



Service contract for the support to the follow-up of the
Communication on Water scarcity and Droughts

TOPIC REPORT ON WATER SCARCITY AND DROUGHTS ASPECTS IN A SELECTION OF EUROPEAN UNION RIVER BASIN MANAGEMENT PLANS

13 June 2011



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INDEX

| | |
|--|-----------|
| 1. INTRODUCTION..... | 5 |
| 2. METHODOLOGY..... | 5 |
| 3. RELEVANCE OF WATER SCARCITY AND DROUGHTS..... | 6 |
| 3.1. DEFINITIONS OF WS & D..... | 6 |
| 3.2. OCCURRENCE OF DROUGHT..... | 7 |
| 3.3. OCCURRENCE OF WATER SCARCITY..... | 7 |
| 4. CAUSES OF DROUGHTS AND WATER SCARCITY..... | 7 |
| 4.1. CAUSES OF DROUGHTS..... | 8 |
| 4.2. CAUSES OF WATER SCARCITY..... | 8 |
| 5. EFFECTS OF WATER SCARCITY AND DROUGHTS..... | 8 |
| 6. DATA ON WATER DEMAND AND WATER AVAILABILITY TREND SCENARIOS..... | 9 |
| 6.1. WATER DEMAND TREND SCENARIOS..... | 9 |
| 6.2. WATER AVAILABILITY TREND SCENARIOS..... | 9 |
| 7. MEASURES TO DEAL WITH WATER SCARCITY AND DROUGHTS..... | 10 |
| 8. INTER-LINKAGES BETWEEN WATER SCARCITY AND SECTOR POLICIES..... | 11 |
| 9. QUALITY OF DATA AND ASSUMPTIONS..... | 12 |
| 10. TRANSBOUNDARY COOPERATION ON WATER SCARCITY AND DROUGHTS..... | 13 |
| 11. CONCLUSIONS..... | 13 |
| 12. REFERENCES..... | 14 |
| 13. ANNEXES..... | 15 |
| 13.1. CORRESPONDANCE OF RBD CODES AND RBD NAMES..... | 15 |
| 13.2. RELATIONSHIP BETWEEN THE 7 ACTION LINES OF THE 2007 COMMUNICATION ON WATER SCARCITY & DROUGHT AND THE POSSIBLE MEASURES INCLUDED IN THE RBMPs..... | 16 |
| 13.3. INFORMATION ON THE ASSESSED RBMPs..... | 17 |



1. INTRODUCTION

The aim of this report is to improve the knowledge on Water Scarcity & Drought (WS & D) at the River Basin District (RBD) level, in particular on how different aspects have been considered in the River Basin Management Plans (RBMPs). It is part of the pre-Blueprint for Water reports, giving insight in the possible gaps that should be considered for the better implementation of the Water Framework Directive (WFD) and the Communication on WS&D (2007).

According to the conclusions of the document MED Joint Process WFD/EUWI Water Scarcity Drafting Group (2006:109-110): "...The WFD is not directly designed to tackle quantitative issues; however, the directive can be an instrument for addressing drought and water scarcity management. Indeed:

- The directive is a framework for the protection of waters which prevents further deterioration (articles 1.a and 4).
- The directive contributes to mitigate the effects of droughts (article 1.e).
- Water quantity can have a strong impact on water quality and therefore on the achievement of good ecological status.
- A good quantitative status is required for groundwater; a balance between abstraction and recharge must be ensured. Furthermore, groundwater levels should not be subject to anthropogenic alterations that might have impacts on surface waters and groundwater dependent ecosystems

For these reasons, when developing the WFD Programmes of Measures (POMs) and associated RBMPs (articles 11 and 13), quantitative and qualitative aspects should be jointly considered for the plans and programmes to be coherent and to create synergies where possible. Quantitative issues should, in particular, be taken into account when setting the objective of no further deterioration of current status (articles 4.1, 4.5, 4.6 and 4.7).

- In particular, actions to manage water quantity (e.g. water scarcity) should be considered as measures (basic/supplementary) when developing the WFD POM and associated RBMP (articles 11 and 13).
- When and where needed, a specific drought management (sub)plan should be included in the WFD RBMP (article 13.5).
- Public participation (article 14) should also be organized around water scarcity management issues, as required by the WFD..."

2. METHODOLOGY

The information is based on the RBMPs that have been delivered by MS in time and their latter screening assessment by the European Commission. This covers 68 RBMPs¹ (approximately 1/3 of all EU River Basin Districts), with deadline 24 May 2011.

¹ AT1000, AT2000, AT5000, BG1000, BG2000, BG3000, BG4000, CZ_RB1000, CZ_RB5000, CZ_RB6000, DE1000, DE2000, DE5000, DE6000, DE7000, DE9500, DE9610, DE9650, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FIWDA, FRA, FRB1, FRB2, FRC, FRD, FRE, FRF, FRG, FRH, FRK, FRL, LT1100, LT2300, LT3400, LT4500, LVDUBA, NLEM, NLMS, NLRN, NLSC, SE1, SE2, SE3, SE4, SE5, SK30000, SK40000, UK01, UK02, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK10, UK11, UK12, GBNIENB, GBNIENW and GBNINE. Please find the relation between codes and names in Annex 1.



Additional information from Member States - such as RBDs and other official information – and stakeholders has been taken into account, but is highlighted as such in the annexes.

It looks at different aspects that are relevant for addressing adequately WS&D issues in the RBMPs, and as long as those can be screened.

3. RELEVANCE OF WATER SCARCITY AND DROUGHTS

The first aspect that has been assessed is whether the proper RBMPs have identified either droughts and/or water scarcity as a relevant issue for the RBD, and if those concepts have been adequately differentiated according to their causes, an issue which is not clear in at least 7 RBDs². As it can be expected, droughts and water scarcity occur together in the major part of RBDs, although there are 8 exceptions in the assessed samples.

3.1. DEFINITIONS OF WS & D

In the context of this report, drought is used to define natural events that last mid-term, and water scarcity is used for man-made situations in the mid-term. Out of the above-mentioned terms, those are the key ones for EU policy action, and the actions should also affect positively the long-term concepts. The short-term concepts will be addressed by (water) management actions by the competent authorities.

| | | Temporary extension | | |
|--------|----------|--------------------------------|-----------------------------------|---------------------|
| | | Short-term (days, weeks) | Mid-term (months, seasons, years) | Long-term (decades) |
| Causes | Natural | Dry Spell | Drought | Aridity |
| | Man-made | Temporal water overabstraction | Water scarcity | Desertification |

Figure 1: Key elements for the definition of water scarcity and drought

Drought is a normal, recurrent feature of European climates; it is defined as a temporary negative deviation from average precipitation values (a rainfall deficit), due to the reduction of precipitation received in a certain time. Its severity can be increased by high temperatures, strong winds, low relative humidity, the timing and characteristics of the rainfall, and the duration of the drought episode

Water scarcity is the effect derived from the imbalance between the natural availability of water resources and water demand. It is caused by man-made (over)abstraction of water resources, or their pollution (reducing their suitability for water uses). Due to the increase of water consumption, water scarcity is increasingly relevant across Europe. Usually, water scarcity is characterized by a permanent and continued degradation or decline of water resources (e.g. streamflow, lake or groundwater levels and issues such as the salinization of coastal groundwater).

It should also be noted that drought and water scarcity can overlap, when an already water-scarce area is facing an additional temporarily limited drought. Thus in the water management practice droughts and water scarcity situations are often dealt with in a similar way, there are policy and management

² BG1000, BG2000, BG3000, BG4000, FRE, FRG and FRH

responses that are particular to each of them. Therefore, and when data allows it, this report tries to establish specific analysis for each of the two phenomena.

3.2. OCCURRENCE OF DROUGHT

Droughts are reported from a wide range of RBDs across Europe. According to 8 RBMPs, RBD-wide drought spells are recognised phenomena, and in another 19 RBDs local or sub-basins drought spells occur. In 7 RBDs, droughts and water scarcity affect part of or the entire basin but the two conditions are not clearly distinguished or the issue is not clear. Droughts are not relevant in 31 RBD. The following map shows the European RBDs and the occurrence of droughts as reported by official sources, but it should be noted that for 4 RBDs, experts disagree with those. Drought is not only characteristic for Southern Europe, and occurs also in other parts of the EU.

