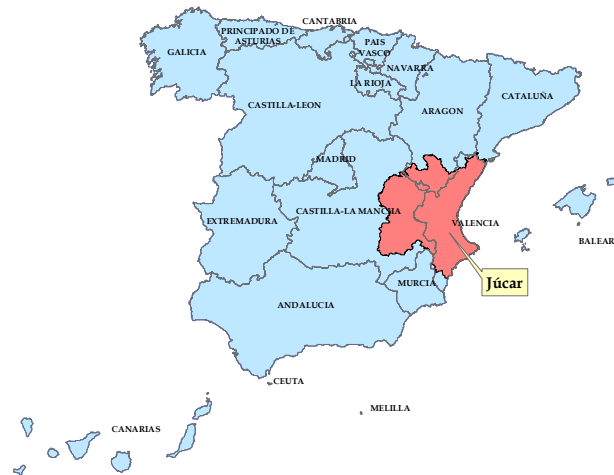


# Programme of measures in the Júcar Hydrological District

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Júcar River Basin Authority



# INDEX

1. Júcar River Basin
2. Programme of Measures of RBMP
3. Pressures & Measures
4. Investment and implementation of the Programme of Measures
5. Conclusions

# 1. JÚCAR RIVER BASIN

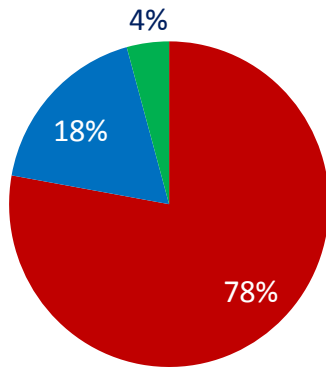


Surface (km <sup>2</sup> )	42.851
Permanent Population (2009)	5.162.163
Tourism equivalent population (2009)	404.883
Irrigation surface 2009 (ha)	371.990
Water demand 2009 (hm <sup>3</sup> /year)	3.155

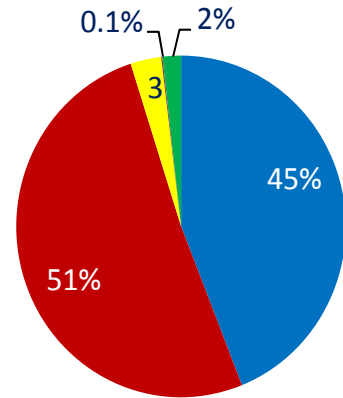
Agricultural demand represents 79% of the total demand of the JRBA

Demand distribution by origin and typology:

