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Guidelines for equitable participation in water decision-making

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Key points

This document is designed to foster collaboration between researchers, practitioners and stakeholders who manage and allocate water. The guidelines address how to make multi-stakeholder participation and decision-making in water planning more equitable. Applications of knowledge co-production and participatory action research (PAR) are described in real-world case studies. We present a pathways approach, used in the case studies to encourage and facilitate equitable participation as well as to identify and overcome barriers to engagement. The content of the document should empower researchers and stakeholders to find entry points, end-goals, and pathways for engagement and ownership in water decision-making.

Introduction: who can use this document?

These guidelines are intended to help both researchers and practitioners enable equitable participation in water decisions. Stakeholders who may be included in decision-making on water can take a variety of forms, from an individual curious about their local water management to an organized sectoral group seeking to influence the planning process.

The first section of this document, "What is multi-stakeholder participation in water and how can we make it equitable?", defines the context for multi-stakeholder participation (MSP) in water decision-making processes. Here, we present case studies to provide context and to illustrate the diversity in entry points and end points for participation in water decisions. The multi-stakeholder-oriented pathways approach focuses on the social and institutional elements involved in water adaptation. In this context, these methods attempt to include multiple stakeholders with conflicting goals, interests and values (Werners et al., 2021). The pathways approach recognizes different levels of participation, which vary according to each interest group.

The second part of this guide, "Guidelines for Participatory Action Research for multi-stakeholder participation and equitable water governance", is written for practitioners and stakeholders, such as community groups or water users, that want perspective on what can be expected when getting involved in a participation process for water management, as well as a discussion of how this process might be made more equitable. We connect the theory of Participatory Action Research (PAR) with the pathways approach to achieve more inclusive participation. We present how PAR brings together researchers, practitioners and stakeholders to understand environmental challenges and find solutions, promoting equality in participation and targeting the needs of a particular group in an iterative cycle of research that ultimately generates a better understanding of the conditions and possible solutions in order to take action (Baum, 2006).

By presenting the background on multi-stakeholder participation and case studies and by showing the pathways approach as an entry point for participation, we expect to connect local actors with a practical approach to engage in water decisions and to create ownership of the resulting policies through cooperation.

1. What is multi-stakeholder participation in water and how can we make it equitable?

Human decisions on water can have a wide effect, impacting rivers, ecosystems, economies, livelihoods, cultures and spiritual values. To make our decisions more equitable, we need to engage directly with the people affected and understand the norms, values and forms of knowledge surrounding water which underlie these decisions. The participation of people affected by the decisions, known as "stakeholders", is deeply connected to power relations. In this case, when co-learning occurs, researchers are among the stakeholders. As these guidelines show, these power relations cut across jurisdictions and scales and are held together by "discourses" – that is, by knowledges and the ways in which people represent and give meaning to the world around them. As critics of participation have pointed out, the concept of participation can often too readily lose its meaning, becoming a synonym for "engagement", "empowerment", "involvement", "consultation", "deliberation", "dialogue", "partnership", "outreach", "mediation", "consensus-building" and "civic science" (Cooke & Kothari, 2001; Hickey & Mohan, 2004). Despite this tendency, the aims of participation in water management are historically rooted in the Dublin 1992 Principles (Gorre-Dale, 1992), which call for the involvement of individuals or groups that are affected by a water decision to be involved in that decision-making process. While certainly a laudable goal, achieving such inclusivity in decision-making requires greater sensitivity to the role of discourse in participatory processes.

This acknowledgement of the discourses underlying multi-stakeholder participation (MSP) manifests most overtly in the way different stakeholders – whether they be industry, large or small mining groups, public relations branches of polluting energy companies, or local users of water such as farmers, families, Indigenous peoples and fishing communities who often suffer from pollution impacts – give meaning to water. When all who have an interest in the decision are involved in the process, it is possible to achieve MSP in water decision-making. However, barriers to equitable decision-making appear often when water is scarce, often resulting in those with more power influencing its distribution to their own advantage. As such, power is an important factor, as it can be used to control decisions on water governance. Studies on this topic have concluded that power dynamics based on race, economic status, technical knowledge and political status generally inhibit disadvantaged individuals (Bréthaut et al., 2019), preventing the implementation of comprehensive MSP.

Even when participatory spaces are made accessible, some water actors that may perceive low benefit in their participation may refrain from joining the process, particularly if they have competing interests with those engaging in the participatory process or if their activities are negatively affecting disadvantaged water users across the river basin who are engaging in the participatory work. For instance, water-intensive and reliant sectors, such as the mining or large-scale agriculture industries, may not want to engage in these participatory spaces as the strength of the other organized groups may undermine their own power and interests. In other words, mining groups and similar industry bodies can entrench their own positions of power by refusing to participate, as to participate opens them up to critique. In not engaging, they can continue with business as usual without needing to consider other communities or actors engaged with water. This feeds into imbalances of power, leading to limited participation of all that need to be at the table. At its core, MSP is about giving people an active role in water decision-making, but the challenge is in making equitable implementation procedures. There are multiple stakeholders, with varying views, affected by any water decision. How do stakeholders navigate the world of MSP possibilities and realities in water decision-making?

Background

Water management processes are influenced by many factors, including legislation and regulation, governance arrangements, power structures, environmental conditions, policy implementation scales ranging from the river basin to the household level, and planning instruments at municipal, regional, national and even transboundary levels.

Water management instruments such as watershed plans or integrated water management processes can vary enormously by region. Different themes may be covered such as river basin management, flooding water systems, drought management, water permits, water rights and environmental flows. Likewise, the level of local knowledge incorporated into the planning, and the expertise available to produce and implement the plans, can differ with each region. Each plan may also be at a different implementation stage, and timelines for achieving the established goals may range from one or two years to a decade. Each of these factors can greatly influence MSP.

