

Introduction to the Integrated Vulnerability Assessment Approach

Training on Applying the Climate Change Vulnerability Assessment Methodology in the Arab Region, 11-13 May 2014, Beirut

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Background



••• Objectives of the VA methodology:

- Allow an **integrated vulnerability assessment** of the Arab region with particular focus on the climate change **impacts on water**
- Identify regional climate change **vulnerability hotspots** to identify shared climate related challenges in the Arab region

Key characteristics of the Integrated VA Methodology



1) Integrated/transdisciplinary approach



2) Jointly developed from regional institutions



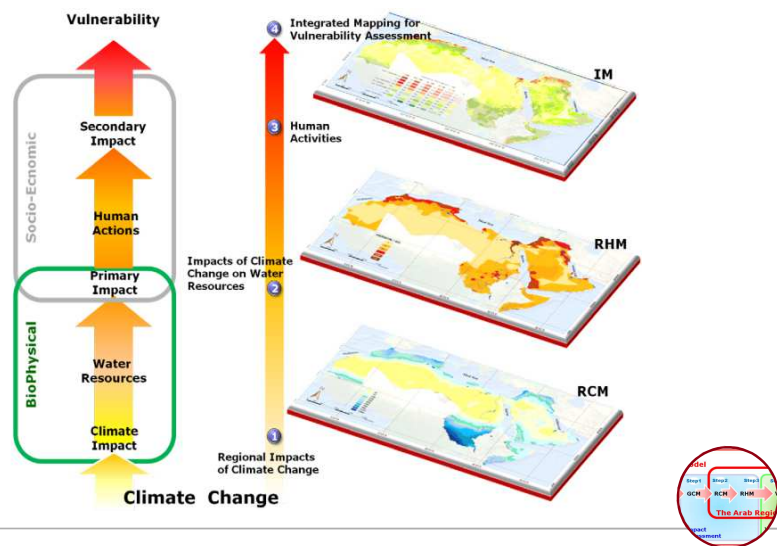
3) Regional perspective on climate change vulnerability with particular focus on water issues




4) Modular structure

3

1) Integrated Assessment Approach of RICCAR




4

1) Integrated approach = different sources of data 

Exposure

Outputs of the RCMs and RHM's (SMHI & ACSAD), e.g.


- Change in precipitation
- Change in temperature
- Change in run-off



Sensitivity

Natural/physical environment, e.g.


- Land use land cover
- Road density
- Population density
- Available water resources




Adaptive Capacity






Social environment, e.g.


- GDP/income
- Education level
- Health services
- Governance



5

1) Integrated approach = cross-sectoral approach 

	Impacts
 Water	Change in water availability
 Biodiversity & Ecosystems	Change in area covered by forests
	Change in area of wetlands/marshes
 Agriculture	Change of water available for crops
	Change of water available for pasture/livestock
 Infrastructure & Human Settlements	Damage from inland flooding
	Damage from coastal flooding
 People	Change of water available for drinking
	Change in health stress due to rising temperatures
	Change of employment rate in the agricultural sector



6

2) Joint regional development process



- Key institutions from the Arab region, working on water, climate change, climate change impact assessment and sustainable development issues

1st Meeting 29-30 January 2013, Beirut	Discussion of underlying vulnerability concept, identification of objectives and key sectors/topics as well as climate change impacts the vulnerability assessment focuses on
2nd Meeting 27-28 May 2013, Beirut	Validation of selected climate change impacts, identification and discussion of key indicators for assessing vulnerability in the different sectors, discussion of possible data sources
3rd Meeting 25-26 November 2013, Amman	Finalisation of the list of indicators, approval of the aggregation methodology and exercise on indicator evaluation



