
The Portuguese Adaptation Strategy to the Impacts of Climate Change on Water Resources and Cooperation with Spain in the face of Climate Change

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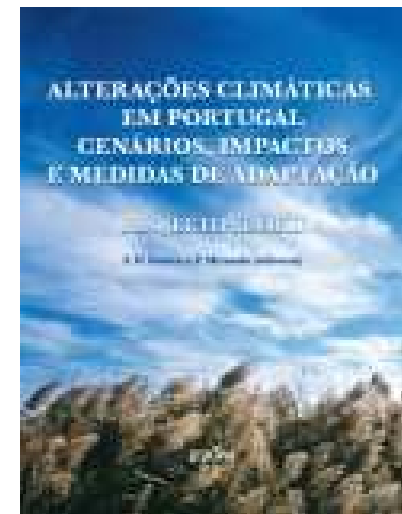
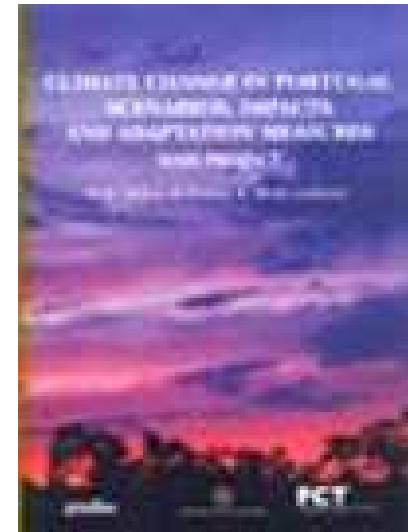
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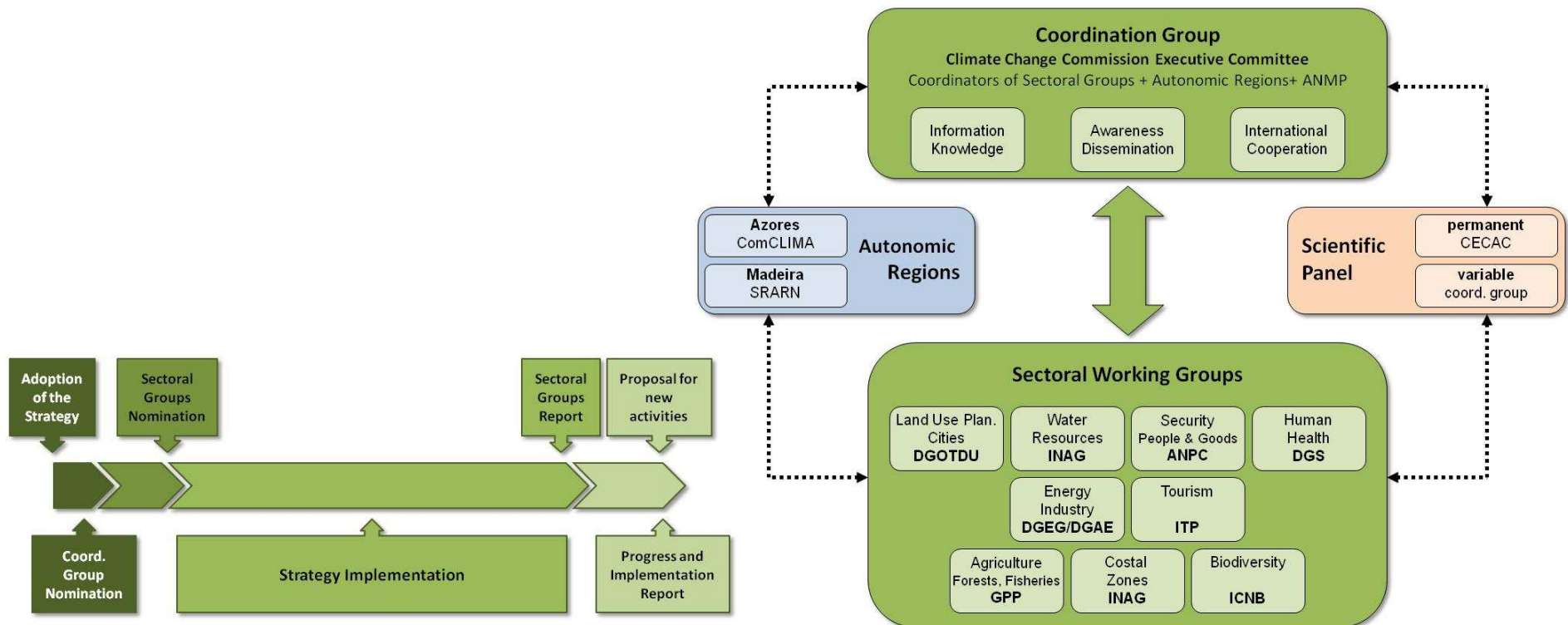
- Major impact assessment studies:
 - SIAM (2002, 2006)
 - CLIMAAT (2007)
- Water resources plans:
 - River Basin Plans (1996-1998)
 - National Water Plan (2000)
 - River Basin Management Plans - 2nd Gen. (ongoing)
 - National Water Plan - 2nd Gen. (ongoing)
- Transboundary agreements with Spain:
 - Albufeira Convention (2000, 2008);
- Adaptation strategies
 - ENAAC (National Climate Change Adaptation Strategy)
 - Public discussion in 2009; Approved in March 2010;
 - ENAAC-RH (National Adaptation Strategy to the Impacts of Climate Change on Water Resources)
 - Conclusion phase before public discussion;