Participation in decision-making for water governance may take a variety of forms. A range of stakeholders with a diverse set knowledge and expertise may be engaged at multiple scales across space and time. “Authentic participation” in research and knowledge production, as Robin McTaggart notes, “means sharing in the way research is conceptualised, practiced, and brought to bear on the life-world” (McTaggart, 1999; Rappaport, 2020). Responsible agency – that is, ownership of knowledge production and technical expertise specific to each decision-making context – “is made possible by grassroot participation in setting the research agenda, collecting the data, and controlling the ways in which the information is used” (Rappaport, 2020). For example, water-related participatory processes associated with Colombia’s River Basin and Management Plan (*Plan de Ordenación y Manejo de Cuenca Hidrográfica – POMCA)* establish rules and regulations on how water decisions are made in Colombia (see section on Case study 2 below) and stakeholders have clear roles to play within the water governance. Such a structure fosters beneficial interactions between research and practice, allowing the multiple organizations involved in water to meaningfully engage with other water users. This environment helps researchers and practitioners to support each other, where “the work of consciousness-raising feeds into the work of organizing and mobilizing, which, in turn, supplies new research questions” (Fletcher, 1988; Rappaport, 2020). Creating such an environment is the core goal of PAR.

Participatory processes generate a variety of social and environmental outcomes. The outcomes may depend not only on the type and degree of stakeholder participation, but also on the extent to which these participatory processes equitably recognize the multitude of alternative knowledges of water held by all stakeholders. Opening up decision-making processes to non-state actors, for instance, is an important step to allow for both greater representation of multiple interests and confronting the status-quo discourse, particularly from those that are often underrepresented or marginalized (Fung, 2006). However, simple inclusion is not enough. Decision-making processes “may range from classical political-administrative decision-making processes to highly inclusive instances of co-governing” , with not all processes being participatory or collaborative (Jager et al., 2020). To achieve equity in water governance, the decision-making process must allow for underrepresented actors to meaningfully participate and collaborate, beyond simply being included (Newig & Fritsch, 2009). Only in doing so can water-related participatory processes achieve full representation of interests.

Alongside the procedural insights offered by a PAR approach, the river basin approach (or integrated water resource management, IWRM) to water governance that has been dominant in recent years has pushed for decentralization in water management. A river basin approach often involves river basin organizations –specialized organizations set up by political authorities, or in response to stakeholder demands, to deal with the water resource management issues in a river basin, a lake basin, or across an important aquifer - as a means for participation of water users and civil society (Kauffman, 2015). However, the river basin approach may lead to potential conflicts or mismatches with existing administrations or governments, particularly when the politics of knowledge production are ignored. For instance, although river basins are defined by

natural boundaries, river basin management is also a result of political processes demarcating not only administrative boundaries, but also knowledge boundaries – between technical expertise or knowledge on the one hand and lay or tacit knowledge on the other (Warner et al., 2014). Ensuring that participatory processes are equitable requires that we address both these challenges – the political and the educational – to address conflicts around competition for common resources and introduce collaboration to achieve better outcomes for all. Lack of collaboration may result in conflicting water use across the basin, leading to unsustainable water use and insufficient or unsafe water supply for downstream users.

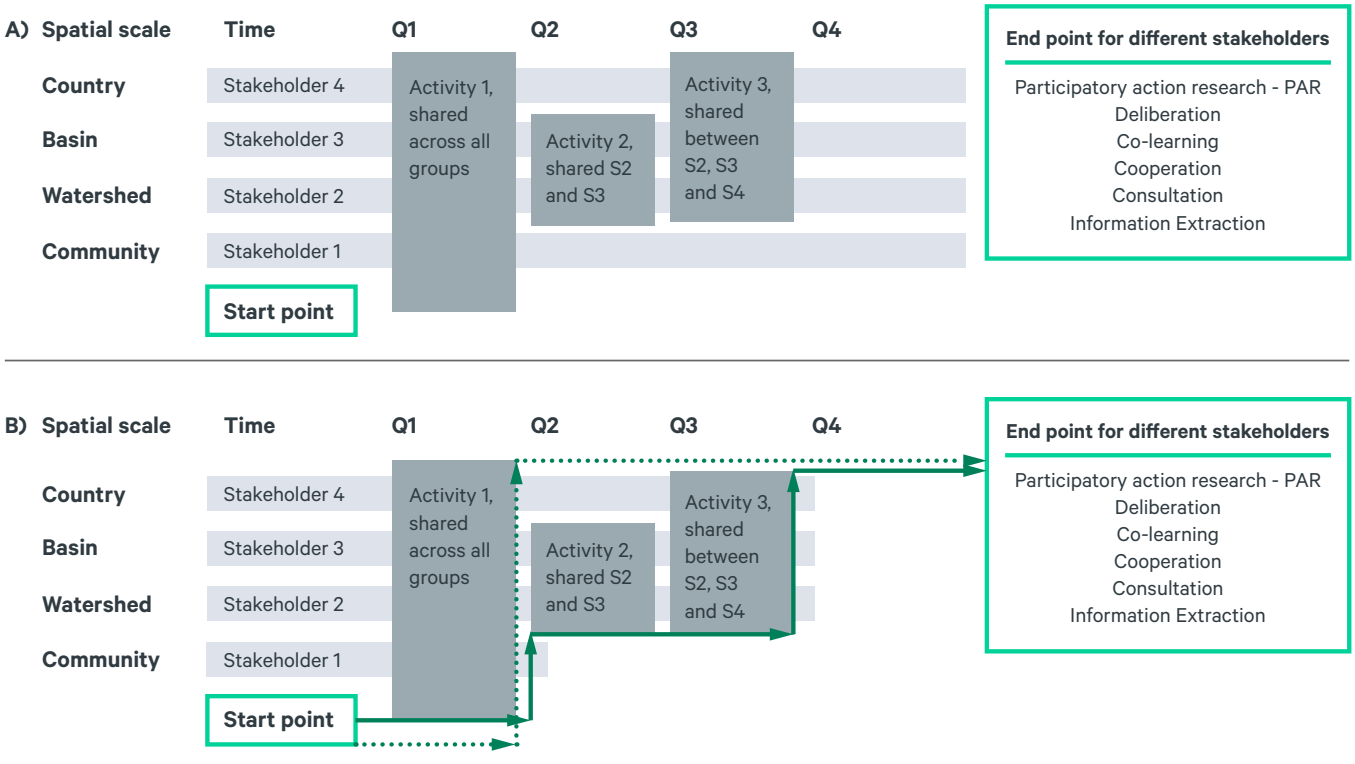
What is a pathways approach?