Groundwater origin represents 51% of the total water resources of the JRBA



- Agricultural
- Urban
- Industrial-recreational



- Surface
- Groundwater
- Reuse
- Desalination
- Transfer

# 1. JÚCAR RIVER BASIN

Identification and delimitation of water bodies

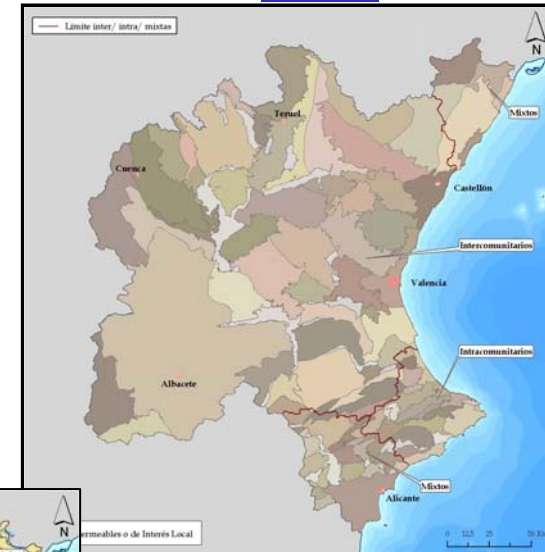
**304 surface water bodies: rivers**



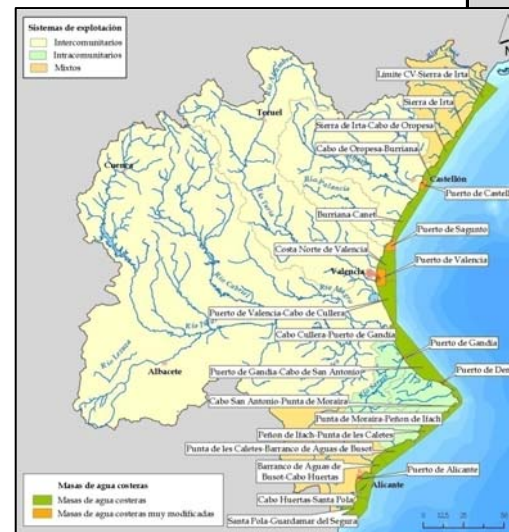
**19 surface water bodies: lakes**



**90 groundwater bodies**

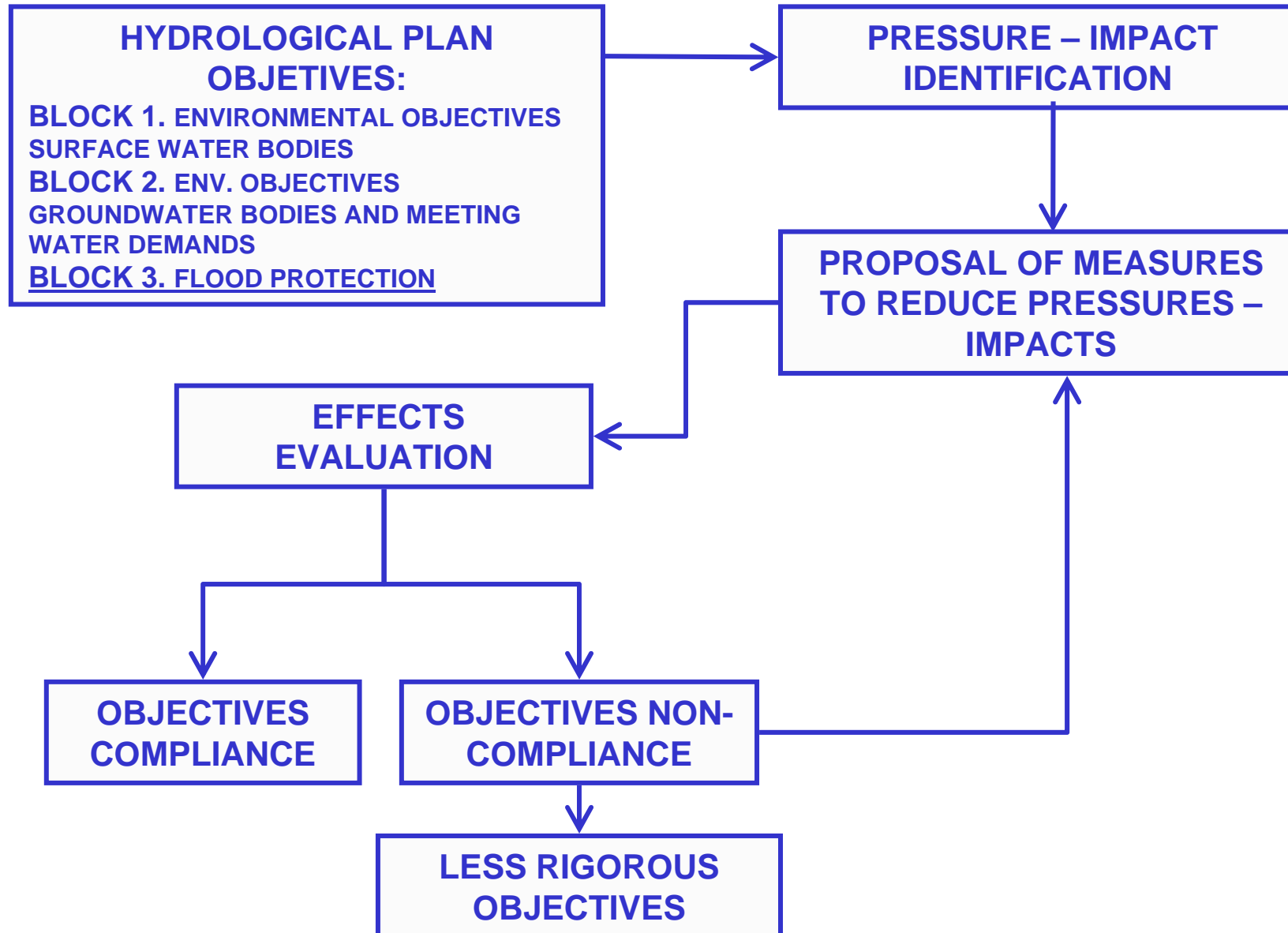