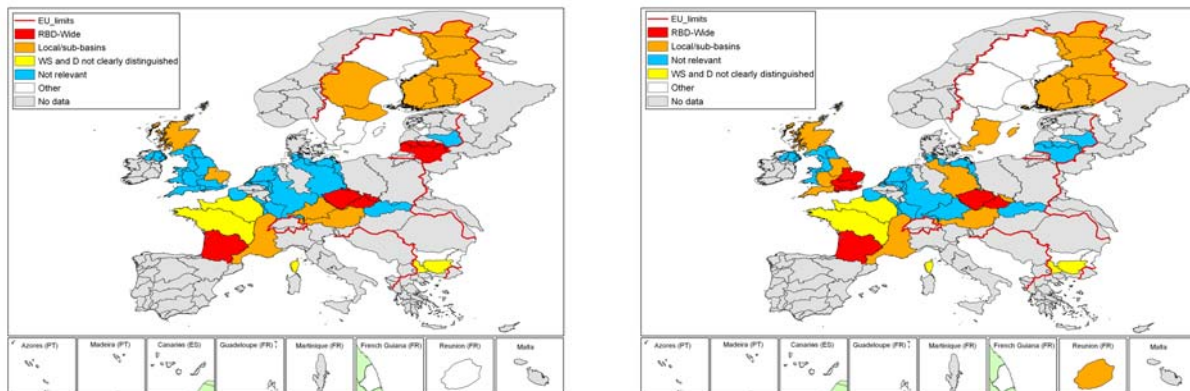


Figure 1: Occurrence of Drought situations in the EU according to the RBMPs. Figure 2: Occurrence of Water Scarcity situations in the EU according to the RBMPs.

3.3. OCCURRENCE OF WATER SCARCITY

Water scarcity is reported from the following RBDs across Europe. In particular, the following water scarcity situations have been reported in the RBMPs: 6 RBDs face basin-wide water scarcity, 22 local or sub-basin water scarcity. In 5 RBDs, droughts and water scarcity affect part of or the entire basin but the two conditions are not clearly distinguished. Water scarcity is not relevant in 31 RBD.

According to the assessment, 35 RBMPs report positively on water scarcity. The list of RBDs facing water scarcity includes almost the whole EU Mediterranean area (not based on the assessment), but also some areas in Central, Eastern and Northern Europe with significant water scarcity at a local level, mainly due to large water usage in comparison to availability.

4. CAUSES OF DROUGHTS AND WATER SCARCITY

The assessment of the causes of droughts and water scarcity in the RBMPs supports the conclusion regarding the confusion between the different phenomena.



4.1. CAUSES OF DROUGHTS

Though droughts are understood as natural meteorological phenomena due to irregular rainfall patterns and thus a decrease in natural available water resources, for water management purposes they can also be classified as agricultural droughts or hydrological droughts. In fact, a significant part of assessed RBMPs has identified these natural causes for droughts.

Nonetheless, 6 RBMPs have also argued past and current water overallocation and new water demands from agriculture and tourism as a cause for drought situations, and another 5 plans³ do apparently not include an analysis of the causes for droughts though the RBD is affected by these phenomena. These results of the RBMPs screening are not consistent with the good planning practices.

4.2. CAUSES OF WATER SCARCITY

According to the RBMPs, water scarcity situations in RBDs are mainly also caused by irregular rainfall patterns and a decrease in natural available water resources. Only 9 RBMPs recognise past and current overallocation of resources as a cause of water scarcity problems (CZ, FR, SE) and 13-18 plans identify different new water demands as cause for upcoming water scarcity problems (AT, FI, UK). Though 2 RBMPs⁴ identify RBD-wide water scarcity, no clear causes have been identified for those basins. This lacking analysis (overall for 16 RBDs that are affected by any kind of WS) can hamper the development of adequate strategies and measures to tackle water scarcity.

5. EFFECTS OF WATER SCARCITY AND DROUGHTS

A number of different effects can be expected to be caused by past, current and future droughts or water scarcity situations according to their frequency and magnitude, such as the following:

- Urban or domestic water supply shortages are a reported effect in 14 RBDs due to droughts and in 25 RBDs due to water scarcity.
- Economic losses, mainly in the agricultural sector, e.g. losses/reduction of production due to insufficient water rates, or the loss/damage of crops due to insufficient water rates; in the industry sector, and/or in the tourism sector, e.g. the cancellation of tourist reservations due to water shortages, the closure of water-demanding leisure facilities (e.g. water parks, golf course) or compensation of damages for water shortages and/or restrictions in tourist resorts. These have only been reported in 2 RBMPs⁵
- Hindrance to the potential economic development in the RBD due to the lack of water to support it; and/or the associated dependence of the RBD on new/external water resources has only been reported for 2 RBDs; an increased groundwater (over-)abstraction is much more relevant, reported for 11-20 RBDs.

³ CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FRF and UK05

⁴ CZ_RB_1000, FRF

⁵ FIVAHG, FRF



- Environmental effects, such as the degradation of surface water quality, groundwater quality, wetlands degradation or disappearance and/or the disruption of environmental in-stream flow regimes are the main identified effects of WS&D according to the assessment, occurring in 10-25 RBDs.

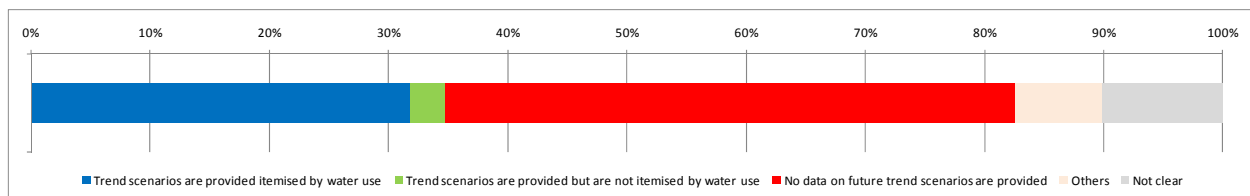
In 6 cases, some evidence has been found that water scarcity/drought are being used as an ex-ante argument to justify exemptions from achieving environmental objectives (e.g. inability to significantly improve the chemical status of a surface water body due to the scarcity of flowing water; inability to significantly improve the quantitative status of a groundwater body due to water scarcity).

6. DATA ON WATER DEMAND AND WATER AVAILABILITY TREND SCENARIOS

Any water management and development planning should be based on sound evaluations of water demand and water availability and corresponding trend scenarios. This issue is being addressed in the RBMPs with a very different level of detail.

6.1. WATER DEMAND TREND SCENARIOS

In approximately 1/3 of the assessed RBMPs, water demand trend scenarios are provided itemised by water use, revealing in principle a more detailed knowledge on water use projections and being more transparent. The completeness of the timeline of these projections (e.g. 2015, 2021, 2027) and information regarding the geographical scope, magnitude and trend data for each itemised water use have not been assessed so far.

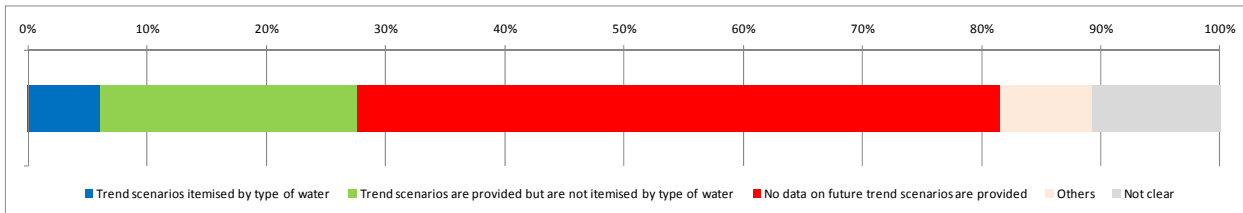


It is more concerning that no data on future water demand trend scenarios are provided have been included in almost 50% of the RBMPs. This is particularly important for those RBDs⁶ that have reported on WS as RBD-wide issues.

6.2. WATER AVAILABILITY TREND SCENARIOS

In less than 30% of the RBMPs, water availability trend scenarios are provided, but only in 5% they are itemised by type of water (e.g. surface, groundwater, reused, desalinated). The completeness of the timeline of these projections (e.g. 2015, 2021, 2027) and information regarding the geographical scope, magnitude and trend data for each itemised water type have not been assessed so far.

⁶UK05, UK06 and UK07



In more than 50% of the assessed RBMPs, no data on future water availability trend scenarios are provided. This is particularly important for those RBDs⁷ that have reported on WS as RBD-wide issues.

7. MEASURES TO DEAL WITH WATER SCARCITY AND DROUGHTS

A set of 22 specific measures have been searched in order to analyse the completeness of the battery of measures foreseen to deal with water scarcity/drought in the RBD, and note has been taken regarding other measures included in the RBMPs.



The top-5 list of the measures in the RBMPs includes the following: 1. Reduction/management of groundwater abstraction, 2. Studies, research and pilot projects, 3. Training, education and capacity building, 4. Reduction of urban network losses and 5. Development of DMPs.

Though the planned effort to reduce/manage groundwater abstraction (present in >90% of RBMPs, and reflected as a high priority in a 60% of the plans) is positive in terms of increasing awareness of quantitative groundwater problems across the EU and addresses a pressure, its impact looks uncertain

⁷ UK05, UK06 and UK07



as other closely related measures such as metering, pricing/subsidies and water consumption restrictions will only be addressed in much less RBDs.

