

Introduction

The initial proposal employs adjusted systematic review¹ with preferences given to recent articles with more than one author in the Scopus database. The pro of this approach are the tailored and self-reflexive approach to the topic, while the con is the subjectivity and the incomprehensiveness of the review.



Some applicable types of governance:

- *Networked governance is a polycentric formation focusing on negotiation, compliance via obligations, customized and frequent exchanges, as well as control via sanctions and reputation² as ways to organize participating actors.*
- *Heterarchy is an alternative horizontal organizational continuum, incorporates both networks and hierarchies³, coordinates operationally autonomous systems, conditioned by functional linkages⁴ (that are invisible to those involved and can shape strategy).*
- *The governance meshwork⁵ - a fluid framework consisting of recalibrating interactions among elements inclusive of informal and non-human agency (agreements, knowledge, mandates), whereby the normative structure is co-defined by participating actors, which reconstitute assemblages over novel agendas. With network-based approach being blind to histories and trajectories of how policy-relevant output emerges, the governance meshwork framework cares about methods, positions, roles, evaluation criteria, focuses on*

¹ Kysh, 2013, Difference between a systematic review and a literature review. <http://dx.doi.org/10.6084/m9.figshare.766364>

² Jones et al., 1997, A General Theory of Network Governance: Exchange Conditions and Social Mechanisms, <http://www.jstor.org/stable/259249>

³Cumming, 2016, Heterarchies: Reconciling Networks and Hierarchies, <https://doi.org/10.1016/j.tree.2016.04.009>

⁴ Jessop, 'The Governance of Complexity and the Complexity of Governance: Preliminary Remarks on some Problems and Limits of Economic Guidance', published by the Department of Sociology, Lancaster University, Lancaster, LA1 4YN, at <http://www.comp.lancs.ac.uk/sociology/papers/Jessop-Governance-of-Complexity.pdf>

⁵ Sarkki et al., 2019, Managing science-policy interfaces for impact: Interactions within the environmental governance meshwork, <https://www.sciencedirect.com/science/article/pii/S146290111630332X>

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storytelling and connections marking degree centrality in open-ended stakeholder engagement (density, centralization, number of subgroups)⁶.

- *Experimentalist governance is marked by collaborative strategy formulation with civil society, recursive review of polycentric local units, which peer review their discretely formulated implementation modalities and provide feedback to the centre⁷. Experimentation is itself a method that can be based on ecologies of innovation or a generative approach (specific domain) and is best for policy makers with limited alternatives and time, which allows them to build capacity and knowledge for future decisions (hence no monopolisation of results), e.g. via a directly deliberate poliarchy aimed at coalition building and anchoring of the instrument⁸.*
- *Hybridization of ideal-typical modes of governance (hierarchical, network, market) and the incorporation of the second-order self-adjustment capacity of the institutional design necessitates that institutions engage in the governance of governance, resp. “act as meta-governors”⁹.*
- *Managed institutional failure, learning and re-stabilization produce institutional change and such functionalist practices can be up scaled¹⁰.*



Building on these, water governance is a set of rules and norms that shape interdependency, adaption and system stability, comes at the expense of coordination that might undermine democratic accountability and is in reality hybrid (a mix of hierarchies, markets and networks) and resembles polycentric systems (mutually adapting autonomous decision-centres)¹¹. Weak cross-sectoral coordination, role delineation and transaction costs (insufficient information, monitoring, enforcement), complexity, indirect effects and vertical incoherence (in contrast to contraction and

⁶ Klenk, 2018, From network to meshwork: Becoming attuned to difference in transdisciplinary environmental research encounters, <https://www.sciencedirect.com/science/article/pii/S1462901118303277#fig0005>

⁷ Zabel & Zeitlin, Experimentalist Governance, [http://www2.law.columbia.edu/sabel/papers/Sabel%20and%20Zeitlin%20handbook%20chapter%20final%20\(with%20abstract\).pdf](http://www2.law.columbia.edu/sabel/papers/Sabel%20and%20Zeitlin%20handbook%20chapter%20final%20(with%20abstract).pdf)

⁸ Huitema et al., 2018, Policy experimentation: core concepts, political dynamics, governance and impacts <https://doi.org/10.1007/s11077-018-9321-9>

⁹ Ibid.