**Transitional water bodies: 4**



**Coastal water bodies: 22 (16+6)**

## 2. PROGRAMME of MEASURES RBMP



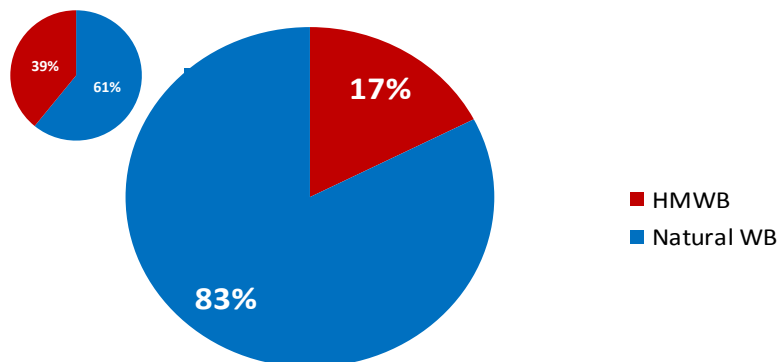
**HYDROMORPHOLOGICAL PRESSURES**

**SUMMARY PROPOSED MEASURES**

ACTION TYPE	Nº	INVESTMENT M€
Demolition non-used auxiliary dams	56	2,27
Fishways	199	25,37
Demolition of river channelling	14	32,68
Reduction of invasive	2	1,96
Re-vegetation and river bed restoration	15	143,87
Environmental restoration of river beds and wetland recovery	46	152,41
Other: Coastal hydromorphological restoration actions	104	209,29
<b>TOTAL</b>	<b>436</b>	<b>567,85</b>



