	4A
SUSTAINABILITY AND RESILIENCE	**Principle 13. Integrated strategies and local empowerment**

Target group / Relevant stakeholder: National Policy-Makers, Municipal Governments, Regulators, Urban Water Utilities, Medium Water Utilities, Rural Service Providers, Watershed or River Basin Organisations, User Groups, Networks or Platforms, and/or Private Sector

DESCRIPTION

Decentralised bodies (e.g., regions, watersheds, cities) use their own assets, efficiently manage utilities and waste companies, enforce regulations as well as collaboration with other local, national and international stakeholders (Christensen, 2021 and Lakatos et al., 2021 in Salvetti and Focacci, 2024, 22).

EXPECTED RESULTS

Outputs:

- Coherence between water governance and related policy areas (e.g., land use, energy, agriculture).
- Vertical coordination mechanisms and inter-municipal collaboration to enhance governance.
- Mechanisms for solidarity between urban and rural water users.
- Innovative governance practices promoting social learning and consensus building.
- Strategic plans for investment in water resource and wastewater management.

CONDITIONS FOR SUCCESS

- Sector policy and strategy: Water policies should adopt IWRM, considering cross-sector linkages (agriculture, energy, environment). They should also promote decentralised governance by transferring authority and resources to local entities (Hegga et al., 2020; Nyika and Dinka, 2018), ensuring participation in decision-making.
- Institutional arrangements: Governance frameworks should be multi-level, linking national, regional, and local institutions, and ensuring vertical and horizontal coordination. Legal frameworks need to support water user associations, local cooperatives, and consider existing traditional water governance systems.
- Sector financing: Adequate resources should be made available (Hegga et al., 2020; Nyika and Dinka, 2018) through blended models (public, private, community-based) to support both large-scale and local projects. Micro-financing and grants should enhance access to funding for marginalised groups and small-scale water users.
- Planning, monitoring and review: Data-driven decision-making, with integrated information systems for water use, climate impact, and ecosystem health. Community-based monitoring and participatory evaluation processes, with local stakeholders collecting and using water data.
- Capacity development: Knowledge sharing platforms, regional training centres, and technical exchange programmes. Local training programmes for farmers, women, and youth; and investment in local expertise to reduce reliance on external consultants.

BARRIERS

- Historical legacy: Inequalities in resource management (Taruvinga, 2024; Rahayu et al., 2019) and the long-term effects of historical water governance decisions (Rowbottom et al., 2022).
- Conflicts among stakeholders, who are representing specific water demands and socio-economic interests, usually arise in the politically sensitive water sector (Ricart Casadevall, 2022).
- Government interference or lack of support to decentralised governance (Taruvinga, 2024).
- Insufficient resource allocation to support local actors (Hegga et al., 2020).
- The effectiveness of decentralisation varies across countries and regions (Laryea-Adjei and van Dijk, 2012).

- Inertia and complexity of existing systems: The interaction of external pressures, innovation, diverse stakeholders and industry reforms (Quezada et al., 2016, Romano, 2017). The adoption of innovation is shaped by complex politics and powerful coalitions across governance levels (Daniell et al., 2014).
- Socio-institutional barriers: Lack of financial incentives and unaccounted external benefits, industry fragmentation, low community engagement, and limited knowledge on long-term operation and maintenance of decentralised systems (Quezada et al., 2016).

SOLUTIONS

- Application of participatory methods that foster dialogue, relationships, integrated thinking, and scientific understanding can build a foundation for adaptive and resilient water governance. Engaging stakeholders in modelling has proven effective in developing a shared knowledge base (Voinov and Bousquet, 2010).
- Implementation of shared tools to enhance stakeholder collaboration across different decision-making levels (Jubach and Tokar, 2016).
- Plurality in governance and institutional frameworks: Coordinating diverse actors by aligning formal state policies with local governance structures. A balanced approach that integrates decentralisation for stakeholder engagement with centralised regulation can enforce national environmental standards (Rowbottom et al., 2022).
- Awareness building, acceptance and support for the decentralisation reform process (UNDP-SIWI Water Governance Facility, 2000): Ensuring government commitment, promoting partnerships, enhancing participation, and creating an enabling environment can increase the chances of achieving successful outcomes (UNDP-SIWI Water Governance Facility, 2020).
- Allocation of resources can enhance the quality of relationships between actors (UNDP-SIWI Water Governance Facility, 2020).

