Western and Central Europe: people at risk of water scarcity - high adaptation

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| Summary of the assessed risk:  Risk of water scarcity in Western and Central Europe with high adaptation, including cascading impacts beyond the water sector (such as agriculture, energy and shipping). [13.10.2.3]  Database id: 143 ([link](https://climrisk.org/cree/ember/143)). Scenario: High adaptation.  This ember is found in the following figure(s): Figure 13.31 (a) of AR6-WGII-Chapter13;  (as a rule, summaries are not listed here)  The ember diagram included in this document is based on the assessment provided in the IPCC report and supplementary material listed below, but it does not come from the IPCC; all additional information is provided in view of helping to understand this diagram and is also based on, or reproduced from, the same IPCC sources. Please read the disclaimer notice at the end of this document. |  |

# Transition: undetectable to moderate

|  |  |  |
| --- | --- | --- |
| min | 1.5 | *medium confidence* |
| max | 2.5 |

There is currently an adaptation deficit that can be addressed. There is a high potential for water efficiency improvements and water savings. Regulations, pricing and taxation can help in achieving water demand reductions. [Table SM13.29, Figure 13.31(b), 13.2.2.2].

# Transition: moderate to high

|  |  |  |
| --- | --- | --- |
| min | 3.0 | *medium confidence* |
| max | 4.0 |

There is considerable potential for investment in large water infrastructure and advanced technologies (including storage), water transfer (with potential distributional impacts), water recycling and reuse (requiring time for infrastructure development), and desalination (albeit with adverse effects on the environment and energy demand). [13.10.2.3, table SM13.29 , and figure 13.31(b)]

Under high global warming, a large portfolio of measures is needed to sufficiently reduce risk to water scarcity [Figure 13.31(b)].

# Supplementary information

In Eastern Europe, uncertainty about changes in water scarcity pose distinct challenges for adaptation. [13.2.1.2.2]

Note: The fact that the risks are lower in Western and Central Europe (WCE) as compared to southern Europe probably contributes to the reduced amount of information specifically related to WCE, including about the effectiveness of adaptation options at different warming levels. Some of the text provided here, and how it is placed with regard to the risk transitions, reflects our understanding of the report, beyond the exact original wording. Due to the limited information specific to regions and warming levels, the explanations provided here for the transitions may still be incomplete. The confidence levels reflect figure 13.31 as well as the errata available from [ipcc.ch](https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Errata.pdf) regarding table SM13.29.

This information was filled on the basis of AR6 by Philippe Marbaix in April 2025. Comments are welcome.

# Specific references

Table SM13.29

# Reference for the source data:

Bednar-Friedl., B., R. Biesbroek, D.N. Schmidt, P. Alexander, K Yngve Børsheim, J. Carnicer, E. Georgopoulou, M. Haasnoot, G Le Cozannet, P. Lionello, O. Lipka, C. Möllmann, V. Muccione, T. Mustonen, D Piepenburg, L Whitmarsh, 2022: Europe. In: *Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.* [Pörtner, H.-O., D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 1817-1927. <https://doi.org/10.1017/9781009325844.015>  
Alternative direct download: [www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC\_AR6\_WGII\_Chapter13.pdf](https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter13.pdf)

Bednar-Friedl., B., R. Biesbroek, D.N. Schmidt, P. Alexander, K Yngve Børsheim, J. Carnicer, E. Georgopoulou, M. Haasnoot, G Le Cozannet, P. Lionello, O. Lipka, C. Möllmann, V. Muccione, T. Mustonen, D Piepenburg, L Whitmarsh, 2022: Europe Supplementary Material. In: *Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.* [Pörtner, H.-O., D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)], url: [www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC\_AR6\_WGII\_Chapter13\_SM.pdf](https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter13_SM.pdf)

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