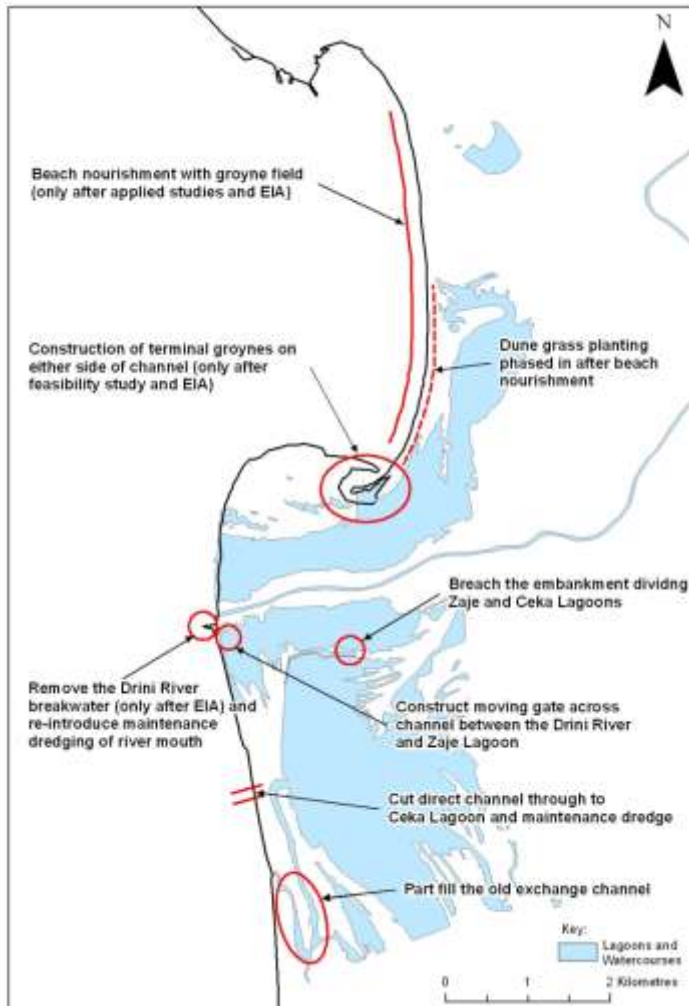
# Potential Adaptation Measurements proposed to involved in Regional Development Plans

- **The Potential Coastal Adaptation Measures in the Drini-Mati River Deltas, Albania are as below:**
  - ***establishment of a system monitoring climate change effects***
  - ***an alert or extreme event warning system***
  - *improvements to the network of irrigation/drainage channels*
  - *organic farming where no use of agricultural chemicals reduces run-off to the lagoons thereby lowering the potential for eutrophication*
  - *to assist Lezha Regional Council to develop funding proposals for climate change-related projects with other donors*

## Potential Adaptation Measurements proposed to involved in Regional Development Plans

The Potential Coastal Adaptation Measures in the Drini-Mati River Deltas, Albania are as below (engineering-hard adaptation measures):

- **Beach nourishment at Shëngjini Beach/Kune Spit to enhance beach widths and heights.**
- Construction of a groyne field across the beach nourishment receiver site to help retain placed sand.
- Dune planting at degraded sites along Kune Spit to encourage dune stabilization and growth, phased in after beach nourishment has taken place.
- Construction of two terminal groynes at Merxhani Lagoon tidal inlet to prevent long shore transported sand from entering the channel.
- Re-configuration and shortening of Ceka Lagoon tidal inlet and maintenance dredging to provide improved water exchange.
- Restore water exchange between Zaje and Ceka Lagoons by breaching embankment between the two.
- Installation of a gate across the Drini River-Zaje Lagoon tidal inlet to control freshwater flow into the lagoon.
- Removal of Drini River breakwater to release sand supply to the north and re- instatement of maintenance dredging of river mouth.



# Lesson learned

A number of important lessons have been learned from the implementation of the project to date, namely:

- The key of success in development of climate change adaptation plan and its implementation is close cooperation in early stages with local governments and local-level stakeholders.
- Stakeholder's analysis is a crucial point of success for any activity that will be undertaken in the future and direct or indirect will affect the stakeholders. The restoration activities take time, but stakeholders need to be involved from the beginning of any project and they must be combined with their wide range of interests as there are the diversity of the coastal areas and what they offer.
- Dissemination of scientific information in a user friendly way for the non-scientific community is vital.



**THANK YOU  
FOR YOUR  
ATTENTION!**

