

Review

A Review of Stakeholder Engagement in Integrated River Basin Management

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Abstract: To address water-related issues of river pollution, floods, droughts, and ecological water allocations, there is a need for an integrated river basin management (IRBM) plan for the successful management of all the river basins in the country. Stakeholder engagement is one of the important elements for the effective implementation of IRBM. In this study, a systematic bibliometric analysis has been successfully carried out to identify the trends, patterns, and research gaps in the establishment of stakeholder engagement frameworks in IRBM. Three renowned scientific databases were used to quantitatively assess the published literature on stakeholder engagement. The search contributed by providing a clear understanding and mechanisms for an effective stakeholder engagement, thus highlighting the research gap, whereby there is a lack of an effective stakeholder engagement framework for IRBM. Based on the analysis results, it was found that many pieces of literature have been written about the implementation of IRBM, including the importance of stakeholder engagement or participation. However, there is very limited study on how effective stakeholder engagement could be carried out to enhance water management at the river basin level. The findings also recorded that stakeholder engagement can serve as a form of social learning, and leadership plays a significant role in ensuring the effectiveness of stakeholder engagement in IRBM. From the review analysis, it was concluded that further research studies need to be carried out at the river basin level to formulate an effective stakeholder engagement framework for the sustainable management of water.

Keywords: integrated river basin management; stakeholder engagement; framework; water resources



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1. Introduction

1.1. Context, Aim, and Objectives

Integrated Water Resources Management (IWRM), which holds the key to sustainable water management, is generally based on three major fundamental principles: ecological sustainability, social equity, and economic efficiency [1]. In the process of implementing IWRM, it is important to be mindful of the need for integration [2]. As for the human system, integration shall comprise (i) a comprehensive institutional arrangement, (ii) the sound planning of water resources to cater to all sectors, (iii) integration in all water-related national policies, (iv) the linkage of water resources planning to national security and economy, and (v) stakeholders' engagement for decision-making in the planning and implementation processes [3].

UNESCO (2009) [4] had advocated that IWRM should be implemented at the river basin level, and such application has often been generally referred to as Integrated River Basin Management (IRBM). The World Wide Fund for Nature (WWF) has defined IRBM as a process of the coordinating conservation, management, and development of water, land, and related resources across sectors within a given river basin, in order to maximize the economic and social benefits derived from water resources in an equitable manner [5].

A river basin, which is defined by its own geographical and hydrological characteristics, will facilitate the practical integration of all downstream, upstream, as well as

basin-wide issues, particularly those related to the aspects of the quantity and quality of the basin's available surface and groundwater resources.

All forms of land use in a river basin, such as land development for residential, commercial, and industrial purposes, agricultural and plantation activities, logging, mining, and other forestry activities, can have profound impacts on the water resources in the river basin [6]. Hence, it is necessary to have in place a system of good water governance at the river basin level.

According to Rijswick et al. (2014) [7], the effectiveness of water governance can be achieved via a multiple dimension approach consisting of segments such as: (i) information about the water system, (ii) principles and policy, (iii) stakeholder involvement, (iv) enforcement, and (v) the prevention of conflict and resolution.

The Hague Declaration in the year 2000 reinforced the pertinent message that the success of water resource management depends on close participation or engagement at all levels, ranging from individual citizens to organizations, based on a mutual commitment towards the need for water security. As such, it is necessary to have the cooperation and collaboration of all sectors, which can complement each other [8]. As IRBM is holistic, it is important to gather different perspectives from the stakeholders [9].

Within the river basin level, it has been argued that stakeholder engagement plays an important role in sustainable catchment management [10]. Thus, effective stakeholder engagement in river basin management must be given due recognition and attention for the purpose of sustainable water management.

Recently, the United Nations has reported that many countries in the Global South encounter water issues due to poor coordination, the non-alignment of national policies related to water, and ineffective stakeholder engagement [11]. In addition, the OECD Principles on Water Governance has recognized that there is no one-size-fits-all solution to global water issues. The option selected should depend on the different administrative, legal, socio-economic, and cultural systems of the country concerned [12].

However, stakeholder engagement is one of the twelve water governance principles (as shown in Figure 1) that serves as a catalyst for highlighting good practices and initiating reform processes towards good water management at any level of the government or country [13].