**MEASURES' EFFECTS EVALUATION**



THE ADOPTION OF MEASURES MANAGES TO REDUCE HMWB FROM 39% TO 17 %

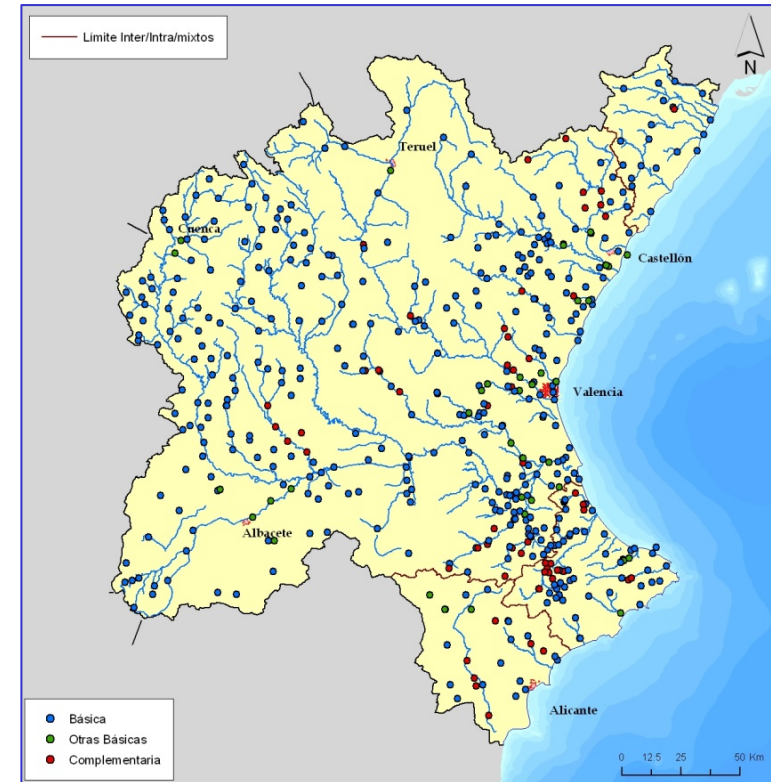
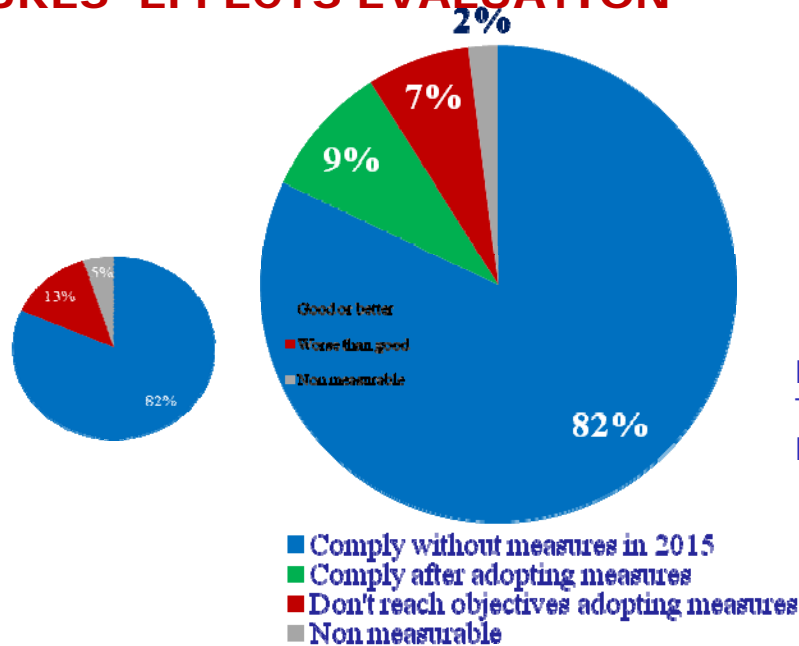


**WATER QUALITY PRESSURES**

**SUMMARY PROPOSED MEASURES**

ACTION TYPE	NºACTIONS*	INVESTMENT M€
Measures Directive 91/271/CEE (B)	497	1417
Other basic measures (OB): Storm tanks and discharge control plans	65	373
Complementary measures (C): Quality improvement, discharge reduction	92	220
<b>TOTAL</b>	<b>654</b>	<b>2010</b>