A pathways approach is a concept that emerged in the climate change discourse since 2010 to represent an evolution from understanding climate adaptation as predicting impacts and providing responsive options, to acknowledging the uncertainty in decision processes inherent in climate adaptation (Werners et al., 2021). Pathways thinking itself is similar to the concepts of outcome mapping, logic models and theory of change, with the basic notion of pathways as sequential decisions and measures over time (Jager et al., 2020).

The proposed PAR-Pathways approach to MSP builds upon the PAR steps outlined above. Once the stakeholder groups, research questions, and structures of power and knowledge have been mapped, a pathways approach can be used to understand and visualize the diverse roles for different stakeholders toward achieving collective goals.

Figure 1 shows an example of a pathways approach to visualize the roles of and connections between various groups in water decision-making activities. The figure shows how some roles can be shared across all groups (activity 1), while others involve only certain groups (activities 2, 3). For example, stakeholder 4 may represent government, which has an end point of achieving

Figure 1. A) Example of a pathways approach for Multi-stakeholder Participation in Participatory Action Research which starts by laying out different stakeholders, different activities and timelines, and B) Example application of two different paths for the process, each ending in the same ultimate goal of PAR. Note that in B, other paths can be taken and the process may not end at the desired PAR level.



a decision through collaborative participation or PAR. Meanwhile, stakeholder 1 may represent a local community, which may not have legal authority in making the final decision but can influence the outcome through consultation processes (e.g. interviews, written submissions). The pathways approach allows for a space to empower and recognize the contributions of marginalized groups.

The pathways approach as presented in the example in Figure 1 shows how there are spatial and time dimensions to the process which are independent from each other, and with different activities occurring in different moments and involving different actors. In this case, the initial step is laying out the stakeholders at different scales and the different activities that could be undertaken in the process (see Figure 1A). In Figure 1B, although different paths are possible from the start point to the end point, each stakeholder group has the opportunity to engage in different activities and at different participation levels at a given time and to interact with other groups as needed. In path 1 (solid line), for example, the stakeholder group 1 starts by engaging in activity 1 through information extraction or consultation, however they are not necessarily included in activities 2 and 3 and so have reached their endpoint in the process. Stakeholder group 2, after engaging in activity 1, continues their participation role in activities 2 and 3 in order for the overall process to end up at a PAR that integrates their perspectives. Note that in path 2 (dotted line), the overall process path is more direct with less activities, but it leaves out the potential involvement of stakeholders in other activities. Stakeholder groups may actively choose to not take part in activities depending on their time availability or need for specific outcomes in the different activities that require or should incorporate their input for decision-making.

When coupled with the PAR agenda as shown in the figure, a pathways approach can help identify which activities each stakeholder need to be involved in to represent their interests while co-producing an understanding of an appropriate starting and end point of PAR, determined by the desired participation roles for each group. These pathways operate within organizational structures, and the critical point for any stakeholder group is to find and cultivate the MSP spaces and equitable participatory processes that are best matched to their desired result. Examples from our case studies include the Colombia case for generating a participatory consultation process that led to stakeholder co-learning, and the Mekong example of the MSP boycott as a case where actions took place outside of the water decision-making body.

It is important for stakeholders to remember that an equitable participatory pathway – one which fosters consensus-based decision making – might not be politically feasible in their own water management setting. Established policies and practices may only allow certain groups in the formal decision-making process. However, a PAR approach can break those existing norms and patterns by eliminating exclusionary policies and helping marginalized stakeholder groups to address such inequities by promoting knowledge co-production and a platform to share information and stories. Although the pathways approach employs consultation and co-production as a means rather than end, its establishment and nurturing through various decision stages holds the potential to transform the interactions between stakeholders across different pathways as more connections and collaboration lead to a closer bond among them. Therefore, stakeholders need to understand the engagement processes available to them, the extent to which these highlight their own concerns and interests, and then identify which ones they will need to undertake to form a pathway to their desired end point in water decision-making.

To illustrate the pathways approach, we present a set of case studies from across the globe. The four case studies present different levels of participation across diverse conditions. Individual pathways to water decision-making vary, united by the key question: **Which pathway is best for the stakeholder group?**

Case study 1. New Zealand – A pathway to MSP that recognizes a river as a "legal person"

In New Zealand, a pathway to MSP is illustrated by how local Indigenous groups fought for over 100 years to grant legal recognition to a river to protect their resources. In New Zealand, the Te Awa Tupua (Whanganui River Claims Settlement) Act 2017 dictates that the river is a living entity and a legal person with rights that can be judicially enforced by appointed guardians (Hutchison, 2014). In this process, legislature provided legal personhood to the Whanganui River after the continuous efforts of the Indigenous Whanganui Iwi to enforce their customary property and fishing rights over the river and protect the river from overexploitation and misuse. After this settlement, other Indigenous nations in New Zealand and other countries have followed suit to protect their ecosystems.