Long-term investments in studies, research, pilot projects, training, education and capacity building is present in 60-70% of the RBMPs, but it should be analysed in-depth how these measures will contribute to the achievement of the WFD objectives by 2015, 2021 and 2027.

A medium presence in RBMPs (30-40%) has been detected for new water-supply measures, such as increase of water re-use, aquifer recharge, reservoirs, rainwater harvesting, water transfer schemes and desalination plants (by decreasing presence).

Restrictions to new water-demanding developments (urban, irrigation) are only planned in 10% of the assessed RBMPs, and drivers such as water pricing systems for efficient use of water (45%) or subsidies for shifting to less water-demanding land uses (<10%) are not addressed in all WS&D-facing RBDs.

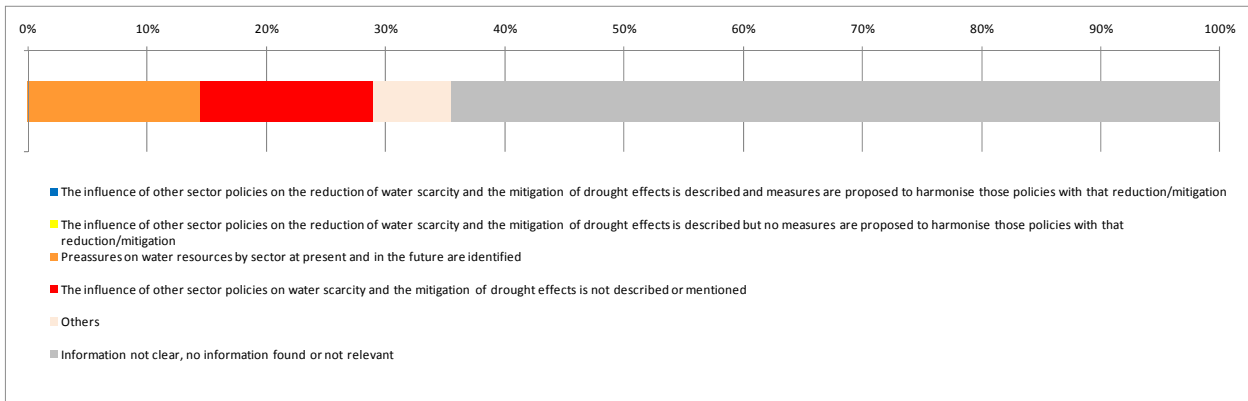
Measures to enhance the resilience of the ecosystems are very relevant to ensure the achievement of the environmental WFD objectives in areas that face WS&D, and are only reflected in 25% of the RBMPs. DMPs are foreseen in 30 RBDs, but are not necessarily always a fully coherent part of the RBMPs. According to the WS&D 2010 Follow-up Report, in the current first planning cycle of the WFD implementation, a number of RBDs have developed DMPs. Those DMPs have been considered either as separate plans (FR, ES, UK), regional plans (AT, BE, HU, IT, NL, RO, SK), emergency management (LU) or specific early warning systems (PT). In other MS, planning is ongoing (MT, CZ, CY), under discussion (EE), or not foreseen at all (IE, SE, BG). Thus, the current focus is very varied, and not necessarily WFD provisions are completely coherent with DMPs and vice versa.

Other measures that have been included in different RBMPs are the following ones: Improvement of the efficiency of water agricultural uses (match irrigation to crop needs, construction of storage ponds, change timing of abstractions, encourage farmers to build winter storage reservoirs), in business and households; Adoption of binding performance criteria for new buildings and for public and private networks; Measures to enhance water governance and metering; Development of water management plans; Development of fiscal or economic incentives for the promotion of water-efficient devices and practices; Establishment of water rights markets or schemes to facilitate water reallocation; Put in coherence the authorizations of abstractions with the needs of the aquatic environment; Application of water saving measures in industry as a prerequisite to get a licence drawing up at a priority list for the division of water in times of drought; Improve understanding of existing water sources; Identification of water bodies used for water abstraction, including mapping of groundwater bodies and continued monitoring to follow the development of status of those water bodies; Increase supply capacity by integration of use of different sources; seeking new aquifers and water sources and using substitute ones, Extension of abstraction to include previously exempt areas,

In consequence, some of these measures should be analysed deeper and/or good practice examples should be better disseminated to water managers in future.

8. INTER-LINKAGES BETWEEN WATER SCARCITY AND SECTOR POLICIES

Water scarcity problems originate not only in inadequate water policies but also in the policies of water-using sectors. RBMPs can acknowledge these inter-linkages and propose measures to harmonise those policies with the reduction of water scarcity and the mitigation of drought in the RBD.

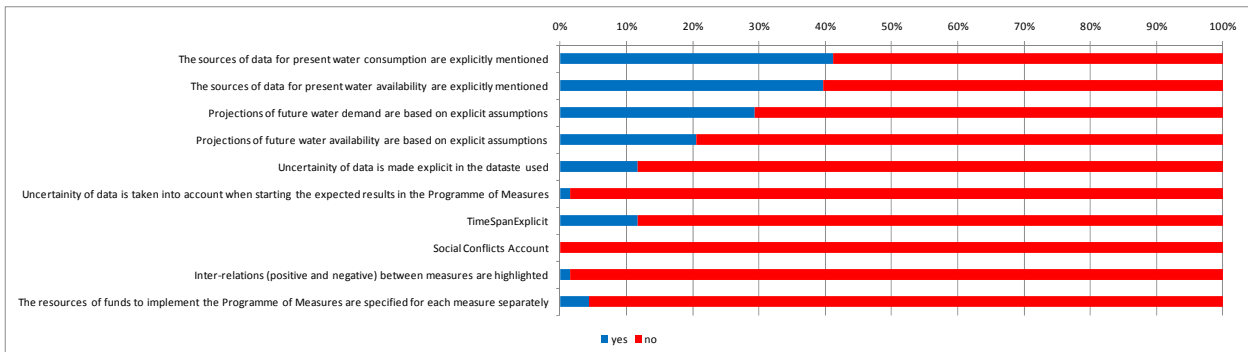


According to the RBMP assessment, in no case the influence of other sector policies on the reduction of water scarcity and the mitigation of drought effects are described, nor are measures proposed to harmonise those policies with that reduction/mitigation.

At most (15% of the assessed plans), the pressures on water resources by sector at present and in the future are identified, and in approximately 15% of the RBMPs, the influence of other sector policies on water scarcity and the mitigation of drought effects is not described or mentioned. In more than 50% of the plans, no information has been found.

9. QUALITY OF DATA AND ASSUMPTIONS

RBMPs and their associated Programme of Measures should be based on explicit and transparent data and assumptions.



The screening exercise reflects a significant number of unclear or not-transparent datasets for water quantity aspects of the plans. In 40% of the assessed RBMPs, the sources of data for present water consumption and for water availability are explicitly mentioned; and in a 20-30% of the plans, projections of future water demand and water availability are based on explicit assumptions.

In 1/10 of the plans, uncertainty of data is made explicit in the dataset used, and when relevant, the time span of the dataset is made explicit. In an even less proportion, uncertainty of data is taken into account when stating the expected results in the Programme of Measures, existing social conflicts or likely future resistance that might constrain the application or the success of specific measures are taken into account when stating the expected results in the Programme of Measures, (positive and negative) inter-relations



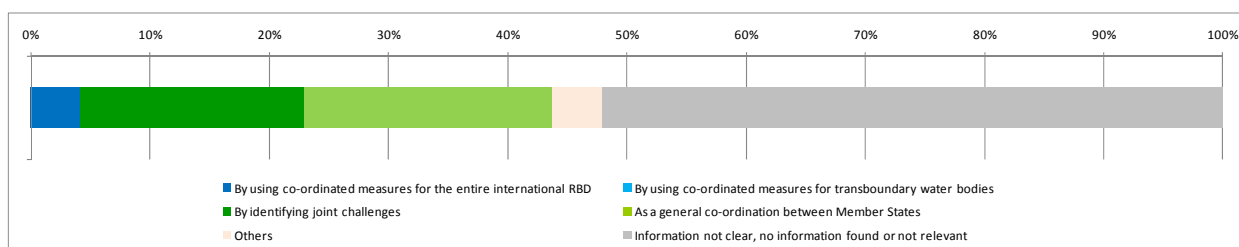
between measures are highlighted or the sources of funds to implement the Programme of Measures are specified for each measure separately.

10. TRANSBOUNDARY COOPERATION ON WATER SCARCITY AND DROUGHTS

Finally, in international basins water scarcity and drought should be dealt with from a transboundary perspective. Up to now, 38 International RBMPs have been analysed, and their approach to deal with WS&D can be classified under the following headings:

In more than 50% of the plans, the information is not clear, no information found or not relevant

Less than a 5% of the plans include co-ordinated measures for the entire international RBD. In 20% of the plans, they identify joint challenges and in another 20% it is dealt with as a general coordination issue.