**MEASURES' EFFECTS EVALUATION**

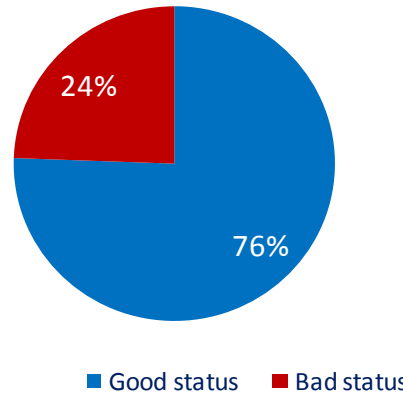


DIFFICULTY TO ACHIEVE GOOD STATUS THROUGH TREATMENT MEASURES AND DISCHARGE REDUCTIONS DUE TO FLOW SCARCITY PROBLEMS

ADOPTION OF MEASURES MANAGES TO REDUCE WB IN BAD STATUS FROM 13% TO 7 %

**QUALITY PRESSURES**

- **DIFFUSE POLLUTION: AGRICULTURAL NITRATES**

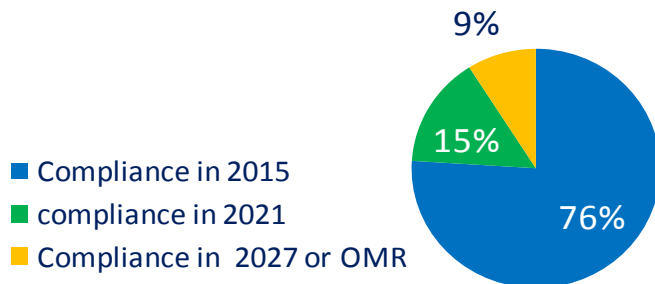


**PROPOSED MEASURES**

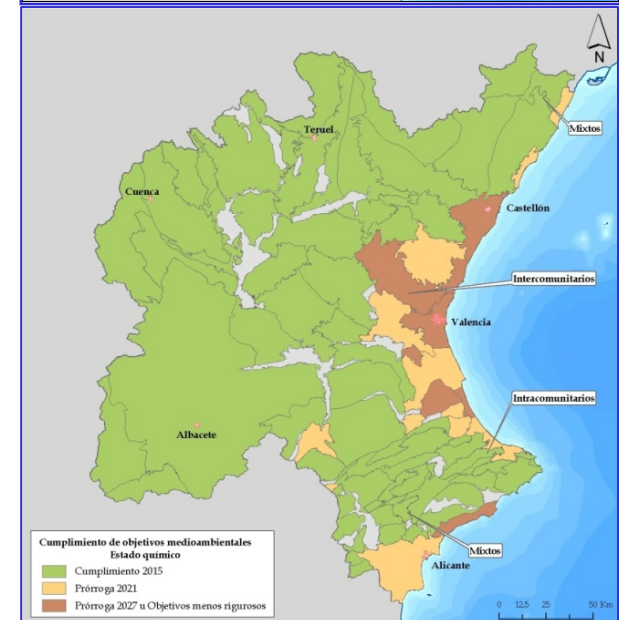
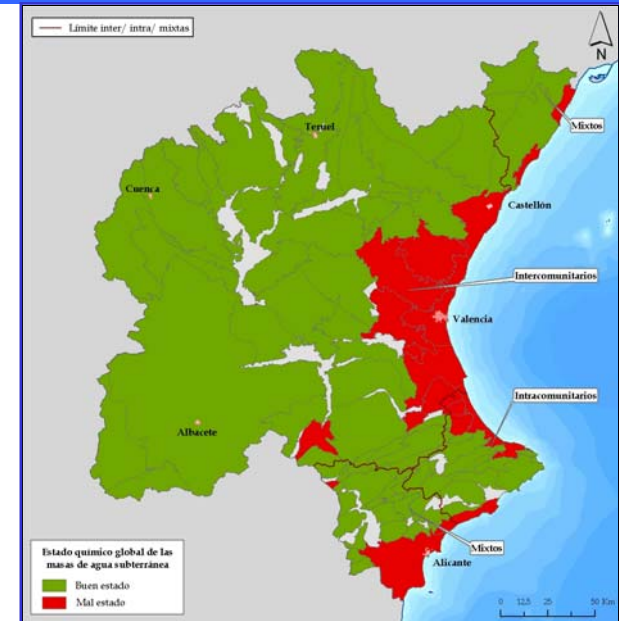
- **REDUCTION CONTAMINATION BY NITRATES THROUGH:**
  - CONTAMINATION CONTROL PLANS
  - GOOD PRACTICES' CODES