Before the settlement, the Whanganui Iwi – the Indigenous Maori peoples living along the Whanganui River – lacked representation and power in decision-making over the river. Traditional Maori practices and rights were not recognized in earlier water management actions; in particular, their perspective of the river as a living entity was ignored. As a result, the Whanganui Iwi embarked on a long struggle to become involved in collaborative decision-making for the river's interests (Hutchison, 2014). It started when the Whanganui Iwi protested and sought legal action for recognition of its relationship with the river in the 1870s. This continued through 1975, when New Zealand's national government allowed for grievances to be heard, although without much action at that point. In 1990, the river was recognized by the government as a *taonga* – a Maori word meaning a priceless treasure – but the rights to the river were still not granted to the Maori and the government had done little to improve fish management and pollution control. By 2008, a new government representing the centre-right National Party won an election and started a debate about how to treat the river as a person in line with the Maori perspective. This ultimately resulted in the 2017 law assigning the Whanganui Iwi to speak on behalf of the river in decision-making instances (Hutchison, 2014).

Implementation of the Te Awa Tupua framework is supported through a series of payments to the river by the Crown, including a NZD 30 million contestable fund, Te Korotete o Te Awa Tupua, which can be used by the Maori for the purposes of giving the rights of the river and its catchment force and effect guaranteeing the financial support for implementing and operationalizing the new framework (O'Donnell and Talbot-Jones 2018). To meet this final goal, the Whanganui Iwi pursued many courses of action, but the pathway that led to the river's legal personhood was based on traditional values and actions – including the recognition of the river as a living being – and strong local stakeholder leadership through policy, legal and community traditional processes.

Following the passage of the Te Awa Tupua, as the guardians of Whanganui River, the Whanganui Iwi have four clear duties (Hutchison, 2014):

1. to act and speak for and on behalf of the river;
2. to uphold the river's recognition and values as an indivisible entity and as a legal person;
3. to promote and protect the environmental, social, cultural, and economic health and well-being of the river; and
4. to take any other action reasonably necessary to achieve its purpose and perform its functions.

In the wake of the 2017 Act, a strategy group was formed consisting of individuals and organizations interested in the Whanganui River, including Whanganui Iwi community representatives, local authorities, commercial and recreational users, and environmental groups. The strategy group's mission is "to act collaboratively to advance the health and well-being of the river" (Hutchinson, 2014).

Case study 2. Mekong River – A pathway to MSP through boycotting

In the Mekong River, civil society organizations took an unusual pathway to MSP by publicly boycotting the Mekong River Commission (MRC)'s participatory process. The Mekong River Commission is an intergovernmental organization for regional dialogue and cooperation in the Lower Mekong River that guides the national bodies of the lower Mekong (Thailand, Viet Nam, Lao PDR and Cambodia) toward mutually agreed river management outcomes without giving up their sovereign rights for water management. The MRC has clear rules for engagement and decision-making, which are duly documented in the Handbook for Stakeholder Engagement at the Mekong River Commission Document, including: defining stakeholder roles; creating engagement opportunities such as meetings, conferences and partnerships; and providing access to information. In this context, community groups can become active in the MSP through a prior consultation process held for proposed large infrastructure project developments on the main stream of the Mekong River (e.g. dams).

While the prior consultation process allowed stakeholders to contribute to information exchange and communication, critics claimed it did not give stakeholders access to the empowered decision-making that was expected with participation. "Previous prior consultations have been regarded as a rubber stamp to satisfy community consultation obligations," said Wora Suk, member of the Thai Extraterritorial Obligation-Watch Working Group and Save the Mekong, in a statement about the Paklay Hydro Power Plant. "In reality, these processes have not taken community concerns into account." In response, the coalition of NGOs and community-based groups, such as Save the Mekong, boycotted the MRC processes for the Paklay project and instead sought institutional change that would incorporate community viewpoints into decision-making procedures. While the Paklay process continued without these voices, the boycott raised awareness and media attention, leading to increased funding for research into Mekong water management conducted by each country that the MRC integrates into a larger-scale perspective. As a result, the prior consultation process was adjusted, allowing NGO groups to more meaningfully contribute in subsequent consultations through their engagement in a PAR process starting with the Luang Prabang Hydro Power Plant.

Case study 3. Colombia – A pathway to MSP that grants rights to rivers

In the Magdalena River, a pathway to MSP uses the current planning system incorporating rights to rivers into the existing participatory spaces for water planning, which differ from the traditional process in which the voice of rivers was not represented by a group. The planning strategy for Colombia's water resources management policy is a nested system with a top-down approach. In this context, the trend to turn rivers into subjects of rights enacted by participation of stakeholders representing them, in many instances indigenous communities, has brought the possibility of including rights to rivers from the start of the planning process which is already happening in other countries and jurisdictions (as shown in the New Zealand case study). Within the planning strategy for water, at the macro-basin level, national development integrates the most representative economic and social sectors and provides guidelines for water management in the next scale level (i.e. the sub-basin). These guidelines include how to follow the technical components and participatory aspects to include stakeholders, and are defined in the Macro-basin Strategic Plan (Plan Estratégico de la Macrocuenca – PEM) and then later prioritized and internalized in the River Basin Management and Development Plan (Plan de Ordenación y Manejo de Cuenca Hidrográfica – POMCA) (Minambiente, 2014).

The POMCA formulation process includes a prospective design and environmental zoning phase. This is when stakeholders will draft a set of proposed management actions/plans as a package of future scenarios for the river basin in 10 years' time. There are many themes to be considered, from coordinated, sustainable land and water use to the definition of areas for environmental conservation and restoration. Stakeholders may ask questions such as, "What will economic activities in the river basin look like in 10 years?" Environmental authorities use the agreed-upon plans arising from the POMCA process, which are legally binding, to define the environmental

zoning in the basin. For instance, the POMCA's environmental zoning for a water supply area will preserve or restore those basins supplying water for municipal and rural aqueducts. A budget is allocated for the agreed activities once the environmental zoning is defined, leading to water management improvements within the scope of the POMCA.