The establishment of a joint GIS, co-ordination for establishment of status, objectives and measures and transboundary coherence of the Programme of Measures could be positive examples of transboundary coordination addressing WS&D.

11. CONCLUSIONS

The screening assessment of 1/3 of the EU RBMPs provides a snapshot that reveals the EU-wide relevance of the WS & D, but also, fall short significantly regarding the analysed key questions.

The following conclusions can be drawn:

- Water scarcity and droughts are relevant across the EU, though much more clarity is needed to understand the phenomena and their causes. Approximately 2/3 (45) of the screened RBMPs recognize either drought, water scarcity or both phenomena as relevant across the whole RBD or in sub-basins. Out of those RBDs, in a 20% of the RBMPs drought and water scarcity are not clearly distinguished; and regarding several other RBDs, the data reflected in the RBMP do not coincide with the expert screening exercise (this means, in areas where the RBMP does recognize relevant drought or water scarcity problems, the expert considers they are not; and vice versa). The RBMPs identify changes in rainfalls as natural causes for droughts, and a mix of different issues as causes for water scarcity. 2-5 RBMPs do not (clearly) identify the causes for their significant drought or water scarcity problems.
- The datasets on water quantity are insufficient to plan proactively. Half of the RBMPs do not provide data on future water demand trend scenarios are provided. Only in less than 30% of the RBMPs, water availability trend scenarios are provided, and in 5% of the screened plans they are itemised by type of water. Regarding the quality of data, only in 40% of the assessed RBMPs the sources of data



for present water consumption and for water availability are explicitly mentioned; and in a 10% of the plans uncertainty of data or regarding future projections (e.g. impact of PoMs) is made explicit.

- PoMs still need to improve significantly in order to develop coherent and effective sets of measures. This becomes clear when looking at some key measures: Though the planned effort (>90% of RBMPs) to reduce/manage groundwater abstraction is positive in terms of increasing awareness of quantitative groundwater problems across the EU and addresses a pressure, its impact looks uncertain as other closely related measures such as metering, pricing/subsidies and water consumption restrictions will only be addressed in much less RBDs.
- Water supply measures (in 30-40% of RBMPs) are significantly stronger reflected in the screened set of plans than restrictions of pressures (e.g. new water-demanding urban or agricultural developments) or measures to ensure the achievement of the environmental WFD objectives under WS&D conditions.
- In international basins, there is still a major gap to deal with water quantity in a way that reduces conflict risks and contributes to the WFDs environmental objectives. Out of the 38 screened international RBMPs, in more than 50% of the plans, the information is not clear, no information found or not relevant, and less than a 5% of the plans include co-ordinated measures for the entire international RBD.

12. REFERENCES

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13. ANNEXES

13.1. CORRESPONDANCE OF RBD CODES AND RBD NAMES

| MSCODE | RBDCode | RBDName |
|--------|------------|--|
| AT | AT1000 | Danube |
| AT | AT2000 | Rhine |
| AT | AT5000 | Elbe |
| BG | BG1000 | Danube Region Basin District |
| BG | BG2000 | Black Sea Basin District |
| BG | BG3000 | East Aegean Region Basin District |
| BG | BG4000 | West Aegean Region Basin District |
| CZ | CZ_RB_1000 | Danube |
| CZ | CZ_RB_5000 | Elbe |
| CZ | CZ_RB_6000 | Oder |
| DE | DE1000 | Danube |
| DE | DE2000 | Rhine |
| DE | DE5000 | Elbe |
| DE | DE6000 | Odra |
| DE | DE7000 | Meuse |
| DE | DE9500 | Eider |
| DE | DE9610 | Schlei/Trave |
| DE | DE9650 | Warnow/Peene |
| FI | FIVHA1 | Vuoksi |
| FI | FIVHA2 | Kymijoki-Gulf of Finland |
| FI | FIVHA3 | Kokemäenjoki-Archipelago Sea-Bothnian Sea |
| FI | FIVHA4 | Oulujoki-Iijoki |
| FI | FIVHA5 | Kemijoki |
| FI | FIVHA6 | Tornionjoki (Finnish part) |
| FI | FIVHA7 | Teno-, Näätjärvi- and Paatsjoki (Finnish part) |
| FI | FIWDA | Aland islands |
| FR | FRA | Scheldt, Somme and coastal waters of the Channel and the North Sea |
| FR | FRB1 | Meuse |
| FR | FRB2 | Sambre |
| FR | FRC | Rhine |
| FR | FRD | Rhone and Coastal Mediterranean |
| FR | FRE | Corsica |
| FR | FRF | Adour, Garonne, Dordogne, Charente and coastal waters of aquitania |
| FR | FRG | Loire, Brittany and Vendee coastal waters |
| FR | FRH | Seine and Normandy coastal waters |
| FR | FRK | Guyana (French) |
| FR | FRL | Reunion Island |
| LT | LT1100 | Nemunas |
| LT | LT2300 | Venta |
| LT | LT3400 | Lielupe |
| LT | LT4500 | Daugava |
| LV | LVDUBA | Daugava |
| NL | NLEM | Ems |
| NL | NLMS | Meuse |



| | | |
|----|----------|------------------------|
| NL | NLRN | Rhine |
| NL | NLSC | Scheldt |
| SE | SE1 | Bothnian Bay |
| SE | SE2 | Bothnian Sea |
| SE | SE3 | North Baltic |
| SE | SE4 | South Baltic |
| SE | SE5 | Skagerrak and Kattegat |
| SK | SK30000 | Vistula |
| SK | SK40000 | Danube |
| UK | UK01 | Scotland |
| UK | UK02 | Solway Tweed |
| UK | UK03 | Northumbria |
| UK | UK04 | Humber |
| UK | UK05 | Anglian |
| UK | UK06 | Thames |
| UK | UK07 | South East |
| UK | UK08 | South West |
| UK | UK09 | Severn |
| UK | UK10 | Western Wales |
| UK | UK11 | Dee |
| UK | UK12 | North West |
| UK | GBNIIENB | Neagh Bann |
| UK | GBNIIENW | North Western |
| UK | GBNINE | North Eastern |

13.2. RELATIONSHIP BETWEEN THE 7 ACTION LINES OF THE 2007 COMMUNICATION ON WATER SCARCITY & DROUGHT AND THE POSSIBLE MEASURES INCLUDED IN THE RBMPs

The following 22 measures have been looked at in the RBMP assessment. The table explains their relationship with the 7 headings of the Communication on WS&D, and if they address mainly drivers, pressures and/or impacts according to the DPSIR scheme.

| | Water pricing | Allocating funding | Drought risk mgmt | Water supply infrastructure | Efficiency | Water-saving culture | Knowledge and data | Drivers | Pressures | Impacts |
|--|---------------|--------------------|-------------------|-----------------------------|------------|----------------------|--------------------|---------|-----------|---------|
| Modification of the water pricing system to foster a more efficient use of water | X | | | | | | | X | | |
| Subsidies for shifting to less water-demanding land uses | | X | | | | | | X | | |
| Development of Drought Risk Management Plans | | | X | | | | | | | X |
| Development or upgrade of desalination plants | | | X | | | | | | X | |
| Development or upgrade of reservoirs or other water regulation works | | | | X | | | | | X | |
| Development or upgrade of water transfer schemes | | | | X | | | | | X | |
| Promotion of rainwater harvesting | | | | X | | | | | | X |
| Measures to increase treated water re-use | | | | X | | | | | X | X |
| Measures to foster aquifer recharge | | | | X | | | | | X | X |

| | | | | | | | | | | |
|--|----------|----------|----------|----------|----------|----------|----------|----------|-----------|----------|
| Measures to enhance water metering | | | | | X | | | | X | |
| Improvement of the efficiency of water agricultural uses | | | | | X | | | | X | |
| Adoption of binding performance criteria for new buildings and for public and private networks | | | | | X | | | | X | |
| Development of fiscal or economic incentives for the promotion of water-efficient devices and practices | | | | | X | | | X | X | |
| Reduction of losses in urban distribution networks | | | | | X | | | | X | X |
| Training, education and capacity-building in water saving | | | | | | | X | | X | |
| Studies, research and pilot projects to solve water scarcity problems and improve the response to droughts | | | | | | | X | | X | X |
| Restrictions to new urban developments | | | | | | | | | X | |
| Restrictions to new irrigation schemes | | | | | | | | | X | |
| Reduction / management of groundwater abstraction (e.g. by controls, registers) | | | | | | | | | X | |
| Establishment of water rights markets or schemes to facilitate water reallocation | | | | | | | | X | X | X |
| Measures to enhance the resilience of the ecosystems to water scarcity and droughts | | | | | | | | | | X |
| Measures to enhance water governance | | | | | | | | | | X |
| Σ=22 | 1 | 1 | 2 | 5 | 5 | 1 | 1 | 6 | 14 | 9 |

13.3. INFORMATION ON THE ASSESSED RBMPs

The following tables include information from the RBMP screening on water scarcity and drought aspects, developed by the European Commission during 2010 and 2011. Please note that the sums of the different plans are different due to double-counting in several items.