**22 GWB BAD QUIMICAL STATUS**

**MEASURES' EFFECTS EVALUATION**

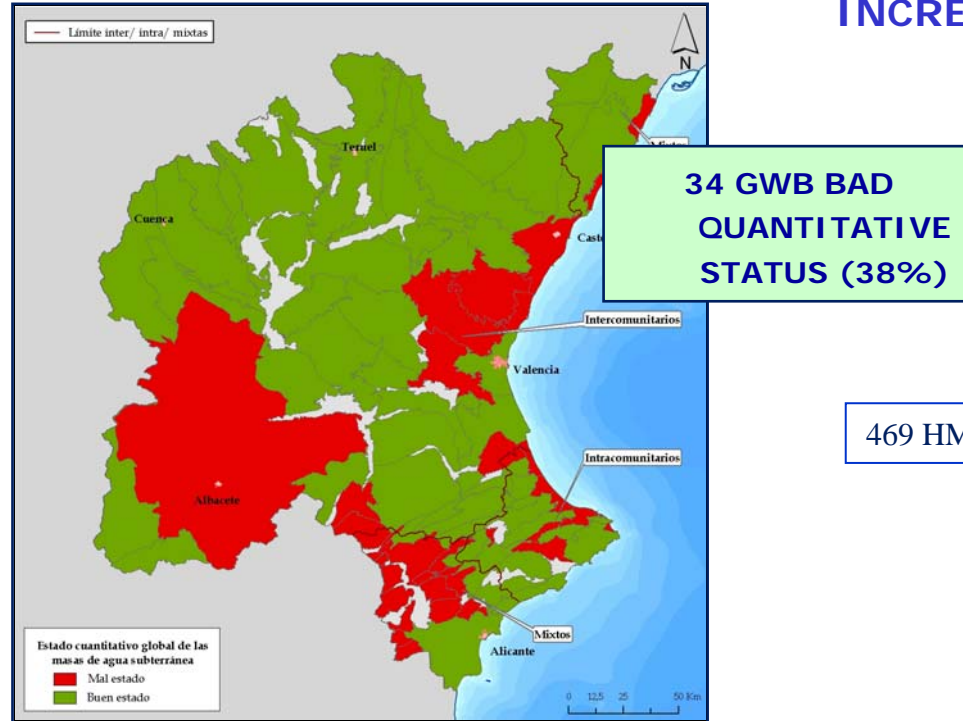


DUE TO THE INERTIA OF THE ACTION MEASURES AGAINST DIFFUSE CONTAMINATION (NO3) IT IS NOT POSSIBLE TO FORESEE A COMPLETE OBJECTIVE COMPLIANCE BEFORE 2027