Three key questions guide the POMCA's prospective process (Miklos et al., 2008):

- How could the scenario be?
- How do the stakeholders want it to be?
- What should/could stakeholders do today to achieve the desired future?

Following from these three questions, the POMCA methodology follows a three-step scenario-building process defined by the river basin council members:

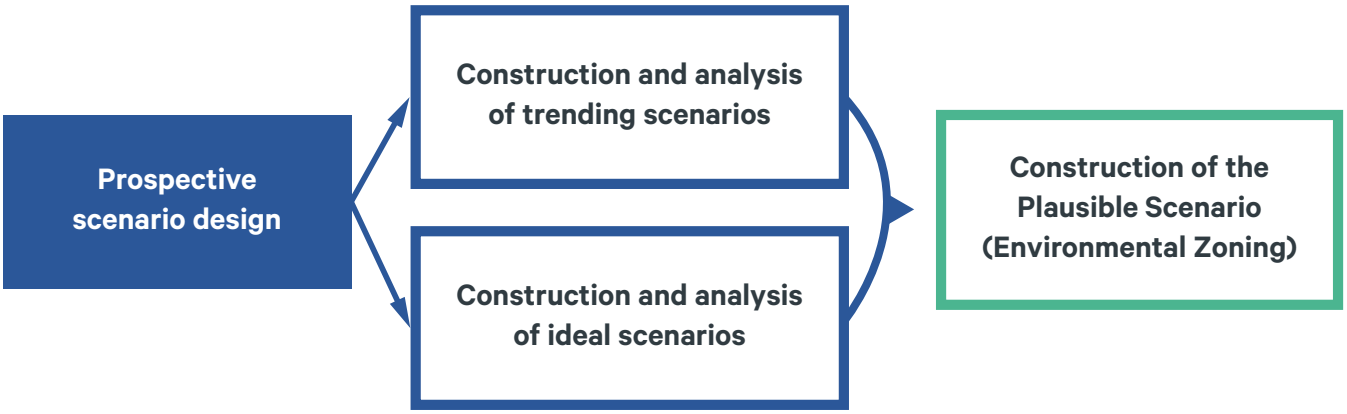
1. Stakeholders define the **trending scenario**, where council members analyse what will happen in the future in the basin if nothing is done at the present.

2. Stakeholders agree on an **ideal scenario** for water resources management in the basin.

3. Stakeholders reconcile each other's interests and define a common future for the basin, from which everyone benefits. This is the **plausible scenario**, optimally a consensus-based decision between the current and the ideal scenarios.

Figure 2 illustrates the scenario-building design for the POMCA's planning and zoning processes.

Figure 2. Planning and zoning processes in the POMCA methodology



Adapted from: Minambiente (2014)

As mentioned above, besides the POMCA as an instrument towards water management, there is a trend in Colombia to turn rivers into subjects of rights. This trend was sparked by another participation mechanism known as Popular Action. Popular Action is the procedural means included in the Colombian Constitution and developed by law for the protection of collective rights and interests. Any person belonging to a community group is procedurally entitled to defend the group's interests. This is how in 2016 the Atrato River basin became the first to be considered a legal subject in Colombia, especially as a response to Indigenous concerns over water management (Moyle et al. 2010). Since then, other Colombian rivers have also been declared subjects of rights: the Cauca River; the Magdalena River; the Quindío River; and three rivers in Tolima.

The *rivers as subjects of rights* concept allows a different form of participation by assigning and recognizing the roles of ”guardians” or ”stewards” of the rivers. This is an example of how discourses from local knowledge can be merged into water management. This approach also enables increased stakeholder participation, generating a variety of social and environmental outcomes. Greater integration of management structures such as the POMCA and participation mechanisms like Popular Action can ensure further protection for the environment and the rights of Indigenous communities. These participation instruments are becoming popular in Colombia, most notably the scenario-based approach and Popular Action, and may set the country on a path towards greater cooperation and co-learning. Such instruments allow stakeholder engagement and foster dynamics that empower different social groups to assert priorities and take ownership of shared resources.

Case study 4. California – A pathway to MSP that balances water for people and fish

In this case, cooperation between a conservation group and a water district began with a legal complaint.

California has a history rich with economic development since gaining statehood in 1850, growing into a state economy equal to the world’s fourth-largest national economy in 2022. However, much of the state’s development has been reliant on water resources, at a large cost to the environment. Over the past 150 years, fish have paid a steep price for the rest of the state’s wealth. Among the 129 fish species native to California, “7 have become extinct, 31 are listed as threatened or endangered under the federal and state Endangered Species Acts, and another 69 are in decline and will likely qualify for listing in the future,” according to studies by the University of California-Davis. The steelhead trout and Chinook salmon are no stranger to the struggle to survive as a native fish species in California, particularly in Coyote Creek, Guadalupe River and Stevens Creek, which are used to supply water to the city of San Jose. The Santa Clara Valley Water District (known as Valley Water) is the water utility district that manages the water in these rivers, and according to environmental groups representing the fish, have done so in a way that severely threatens the viability of these species in the rivers.

Frustrated with the lack of consideration for fish habitat in water management, in 1996, the Guadalupe-Coyote Resource Conservation District (GCRCD) filed a complaint against Valley Water with the state of California, claiming the management of these rivers violates the California Constitution, Water Code, Fish and Game Code, and the public trust doctrine requiring the protection of public goods. As a result of this formal complaint, Valley Water and environmental groups, including GCRCD, worked together to negotiate an agreement finalized in 2003 outlining the steps Valley Water must take to modify its system in order to protect habitat while providing water to the city and its residents. The agreement’s implementation and the changes it calls for are still undergoing studies and modifications and the final result of the coordination effort is yet to be seen.