13.3.1. Which of the following water scarcity phenomena characterize the RBD?

| | Σ=72 | RBMPs |
|--|-------------|---|
| RBD wide | 6 | CZ_RB_1000, CZ_RB_5000, FRF, UK05, UK06, UK07 |
| Local Subasins | 22 | AT1000, AT2000, AT5000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, DE5000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FIWDA, FRD, FRL, SE4, UK01, UK04, UK08, UK09 |
| Two conditions not clearly distinguished | 5 | BG3000, BG4000, FRE, FRG, FRH |
| Other | 6 | FIWDA (only GW abstraction), FRK, SE1, SE2, SE3, SE5 |
| Not clear | 2 | BG1000, BG2000 |
| No information found | 0 | |
| Not relevant | 31 | DE1000, DE2000, DE6000, DE7000, DE9500, DE9610, DE9650, FRA, FRB1, FRB2, FRC, LT1100, LT2300, LT3400, LT4500, LVDUBA, NLEM, NLMS, NLRN, NLSC, SE1, SK30000, SK40000, UK02, UK03, UK10, UK11, UK12, GBNIENB, GBNIENW, GBNINE |

13.3.2. Which of the following drought phenomena characterize the RBD?

| | $\Sigma=71$ | RBMPs |
|--|-------------|---|
| RBD wide | 8 | CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FRF, LT1100, LT2300, LT3400, LT4500 |
| Local Subasins | 19 | AT1000, AT2000, AT5000, CZ_RB_1000, CZ_RB_5000, DE1000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FRB2, FRD, SE2, SE3, UK01, UK05 |
| Two conditions not clearly distinguished | 5 | BG3000, BG4000, FRE, FRG, FRH |
| Other | 6 | FIWDA (only GW abstraction), FRK, FRL, SE1, SE2, SE3, SE4, SE5 |
| Not clear | 2 | BG1000, BG2000 |
| No information found | 0 | |
| Not relevant | 31 | DE2000, DE5000, DE6000, DE7000, DE9500, DE9610, DE9650, FRA, FRB1, FRC, LVDUBA, NLEM, NLMS, NLRN, NLSC, SE1, SK30000, SK40000, UK02, UK03, UK04, UK06, UK07, UK08, UK09, UK10, UK11, UK12, GBNIENB, GBNIENW, GBNINE |

13.3.3. What are the factors that are identified as the main causes (drivers) of current and upcoming Drought situations?

| | $\Sigma=100$ | RBMPs |
|--|--------------|---|
| Decrease in natural available resources | 25 | AT1000, AT2000, AT5000, BG1000, BG3000, BG4000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIWDA, FRA, FRB2, FRG, LT1100, LT2300, LT3400, LT4500, NLEM, NLMS, NLRN, NLSC, UK01 |
| Irregular rainfall patterns | 28 | AT1000, AT2000, AT5000, BG1000, BG3000, BG4000, DE1000, DE2000, DE5000, DE6000, DE7000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FIWDA, FRB2, FRE, FRG, FRH, FRK, LT1100, LT2300, LT3400, LT4500 |
| Insufficient development of water supply infrastructure | 0 | |
| Past and current overallocation of available water resources | 3 | FRB2, FRG, FRH |
| Need to satisfy new urban water demands | 0 | |
| Need to satisfy new agricultural water demands | 3 | AT1000, AT2000, AT5000 |
| Need to satisfy new industrial water demands | 0 | |
| Need to satisfy new tourism water demands | 3 | AT1000, AT2000, AT5000 |
| Non authorised or non controlled use of water | 0 | |
| Water use technologies that do not foster efficient use | 0 | |



| | $\Sigma=100$ | RBMPs |
|---|--------------|---|
| Lack of water metering | 0 | |
| Water pricing policies that do not provide incentives for efficient use | 0 | |
| Lack or inadequacy of drought risk management plans | 0 | |
| Insufficient flexibility in the water rights system | 0 | |
| Other | 0 | |
| Not clear | 11 | BG1000, BG2000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FRD, FRF |
| No information found | 10 | CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, UK03, UK04, UK05, UK06, UK07, UK08, UK09 |
| Not relevant | 17 | DE9500, DE9610, DE9650, FRB1, FRC, LVDUBA, SE1, SE5, SK30000, SK40000, UK02, UK10, UK11, UK12, GBNIENB, GBNIENW, GBNINE |

13.3.4. What are the factors that are identified as the main causes (drivers) of current and upcoming water scarcity (WS) situations?

| | $\Sigma=192$ | RBMPs |
|--|--------------|---|
| Decrease in natural available resources | 28 | AT1000, AT2000, AT5000, BG1000, BG3000, BG4000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIWDA, FRA, FRD, FRG, NLEM, NLMS, NLRN, NLSC, SE4, UK01, UK03, UK04, UK05, UK06, UK08, UK09 |
| Irregular rainfall patterns | 30 | AT1000, AT2000, AT5000, BG1000, BG3000, BG4000, DE2000, DE5000, DE6000, DE7000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIWDA, FRE, FRG, FRH, FRK, FRL, SE1, UK03, UK04, UK05, UK06, UK07, UK08, UK09 |
| Insufficient development of water supply infrastructure | 3 | BG1000, BG4000, FRL |
| Past and current overallocation of available water resources | 9 | CZ_RB_1000, CZ_RB_5000, FRD, FRG, FRH, SE2, SE3, SE4, UK01 |
| Need to satisfy new urban water demands | 18 | FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FIWDA, FRD, FRL, SE1, UK03, UK04, UK05, UK06, UK07, UK08, UK09 |
| Need to satisfy new agricultural water demands | 17 | AT1000, AT2000, AT5000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FRD, FRL, UK03, UK04, UK05, UK06, UK07, UK08 |
| Need to satisfy new industrial water demands | 13 | FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FRL, UK03, UK04, UK05, UK06, UK07, UK08 |
| Need to satisfy new tourism water demands | 17 | AT1000, AT2000, AT5000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FRL, UK03, UK04, UK05, UK06, UK07, UK08 |

| | | |
|---|----|--|
| Non authorised or non controlled use of water | 5 | FIVHA1, FIVHA2, FIVHA3, FIVHA4, FRL |
| Water use technologies that do not foster efficient use | 5 | BG1000, BG3000, BG4000, FRD, SE2 |
| Lack of water metering | 1 | SE2 |
| Water pricing policies that do not provide incentives for efficient use | 1 | FRL |
| Lack or inadequacy of drought risk management plans | 3 | SE2, SE3, SE4 |
| Insufficient flexibility in the water rights system | 0 | |
| Other | 4 | FIWDA (wells to provide heat is a threat to GW), FRL, SE1, UK08 |
| Not clear | 13 | BG1000, BG2000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FRF, SE2, SE3, SE4 |
| No information found | 3 | CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, |
| Not relevant | 22 | DE1000, DE9500, DE9610, DE9650, FRB1, FRB2, FRC, LT1100, LT2300, LT3400, LT4500, LVDUBA, SE1, SE5, SK30000, SK40000, UK02, UK10, UK11, UK12, GBNIENW, GBNINE |

13.3.5. What are the effects of past and expected droughts?

| | Σ=125 | RBMPs |
|---|--------------|---|
| Urban supply shortages | 14 | BG3000, DE2000, FIVHA6, FRB1, FRC, FRE, FRF, FRG, FRK, NLEM, NLMS, NLRN, NLSC, UK01 |
| Economic losses in the agricultural sector | 1 | FRF |
| Economic losses in the industrial sector | 2 | FIVHA6, FRF |
| Economic losses in the tourism sector | 2 | FIVHA6, FRF |
| Hindrance to the economic development of the RBD | 1 | FRF |
| Dependence of the RBD on new/external water resources | 1 | FRF |
| Degradation of surface water quality | 19 | AT1000, AT2000, AT5000, BG3000, DE1000, DE2000, DE5000, DE7000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FRF, FRH, FRK, UK01 |
| Degradation of groundwater quality | 10 | DE9650, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FIWDA, FRF |
| Groundwater over-abstraction | 11 | AT1000, AT2000, AT5000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIWDA, FRF, FRG, FRH |
| Wetlands degradation or disappearance | 10 | BG3000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FRF, FRG |
| Disruption of environmental in-stream flow regimes | 13 | AT1000, AT2000, AT5000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FRF, FRG, UK01 |
| Exemptions of environmental objectives | 3 | FRC, FRF, FRH |
| Others | 8 | DE2000, DE7000, FRD, FRE, FRH, LT2300, LT3400, LT4500 |
| Not clear | 5 | BG1000, BG4000, SE2, SE3, SE4 |
| No information found | 12 | BG2000, DE6000, FRA, FRB2, LT1100, UK03, UK04, UK05, UK06, UK07, UK08, UK09 |
| Not relevant | 13 | DE9500, DE9610, LVDUBA, SE5, SK30000, SK40000, UK02, UK10, UK11, UK12, GBNIENB, GBNIENW, GBNINE |