¹⁰ Newig et al., 2019, Sustainability through institutional failure and decline? Archetypes of productive pathways, <https://doi.org/10.5751/ES-10700-240118>

¹¹ Pahl-Wostl et al, 2020, Enhancing the capacity of water governance to deal with complex management challenges: A framework of analysis, <https://doi.org/10.1016/j.envsci.2020.02.011>

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inter-sectoral incoherence) are some of the acute problems it faces¹². In wider context, WFD alongside other policies, has been conceived with little attention to socio-ecological systems and adaptive learning and change that provides feedbacks, as operational monitoring and review are inflexible, which can be achieved instead via data and practice sharing¹³.



Evidence for Failure/Success from non-EU countries

To begin with, a dichotomous commons versus commodity prism provides insufficient explanation of the complexity of water governance, as the eastern Chinese tradition reveals that the state employs country-wide adoption of successful local level experimentation concerned with trading and exchange practices, while private actor goals of equity and environmental sustainability¹⁴. There are at least four clusters – complexity, uncertainty, tame and wicked problems – with e.g. low and high degree of wickedness resulting in similar effects in goal formulation and implementation, which hint that the success-failure dichotomy is insufficient and that governance strategies (law, incentives, persuasion) can further inform cluster conceptualization¹⁵. Some elements of failure in water governance include:

- *Lack of trust in scientific data, the subjective nature of trusted advice and socio-cultural embeddedness of employing legal and economic instruments necessitate conditions for trusted knowledge exchange at local level and usage of rewards for practice adoption, such as smarter regulation responses¹⁶;*
- *Perpetuation of the inherent egalitarian ecology, political definition of basin scales and foreign experts as beneficiary of aid that bring along externalities, such as reproduction of state subjects and neoliberal paradigms¹⁷;*

¹² Bolognesi and Pflieger, 2019, The coherence(s) of institutional resource regimes: Typology and assessments from the case of water supply management, <https://doi.org/10.1016/j.envsci.2019.05.003>

¹³ Waylen et al., 2019, Policy-driven monitoring and evaluation: Does it support adaptive management of socio-ecological systems?, <https://doi.org/10.1016/j.scitotenv.2018.12.462>

¹⁴ Jiang et al., 2020, Beyond contradiction: The state and the market in contemporary Chinese water governance, <https://doi.org/10.1016/j.geoforum.2019.11.010>

¹⁵ Sabrina Kirschke, Christian Franke, Jens Newig & Dietrich Borchardt, 2019, Clusters of water governance problems and their effects on policy delivery, *Policy and Society*, 38:2, 255-277, DOI: 10.1080/14494035.2019.1586081

¹⁶ Taylor and Eberhard, 2020, Practice change, participation and policy settings: A review of social and institutional conditions influencing water quality outcomes in the Great Barrier Reef, <https://doi.org/10.1016/j.ocecoaman.2020.105156>

¹⁷ Thomas, 2020, The Problem with Solutions: Development Failures in Bangladesh and the Interests They Obscure, <https://doi.org/10.1080/24694452.2019.1707641>



- *Underinvestment in water utilities, weak water bodies¹⁸;*
- *Insufficient mechanisms for coping with sociohydrological risk, either because power holders consider it as exogenous to their mandate and define vulnerability in a way that restricts their responsibility to act or because of overregulation that leads to inconsistent adoption and appearance of informal settlements and solutions (delivery in water bottles)¹⁹;*
- *Institutional structures created via competing interests and designed as responsive rather than adaptive to climate variability (e.g. managing one crisis to next or focusing only on water infrastructure), as they constrain water managers and bring forth path dependence²⁰;*



Building on the institutional decomposition and analysis framework, which finds positive correlation between economic development and water law integration with other sectors, governance centralization and accountability, an analysis of India suggests indicators (participation, financial transparency, integrated treat water treatment, independence, usage of science and technology and attention to poverty²¹ that can inform the definition of institutional clusters. Some (at least partial) successes are:

- *Inter-local government cooperation in Indonesia is a way to overcome patrimonial clientelism²²;*
- *Usage of delegated management and community management approaches that are better suited to the sub-Saharan Africa's public and the private suppliers' inability to grapple with corruption and curb investment²³.*
- *Process/outcome effectiveness defined success via usage of inclusion practices.*

¹⁸ Bolognesi and Nahrath, 2020, Environmental Governance Dynamics: Some Micro Foundations of Macro Failures, <https://doi.org/10.1016/j.ecolecon.2019.106555>

¹⁹ Lerner et al., 2018, Governing the gaps in water governance and land-use planning in a megacity: The example of hydrological risk in Mexico City, <https://doi.org/10.1016/j.cities.2018.06.009>

²⁰ Friend and Tinpanga, 2018, Urban Water Crises under Future Uncertainties: The Case of Institutional and Infrastructure Complexity in Khon Kaen, Thailand, doi:10.3390/su10113921

²¹ Ahmed and Araral, 2019, Water Governance in India: Evidence on Water Law, Policy, and Administration from Eight Indian States, doi:10.3390/w11102071

²² Rahayu et al., 2019, Water governance in decentralising urban Indonesia, DOI: 10.1177/0042098018810306

²³ Adams and Smiley, 2019, Urban water supply in Sub-Saharan Africa: historical and emerging policies and institutional arrangements, <https://doi.org/10.1080/07900627.2017.1423282>

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EU's Approach

The WFD has five elements – river basin districts, planning, participation, economic analysis, policy integration²⁴, which build on two of the four 1992 Dublin Principles (participation and commodification)²⁵.



Implementation in EU Member States

The fragmented (e.g. relevant stakeholders and accountability are not clearly defined), highly policy dense Swedish case suggests that central guidance for prioritization between different water quality issues that result in goal conflicts²⁶. The case of Ireland reveals a split between land and sea management and little interaction among implementing authorities²⁷.

With regards to participation in Germany, UK and Spain, advocacy, knowledge provision, fair process, deliberation and negotiation improve output and outcome quality²⁸. The Spanish case also reveals that despite the two-tier policy cycle (EU Commission providing tools and guidance for knowledge generation and river basin districts making political decisions) suffers from epistemic uncertainty stemming from problem and affected groups definition²⁹. Another split - between top-down WFD approach and a bottom up catchment management is evident in UK³⁰. While Netherlands's pragmatism entails high decentralization and topical integration of water boards, the WFD reduced the representation of state actors in basin committees in France, who nevertheless retain formulate management principles and resulted in a cost-effective strategy of

²⁴ Boeuf, B., and O. Fritsch. 2016. Studying the implementation of the Water Framework Directive in Europe: a meta-analysis of 89 journal articles. <http://dx.doi.org/10.5751/ES-08411-210219>

²⁵ Heldt et al., 2017, Is the EU WFD suitable to support IWRM planning in non-European countries? Lessons learnt from the introduction of IWRM and River Basin Management in Mongolia, <http://dx.doi.org/10.1016/j.envsci.2017.05.009>

²⁶ Soderberg, 2016, Complex governance structures and incoherent policies: Implementing the EU water framework directive in Sweden, DOI: 10.1016/j.jenvman.2016.08.040

²⁷ O'Hagan et al., 2020, Addressing the tangled web of governance mechanisms for land-sea interactions: Assessing implementation challenges across scales, <https://doi.org/10.1016/j.marpol.2019.103715>

²⁸ Kochskaemper, E. et al., 2016, Participation for effective environmental governance? Evidence from Water Framework Directive implementation in Germany, Spain and the United Kingdom, <https://doi.org/10.1016/j.jenvman.2016.08.007>

²⁹ Cabello et al., 2018, Unravelling narratives of water management: Reflections on epistemic uncertainty in the first cycle of implementation of the Water Framework Directive in southern Spain, <https://doi.org/10.1016/j.envsci.2018.03.019>

³⁰ Pahl-Wostl, 2020, Enhancing the capacity of water governance to deal with complex management challenges: A framework of analysis, <https://doi.org/10.1016/j.envsci.2020.02.011>

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two levels and four river basin districts³¹. In Greece and the Eastern Mediterranean river catchments might not be sufficient to provide for adjacent cities resulting in a necessity for interbasin transfers³². In Romania, the reorganization of water service providers into regional ones have reduced fragmentation, but led to expansion of areas of operation, e.g. improving connection and wastewater treatment³³.