7

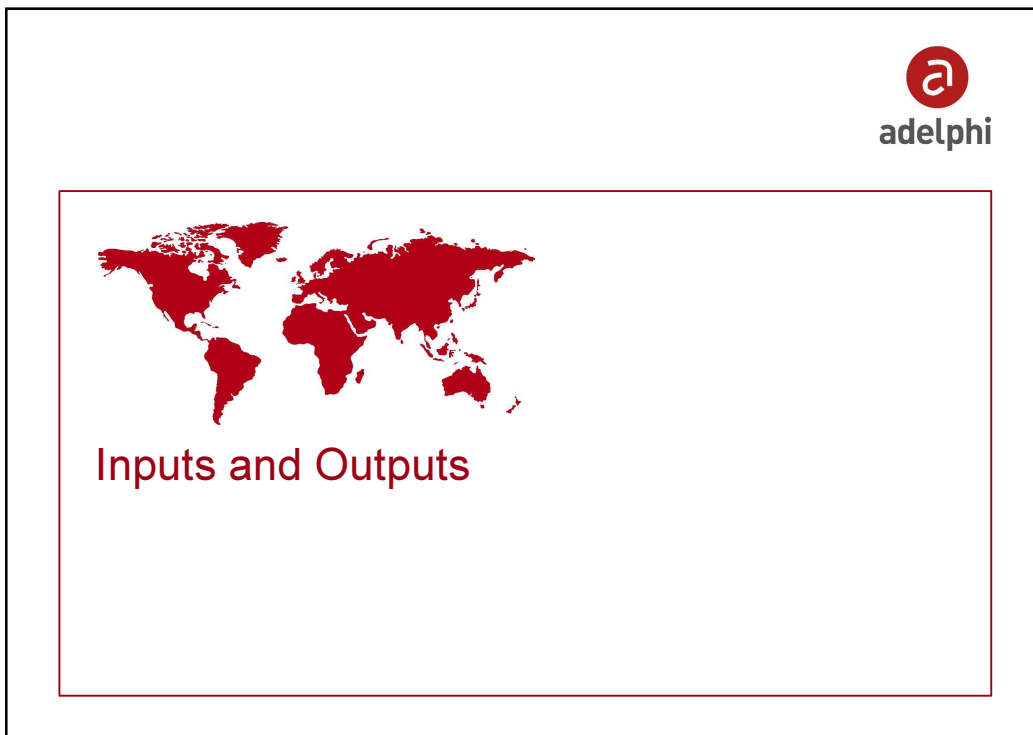
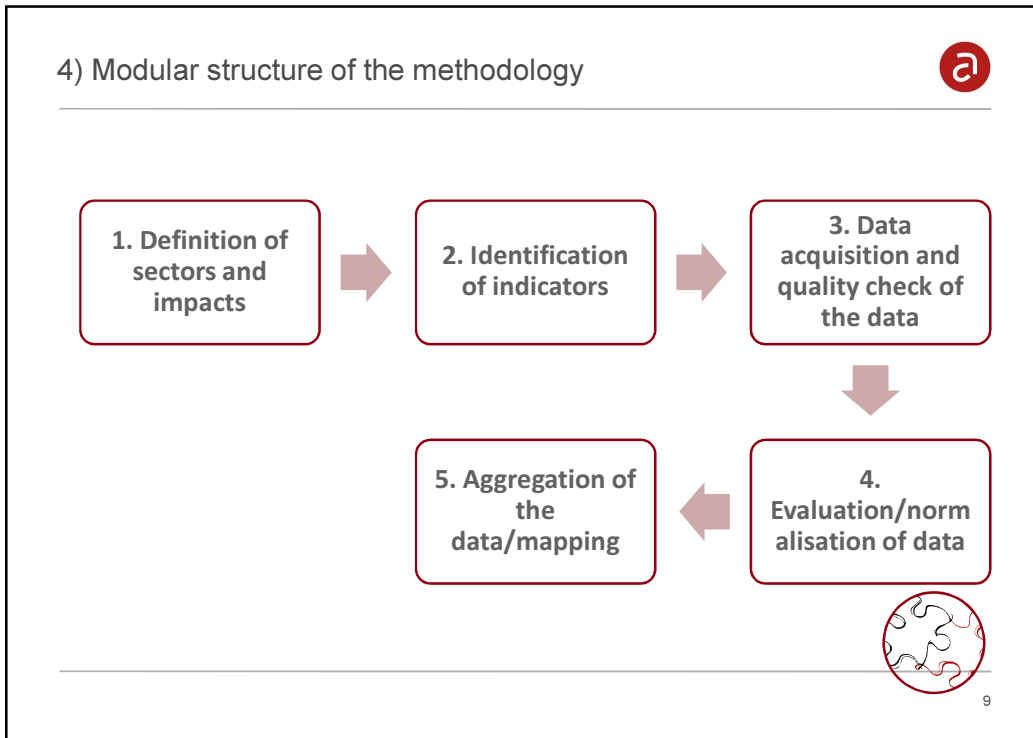
3) Regional perspective on climate change



