

## Supplementary material, results literature review

### Results literature review

For the purpose of this study, a literature review is carried out to identify the knowledge on the different perspectives and their interactions and how they are related to current debates on water quality. The challenges to realising water quality improvement in river basins is not limited to the European continent, but can be recognized worldwide. The range of the literature review, therefore, was wide, in order to gather studies of experiences from a variety of ecological, legal and social-economic circumstances. The review was carried out using the search engines Google Scholar, Scopus, Web of Science and Science Direct on the terms 'water quality' and 'governance' excluding studies focusing on water quantity, water supply, water reuse or sea basins. An earlier review of WFD Implementation made by Boeuf and Fritsch [1] was also used, as well as legal literature based upon EC publications, case law from the European Court of Justice (ECJ) and follow ups of references in the articles studied.

This resulted in a list of 122 articles, each of which uses one or more perspectives, implicitly or explicitly. Based upon the abstract, title and key words, an initial identification was made as to which of the perspectives were used in the article. If there was uncertainty regarding this observation, the article was read and the qualification adjusted accordingly. Articles using two or more perspectives were used to describe the interactions and their contribution to water quality.

One of the restrictions of this approach is that grey literature is only included on a limited basis; another is that the search focused on English-language publications only. These limitations set constraints on the results, especially with regard to legal and ecological studies, as these are often nation based, written in the national language and they are not found by search engines such as Scopus. Despite these limitations, the resulting list of papers does offer a wide overview of how scientific literature addresses the ecological, legal and social-economic perspectives on water quality governance and their interactions so far.

Table 1 shows the results of the literature review.

Table 1 Results literature review on ecological, legal and social perspectives on water quality management.

No.	Reference	Countries or continents studied	Perspectives		
			Ecological	Legal	Social
1	Andersson, <i>et al.</i> [2]	Sweden	-	-	X
2	Baaner [3]	Denmark, Sweden, Norway	X	X	-
3	Backes and Van Rijswick [4]	Europe	-	X	-
4	Behagel and Arts [5]	Netherlands	-	-	X
5	Behagel and Turnhout [6]	Netherlands	-	-	X
6	Benson, <i>et al.</i> [7]	England, Wales (UK)	-	X	X
7	Blackstock, <i>et al.</i> [8]	Scotland (UK)	X	-	X
8	Blackstock, <i>et al.</i> [9]	Scotland (UK)	-	-	X
9	Borowski, <i>et al.</i> [10]	Germany, France	-	-	X

No.	Reference	Countries or continents studied	Perspectives		
			Ecological	Legal	Social
10	Braioni, <i>et al.</i> [11]	Italy	X	-	X
11	Bremer, <i>et al.</i> [12]	Latin America	-	-	X
12	Brils, <i>et al.</i> [13]	Europe	X	-	X
13	Carpenter, <i>et al.</i> [14]	USA	X	-	X
14	Chang, <i>et al.</i> [15]	USA	X	-	X
15	Chen, <i>et al.</i> [16]	China	X	-	X
16	Chiang, <i>et al.</i> [17]	Chile	X	X	-
17	Comito, <i>et al.</i> [18]	USA	-	-	X
18	Cook [19]	Canada	X	X	-
19	Crabbé [20]	Belgium	-	X	X
20	Crabtree, <i>et al.</i> [21]	United Kingdom	-	-	X
21	Da Silva, <i>et al.</i> [22]	Portugal	X	-	X
22	deLeon [23]	No specific country	-	-	X
23	Dieperink, <i>et al.</i> [24]	Netherlands	-	X	X
24	Drazkiewicz, <i>et al.</i> [25]	Germany	-	-	X
25	Duncan [26]	New Zealand	-	-	X
26	EC [27]	Europe	-	X	-
27	ECJ [28]	Europe vs. France	-	X	-
28	ECJ [29]	Europe vs. Germany	-	X	-
29	ECJ [30]	Europe vs. Germany	-	X	-
30	Elofsson [31]	No specific country	-	-	X
31	Freriks, <i>et al.</i> [32]	Netherlands	-	X	X
32	Gani and Scrimgeour [33]	OECD countries	X	X	-
33	Grant (2000) [34]	Europe	X	X	-
34	Gu, <i>et al.</i> [35]	China	-	-	X
35	Guo, <i>et al.</i> [36]	China	X	-	X
36	Hagemann, <i>et al.</i> [37]	Ukraine	X	X	X
37	Hammer, <i>et al.</i> [38]	Sweden	X	-	X
38	Harmsworth, <i>et al.</i> [39]	New Zealand	-	-	X
39	Hering, <i>et al.</i> [40]	Europe	X	-	-
40	Hong and Chung [41]	South Korea	-	-	X
41	Howarth [42]	Europe	-	X	X
42	Huber-Stearns and Cheng [43]	USA	-	X	X
43	Hüesker and Moss [44]	Germany	-	-	X
44	Huitema, <i>et al.</i> [45]	No specific country	X	-	X
45	Hummel, <i>et al.</i> [46]	No specific country	-	-	X
46	Jin, <i>et al.</i> [47]	China	X	X	X
47	Jonsson [48]	Sweden	-	-	X
48	Kastens and Newig [49]	Germany	-	-	X
49	Kastens and Newig [50]	Germany	-	-	X
50	Keessen, <i>et al.</i> [51]	11 EU countries	X	X	-
51	Knieper and Pahl-Wostl [52]	Europe	X	X	X
52	Kochskämper, <i>et al.</i> [53]	Germany, Spain, UK	-	-	X
53	Kolinjivadi, <i>et al.</i> [54]	No specific country	-	-	X
54	Kotze and Silima [55]	South Africa	X	-	X