Generally, some of the acute problems in WFD include inefficient classification, centralization and a departure from the systemic intentions (e.g. inclusion of multiple perspectives)³⁴. Existing horizontal networks (e.g. multiple layers of authorities coordinating sectoral bodies) can be also said to add to the interplay with the ecosystem administration approach (better adopted at local level) that the WFD pushes for, thus supporting changes to a multi-level national system (dependent on natural characteristics, such as number of catchments, etc³⁵).

Principles in Water Framework Directive

Polluter pays and integrated management principles were introduced in 1970s-1980³⁶. Polluter pays principle entails that those who cause the pollution should pay for it, while the user pays principle (Art. 9) enshrines service and restoration cost recovery, with the first left to the discretion of states and the latter diverging in interpretation³⁷ and despite efforts to include these end users do not pay full cost of water supply, esp. its environmental costs³⁸, due to inconsistencies in wording (e.g. taken into consideration instead of in accordance), allowing for lowest reasonable level to be applied to factories and consumers³⁹.

³¹ Liefverink, 2011, The EU Water Framework Directive: A multi-dimensional analysis of implementation and domestic impact (Denmark, Netherlands, France), doi:10.1016/j.landusepol.2010.12.006

³² Moutsopoulos and Petalas, 2018, Water supply of Greek cities: the WFD and the principles of integrated water resources management, <https://doi.org/10.1080/09654313.2017.1421909>

³³ Teodosiu et al., Sustainability in the Water Use Cycle: Challenges in the Romanian Context, DOI: 10.30638/eemj.2012.248

³⁴ Voulvoulis et al., 2017, The EU Water Framework Directive: From great expectations to problems with implementation, <http://dx.doi.org/10.1016/j.scitotenv.2016.09.228>

³⁵ Indset and Stokke, 2015, Layering, Administrative Change and National Paths to Europeanization: The Case of the Water Framework Directive, <https://doi.org/10.1080/09654313.2014.915014>

³⁶ Bolognesi and Nahrath, 2020, Environmental Governance Dynamics: Some Micro Foundations of Macro Failures, <https://doi.org/10.1016/j.ecolecon.2019.106555>

³⁷ Corelje et al., 2007, Integrating water management and principles of policy: towards an EU framework?, doi:10.1016/j.jclepro.2006.07.034

³⁸ Jalon et al., 2016, The Environmental Costs of Water Flow Regulation: an Innovative Approach Based on the 'Polluter Pays' Principle, DOI 10.1007/s11269-017-1663-0

³⁹ Unnerstall, 2007, The Principle of Full Cost Recovery in The Eu-Water Framework Directive—Genesis and Content, doi:10.1093/jel/eq1038

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Cost effectiveness principle comes against the disproportionality principle, which gives member state discretion in selectively undercharging or overcharging for the ecosystem service, yet, however, the scale of the disproportionality analysis is not specified⁴⁰. Employing disproportionality in a hypothesis of high costs for achieving good status can also undermine the desired outcomes and can be justified on a mixture of affordability and cost-benefit analysis⁴¹. The Precautionary principle builds on prevention and source principles, caters for safety and address risk management under scientific uncertainty under criteria of proportionality, non-discrimination, consistency, cost-benefit analysis, review and allocation of responsibility (burden of proof usually in the polluting/producing party), can be traced back to 1992's Rio Declaration and is included in EU's Reach directive, Food Safety provisions and WTO's trade guidelines⁴². Participatory policy and relevant knowledge production has proven difficult to capture non-linear socio-natural entanglements related to the setting despite the river basin focus, target appropriate action and deal with future uncertainty, partly due to a quest for harmonized knowledge and predefined problems⁴³.



Subsidiarity, a principle of selecting the effective level of implementation closest to the problem originating in the devolution of power between European communities and member states, is embedded in the WFD (Art. 3, 12, 14) and can be supported by federal structures such as those in Malaysia (balanced with top-down governance), with other approaches including Ecosystem Services Approach (ESA), integrated river basin management (IRBM), catchment based and stakeholder led river management⁴⁴. While some of these have made their way in EU biodiversity strategy, in the future more support for further coherence of implementation and mainstreaming in agriculture policy in lieu of sustainable intensification and floods directive will be needed⁴⁵.