EXAMPLES

Community-Driven Conservation of Italy's Torre Flavia Wetland

SDGs linked

Water risks

The Torre Flavia wetland, located on the outskirts of Rome, faced severe environmental degradation due to urbanisation, which led to silting and reduced water flow. Initially managed by a public agency with limited resources and environmental awareness, the area suffered from neglect. In 1997, a multi-stakeholder initiative began raising awareness about the need for conservation efforts, engaging the local community in restoration activities. By 2001, hydraulic systems were implemented to restore water levels, revitalising the wetland and providing a habitat for migratory birds. The Torre Flavia Long Term Ecological Research Station launched a citizen management programme in 2010, promoting conservation through citizen engagement, education, and scientific research. Today, Torre Flavia is one of Italy's most recognised biodiversity sites, demonstrating how community-driven conservation can transform neglected ecosystems.

Linkages to Governance Principles

Integrated strategies and local empowerment have ensured that the initiative aligns environmental, social, and economic dimensions. Stakeholder engagement has been central to Torre Flavia's success, with local citizens, schools, and volunteer groups actively involved in conservation efforts. Furthermore, the engagement of vulnerable groups, including youth and marginalised communities, has fostered inclusivity and social cohesion. The project has also enhanced environmental resilience by restoring natural habitats and promoting sustainable land management.

Local Engagement Approach for Groundwater Management in Sweden

SDGs linked

Water risks

The Kristianstad Groundwater Council in Sweden was established in 2007 to provide an inclusive platform for groundwater users to engage in collaborative water management. With approximately 90 members from 50 organisations, including government agencies, drinking water producers, businesses, NGOs, and citizens, the Council fosters knowledge-sharing and conflict resolution over groundwater use. Open meetings are held one to two times per year, featuring discussions on groundwater sustainability, resource availability, and protection areas. The Council also responds to regulatory consultations and maintains an online platform with real-time groundwater data to enhance transparency. While participation remains voluntary, its inclusive approach has improved stakeholder cooperation and helped integrate local groundwater concerns into broader water management policies, despite some challenges in mobilising resources and ensuring broad engagement.

Linkages to Governance Principles

The Council advances integrated strategies and local empowerment by engaging a broad range of stakeholders in groundwater decision-making. Environmental resilience is reinforced through discussions on sustainable aquifer management, ensuring long-term groundwater protection. Data and information sharing is a core function, with real-time groundwater monitoring and public access to meeting records, supporting informed decision-making. By promoting collaboration across different sectors, the Council demonstrates the value of participatory governance in resource management, balancing water needs while reducing potential conflicts.

REFERENCES

Christensen, T.B. (2021) "Towards a circular economy in cities: Exploring local modes ofgovernance in the transition towards a circular economy in construction and textile recycling". *Journal of Cleaner Production*, 305, 127058. https://doi.org/10.1016/j.jclepro.2021.127058

Daniell, K.A., Coombes, P.J. and White, I. (2014) "Politics of innovation in multi-level water governance systems". *Journal of Hydrology*, 519, Part C, 2415-2435. https://doi.org/10.1016/j.jhydrol.2014.08.058.https://www.sciencedirect.com/science/article/pii/S0022169414006684

Hegga, S., Kunamwene, I. and Ziervogel, G. (2020) "Local participation in decentralized water governance: insights from north-central Namibia". *Regional Environmental Change*, 20, 105. https://doi.org/10.1007/s10113-020-01674-x