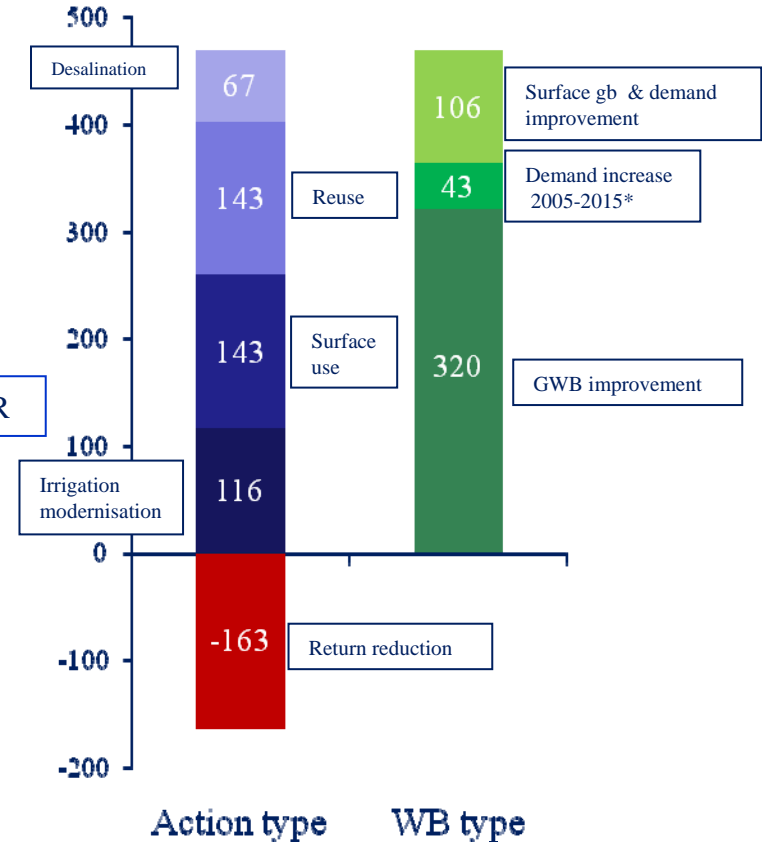


**HIGH WATER PUMPING**



**MEASURES' EFFECTS EVALUATION**

**INCREASE WATER RESOURCES 2005-2015**



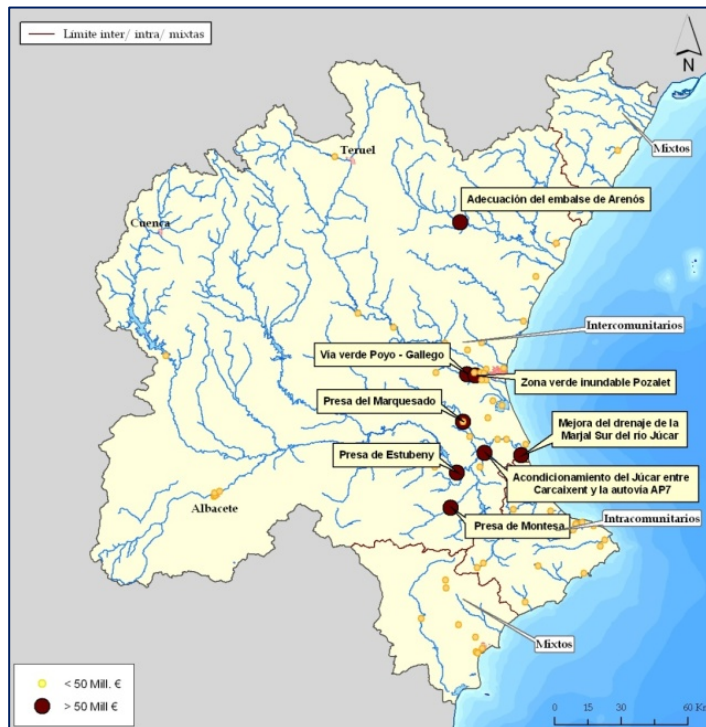
**PROPOSED MEASURES SUMMARY**

ACTION TYPE	NºACTIONS	INVESTMENT M€	WATER RESOURCES INCREASE hm3/year
MODERNISATION	415	1507	116 (+163)
REUSE	52	643	143
DESALINATION	17	419	67
IMPROVE SURFACE USE	95	1374.7	143
<b>TOTAL</b>	<b>579</b>	<b>3943.7</b>	<b>469</b>

IMPORTANT INVESTMENT IN IRRIGATION DERNISATION BUT WATER RETURN REDUCTION  
NEED OF CONVENTIONAL AND NON-CONVENTIONAL RESOURCES  
IMPORTANCE OF IMPROVEMENT OF GWB QUANTITATIVE STATUS