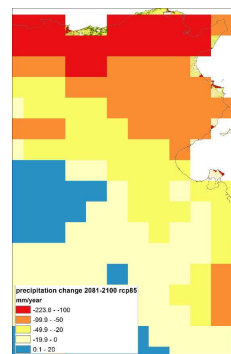
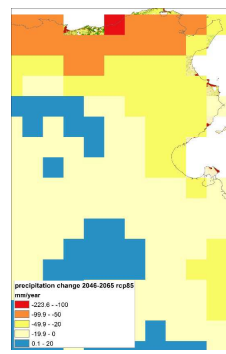
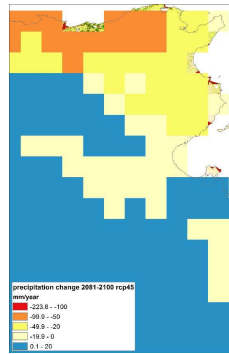
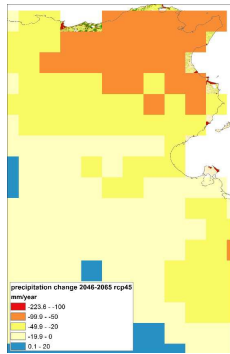
- Which sectors are – from a regional perspective – most relevant?
- What are key climate change impacts for the whole region?
- Which data is available for the whole region to allow a consistent assessment?



8



Change in precipitation: 2046-2065, 2081-2100

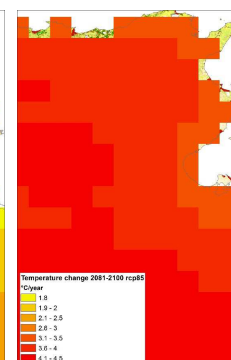
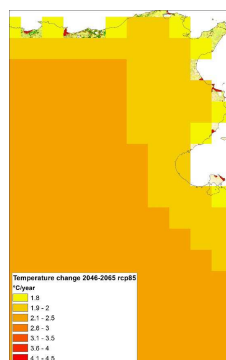
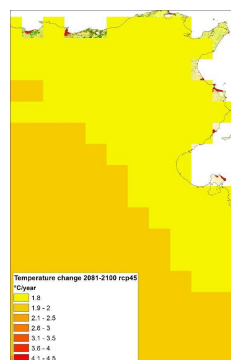
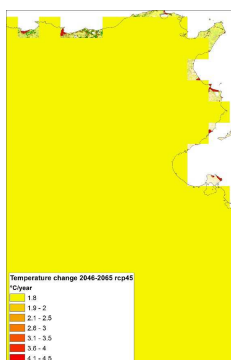


Change in precipitation, RCP 4.5

Change in precipitation, RCP 8.5

Source: SMHI.

Change in temperature: 2046-2065, 2081-2100

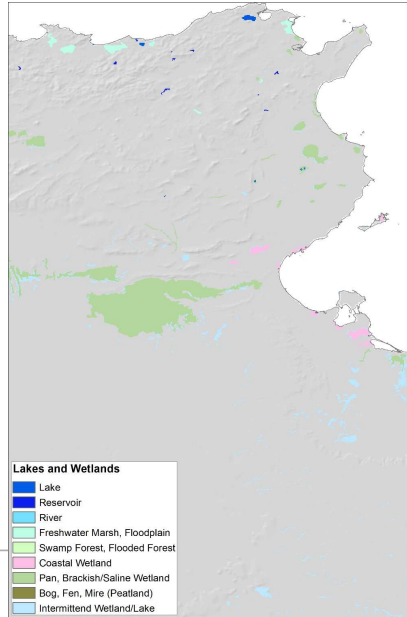


Change in temperature, RCP 4.5

Change in temperature, RCP 8.5

Source: SMHI.

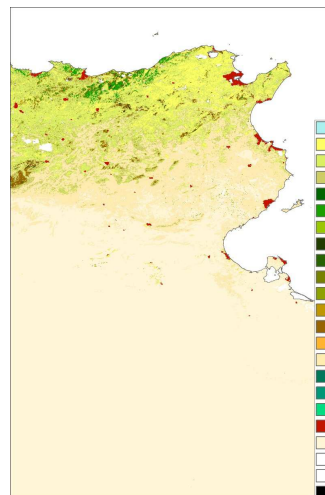
Wetland map



Source: WWF.