Here, the pathway began with a legal confrontation by a conservation group, which led to a consultation and co-learning process to achieve a set of management rules that will hopefully improve fish conservation. In the meantime, actions have been implemented for conservation, including restoration measures to improve habitat and monitoring. More recently, reservoir reoperations are being implemented and the habitat results of such efforts are being documented to continue with the adaptive management approach.

Lessons from case study pathways

These four case studies allow us to further explore water-related decision-making and participatory processes, providing insights into the pathways to achieve MSP PAR for stakeholder groups in water planning across the globe.

- In New Zealand, the national government established legal personhood for the Whanganui River, showing an example of granting rights to rivers like that seen in Colombia. The case study emphasizes the importance of discourse in shifting administrative-political regimes. The struggle of the Whanganui Iwi people highlighted their connection to the river and the need for legal change to enforce property and fishing rights over the river to protect it from overexploitation and misuse. The change resulted from the mobilization of Indigenous knowledges, cosmologies, and associated alliances and networks that challenged prevailing power dynamics.

- In the Mekong case study, a group of civil society stakeholders felt their input to previous MSP processes had made little difference to the water decision-making processes or outcomes. As such, they opted to boycott further MSP until changes were made. The group's actions highlighted the importance of MSPs fostering legitimate, accountable and transparent stakeholder engagement in water decision-making, not tokenistic information exchange, if it is to be meaningful for all collaborators.

- In the Colombian study, the adopted river basin management approach follows a scenario-building strategy with multiple stakeholders, starting with describing the current scenario for water management and finishing by gaining consensus around a plausible future scenario for the implementation of water plans. An additional emerging trend in Colombia – granting rights to rivers – has the potential to further shape Colombia's experience with water-related decision-making and participatory processes by setting a precedent that is being applied to rivers in other countries. In this case, the river's rights (distinct from the communities' rights) are to protection, conservation, maintenance and restoration by the state and local communities.

- In California, similar to the Mekong, the case study shows that greater knowledge co-production may be needed when existing decision-making and opportunities for dialogue and exchange do not stimulate equitable change. In the example, a group of organizations working in the interest of endangered fish species crafted new management strategies with the local water district to protect, rather than destroy, fish habitats. Still, creating change in priorities and practices within complex systems, especially when water is scarce, can take a great length of time.

2. Guidelines for Participatory Action Research for multi-stakeholder participation and equitable water governance

The following section provides a step-by-step outline of a PAR method and its application to MSP processes. PAR brings together researchers, practitioners and stakeholders to understand environmental challenges and find solutions, promoting equality in participation and targeting the needs of a particular group in an iterative cycle of research that ultimately addresses diverse needs in the resulting plan.

The PAR approach described in this section does not pre-identify the set of "stakeholders" and does not assume that who may be affected by decisions is already known. PAR also does not speculate on the respective identities, interests or possible responses to power of the various actors prior to the research process.

The guidelines below outline the steps of the PAR approach and how it can be used to guide practitioners to achieve equitable participation. The first and second steps present how to identify the stakeholders and the start of the co-production process, while the last step guides how to set a participatory process itself.

1. **Identification of stakeholder groups and different forms of discourse and knowledge**

    a. Aim – Identify stakeholder groups to co-produce the Participatory Action Research (PAR) phase. This process of stakeholder identification will help recognize different perspectives and expertise. In conducting this actor-mapping and how each of the stakeholders might be part of a MSP process, it is important to incorporate equity and diversity of perspectives and values and recognize how each group relates to the ecosystems.

    b. Activity – Organize discussions with the main actors – or those that are currently and traditionally managing water resources - to identify which stakeholder groups need to be included in this process of co-production. The discussions can reveal inequities and marginalization in previous MSP processes. This step can identify different forms of knowledge each group brings and that may be lacking from earlier initiatives and note where inequities in power and decision-making exist.

2. **Co-production of research**

    a. Aim – Understand the concerns and objectives of each stakeholder group and work with them to develop a set of research questions and outputs which complement and respond to these interests.
        i. The principal research question should address the problem of power and governance in relation to the different knowledges and values around water held by the local stakeholders.
        ii. By formulating the research question, it is possible to identify the dominant and non-dominant approaches associated with water governance in a particular region, as well as the lack of equity in political decision-making and recognition that stems from MSP.
    b. Activity – Organize stakeholder group discussions.
        i. One representative of each stakeholder group, as well as interested researchers, can discuss their aims and objectives. The discussion should provide a space for representatives from each stakeholder group to reflect upon the different forms of knowledge about their water system which enable or hinder the main objective or research question.

ii. This discussion should address the equity (or lack thereof) around decision-making and power relations in participatory water governance. The conversation should consider how socio-technical solutions and engineering tools shape and are shaped by knowledges and discourses around water.
iii. To define a group of research questions in a co-production setting, it is key to recognize the various knowledges and values at play in different ecosystems and beyond the system boundaries. For instance, the generation of a research question could entail a comprehensive exploration of a specific case study in one location (e.g. Colombia) that generates different conclusions on power relations in water governance for different stakeholder groups. This in turn will yield insights beneficial to stakeholder groups in other locations and vice-versa (e.g. Thailand).
iv. Researchers should work closely with the stakeholders to identify the outcomes important to their interests. This process can help develop the decision-making capability of the stakeholders and recognize the discourses and knowledges that are less privileged within particular natural ecosystems.