13.3.6. What are the effects of past and expected water scarcity?

| | Σ=176 | RBMPs |
|---|--------------|---|
| Urban supply shortages | 25 | BG3000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FIWDA, FRB1, FRC, FRE, FRF, FRG, NLEM, NLMS, NLRN, NLSC, SE4, UK03, UK04, UK05, UK06, UK07, UK09 |
| Economic losses in the agricultural sector | 1 | FRF |
| Economic losses in the industrial sector | 2 | FIVHA6, FRF |
| Economic losses in the tourism sector | 2 | FIVHA6, FRF |
| Hindrance to the economic development of the RBD | 1 | FRF |
| Dependence of the RBD on new/external water resources | 2 | FRF, FRL |
| Degradation of surface water quality | 25 | AT1000, AT2000, AT5000, BG3000, DE2000, DE5000, DE7000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FRF, FRH, SE4, UK01, UK03, UK04, UK05, UK06, UK07, UK08, UK09 |
| Degradation of groundwater quality | 20 | FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FIWDA, FRF, SE1, SE2, SE3, SE4, UK03, UK04, UK05, UK06, UK07, UK08, UK09 |
| Groundwater over-abstraction | 22 | AT1000, AT2000, AT5000, CZ_RB_6000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIWDA, FRF, FRG, FRH, FRL, SE1, SE2, SE3, SE4, UK01, UK03, UK05, UK06, UK07 |
| Wetlands degradation or disappearance | 17 | BG3000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FRF, FRG, UK03, UK04, UK05, UK06, UK07, UK08, UK09 |
| Disruption of environmental in-stream flow regimes | 21 | AT1000, AT2000, AT5000, BG3000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FRF, FRG, UK01, UK03, UK04, UK05, UK06, UK07, UK08, UK09 |
| Exemptions of environmental objectives | 6 | CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FRC, FRF, FRH |
| Others | 9 | DE2000, DE7000, FRD, FRE, FRH, UK04, UK05, UK07, UK08 |
| Not clear | 2 | BG1000, BG4000 |
| No information found | 8 | BG2000, DE6000, FRA, FRB2, LT1100, LT2300, LT3400, LT4500 |
| Not relevant | 13 | DE9500, DE9610, LVDUBA, SE5, SK30000, SK40000, UK02, UK10, UK11, UK12, GBNIENB, GBNIENW, GBNINE |

13.3.7. What data on water demand and water availability trend scenarios are provided for the RBD?

| | Σ=122 | RBMPs |
|---|--------------|--|
| Water demand trend scenarios are provided itemised by water use | 22 | BG2000, BG4000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, DE1000, DE2000, DE5000, DE6000, DE7000, DE9500, DE9610, DE9650, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FRG, LVDUBA |
| Water demand trend scenarios are provided but are not itemised by water use | 2 | DE2000, FRL |
| Water availability trend scenarios are provided itemised by type of water | 4 | BG2000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, |
| Water availability trend scenarios are provided but are not itemised by type of water | 14 | AT1000, AT2000, AT5000, DE2000, DE6000, DE7000, DE9650, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7 |
| No data on future water demand trend scenarios are provided | 33 | BG1000, BG3000, FIWDA, FRB1, FRC, FRE, FRH, FRK, NLEM, NLMS, NLRN, NLSC, SE2, SE3, SE4, SE5, SK30000, SK40000, UK01, UK02, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK10, UK11, UK12, GBNIENB, GBNIENW, GBNINE |
| No data on future water availability trend scenarios are provided | 35 | BG1000, BG3000, DE2000, DE5000, DE9500, DE9610, FIWDA, FRB1, FRC, FRE, FRH, FRK, FRL, NLEM, NLMS, NLRN, NLSC, SE2, SE3, SE4, SE5, UK01, UK02, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK10, UK11, UK12, GBNIENB, GBNIENW, GBNINE |
| Others | 5 | FRD, LT1100, LT2300, LT3400, LT4500 |
| Not clear | 7 | AT1000, AT2000, AT5000, FRA, FRB2, FRF, SE1 |

13.3.8. Does the RBMP include information on measures to minimize pressures and impacts of droughts and water scarcity?

| | $\Sigma=68$ | RBMPs |
|-----------------|-------------|--|
| Yes | 56 | AT1000, AT2000, AT5000, BG1000, BG3000, BG4000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FIWDA, FRA, FRB1, FRB2, FRC, FRD, FRE, FRF, FRG, FRH, FRK, FRL, LT1100, LT2300, LT3400, LT4500, LVDUBA, NLEM, NLMS, NLRN, NLSC, SE2, SE3, SE4, SE5, UK01, UK02, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK10, UK11, UK12, GBNIENB, GBNIENW, GBNINE |
| No or Empty Row | 12 | BG2000 (unclear), DE1000 (unclear), DE2000 (not relevant), DE5000 (not relevant), DE6000, DE7000, DE9500 (not relevant), DE9610 (not relevant), DE9650 (not relevant), SE1, SK30000, SK40000 |

13.3.9. Which measures of the Programme of Measures address droughts and water scarcity?

| Measure | Σ | Category | RBMPs |
|---|----------|--|---|
| 1. Restrictions to new urban developments | 50 | Not included | AT1000, AT2000, AT5000, BG1000, BG3000, BG4000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FIVHA5, FIVHA6, FIVHA7, FIWDA, FRA, FRB1, FRB2, FRC, FRD, FRE, FRF, FRH, FRL, LT1100, LT2300, LT3400, LT4500, LVDUBA, NLEM, NLMS, NLRN, NLSC, SE2, SE3, SE4, SE5, UK01, UK02, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK10, UK11, UK12, GBNIENB, GBNIENW, GBNINE |
| | 2 | Included but unable to assess significance | FRG, FRK |
| | 0 | Low importance | |
| | 4 | Moderate importance | FIVHA1, FIVHA2, FIVHA3, FIVHA4 |
| | 0 | High importance | |
| 2. Restrictions to new irrigation schemes | 51 | Not included | AT1000, AT2000, AT5000, BG1000, BG4000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FIWDA, FRA, FRB1, FRB2, FRC, FRD, FRE, FRF, FRH, LT1100, LT2300, LT3400, LT4500, NLEM, NLMS, NLRN, NLSC, SE2, SE3, SE4, SE5, UK01, UK02, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK10, UK11, UK12, GBNIENB, GBNIENW, GBNINE |
| | 4 | Included but unable to assess significance | FRG, FRK, FRL, LVDUBA |
| | 0 | Low importance | |
| | 0 | Moderate importance | |
| | 1 | High importance | BG3000 |
| 3. Subsidies for shifting to less water-demanding land uses | 52 | Not included | AT1000, AT2000, AT5000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FIWDA, FRA, FRB1, FRB2, FRC, FRD, FRE, FRF, FRH, FRK, FRL, LT1100, LT2300, LT3400, LT4500, LVDUBA, NLEM, NLMS, NLRN, NLSC, SE2, SE3, SE4, SE5, UK01, UK02, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK10, UK11, UK12, GBNIENB, GBNIENW, GBNINE |
| | 2 | Included but unable to assess significance | BG4000, FRG |
| | 0 | Low importance | |
| | 0 | Moderate importance | |
| | 2 | High importance | BG1000, BG3000 |
| 4. Improvement of the efficiency of water agricultural uses | 36 | Not included | AT1000, AT2000, AT5000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FIWDA, FRB1, FRC, FRE, FRF, FRH, FRK, LT1100, LT2300, LT3400, LT4500, NLEM, NLMS, NLRN, NLSC, SE2, SE3, SE4, SE5, UK03, GBNIENB, GBNIENW, GBNINE |
| | 6 | Included but unable to | BG4000, FRA, FRB2, FRD, FRG, FRL |