Jubach, R. and Tokar, A.S. (2016) "International Severe Weather and Flash Flood Hazard Early Warning Systems—Leveraging Coordination, Cooperation, and Partnerships through a Hydrometeorological Project in Southern Africa". *Water 2016*, 8, 258. https://www.mdpi.com/2073-4441/8/6/258

Lakatos, E.S., Yong, G., Szilagyi, A., Clinci, D.S., Georgescu, L., Iticescu, C. and Cioca, L.I. (2021) "Conceptualizing Core Aspects on Circular Economy in Cities". *Sustainability 13*, 7549. https://doi.org/10.3390/su13147549/

Laryea-Adjei, G. and van Dijk, M.P. (2012) "Changing water governance in Ghana through decentralisation". *International Journal of Water*, 6 (3-4), 215-231. https://doi.org/10.1504/IJW.2012.049497

Nyika, J. and Dinka, M. (2018) "Managing water scarcity in an era of climate change in developing countries: the case study of Kenya". *Water Conservation & Management*, 7(1), 77-82. http://doi.org/10.26480/wcm.01.2023.77.82

Quezada, G., Walton, A. and Sharma, A. (2016) "Risks and tensions in water industry innovation: understanding adoption of decentralised water systems from a socio-technical transitions perspective". *Journal of Cleaner Production*, 113, 263-273. https://doi.org/10.1016/j.jclepro.2015.11.018

Rahayu, P., Woltjer, J. and Firman, T. (2019) "Water Governance in Decentralising Urban Indonesia". *Urban Studies*, 56(14), 2917-34. https://doi.org/10.1177/00420980188103

Ricart Casadevall, S. (2022) Water Governance and Social Learning: Approaches, Tools, and Challenges. In Leal Filho W., Azul A.M., Brandli L., Lange Salvia A., Wall T. (Eds.) *Clean water and sanitation. Encyclopedia of the UN Sustainable Development Goals.* Publisher: Springer. https://www.researchgate.net/publication/344264819_Water_Governance_and_Social_Learning_Approaches_Tools_and_Challenges

Romano, S.T. (2017) "Building Capacities for Sustainable Water Governance at the Grassroots: "Organic Empowerment" and Its Policy Implications in Nicaragua". *Society & Natural Resources* 30, 471-487. https://www.semanticscholar.org/paper/Building-Capacities-for-Sustainable-Water-at-the-in-Romano/a0dc4b65a9f23dfdfc2a19c0022fcc98176e2f24

Rowbottom, J., Graversgaard, M., Wright, I., Dudman, K., Klages, S., Heidecke, C., Surdyk, N., Gourcy, L., Amorim Leitão, I., Dinis Ferreira, A., Wuijts, S., Boekhold, S., Doody, D.G., Glavan, M., Cvejić, R. and Velthof, G. (2022) "Water governance diversity across Europe: Does legacy generate sticking points in implementing multi-level governance?". *Journal of Environmental Management*, 319. https://doi.org/10.1016/j.jenvman.2022.115598

Salvetti, M. and Focacci, C. (2024) *Enhanced water governance assessment tool*. Deliverable D2.1., Public, EU Horizon InnWater Project, Grant agreement No. 101086512.

Taruvinga, G.R. (2024) "Decentralisation and Water Governance in Africa: A Zimbabwean Case Study". *Politeia* 43(1). https://doi.org/10.25159/2663-6689/17106

UNDP-SIWI Water Governance Facility (2020) *No 1. Decentralisation of Water Decision Making*. UNDP Water Governance Facility at SIWI Issue Series. https://siwi.org/wp-content/uploads/2015/06/issue_sheet_no1_decentalisation.pdf

Voinov, A. and Bousquet, F. (2010) "Modelling with stakeholders". *Environmental Modelling & Software*, 25(11), 1268-1281. https://doi.org/10.1016/j.envsoft.2010.03.007