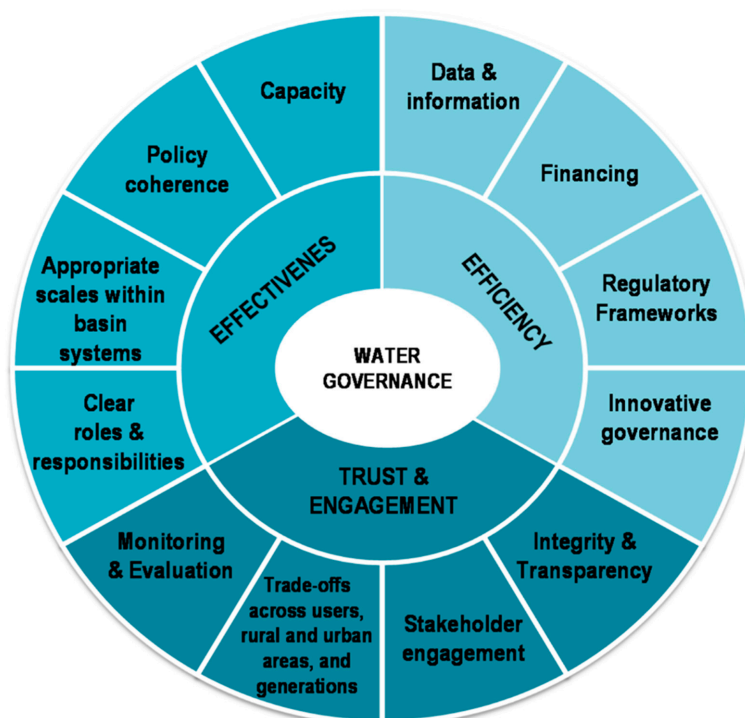


Figure 1. The OECD Principles on Water Governance, adapted from OECD (2015) [13].

This paper provided a systematic review of stakeholder engagement in river basin management, with the specific objectives to: (i) quantitatively assess how many published works contributed to the stakeholder engagement in water resources management, particularly at the river basin level, (ii) synthesize findings of the various mechanisms and factors that contribute to the effectiveness of stakeholder engagement in river basin management, (iii) determine to what extent stakeholder engagement can serve as a form of social learning, (iv) ascertain the importance of leadership for ensuring effective stakeholder engagement in water resources management, and (v) identify research gaps and the way forward for researchers to set a research agenda and address the gap. This paper started by stressing the need for stakeholder engagement in river basin management. It was followed by the methodology and main findings of the analysis, which were organized according to the five objectives stated above.

1.2. The Needs of Stakeholder Engagement in River Basin Management

The Cambridge Dictionaries Online defined a stakeholder as “a person such as an employee, customer or citizen who is involved with an organisation, society, etc. and therefore has responsibilities towards it and an interest in its success.” Using this definition, one can proceed to identify both internal and external stakeholders. The next step is to map those stakeholders into four groups: (i) low interest, low influence—those you need to keep informed; (ii) high interest, low influence—those you need to involve and consult with; (iii) low interest, high influence—powerful key stakeholders you need to engage; and (iv) high interest, high influence—partners you need to collaborate with.

A thorough search in the literature on the word ‘engagement’ may yield numerous related terms such as ‘public participation’, ‘public outreach’, ‘community participation’, ‘community involvement’, ‘community engagement’, and ‘stakeholder engagement’; all of which describe rather similar processes and aims. From the perspective of river basin management (RBM), stakeholder engagement can be generally driven by the relevant host authority or by self-organized action, initiated by a civil society organization or the concerned public at large [14]. Having identified all the relevant stakeholders, one can proceed to divide them into internal and external stakeholders, and then map those stakeholders into groups [15].

There was a recent study carried out to detect a variation of opinions and differences for the same resource in the river basin and highlighted that there is a need for a bottom-up strategy for stakeholder engagement [16]. It is therefore important that research studies are undertaken to confirm the need for stakeholder engagement in river basin management. According to Mitchel, Agle, and Wood (1997) [15], a systematic way of identifying which stakeholders are relevant is by considering who possesses the three attributes: power, legitimacy, and urgency. Power can be manifested based on physical forces, material or financial resources, and symbolic recognition such as prestige and esteem. Legitimacy implies that there is an element of social goodness for the community. Urgency relates to the speed of response by the relevant authority to the stakeholder’s view. A stakeholder may have one, two, or all three of these attributes in RBM.

