



Appendix: Methods

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Methodological Appendix

This appendix outlines the research design and methodology employed during the development of the policy paper of CIVICA Group 31, composed of Sophia Danker, Celeste Del Vecchio, Pablo Dufour, Daniel Fein and Arnaud Foubert. It addresses the assigned research question: “Which policy features should a new EU “Clean Industrial Deal” have in order to make it politically and economically viable, in consideration of the current strategic challenges the EU is facing?”

The paper examines the strengths and weaknesses of the EU Clean Industrial Deal (CID), focusing on the integration of water management strategies to address vulnerabilities in the EU legislation. It provides actionable recommendations to align the CID with Europe’s green transition objectives.

Project Timeline and Milestones

1. Initial Team Organization (Oct 21, 2024)

The group convened through informal communication channels like WhatsApp and the Whaller platform. The focus agreed upon after thorough brainstorming and discussion was to address water-related issues concerning the EU Clean Industrial Deal. The area of focus was chosen due to its oversight in the Deal as a whole and due to members having previous professional experience in water management policies. Each member conducted individual research to gather insights relevant to the study's scope and research question. Contributions included the identification and sharing of think-tank reports, EU agencies’ reports, academic articles, and studies related to the CID.

2. First Meeting with Sienna Maria Nordquist (Oct 24, 2024)

During the first group meeting, the ideas of members were shared and discussed with the supervisor to establish a clear direction for the research. The supervisor presented the general expectations, logistical considerations such as deadlines and word count, and essential components of a successful policy paper. Following the presentation of the topic, her suggestions included narrowing it down by identifying specific industrial sectors affected by growing water scarcity. Additionally, she highlighted the need to draft policy recommendations that align with the objectives of the research while remaining evidence-based. This initial meeting established a clear and methodical foundation for the project.

3. Second Team Meeting (Nov 4, 2024)

Building on the supervisor's guidance, the team identified key sources and outlined the paper's structure, dividing it into sections: introduction and problem definition, current legislative gaps in industrial water management, and proposed recommendations supported by data and infographics. The main body focuses on analysing the gaps in water management within the CID and EU legislation. To ensure the recommendations align with these gaps, the team decided to conduct interviews with experts in the field to identify the most relevant and effective solutions. Tasks were divided among members, internal deadlines were set, and further collection of sources on each related topic commenced.

4. Second Meeting with Sienna Maria Nordquist (Nov 21, 2024)

During the meeting, the supervisor expressed her satisfaction with the scope and depth of the research conducted. Her primary advice was to refine the introduction and clearly articulate the paper's objective. She emphasized that policymakers often prioritise hard facts, so the recommendations should be supported by data and figures. Additionally, she highlighted the importance of clearly defining the relevant stakeholders to strengthen the policy's practical relevance.

5. Following the Meeting

The suggestions were well noted and the team proceeded to finalise the paper by refining the introduction and problem statement, collection of supporting data, and implementation of experts' input. The final draft along with a policy brief and this methodological appendix were submitted to the supervisor for final review on 12th December, with the team meeting for a final time on 13th December. After incorporating Sienna's final feedback all three deliverables were submitted on 15th December.

Methodological Tools

1. Quantitative Analysis

The research incorporated quantitative data on water usage to analyse existing gaps in EU policies and their impact on water management. This evidence was also used to back up the rationale behind the proposed policy recommendations. Most graphs were made by extracting relevant data (scope: the EU) from existing graphs and tables, except from figure 3.

Information on Data Extracted from Water Europe (2024), Assumptions and Calculation Methods:

Data Centres:

- Projected Use (2050): 90 million m³/year.
- Method: Current water use: 60 million m³/year, assuming 20% of data centre cooling relies on water. Projected capacity increase from 12,000 MW to 18,000 MW by 2029 results in a stabilized demand of 90 million m³/year.

Hydrogen:

- Projected Use (2050): 12,100 million m³/year.
- Source: Direct projection based on research into water requirements for green hydrogen production via electrolysis.

Batteries:

- Projected Use (2050): 3,025 million m³/year.
- Method: Batteries assumed to require 25% of the hydrogen sector's water demand.

Semiconductors:

- Projected Use (2050): 1,296 million m³/year.
- Method: Current monthly water use: 45–108 million m³, with the upper bound projected as an annual usage for 2050.

All Emerging Sectors Combined:

- Method: Sum of all emerging sector water demands.

Total Freshwater Abstraction 2022:

- Value Used: 197,000 million m³
- Source: EEA¹

¹ European Commission. (n.d.). Water scarcity and droughts. Retrieved December 5, 2024, from https://environment.ec.europa.eu/topics/water/water-scarcity-and-droughts_en

Bichart:

- Value: 29 % of EU territory was affected by water scarcity in 2019 (no future level of water scarcity found for EU, only a global estimate)
- Sources: European Commission ²

2. Literature Review

The research included an in-depth review of academic articles, policy documents, and reports focusing on the role of water in industrial production. The literature review served as the foundation for understanding the existing knowledge and gaps surrounding water management within the context of the EU Clean Industrial Deal (CID). The group examined diverse EU directives (such as the Water Framework Directive), reports from institutions like the European Environment Agency (EEA), and relevant case studies on water-intensive industries. This comprehensive review helped identify critical challenges, such as water scarcity, inefficiency, and legislative gaps, as well as best practices for sustainable water management.

3. Interviews

External Interviews were conducted using a brief email questionnaire with experts from the Secretariat of the Consultative Commission on Industrial Change, Institute for European Environmental Policy, Water Europe and Ecolab. The response rate was 27 %. These experts shared insights on the feasibility of the initial set of policy recommendations and shared their hierarchy of preferences as well as input on how to expand or narrow them. Additionally, an interview with Jens Nielsen the CEO of World Climate Foundation was conducted to understand the finance mechanism under the Investment Mobilisation Collaboration Alliance (IMCA), which served as an inspiration for policy recommendation two. Also, Mr. Nielsen shared his expertise on realistic leverage ratios for Public-Private Partnerships.

Expanded Tools and Resources

The team utilised Google Drive as a central platform for storing and organising all research materials, drafts, and final documents which enabled collaboration and effective version control. Communication and coordination were facilitated through a combination of tools including email, Zoom, Google Meet, and WhatsApp. These tools supported regular team meetings and streamlined discussions throughout the project.

² European Environment Agency (EEA). (n.d.). Water abstraction by source and sector. Retrieved December 5, 2024, from <https://www.eea.europa.eu/en/analysis/indicators/water-abstraction-by-source-and>