13

Land Use Land Cover

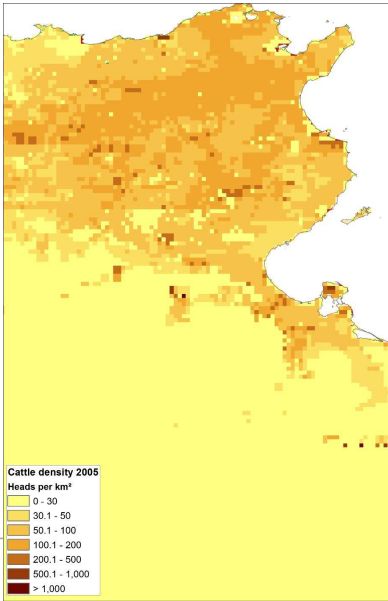


- 11 - Irrigated croplands
- 14 - Rainfed croplands
- 20 - Mosaic Croplands/Vegetation
- 30 - Mosaic Vegetation/Croplands
- 40 - Closed to open broadleaved evergreen or semi-deciduous forest
- 50 - Closed broadleaved deciduous forest
- 60 - Open broadleaved deciduous forest
- 70 - Closed needleleaved evergreen forest
- 90 - Open needleleaved deciduous or evergreen forest
- 100 - Closed to open mixed broadleaved and needleleaved forest
- 110 - Mosaic Forest-Shrubland/Grassland
- 120 - Mosaic Grassland/Forest-Shrubland
- 130 - Closed to open shrubland
- 140 - Closed to open grassland
- 150 - Sparse vegetation
- 160 - Closed to open broadleaved forest regularly flooded (fresh-brackish water)
- 170 - Closed broadleaved forest permanently flooded (saline-brackish water)
- 180 - Closed to open vegetation regularly flooded
- 190 - Artificial areas
- 200 - Bare areas
- 210 - Water bodies
- 220 - Permanent snow and ice
- 230 - No data

Source: Globcover.

14

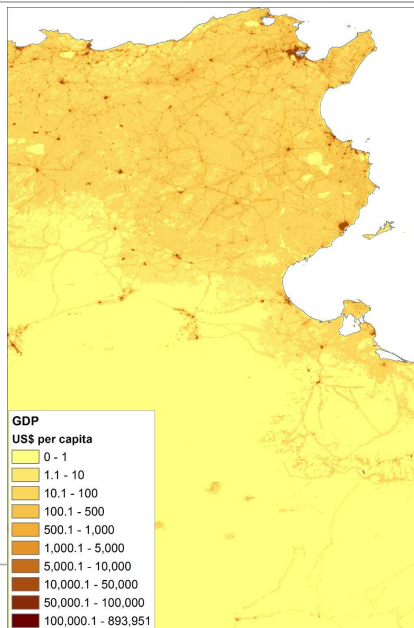
Cattle density map



Source: FAO.

15

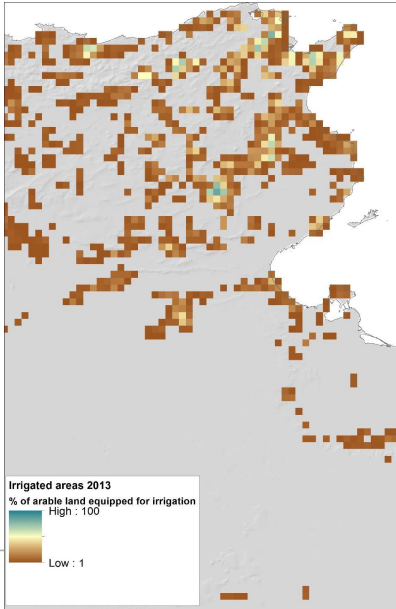
GDP map



Source: UNEP.

16

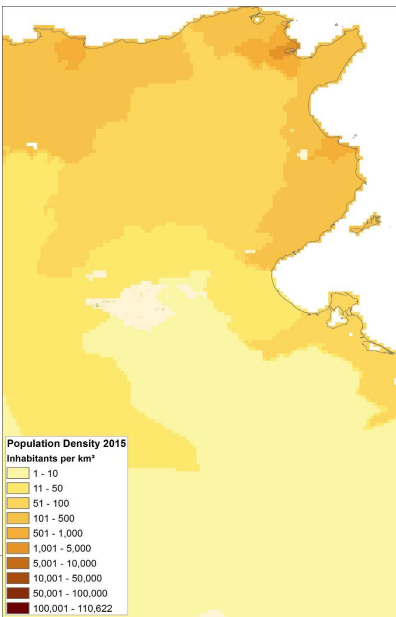
Irrigated areas map



Source: FAO.