Another research study has been highlighted by Wilson and Bryant (1997) [17] using the three layers’ approach to demonstrate how different stakeholders can be engaged to participate in RBM. The study was done based on several types of drivers such as social, cultural, political, economic, technical, and legal. The first layer referred to the center core, which consisted of water agencies and regulatory bodies. The second outer layer represented all the different players involved in RBM such as the local authorities, water users, the private sector, researchers, technical professionals, and the public. The third outermost layer represented the impact on RBM and the public participation processes due to the contribution from the four groups of drivers, namely cultural, technical, economic, and legal drivers. While each layer of stakeholders has a different role and responsibility, they are all equally important.

Depending on the level and extent of participation, various frameworks have been conceptualized for public participation and stakeholder engagement [18]. Arnstein's eight steps ladder framework [19], which was originally developed for urban planning, has been applied to water management, whereby the higher rung denotes greater public involvement [20]. Pretty's topology categorized participation according to the degree of participants' involvement and control over the outcomes of the water-related activities. However, Michener classified participation according to whether it is centered on the host-organizer or the people [21]. The EU Water Framework Directive stated that participation may take place in three different ways, namely by the supply of information, by consultation, and by active involvement.

Many approaches or platforms of stakeholder engagement can be used and may include multi-stakeholder workshops, water users' associations, or multi-stakeholder platforms, which consist of local management committees, advisory committees, NGOs, and various forms of stakeholder partnerships. Luyet et al. (2012) [22] mentioned that any framework on stakeholder engagement must possess its ability to adapt to different contexts, its ability to integrate social and technical sciences, and its application of practical participatory tools and mechanisms. Carr et al. (2009) [23] and Heiland (2005) [24] stressed the necessary requirements and methods used as well as the integrated approach in carrying out stakeholder engagement. Arnstein's ladder was further expanded by Fung (2006) [25], who conceived participation in three dimensions: (i) who the participants are, (ii) the way they communicate, and iii) the level of authority and power they have.

Antunes et al. (2008) [26] and Larson and William (2009) [27] have suggested that monitoring and evaluating the success of stakeholder engagement must be an essential part of the engagement process. Another different type of conceptualization has been proposed by Van den Hove (2000) [28] based on: (i) the way participants interact with one another, and (ii) situations where stakeholders are entirely cooperative to entirely conflictive.

Nevertheless, all the points articulated above indicate that it is important for more research studies to be conducted for further understanding of the needs of stakeholder engagement in river basin management.

2. Methodology

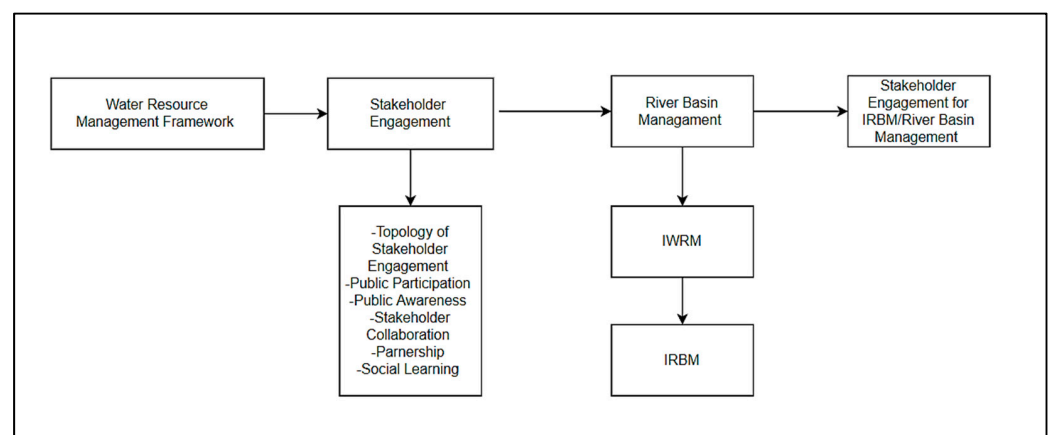
The systematic bibliometric analysis has been successfully carried out to identify the trends, patterns, and research gaps in the establishment of a stakeholder engagement framework in IRBM. Renowned scientific databases (i.e., SCOPUS[®], Publon[®], and Google Scholar[®]) were utilized to perform the review analysis with the relevant keywords. SCOPUS[®] was used as its contents are more globalized as compared to other databases with more comprehensiveness. For further comparison, Google Scholar[®] was used as it can identify a large amount of grey literature that is not found in other databases, in addition to its ability to find specific literature [29]. On the other hand, Publon[®] was used as it links directly to the Web of Science[®], ORCID, and other scholarly journals that could help to retrieve reliable research data for comparison.