| Measure | Σ | Category | RBMPs |
|---|----|--|---|
| | | assess significance | |
| | 1 | Low importance | UK12 |
| | 10 | Moderate importance | UK01, UK02, UK04, UK05, UK06, UK07, UK08, UK09, UK10, UK11 |
| | 3 | High importance | BG1000, BG3000, LVDUBA |
| 5. Reduction of losses in urban distribution networks | 21 | Not included | AT1000, AT2000, AT5000, FIVHA5, FIVHA6, FIVHA7, FIWDA, FRE, FRH, FRK, FRL, NLEM, NLMS, NLRN, NLSC, SE2, SE3, SE4, SE5, UK10, UK11 |
| | 10 | Included but unable to assess significance | BG2000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FRA, FRB2, FRC, FRD, FRF, FRG |
| | 1 | Low importance | LT3400 |
| | 12 | Moderate importance | FIVHA1, FIVHA2, FIVHA3, FIVHA4, LT1100, LT2300, LT4500, UK01, UK02, GBNIENB, GBNIENW, GBNINE |
| | 12 | High importance | BG1000, BG3000, BG4000, LVDUBA, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK12 |
| 6. Reduction/management of groundwater abstraction (e.g. by controls, registers) | 5 | Not included | UK01, UK02, GBNIENB, GBNIENW, GBNINE |
| | 17 | Included but unable to assess significance | FIVHA5, FIVHA6, FIVHA7, FRA, FRB1, FRB2, FRC, FRD, FRE, FRF, FRG, FRH, FRK, SE2, SE3, SE4, SE5 |
| | 1 | Low importance | LT3400 |
| | 17 | Moderate importance | AT1000, AT2000, AT5000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIWDA, LT1100, LT2300, LT4500, LVDUBA, UK10, UK11 |
| | 16 | High importance | BG1000, BG3000, BG4000, FRL, NLEM, NLMS, NLRN, NLSC, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK12 |
| 7. Adoption of binding performance criteria for new buildings and for public and private networks | 34 | Not included | AT1000, AT2000, AT5000, BG3000, BG4000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FIWDA, FRA, FRB1, FRB2, FRC, FRD, FRE, FRF, FRG, FRH, FRK, FRL, LT1100, LT2300, LT3400, LT4500, SE2, SE3, SE4, SE5, UK01, UK02, UK10, GBNIENB, GBNIENW, GBNINE |
| | 4 | Included but unable to assess significance | FIVHA5, FIVHA6, FIVHA7, LVDUBA |
| | 0 | Low importance | |
| | 13 | Moderate importance | FIVHA1, FIVHA2, FIVHA3, FIVHA4, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK11, UK12 |
| | 5 | High importance | BG1000, NLEM, NLMS, NLRN, NLSC |
| 8. Measures to enhance water metering | 30 | Not included | AT1000, AT2000, AT5000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FIVHA5, FIVHA6, FIVHA7, FIWDA, FRA, FRB1, FRB2, FRC, FRD, FRE, FRF, FRG, FRH, FRL, LT1100, LT2300, LT3400, LT4500, SE4, SE5, UK01, GBNIENB, GBNIENW, GBNINE |
| | 6 | Included but unable to assess significance | BG1000, BG3000, BG4000, FRK, SE2, SE3 |
| | 2 | Low importance | UK10, UK11 |
| | 18 | Moderate importance | FIVHA1, FIVHA2, FIVHA3, FIVHA4, LVDUBA, NLEM, NLMS, NLRN, NLSC, UK02, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK12 |
| | 0 | High importance | |
| 9. Modification of the water pricing system to foster a more efficient use of water | 33 | Not included | AT1000, AT2000, AT5000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FIWDA, FRB1, FRC, FRD, FRF, FRG, LT1100, LT2300, LT3400, LT4500, SE2, SE3, UK01, UK02, UK10, UK11, UK12, GBNIENB, GBNIENW, GBNINE |
| | 10 | Included but unable to assess significance | BG1000, BG3000, BG4000, FRA, FRB2, FRE, FRH, FRK, SE4, SE5 |
| | 7 | Low importance | UK03, UK04, UK05, UK06, UK07, UK08, UK09 |
| | 0 | Moderate importance | |
| | 6 | High importance | FRL, LVDUBA, NLEM, NLMS, NLRN, NLSC |

| Measure | Σ | Category | RBMPs |
|--|----|--|--|
| 10. Development of fiscal or economic incentives for the promotion of water efficient devices or practices | 40 | Not included | AT1000, AT2000, AT5000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FIWDA, FRA, FRB2, FRD, FRE, FRF, FRG, FRH, FRK, FRL, LT1100, LT2300, LT3400, LT4500, NLEM, NLMS, NLRN, NLSC, SE2, SE3, SE4, UK01, UK05, UK10, GBNIENB, GBNIENW, GBNINE |
| | 3 | Included but unable to assess significance | FRB1, FRC, SE5 |
| | 9 | Low importance | BG4000, UK03, UK04, UK06, UK07, UK08, UK09, UK11, UK12 |
| | 4 | Moderate importance | BG1000, BG3000, LVDUBA, UK02 |
| | 0 | High importance | |
| 11. Establishment of water rights markets or schemes to facilitate water reallocation | 53 | Not included | AT1000, AT2000, AT5000, BG1000, BG3000, BG4000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FIWDA, FRB1, FRC, FRD, FRE, FRF, FRG, FRK, FRL, LT1100, LT2300, LT3400, LT4500, LVDUBA, NLEM, NLMS, NLRN, NLSC, SE2, SE3, SE4, SE5, UK01, UK02, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK10, UK11, UK12, GBNIENB, GBNIENW, GBNINE |
| | 3 | Included but unable to assess significance | FRA, FRB2, FRH |
| | 0 | Low importance | |
| | 0 | Moderate importance | |
| | 0 | High importance | |
| 12. Development of Drought Risk Management Plans | 26 | Not included | AT1000, AT2000, AT5000, BG1000, BG4000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FRB1, FRC, FRF, FRG, FRH, FRK, LT1100, LT2300, LT3400, LT4500, LVDUBA, NLEM, NLMS, NLRN, NLSC, SE2, SE3, SE5 |
| | 23 | Included but unable to assess significance | FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FIWDA, FRA, FRB2, FRD, FRE, SE4, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK10, UK11, UK12 |
| | 5 | Low importance | UK01, UK02, GBNIENB, GBNIENW, GBNINE |
| | 1 | Moderate importance | FRL |
| | 1 | High importance | BG3000 |
| 13. Measures to enhance the resilience of the ecosystems to water scarcity and droughts | 42 | Not included | AT1000, AT2000, AT5000, BG1000, FRA, FRB1, FRB2, FRC, FRD, FRE, FRF, FRH, FRK, FRL, LT1100, LT2300, LT3400, LT4500, LVDUBA, NLEM, NLMS, NLRN, NLSC, SE2, SE3, SE4, SE5, UK01, UK02, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK10, UK11, UK12, GBNIENB, GBNIENW, GBNINE |
| | 12 | Included but unable to assess significance | CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FIWDA, FRG |
| | 0 | Low importance | |
| | 2 | Moderate importance | BG3000, BG4000 |
| | 0 | High importance | |
| 14. Measures to enhance water governance | 40 | Not included | AT1000, AT2000, AT5000, BG3000, BG4000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FIWDA, FRA, FRB1, FRB2, FRC, FRE, FRH, FRK, LT1100, LT2300, LT3400, LT4500, NLEM, NLMS, NLRN, NLSC, SE2, SE3, SE4, SE5, UK01, UK02, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK10, UK11, UK12 |
| | 8 | Included but unable to assess significance | BG1000, FIVHA5, FIVHA6, FIVHA7, FRD, FRF, FRG, FRL |
| | 0 | Low importance | |
| | 4 | Moderate importance | FIVHA1, FIVHA2, FIVHA3, FIVHA4 |
| | 4 | High importance | LVDUBA, GBNIENB, GBNIENW, GBNINE |
| 15. Training, | 20 | Not included | AT1000, AT2000, AT5000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, |