Externalization

⁴⁰ Ortega, 2012, Economic prescriptions and policy applications in the implementation of the European Water Framework Directive, <http://dx.doi.org/10.1016/j.envsci.2012.06.002>

⁴¹ Klauer and Schiller, 2016, Disproportionate costs in the EU Water Framework Directive—How to justify less stringent environmental objectives, <http://dx.doi.org/10.1016/j.envsci.2016.01.017>

⁴² Crawford-Brown, 2011, The precautionary principle in environmental regulations for drinking water, doi:10.1016/j.envsci.2011.02.002

⁴³ Kaljonen et al., Seeking policy-relevant knowledge: a comparative study of the contextualisation of participatory scenarios for the Narew River and Lake Peipsi, doi:10.1016/j.envsci.2011.10.006

⁴⁴ Khalid et al, 2020, Legal framing for achieving 'good ecological status' for Malaysian rivers: Are there lessons to be learned from the EU Water Framework Directive?, <http://dx.doi.org/10.1016/j.ecoser.2017.06.015>

⁴⁵ Carvalho et al., Protecting and restoring Europe's waters: An analysis of the future development needs of the Water Framework Directive, <https://doi.org/10.1016/j.scitotenv.2018.12.255>

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The EU commission, which oversees the WFD, engages in cross-cutting coordination between DG Envi and other directors horizontally, as well as vertically through a peer review mechanism in which multiple national authorities partake⁴⁶. The WFD is transferred mainly to candidate countries (e.g. Turkey) or part of trans-national river basins (in Western Balkans and Ukraine, resp. EU Enlargement and Neighbourhood) and supported, in the case of Mongolia by donors and NGOs (national development agencies, WWF, GWP), yet do not cater for poverty, social and demographic issues, gender, capacity development and is easier if countries have legal, data monitoring, compensation capacity⁴⁷. EU's environmental foreign policy rests on the principle of externalization of internal policies via the principle of parallelism between internal and external domains (e.g. Reach, support for ETS systems via the World Bank), the transposition of the acquis in its Neighbourhood, establishment of horizontal platforms (e.g. Green Diplomacy Network), support for UN MEAs via the GSP+ scheme for ACP countries, strong role in mega summits, UNEP and issue-specific regimes (UN conventions and protocols), in which it is altogether reliant on policy rather than political solutions⁴⁸. Even though the milieu is unfavourable – NGOs support commodification, tariffs are below cost recovery needs, investing in infrastructure is seen as risky by operators, there is weak regulatory framework – the EU has clear intentions to promote public participation in water governance in Eastern European ENP Countries⁴⁹, whereby institutionalization of policy cooperation (e.g. twinning, transborder governance facilities), interdependence, cost of rule adoption⁵⁰, hard incentives and domestic political will are strong factors⁵¹.



The EU's external engagement is guided by the principles of its own functioning (Art.21 TEU) and as the largest aid donor can be considered critical in establishing normative coherence for sustainable development. Yet, this cannot be said for its external water policy (e.g. EU Water

⁴⁶ Indset, 2018, The Changing Organization of Multilevel Water Management in the European Union. Going with the Flow?, <https://doi.org/10.1080/01900692.2016.1274325>

⁴⁷ International Conference on Water and the Environment: Development Issues for the 21st Century. 26–31 January 1992, Dublin, Ireland. . Report of the Conference, Geneva: World Meteorological Organization; online: www.wmo.ch/web/homs/documents/english/icwedec.html

⁴⁸ Schunz, 2017, The European Union's environmental foreign policy: from planning to a strategy?, <https://doi.org/10.1057/s41311-017-0130-0>

⁴⁹ Anne Wetzels, 2011, The promotion of participatory governance in the EU's external policies: compromised by sectoral economic interests?, *Democratization*, 18:4, 978-1000, DOI: 10.1080/13510347.2011.584735

⁵⁰ Freyburg et al., 2011, Democracy promotion through functional cooperation? The case of the European Neighbourhood Policy, DOI:10.1080/13510347.2011.584738