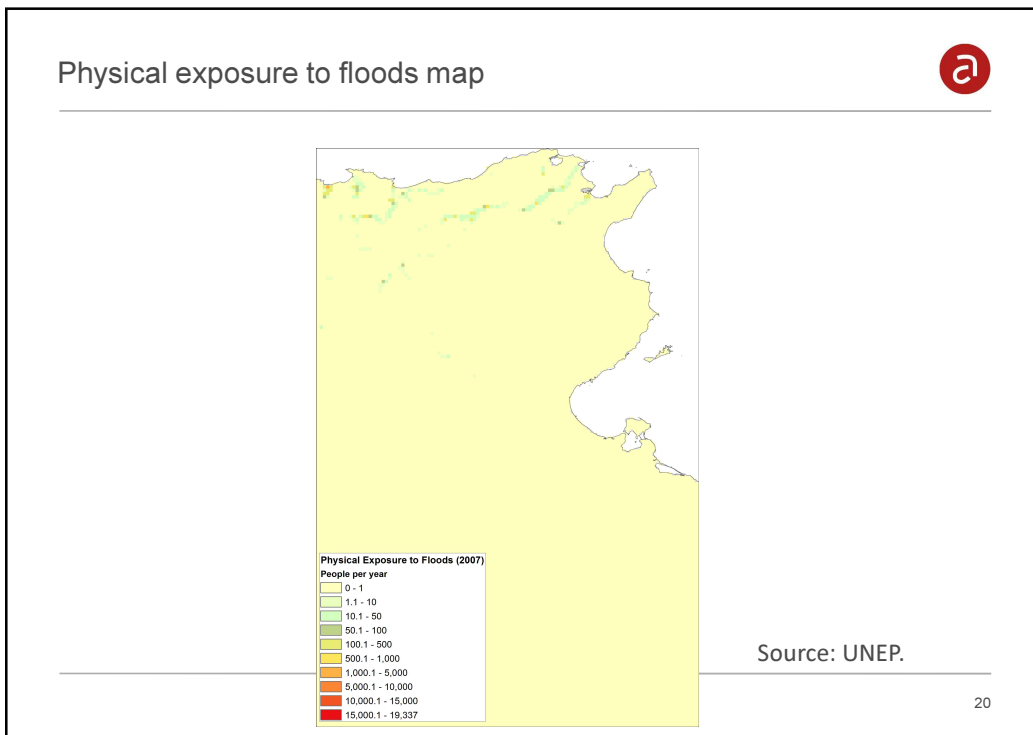
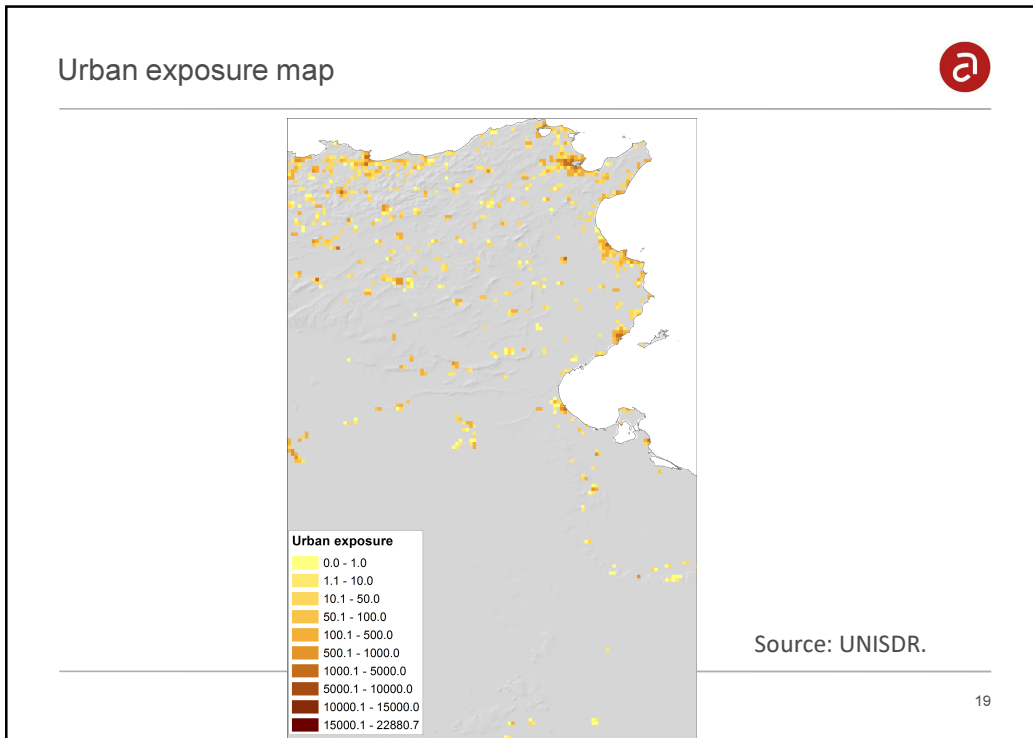
17