Acknowledging these differences will highlight how participation and power can be addressed in the context of water governance. Giving space for the stakeholder groups to discuss their interests can reveal the diverse set of needs in communities across the watershed. For example, motivations in the basin may range from Indigenous communities securing water access in line with their traditional practices and cosmologies (as seen in the Whanganui Iwi case) to governmental authorities planning developments and (inter)national civil society actors pursuing rights and associated laws for the protection of nature.

3. Participatory mapping and data collection

a. Aim – Using inputs from step two, 1) outline how the participation process can take place within the MSP based on the research co-production, and 2) collect the data needed to answer the research questions in collaboration with the stakeholders.

b. Activity – Complete a participatory mapping process using the guiding question of, *How can different stakeholder groups and forms of knowledge contribute to equitable decision-making in water governance?* The dialogue will build upon the topics from the previous discussion on co-production of research from step 2. This activity will foster a PAR approach within MSP, enabling knowledge transfer and the use of evidence generated by these activities.

The mapping process Is multi-scalar and can begin from any tangible feature in the ecosystem (e.g. a dam, a floodplain). These features can provide a foundation to map the associated hydro-social layers and the stakeholder relations connected to that feature, and to discover which plans, policies or developments can impact the existing features.

There is no need to predetermine system boundaries at this stage, but rather allow them to emerge through the limits based on the participants' understanding of the system. This mapping process will also investigate the infrastructure and the politico-economic and cultural institutions and organizations that mediate this infrastructure. This could include, for example, those with political authority, regulatory roles, and decision-making power.

c. Analysis of these participatory mapping outputs by researchers supporting the process will take place in close collaboration with stakeholders. This should ultimately foster greater understanding and recognition of the discourses and multiple forms of knowledge at play in each ecosystem.

How to use a pathways approach for engaging in multi-stakeholder participation for decision-making

As shown in the case studies, many stakeholder groups have asked questions surrounding decision-making like, "Why do water decision-makers not listen to us?;" "How can I get my voice heard?;" "Why aren't I at the decision-making table?;" or even, "I went to all the meetings – but the outcome does not reflect our views." These sentiments reflect the current state of IWRM water decision-making: Technical knowledge of scientists is prized, while local knowledge from stakeholder groups goes unrecognized. Thankfully, things are changing, as shown in the case studies presented above. Across the globe, more stakeholders affected by water decisions are becoming more involved in knowledge co-production.

So why engage in a PAR and pathways approach to MSP? Stakeholder groups want to engage in order to break this divide between scientists and stakeholders. As the Mekong case demonstrates, there has been increasing understanding that in order to foster equity in decision-making, participatory processes must also recognize marginalized discourses and forms of knowledge and expertise. The aim of the integrated PAR-Pathways approach is to recognize these marginalized perspectives to achieve social-environmental justice.

As shown in the case studies, using the PAR approach towards MSP is particularly effective in building trust between stakeholders and researchers. PAR also shows associated benefits such as building a greater sense of legitimacy around the participatory process, awareness of water issues, and empowerment of stakeholders to take ownership of problems and provide solutions (García & Bodin, 2019). This has led to improved accountability and sustainable management of water since stakeholder involvement creates a system to review each other's commitments and actions (Newig & Fritsch, 2009). The PAR approach to MSP delivers better water decisions, but it only works when stakeholders are involved in the co-production of knowledge about water.

How can stakeholders be involved in water decision-making?

How can stakeholders make a difference? In an ideal world, stakeholders could choose to be involved throughout the whole decision process from beginning to end. However, existing decision processes may constrain where in the process they are able to engage. There are two places for stakeholders to consider directly engaging in water decision making: 1) engaging in the decision process itself (e.g. a water planning process) or and 2) making their needs known to the stakeholder group representing their interests (e.g. stakeholders involved in water planning). In both instances, stakeholder participation can be informed by the PAR-Pathways approaches described above.

Water decision-making can be informed equitably by all stakeholders in the co-production through which knowledge is generated. Drawing from the PAR approach outlined above, it is possible to identify the stakeholders affected by such processes and to comprehend the concerns, interests and subjectivities of each group involved in the MSP. This can involve stakeholders in a variety of activities such as attending focus groups, which will help to make the public more aware of water decisions and issues, or intervening at the institutional level to rework policies. This approach means that a stakeholder group actively moves from only being *affected by* water decisions to being a knowledge-producing *agent* with the capability to reshape water decisions and policies. The case studies in New Zealand and Mekong provide successful examples of this transformation.

Guiding questions for stakeholders and practitioners to design an equitable PAR-Pathways approach

The co-production of knowledge associated with the PAR approach is the basis to design a pathway approach to equitable MSP. In water decision-making, the discourses and knowledges used by stakeholder groups, as well as each context (e.g. society and culture, history, economy, geography, water body), is unique and a source of authority and expertise in its own right. It is important for stakeholders to highlight knowledge co-production and find allies appropriate for their specific pathway that will benefit them. Below are guiding questions for stakeholders to consider as a departure point: Where is the stakeholder starting from?

As a stakeholder affected by a water management decision, understanding one's starting point is essential. Key issues to consider are:

- **Scale** – What is the timeline and spatial area in which the decision needs to take place for a specific stakeholder group? Is it a cohesive social or jurisdictional unit? Is the group nested within or spanning beyond jurisdictional or geographic boundaries? What strategic allies might exist at that scale?

- **Representation** – What power does the stakeholder group hold within the water decision-making processes? How cohesive is their representation? What forms of expertise and knowledge does their group offer?

- **Existing decision structures** – Who has access to various decision-making powers? Ensure that stakeholders and their groups know these rules at the start and consider them in deciding how they participate, either within the rules or by challenging them.

- **Capacity to engage** – Does the stakeholder group have the technical and representative capacity to effectively engage – to participate, be present and active – in the PAR knowledge sharing process? If they do not already have the capacity, how can PAR help them build it? Where is the stakeholder's end point?