No.	Reference	Countries or continents studied	Perspectives		
			Ecological	Legal	Social
55	Lah, <i>et al.</i> [56]	South Korea	X	-	X
56	Le Bourhis [57]	France	X	-	X
57	Lee [58]	Europe	-	X	X
58	Leidel, <i>et al.</i> [59]	Ukraine	X	-	X
59	Lukacs, <i>et al.</i> [60]	USA	-	-	X
60	Mauerhofer, <i>et al.</i> [61]	No specific country	-	X	X
61	McLaughlin and Krantzberg [62]	Canada, USA	-	-	X
62	Metcalf, <i>et al.</i> [63]	Australia	X	-	X
63	Metz and Ingold [64]	Switzerland	-	-	X
64	Mihók, <i>et al.</i> [65]	Hungary	X	X	X
65	Moss [66]	Europe	X	-	X
66	Newig and Koontz [67]	Europe	-	-	X
67	Newig and Fritsch [68]		X	-	X
68	Newig, <i>et al.</i> [69]		-	-	X
69	Newson [70]	United Kingdom	-	-	X
70	Norman, <i>et al.</i> [71]	Mexico	X	-	-
71	Ostrom, <i>et al.</i> [72]	No specific country	-	-	X
72	Pahl-Wostl, <i>et al.</i> [73]	29 Basins worldwide	X	-	X
73	Pahl-Wostl, <i>et al.</i> [74]	No specific country	X	-	X
74	Parker [75]	USA	X	-	X
75	Parsons, <i>et al.</i> [76]	Australia	X	-	-
76	Pereira and Quintana [77]	Europe	-	-	X
77	Plambeck [78]	Europe	-	X	X
78	Plant, <i>et al.</i> [79]	Australia	X	-	X
79	Probohudono, <i>et al.</i> [80]	Indonesia	-	-	X
80	Raad van State [81]	Netherlands	-	X	-
81	Raadgever, <i>et al.</i> [82]	Netherlands	-	-	X
82	Rahaman, <i>et al.</i> [83]	Europe	-	-	X
83	Reeling and Gramig [84]	USA	X	-	X
84	Reinhard, <i>et al.</i> [85]	Europe	X	-	X
85	Richter, <i>et al.</i> [86]	Germany	X	X	X
86	Rissman, <i>et al.</i> [87]	USA	-	-	X
87	Roggero [88]	Germany	-	-	X
88	Ross and Connell [89]	Australia	-	X	X
89	Rutt and Bluwstein [90]	USA	-	X	X
90	Schindler [91]	USA	X	-	X
91	Schmidt, <i>et al.</i> [92]	China	X	-	-
92	Scholz and Stiffler [93]	USA	-	X	X
93	Scott [94]	USA	X	-	X
94	Scott [95]	USA	X	-	X
95	Scott and Trubek [96]	Europe	-	X	X
96	Smith and Porter [97]	USA	X	X	X
97	Somanathan [98]	South East Asia	-	-	X
98	Steiger-Meister and Becker [99]	USA	-	X	X

No.	Reference	Countries or continents studied	Perspectives		
			Ecological	Legal	Social
99	Storey, <i>et al.</i> [100]	New Zealand	-	-	X
100	Stuart and Gillon [101]	USA	-	-	X
101	Tan [102]	OECD countries	X	-	X
102	Taylor and Short [103]	USA	X	-	X
103	Trowbridge, <i>et al.</i> [104]	USA	X	-	X
104	Van der Heijden and Ten Heuvelhof [105]	Netherlands	-	-	X
105	Van der Heijden, <i>et al.</i> [106]	Netherlands	-	-	X
106	Van Holten and Van Rijswijk [107]	Europe	-	X	-
107	Van Kempen [108]	Europe	-	X	-
108	van Leeuwen and Sjerps [109]	Turkey	-	-	X
109	van Meerkerk, <i>et al.</i> [110]	Netherlands	-	-	X
110	Van Rijswijk [111]	Germany	-	X	-
111	Van Rijswijk, <i>et al.</i> [112]	Europe, 3 basins: Rhine, Meuse, Danube	-	X	-
112	Van Rijswijk [113]	Netherlands	-	X	-
113	Vollmer-Sanders, <i>et al.</i> [114]	Canada, USA	X	-	X
114	Vörösmarty, <i>et al.</i> [115]	No specific country	X	-	X
115	Wang and Ongley [116]	China	-	X	X
116	Wardropper, <i>et al.</i> [117]	USA	X	X	X
117	Waylen, <i>et al.</i> [118]	Scotland (UK)	-	X	X
118	Webb and Martin [119]	Australia	X	X	X
119	Weible and Sabatier [120]	USA	X	-	X
120	Wright, <i>et al.</i> [121]	Australia	-	X	X
121	Yates, <i>et al.</i> [122]	Canada	X	-	X
122	Zingraff-Hamed, <i>et al.</i> [123]	France, Germany	-	-	X

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