An advanced search was done using the Boolean operators, mainly "AND" and "OR" to search for publications with specific keywords. For SCOPUS[®], TITLE-ABS-KEY ("Keywords") was entered for all the search strings to include all publications that have the keywords in their title, abstract, and in their paper's keyword. For Google Scholar[®] and Publon[®], the keywords were entered with the same Boolean operators, "AND" and "OR" in its search engine. The number of publications from each search was then recorded. The analysis was started with a search on the availability of water resource management framework publications. As the word "framework" was considered general, a wide range of frameworks appeared, resulting in 17,021 publications on the SCOPUS[®] database, 10,905 publications on Publon[®], and 15,600 publications on Google Scholar[®] as summarized in Table 1.

Table 1. Comparison of the number of publications found for each keyword on the three scientific databases.

Keywords	Frequency		
	SCOPUS®	Publons®	Google Scholar®
Water Resource Management Framework	17,021	10,905	15,600
Water Resource Conceptual Framework	1308	20,904	2890
Stakeholder Engagement	22,169	10,262	21,900
(i) Topology of stakeholder engagement	4	10,267	293
(ii) Public participation	3790	1206	5610
(iii) Public Awareness	124	1244	1090
(iv) Stakeholder collaboration partnership	851	284	4190
(v) Communication	3273	1435	4340
(vi) Social learning	737	850	2360
River Basin Management	21,589	10,523	14,200
IWRM	2650	1172	1320
IRBM	434	897	1200
Stakeholder Engagement Framework for IRBM	3	1	32

With that, a more detailed search was done to identify the number of publications on the conceptual framework for water resource management, resulting in 1308 publications on SCOPUS® and 2809 on Google Scholar®. Publons® in this case showed an unreasonable result of 20,904 publications, which was more than its previous search on general framework. Hence, for comparison purposes, Google Scholar® and SCOPUS® were placed with more priority due to higher accuracy and reliability. The same procedure was done with keywords related to stakeholder engagement, including the subtopics on: (i) the topology of stakeholder engagement, (ii) public participation, (iii) public awareness, (iv) stakeholder collaboration partnership, (v) communication, and (vi) social learning as shown in Table 1. Other keywords also included: IWRM, IRBM, and other related keywords to this study. Figure 2 shows the keyword filtering stage for the systematic bibliometric analysis.

**Figure 2.** Keyword filtering stage for systematic bibliometric analysis.

3. Review Findings

3.1. Publication Patterns and Foci

The first keyword search was conducted on the water resource management framework from the renowned scientific databases. From the search records, more than 40,000 publications combined across all the databases were related to water resources framework.

The publications shown ranged from numerical framework, geo-information framework, uncertainty estimation framework, and other different types of frameworks. Since the stakeholder engagement framework in river basin management is categorized as a conceptual framework, the search was further narrowed down to a conceptual framework for water resource management, which further yielded down to less than 15,000 publications. Figure 3 shows the comparison of the frequency of publications found for each keyword from the three scientific databases (i.e., SCOPUS®, Publon®, and Google Scholar®).