Population density map

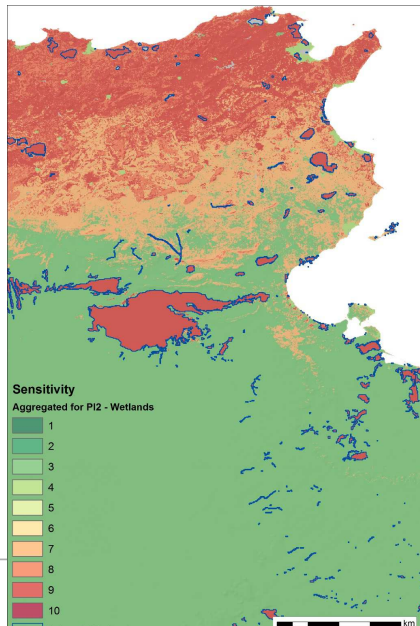


Source: CIESIN.

18



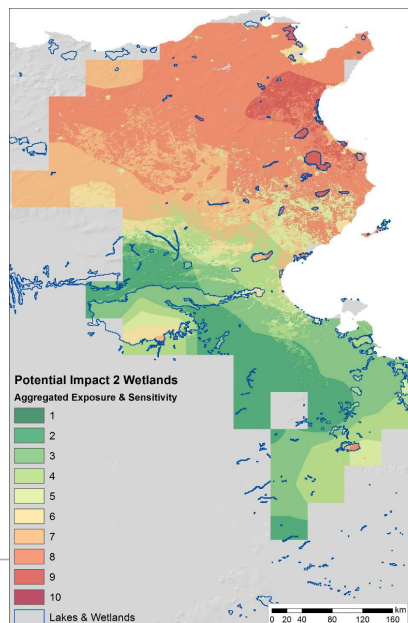
Sensitivity map for wetlands



Source: EURAC.

21

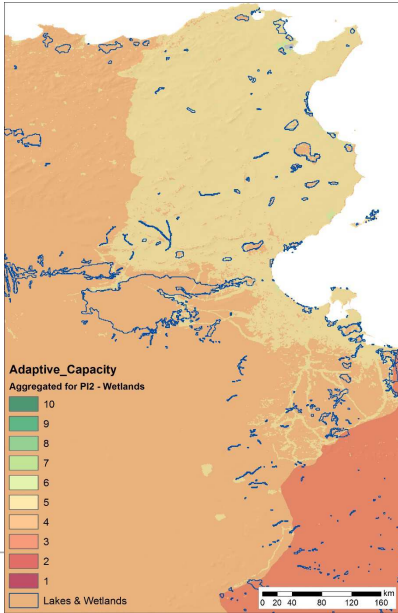
Potential impact map for wetlands (exposure + sensitivity)



Source: EURAC.

22

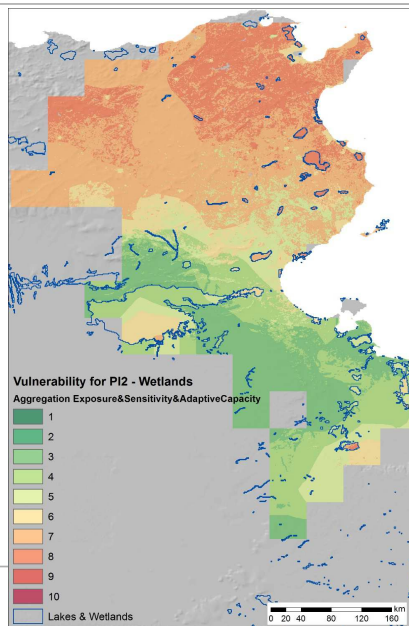
Adaptive capacity map for wetlands



Source: EURAC.


23

Vulnerability map for wetlands (exp.+sens+adapt.cap.)



Source: EURAC.

24



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