National Climate Change Adaptation Strategy

Objective 1:	Information and Knowledge
Objective 2:	Reducing Vulnerability and Increase the Response Capacity
Objective 3:	Participation, Awareness and Dissemination
Objective 4:	International Cooperation

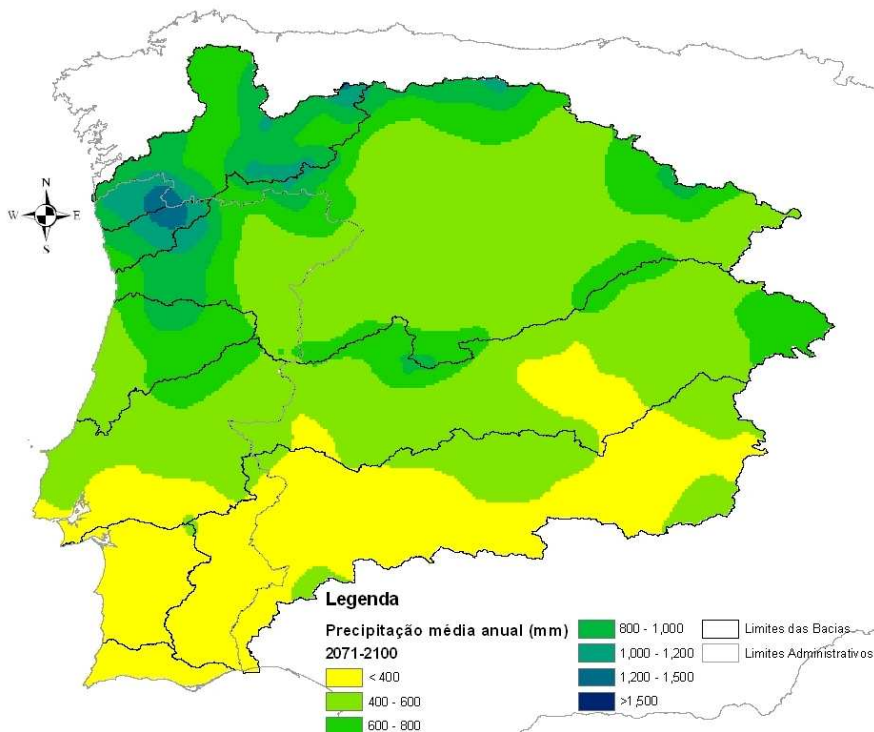


- Client: The Water Institute (and River Basin Authorities)
- Goal: To reduce the vulnerability of water resources systems and dependent activities and services to climate change.