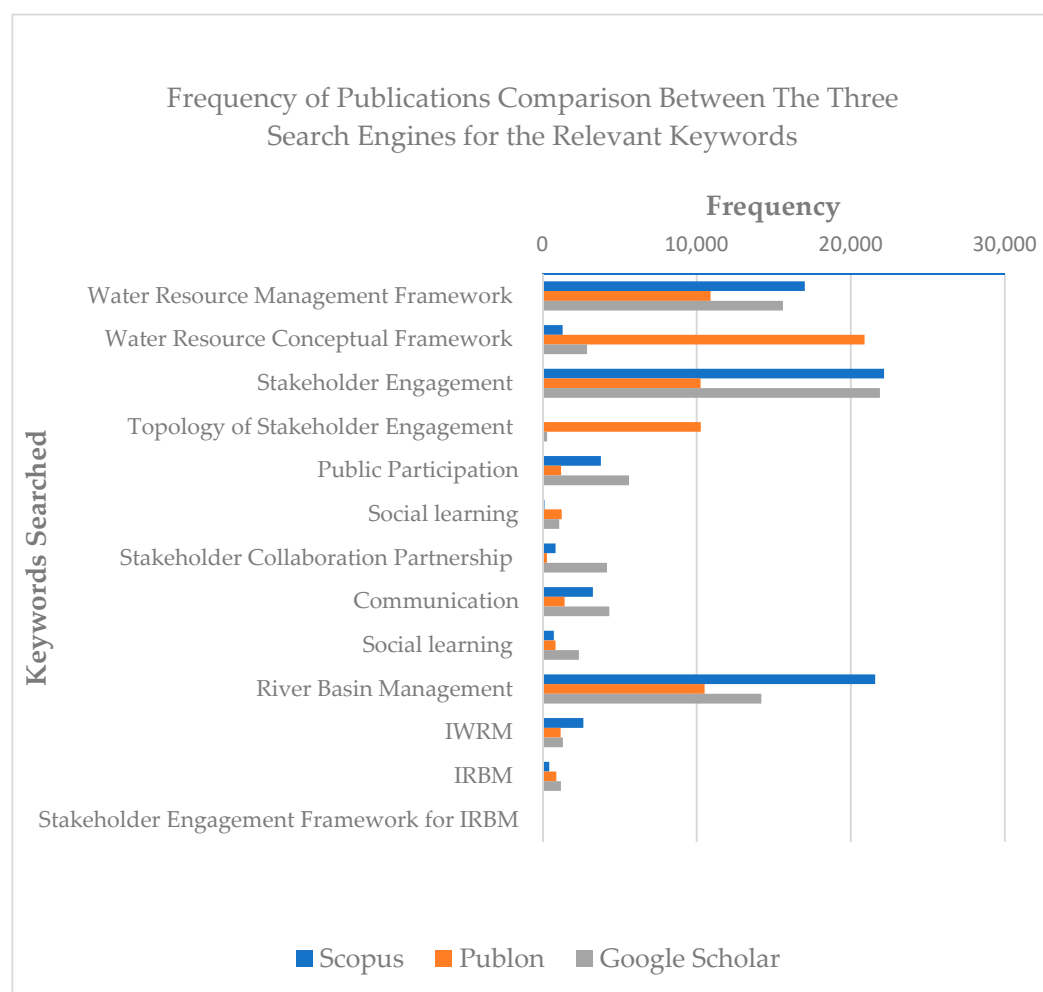


Figure 3. Comparison of the frequency of publications found for each keyword on the three scientific databases.

Figure 4 shows the search records in percentage from Google Scholar® for the main topic of stakeholder engagement with different subtopics. Based on these high-quality search records, papers dealing with stakeholder engagement on the subtopic of public participation (31.4%) were most numerous, followed by communication (24.3%), stakeholder collaboration partnership (23.4%), social learning (13.2%), public awareness (6.1%), and the last one on the topic of the topology of stakeholder engagement (1.6%). These synthesized findings have successfully provided an understanding of the various mechanisms and factors that contribute to the effectiveness of stakeholder engagement in river basin management. The findings also elaborated further to what extent stakeholder engagement can serve as a form of social learning and the importance of leadership for ensuring effective stakeholder engagement in river basin management.