| Measure | Σ | Category | RBMPs |
|--|----|--|--|
| education and capacity-building in water saving | | | FIWDA, FRA, FRB2, FRE, FRH, FRK, LT1100, LT2300, LT3400, LT4500, SE2, SE3, SE4, SE5 |
| | 9 | Included but unable to assess significance | FIVHA5, FIVHA6, FIVHA7, FRB1, FRC, FRD, FRF, FRG, FRL |
| | 17 | Low importance | BG3000, BG4000, UK01, UK02, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK10, UK11, UK12, GBNIENB, GBNIENW, GBNINE |
| | 5 | Moderate importance | BG1000, FIVHA1, FIVHA2, FIVHA3, FIVHA4 |
| | 5 | High importance | LVDUBA, NLEM, NLMS, NLRN, NLSC |
| 16. Studies, research and pilot projects to solve water scarcity problems and improve the response to droughts | 18 | Not included | AT1000, AT2000, AT5000, FRA, FRB1, FRB2, FRC, FRD, FRE, FRF, FRK, LT1100, LT2300, LT3400, LT4500, LVDUBA, UK01, UK11 |
| | 18 | Included but unable to assess significance | CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FIWDA, FRG, FRH, FRL, SE2, SE3, SE4, SE5 |
| | 14 | Low importance | BG4000, UK02, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK10, UK12, GBNIENB, GBNIENW, GBNINE |
| | 6 | Moderate importance | BG1000, BG3000, NLEM, NLMS, NLRN, NLSC |
| | 0 | High importance | |
| 17. Promotion of rainwater harvesting | 41 | Not included | AT1000, AT2000, AT5000, BG1000, BG3000, BG4000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FIWDA, FRA, FRB2, FRE, FRG, FRH, FRL, LT1100, LT2300, LT3400, LT4500, LVDUBA, NLEM, NLMS, NLRN, NLSC, SE2, SE3, SE4, SE5, UK01, UK02, GBNIENB, GBNIENW, GBNINE |
| | 5 | Included but unable to assess significance | FRB1, FRC, FRD, FRF, FRK |
| | 10 | Low importance | UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK10, UK11, UK12 |
| | 0 | Moderate importance | |
| | 0 | High importance | |
| 18. Measures to increase treated water re-use | 33 | Not included | AT1000, AT2000, AT5000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FIWDA, FRA, FRB1, FRB2, FRC, FRE, FRF, FRG, FRH, FRK, FRL, LT1100, LT2300, LT3400, LT4500, NLEM, NLMS, NLRN, NLSC, SE2, SE3, SE4, SE5, UK01, GBNIENB, GBNIENW, GBNINE |
| | 8 | Included but unable to assess significance | FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FRD |
| | 11 | Low importance | UK02, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK10, UK11, UK12 |
| | 1 | Moderate importance | BG1000 |
| | 3 | High importance | BG3000, BG4000, LVDUBA |
| 19. Measures to foster aquifer recharge | 36 | Not included | AT1000, AT2000, AT5000, BG1000, BG3000, BG4000, FRE, FRF, FRG, FRK, LT1100, LT2300, LT3400, LT4500, LVDUBA, NLEM, NLMS, NLRN, NLSC, SE4, SE5, UK01, UK02, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK10, UK11, UK12, GBNIENB, GBNIENW, GBNINE |
| | 18 | Included but unable to assess significance | CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FIWDA, FRA, FRB1, FRB2, FRC, FRD, FRH, FRL |
| | 2 | Low importance | SE2, SE3 |
| | 0 | Moderate importance | |
| | 0 | High importance | |
| 20. Development or upgrade of reservoirs or other water regulation works | 36 | Not included | AT1000, AT2000, AT5000, BG1000, BG3000, FRA, FRB1, FRB2, FRC, FRH, FRK, FRL, LT1100, LT2300, LT3400, LT4500, LVDUBA, NLEM, NLMS, NLRN, NLSC, SE2, SE3, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK10, UK11, UK12, GBNIENB, GBNIENW, GBNINE |



| Measure | Σ | Category | RBMPs |
|--|----|--|---|
| | 13 | Included but unable to assess significance | CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FIVHA5, FIVHA6, FIVHA7, FIWDA, FRD, FRE, FRF, FRG, SE4, SE5 |
| | 0 | Low importance | |
| | 2 | Moderate importance | UK01, UK02 |
| | 5 | High importance | BG4000, FIVHA1, FIVHA2, FIVHA3, FIVHA4 |
| 21. Development or upgrade of water transfer schemes | 42 | Not included | AT1000, AT2000, AT5000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FIWDA, FRA, FRB1, FRB2, FRC, FRG, FRH, FRK, LT1100, LT2300, LT3400, LT4500, LVDUBA, NLEM, NLMS, NLRN, NLSC, SE2, SE3, SE4, SE5, UK01, UK02, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK10, UK11, UK12, GBNIENB, GBNIENW, GBNINE |
| | 6 | Included but unable to assess significance | FIVHA5, FIVHA6, FRD, FRE, FRF, FRL |
| | 0 | Low importance | |
| | 1 | Moderate importance | BG3000 |
| | 7 | High importance | BG1000, BG4000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA7 |
| 22. Development or upgrade of desalination plants | 55 | Not included | AT1000, AT2000, AT5000, BG1000, BG3000, BG4000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FRA, FRB1, FRB2, FRC, FRD, FRE, FRF, FRG, FRH, FRK, FRL, LT1100, LT2300, LT3400, LT4500, LVDUBA, NLEM, NLMS, NLRN, NLSC, SE2, SE3, SE4, SE5, UK01, UK02, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK10, UK11, UK12, GBNIENB, GBNIENW, GBNINE |
| | 1 | Included but unable to assess significance | FIWDA |
| | 0 | Low importance | |
| | 0 | Moderate importance | |
| | 0 | High importance | |
| 23. Other measures | 10 | Not included | FRB2, FRK, LT1100, LT2300, LT3400, LT4500, SE1, SE2, SE3, SE4 |
| | 8 | Included but unable to assess significance | FRA, FRB1, FRC, FRE, FRF, FRG, FRL, SE5 |
| | 15 | Low importance | UK01, UK02, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK10, UK11, UK12, GBNIENB, GBNIENW, GBNINE |
| | 0 | Moderate importance | |
| | 4 | High importance | NLEM, NLMS, NLRN, NLSC |

13.3.10. How transparent and reliable are the data and the assumptions, with respect to water scarcity and droughts, upon which the RBMP is based?

| | Σ=149 | RBMPs |
|---|-------|---|
| The sources of data for present water consumption are explicitly mentioned | 28 | AT1000, AT2000, AT5000, BG1000, BG3000, BG4000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, DE1000, DE2000, DE5000, DE6000, DE7000, DE9500, DE9610, FIVHA4, LT1100, LT2300, LT3400, LT4500, SE1, SE2, SE3, SE4, SE5, SK30000, SK40000 |
| The sources of data for present water availability are explicitly mentioned | 27 | AT1000, AT2000, AT5000, BG1000, BG2000, BG3000, BG4000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, DE1000, DE2000, DE7000, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIVHA6, FIVHA7, FIWDA, LT1100, LT2300, LT3400, LT4500, SK30000, SK40000 |
| Projections of future water demand are based on explicit assumptions | 20 | AT1000, AT2000, AT5000, BG2000, BG4000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, DE1000, DE2000, DE5000, DE6000, DE7000, DE9500, DE9610, DE9650, LT1100, LT2300, LT3400, LT4500 |
| Projections of future water availability are based on explicit assumptions | 14 | AT1000, AT2000, AT5000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, DE1000, DE2000, DE7000, DE9650, LT1100, LT2300, LT3400, LT4500 |
| Uncertainty of data is made explicit in the data used | 8 | DE2000, DE5000, DE6000, DE7000, DE9500, DE9610, DE9650, LVDUBA |
| Uncertainty of data is taken into account when starting the expected results in the Programme of Measures | 1 | LVDUBA |

| | | |
|---|-----------|---|
| TimeSpanExplicit | 8 | CZ_RB_1000, DE1000, DE6000, LT1100, LT2300, LT3400, LT4500, LVDUBA |
| Social Conflicts Account | 0 | |
| Inter-relations (positive and negative) between measures are highlighted | 1 | BG4000 |
| The resources of funds to implement the Programme of Measures are specified for each measure separately | 3 | BG2000, BG3000, LVDUBA |
| Unclear | 10 | BG1000, BG3000, BG4000, FRA, FRB2, FRG, SE1, SE2, SE3, SE4 |
| No information found | 23 | FRB1, FRC, FRD, FRE, FRF, FRH, FRK, FRL, NLEM, NLMS, NLSC, UK01, UK02, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK10, UK11, UK12 |
| Not relevant | 6 | SE1, UK01, UK02, GBNIENB, GBNIENW, GBNINE |

13.3.11. In the case of an International River Basin District, in what way have the water scarcity and/or droughts related issues been coordinated?

| | Σ=87 | RBMPs |
|--|-------------|--|
| As a general coordination between Member States | 10 | CZ_RB_1000, FRA, FRB2, NLEM, NLMS, NLRN, NLSC, SE1, SE2, SK40000 |
| By identifying joint challenges | 9 | AT1000, AT2000, AT5000, CZ_RB_1000, DE1000, DE2000, DE5000, DE7000, SK40000 |
| By using coordinated measures for transboundary water bodies | 0 | |
| By using coordinated measures for the entire international RBD | 2 | FRB1, FRC |
| Others | 2 | BG3000, DE7000 |
| Not an International RBD | 30 | BG2000, DE9500, DE9610, DE9650, FIVHA1, FIVHA2, FIVHA3, FIVHA4, FIVHA5, FIWDA, FRD, FRF, FRG, FRK, FRL, SE3, SE4, UK01, UK02, UK03, UK04, UK05, UK06, UK07, UK08, UK09, UK10, UK11, UK12, GBNINE |
| Information not clear | 1 | LT2300 |
| No information found | 16 | BG1000, BG4000, CZ_RB_1000, CZ_RB_5000, CZ_RB_6000, DE6000, FIVHA5, FIVHA6, FIVHA7, FRH, LT1100, LT3400, LT4500, SK30000, GBNIENB, GBNIENW |
| Not relevant | 8 | FRE, LVDUBA, SE1, SE3, SE4, SE5, GBNIENB, GBNIENW |