⁵¹ Brouwer et al., 2013, Mainstreaming climate policy: the case of climate adaptation and the implementation of EU water policy, doi:10.1068/c11134

Initiative), as despite support for water infrastructure sentient to poverty, CSO advocacy on water issues (Costa Rica, Palestine), it foregoes the human rights dimension and conditions aid, loan and trade instruments (EPAs and FTAs) to service liberalization, which has led to global corporate centralization in the sector⁵². The strong support for human right to water by CSO and trade unions has resulted only in technical adjustments and albeit national development agencies have dropped privatization as a conditionality, aid allocated by them and the Commission is low⁵³. Further incoherence is evident also in the way the EU conducts water projects in developing countries⁵⁴ and as payment for watershed services in Mexico suggests, the PCD's potential to identify potential policy spill-overs has only been partially used⁵⁵. On separate note, the RBM approach's lack of sensitivity to conceptual and political challenges can be said to influenced little EU's fisheries policies⁵⁶, which have altogether rather hindered economic development (incl. with payments for access to water), perpetuated power imbalances with ACP⁵⁷ and led to subsidy driven overexploitation of marine resources⁵⁸.



Another potential instrument – EU Science Diplomacy - is constrained by diverging agendas, claims and resources between the member states and the commission, as well as latter's institutional divide among DGs it does not run counter their interest but provides a novel avenue in foreign policy and can contribute to multi-level governance⁵⁹. In particular, with River Basin Organizations at its core, water science diplomacy can instigate interdisciplinary, multi-level, formal and informal, intra-state transboundary cooperation over shared resources⁶⁰, incl. intersectionality via nexus governance that can cater for institutionalization of comprehensiveness, overcoming

⁵² Koff and Maganda, 2016, The EU and The Human Right to Water and Sanitation: Normative Coherence as the Key to Transformative Development, doi:10.1057/ejdr.2015.77

⁵³ Langford and Russel, The Right to Water in Context, doi:10.1017/9780511862601.003

⁵⁴ Nshimbi, 2019, SDGs and decentralizing water management for transformation: Normative policy coherence for water security in SADC river basin organizations, <https://doi.org/10.1016/j.pce.2019.02.010>

⁵⁵ Koff and Madanga, 2019, Saving the baby while discarding the bathwater: the application of policy coherence for development analysis to payment for watershed services, doi: 10.21829/myb.2019.2531760

⁵⁶ Karbon and Kejzer, The European Union and Policy Coherence for Development: Reforms, Results, Resistance, doi:10.1057/ejdr.2015.72

⁵⁷ Antonova, 2016, The rhetoric of "responsible fishing": Notions of human rights and sustainability in the European Union's bilateral fishing agreements with developing states, <http://dx.doi.org/10.1016/j.marpol.2016.04.008>

⁵⁸ Okafor-Yarwooda and Belhabibb, 2020, The duplicity of the European Union Common Fisheries Policy in third countries: Evidence from the Gulf of Guinea, <https://doi.org/10.1016/j.ocecoaman.2019.104953>

⁵⁹ Ruffin, 2019, EU science diplomacy in a contested space of multi-level governance: Ambitions, constraints and options for action, <https://doi.org/10.1016/j.respol.2019.103842>

⁶⁰ Klimes et al., 2019, Water diplomacy: The intersect of science, policy and practice, <https://doi.org/10.1016/j.jhydrol.2019.02.049>

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embedded interests and identification of alternatives and mitigation measures⁶¹. The transboundary nexus governance perspective in water diplomacy can also help overcome state centrism, uncertainty and solve conflicts, inter alia via adding intra-state (sectoral, regulatory and institutional) arrangements and practices and using collaborative indicator framing and exercising in simulation labs⁶².



⁶¹ Venghaus and Hake, 2018, Nexus thinking in current EU policies – The interdependencies among food, energy and water resources, <https://doi.org/10.1016/j.jhydrol.2019.02.049>

⁶² Salmoral, 2019, Water diplomacy and nexus governance in a transboundary context: In the search for complementarities, <https://www.sciencedirect.com/science/article/pii/S0048969719330864#f0010>

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