- Sectors considered:

- Water planning and management
- Water services
- Agriculture and forests
- Energy production
- Ecosystems and biodiversity
- Coastal zones
- Tourism

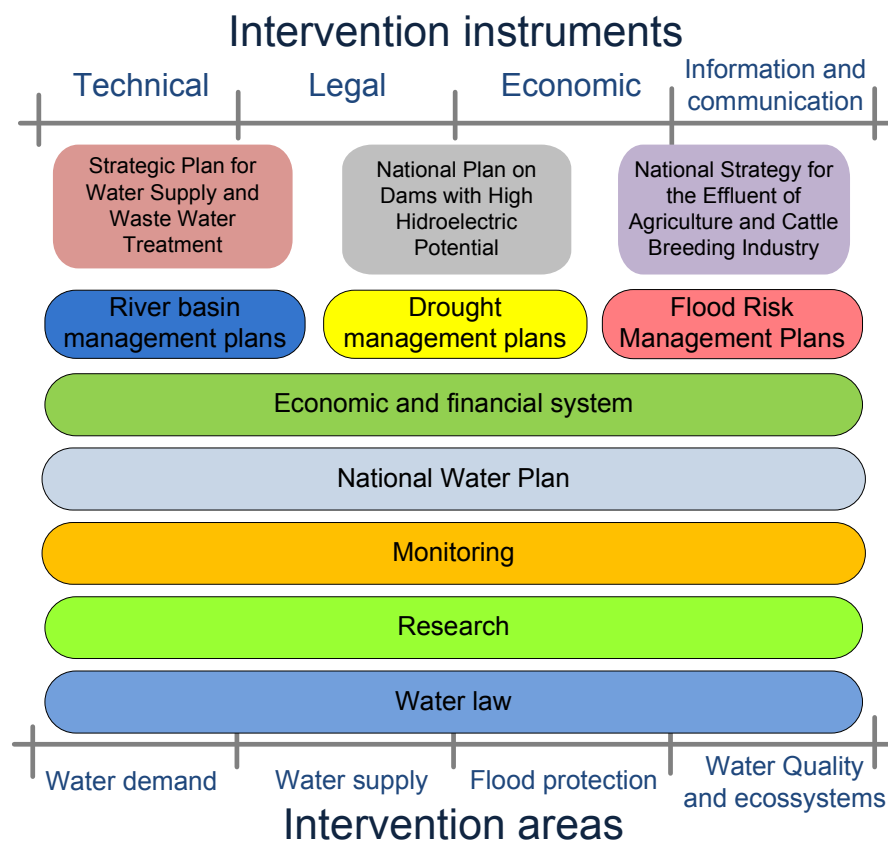


- Supporting tool: Update of regional climate scenarios for Portugal and transboundary river basins.



Key Strategy Principles

- Invest in research and development;
- Assume an integrated and long term vision;
- Decide early and review frequent;
- Adopt flexible, low regret, cost-effective and proportional solutions;
- Mainstream adaptation policies into existing water management practice;
- Make use of existing instruments;
- It is also an opportunity !