Hydrological planning in Spain includes also flood protection objectives

## FLOOD RISK



## PROPOSED MEASURES

- FLOOD LAMINATION
- RIVER BED ADAPTATION
- DAMAGE MITIGATION

ACTION TYPE	NºACTIONS	INVESTMENT M€
EXTREME PHENOMENA: FLOODS	79	3402

## MEASURES' EFFECTS EVALUATION

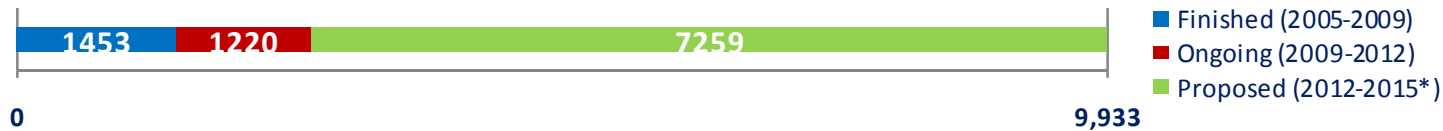
- MINIMISING DAMAGES DUE TO FLOODS

INVESTMENTS TO MITIGATE DAMAGES DUE TO FLOODS REPRESENT AN IMPORTANT AMOUNT IN THE TOTAL OF THE PROGRAMME OF MEASURES

# 4. INVESTMENT AND IMPLEMENTATION OF THE PROGRAMME OF MEASURES

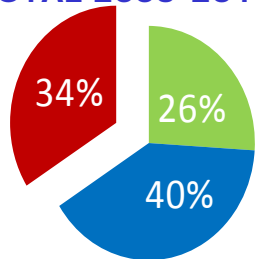
DRAFT SUMMARY PoM 2005-2015\*

Total investment draft PoM (2005-2015\*): **9933Mil. €**

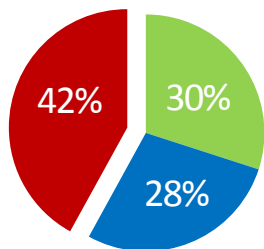


BUDGETARY DISTRIBUTION PER BLOCKS

TOTAL 2005-2015\*



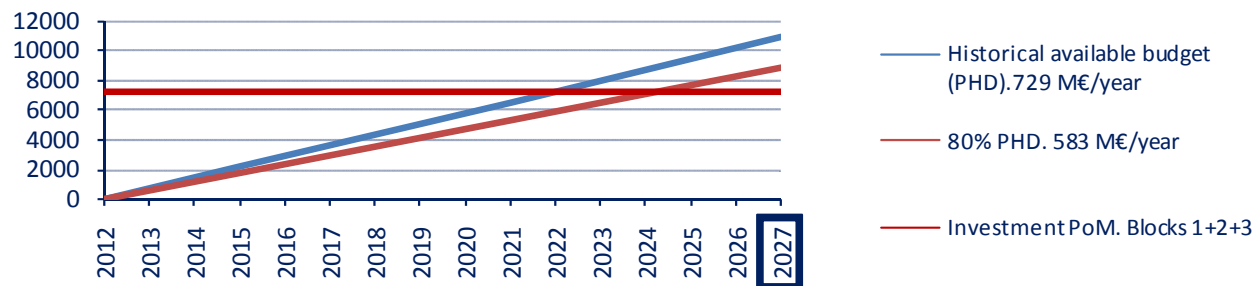
FORESEEN: 2012- 2015\*



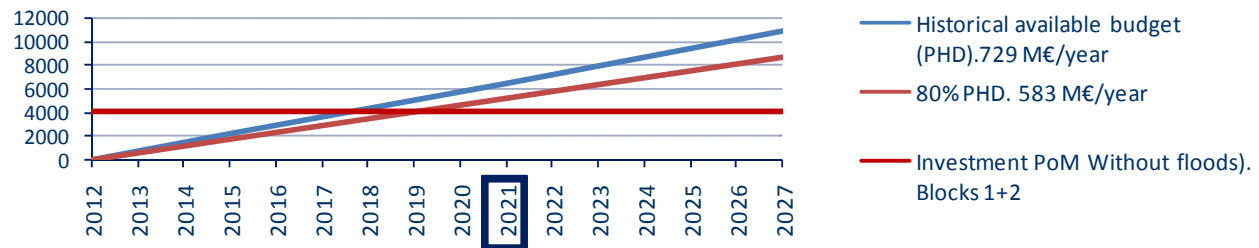
- BLOCK 1. Surface WB
- BLOCK 2. Ground WB
- BLOCK 3. Floods

BUDGETARY CAPACITY EVALUATION. HZ  
2015, 2021, 2027

TOTAL. BLOCKS 1+2+3



WITHOUT EXTREME PHENOMENA. BLOCKS 1+2



## 5. CONCLUSIONS Júcar River Basin District

- Hydrological planning in Spain includes environmental objectives (RBMP), as well as meeting water demand and flood protection.
- The adoption of measures for hydromorphological pressures mitigation achieves an important reduction of HMWB, from **39%** to **17%**.
- The achievement of good status of SWB is associated mainly to discharge treatment measures, with important investments in basic measures (D91/271 CE) of almost **1.500 m€**.
- Treatment measures hardly achieve the environmental objectives in some SWB (**7%**), due to the scarce circulating flow: effort in establishing minimum environmental flows.
- The main problem in the chemical status of GWB is nitrate contamination from agriculture (**24%**): the great inertia of the process results in some cases in extensions up to 2027 (**9%**)
- The main environmental problem in the JRBD is the quantitative status of its (**38%**), hardly separable of the adequate demand satisfaction.
- The adopted measures for agricultural demand reduction due to irrigation modernisation and conventional and non-conventional additional resources represent an investment of almost **4.000 m €** and allow to jointly provide more than **450 hm<sup>3</sup>/year**.
- The inclusion in hydrological plans of measures against floods increases the need for investment in an important way and represents **34%** of the total.
- The total investment, by the different administrations, is almost **10.000 m €**, of which more than **7.000 m €** are subsequent to 2012:
  - Uncertainty about the real financing capacity in time of crisis: 80% historical.
  - Globally, a financing horizon for **2027** is foreseen, which could be reduced to **2021** if measures against floods had independent financing.

**Thank you for your attention**