Based on the starting conditions of the stakeholder group and the context around the water decision-making, what types of engagement for stakeholder participation are possible? Depending on the different levels of participation and end points associated with them, it is possible to define an approach for engagement and to foster inclusion. The end points complement the participation guideline and the pathways approach presented below. Stakeholders must consider elements of empowerment and capacity to deliver, as well as processes to achieve PAR. What is the expectation of an MSP process: awareness, information, consultation, discussion, co-design or even co-decision-making and empowerment? Does the practitioner have the capacity to conduct PAR and deliver on specific MSP end points or do they need support from specific stakeholders or research groups? These questions must be considered in the context of levels of participation (see Table 1 on levels of participation and types of engagement). Note that the facilitation is generally carried out by practitioners, although in some instances they may be working in collaboration with researchers that are guiding the process.

Table 1. Forms of engagement for different levels of participation as part of a pathways approach to reach PAR.

Levels of participation	Approach for engagement	Approach for fostering gender and social inclusion
Participatory action research (PAR)	Facilitate process, while participants guide process and research	Provide mentoring and training for people from different social groups to contribute technical expertise
Deliberation	Process information in collaboration with stakeholder groups	Create spaces for people from diverse groups to review information and reach conclusions
Co-learning	Engage with people to define problems and find solutions	Foster dynamics that empower people from different social groups to assert priorities and take ownership
Cooperation	Work with people to determine priorities, while process overseen by a lead group	Create appropriate engagement spaces for attracting and engaging participants from different class, age and ethnic groups
Consultation	Seek local opinions and enable dialogue	Consult with appropriate diversity of partners from different ethnic, class and age groups, and especially include women among them
Information extraction	Ask people questions and process the information	Highlight participants' contributions

Source: Escobar et al. (2017)

In the process, each row shows the approach for engagement and inclusion for each level of participation. The lower levels are the minimum participation possible, while the highest level reaches the desired PAR approach. Even when PAR is the ultimate goal, it may be necessary to start with lower levels to create familiarity and foster stakeholder relationships. In this sense, the different levels can be seen as chronological from the bottom up as part of the pathways approach process. What pathway will get the stakeholder to their end point?

Based on the review of end points and possibilities for engagement and inclusion, the next question is: Which types of activities (e.g. focus groups, meetings, surveys) would best help achieve the stakeholder's desired end point goal? Previous MSP applications have focused on the participatory activity itself without accounting for the larger surrounding social context. To foster equity and empower stakeholders, these processes must better accommodate marginalized groups and types of knowledge. Stakeholders can plan a pathway once they determine the activities and methods for achieving a specific end point. With this in mind, they can effectively navigate through myriad PAR and MSP decision-making processes to identify which ones best fit their stakeholder group to achieve the desired outcome.

Addressing barriers for MSP in water

To engage in a PAR-Pathways approach, stakeholders must recognize the barriers to participating in water decision-making. These barriers, explaining why stakeholder groups were not involved earlier, need to be understood and overcome.

For many stakeholders, finding ways to be included in water decision-making can be reasonably straightforward (e.g. send an email, join a focus group, complete a survey). However, it can be far more challenging to influence the process on a more meaningful level, with authoritative recognition for the stakeholder group's priorities, expertise and knowledge. Stakeholder groups have identified clear barriers for entry to equitable and meaningful MSP in water (Emanuel & Wilkins, 2020; García & Bodin, 2019). These barriers can be categorized into two

groups (Table 2): operational barriers, such as rules which prevent joining an established water decision process already in operation; and agent barriers, such as a lack of capacity and power for a stakeholder group.

Table 2. Commonly identified operation and agent barriers identified by stakeholder groups.

Operational barriers	Agent barriers
Lack of information on planning, legalities, options, & regulation	Lack of access to resources
Poor coordination	Lack of expertise
Poor execution of PAR process	Lack of training
Failure to influence process due to domination by established powerful groups	High costs of PAR process
Lack of communication particularly in an accessible way (in terms of language and technicality)	Low awareness and mistrust
Unequal and inequitable access opportunities to participate (e.g. times, places, and in ways that are not accessible by all)	Not speaking the language in which information is communicated
	Lack of time or availability to participate

Despite such barriers, many stakeholder groups still persevere and find ways to engage. In the Mekong case study, stakeholders successfully overcame the operational barrier of powerful group domination and agent barriers of lack of expertise and mistrust by staging a boycott, leading to structural changes in the decision process. In Colombia, assigning legal rights to rivers made it possible for their ecosystems to be represented in the participatory process and allowed for additional roles for river stewards. In general, operational barriers can be addressed with better coordination and information while agent barriers require deeper consideration, including allocating resources to promote participation, trainings and time availability.

3. Summary and conclusions

Achieving equitable participation in water decisions is challenging, given the power dynamics among stakeholders involved in water planning. Still, multi-stakeholder participation – MSP – is key to identifying and achieving decisions that benefit all. Case studies of water decisions in various parts of the world show these challenges, but also illustrate opportunities for stakeholders to choose different pathways for effective participation. Based on these examples, the provided set of steps for participation action research – PAR – that can provide a guide for stakeholders and practitioners seeking to be part of water decision processes.

For practitioners, including elements of PAR in MSP is key to unlocking existing barriers to stakeholder participation in water decisions. However, choosing an appropriate pathway to arrive at an end point and selecting methods to achieve the desired outcomes can provide a roadmap for realistic involvement and outcomes. It can also create entry points for actors to engage by understanding the starting point based on location and context, and defining the route to get to the end point. It is possible for stakeholders to encounter operational or agent barriers along the way that need to be overcome by improving coordination and allocating sufficient resources to the PAR process. Investing in a pathways approach will lead to better stakeholder engagement in water decisions and to achieving more creative, inclusive solutions for water management that represent the needs of all involved.

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