Key programs of measures

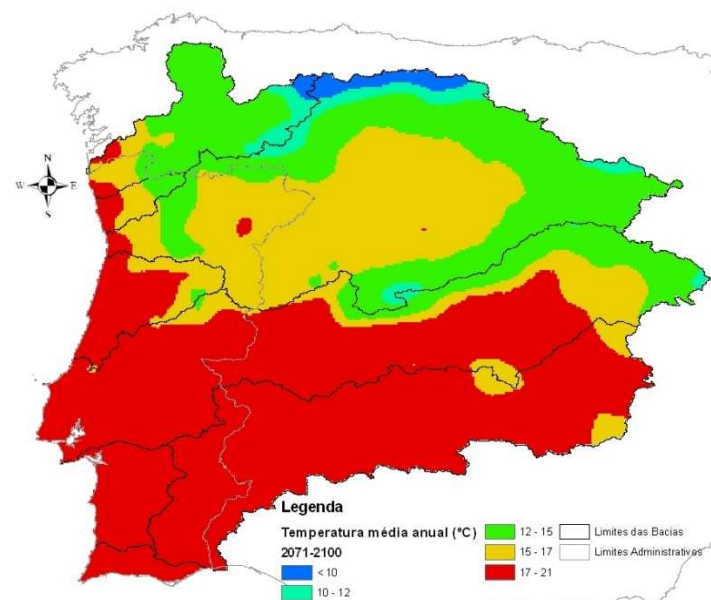
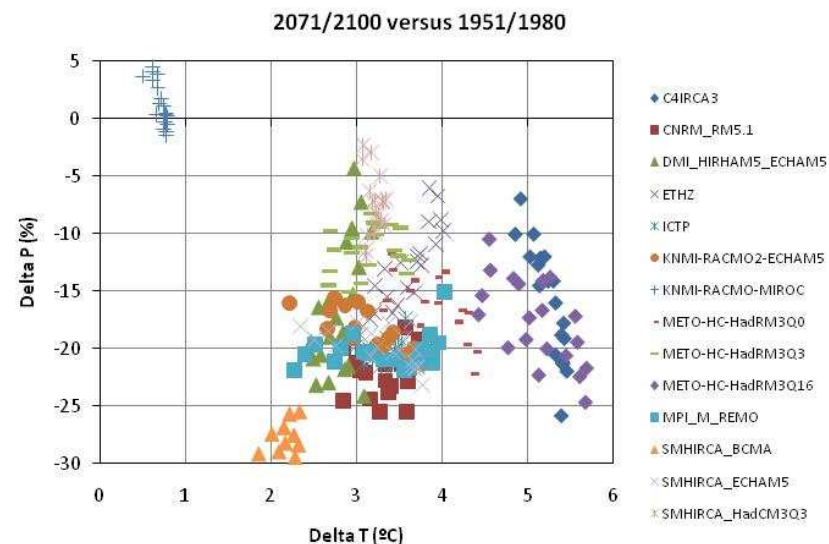
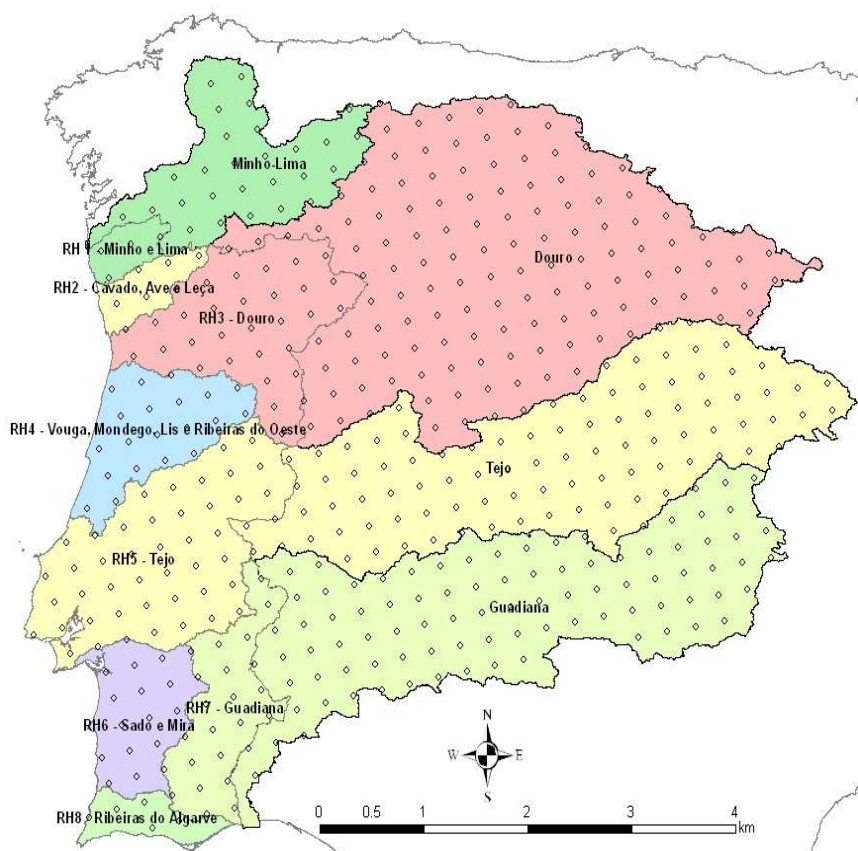
- Water planning and management
 - Manage water demand
 - Protect water bodies
 - Review water management policies
 - Review design criteria
 - Review and upgrade water infra-structures
 - Review and improve risk management approaches
 - Invest in research and development activities, including monitoring efforts
 - Involve stakeholders and civil society
- Ecosystems and biodiversity
 - Guarantee water quality
 - Guarantee hydrological and hydromorphological quality
- Water services
 - Promote water use efficiency
 - Protect water sources
 - Review and upgrade water infra-structures for risk management and resilience improvement



Key programs of measures

- **Agriculture**
 - Agricultural crops:
 - Improve soil water retention capacity
 - Reduce winter runoff
 - Promote water use efficiency
 - Forests:
 - Review species selection and use
 - Conserve soil water and organic matter
- **Energy production**
 - Review energy production policies
 - Review energy infrastructures for risk management and resilience
- **Coastal zones:**
 - Implement the concept of coastal safety zone
 - Identify areas to protect and areas to leave
 - Create maritime sand resources reserves
- **Turism**
 - Manage water demand
 - Involve stakeholders and civil society

Based on the Ensembles data set





Cooperation with Spain



	AREA (km ²)	PT (%)	SP (%)
BASINS	264600	22	78
Douro	97600	19	81
Tejo	80600	31	69
Guadiana	66800	18	83
Minho	17100	5	95
Lima	2500	48	52
IBERIA	581000	15	85



The Albufeira Convention

- Goal: To improve the cooperation between Portugal and Spain in order to encourage the use of shared river basins and to ensure and improve the ecological status of water bodies;
- History:
 - 1864 - Treaty on Limits
 - 1927, 1964 & 1968 - Conventions on sharing boundary rivers for hydropower development
 - 2000, 2008 - Albufeira Convention (Convention on Cooperation for the Protection and Sustainable Use of the waters in the Portuguese-Spanish River Basins)
- Institutional Framework
 - Conference of Parties, at a political level (relevant Ministers of both parties)
 - Commission for the Application and Development of the Convention, at an operational level
 - Permanent Technical Secretariat
 - Working Groups



The Albufeira Convention

- Common goals:
 - Promote good water status
 - Promote a sustainable, equitable and rational use of water resources
 - Prevent and mitigate the impacts from flood, droughts and pollution accidents
 - Promote infra-structures safety
- Main agreements:
 - Information sharing
 - Evaluation of projects with transboundary impacts
 - Minimum flows (when precipitation greater than 65% of average value):

River basin	Monitoring section	Minimum annual flow (hm3)	Minimum 3-month flow (hm3)				Minimum weekly flow (hm3)	Minimum daily flow (m3/s)
			Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep		
Minho	Frieira dam	3700	440	530	330	180	-	-
Douro	Miranda dam	3500	510	630	480	270	10	-
	Bemposta dam	3500	510	630	480	270	10	-
	Saucell dam + Águeda River Gauge Station	3800	580	720	520	300	15	-
	Crestuma dam	5000	770	950	690	400	20	-
Tejo	Cedillo dam	2700	295	350	220	130	7	-
	Ponte Muje Gauge Station	1300	150	180	110	60	3	-
Guadiana	Badajoz	300 - 600 *	32-63 *	37-74 *	21-48 *	16-32 *	-	2
	Pomarão Gauge Station	-	-	-	-	-	-	2

* depending on stored volume in reservoirs and precipitation measurements



The Albufeira Convention and climate change adaptation

- The current text from 2008 does not mention climate change nor climate change adaptation needs;
- At the operation level discussions are focused on:
 - the magnitude of change in observed inflows to Portugal which is larger than possible current climate change impacts;
 - the verification and enforcement of the minimum flows requirements;
 - how to meet water needs and WFD goals in a changing climate.
- The question remains: Is the current agreement satisfactory to a changing environment ?



Some questions as a contribution for the debate

- Should the Albufeira Conventions rules be adapted ?
How ?
- How to define criteria for equitable benefit/damage sharing?
- How to implement benefit/damage sharing strategies for transboundary basin management?
- How will climate change influence equitable management criteria to adopt in transboundary basin management?
- How to strength cooperation between the two parties in joint projects of R&D?
- How to make water an integral part of general socio-economic planning in the transboundary basins?