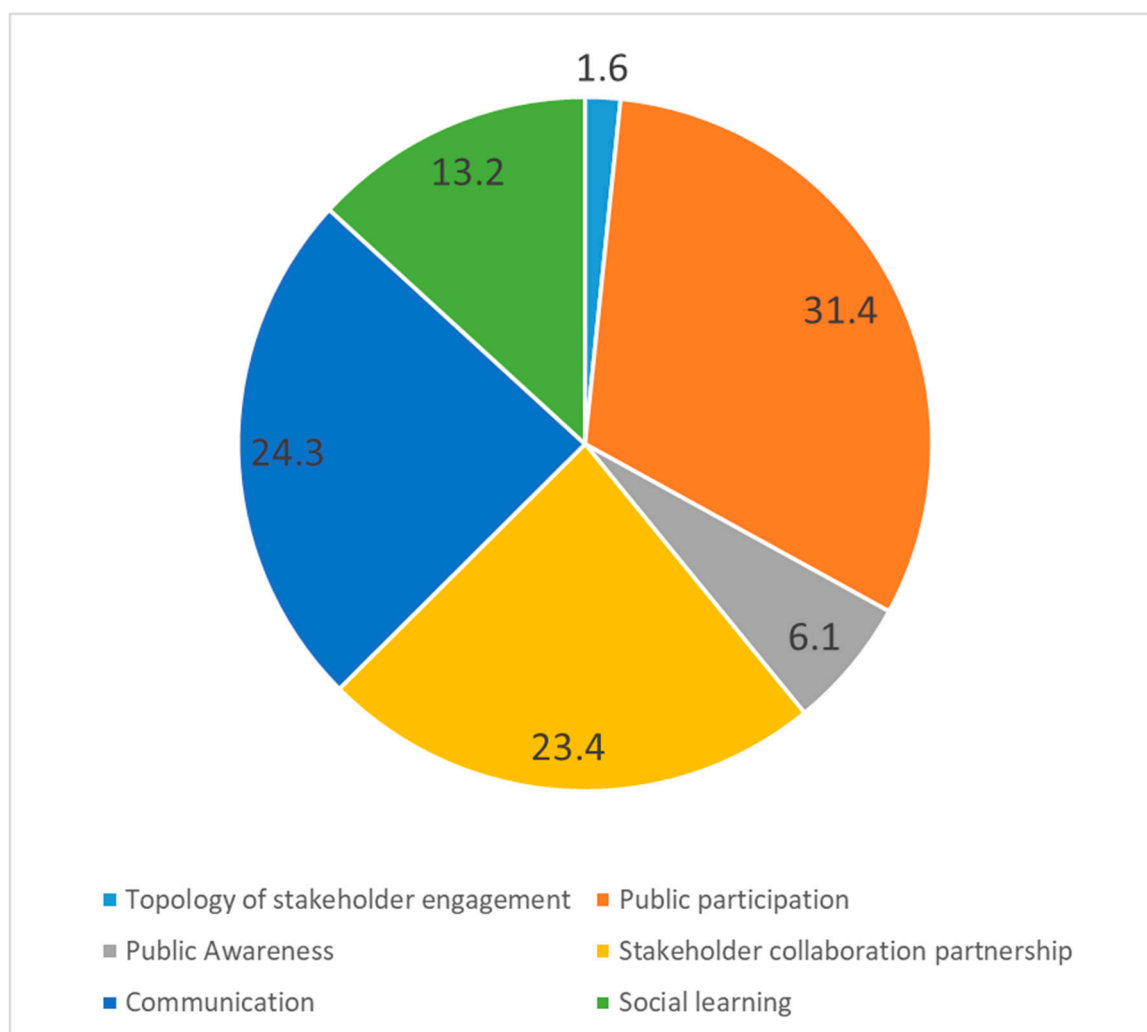


Figure 4. Search records from Google Scholar® for the stakeholder engagement with different subtopics in percentage (%).

The systematic review analysis then proceeded with the search of publications related to stakeholder engagement, which can be narrowed down to the subtopic of the topology of stakeholder engagement, public participation, public awareness, collaboration, communication, social learning, and other related terms. Other than that, there were also numerous publications found related to river basin management, IWRM, and IRBM as summarized in Table 1. Since the crucial keywords for this research would be IRBM and stakeholder engagement, a further search was done by combining the keywords of IRBM, stakeholder engagement, and other keywords related to stakeholder engagement, and framework.

For the detailed review analysis, a time range from the year 2000 to the year 2022 was set. With that, the more recent publications were focused to examine the current status and research studies on the topic of stakeholder engagement in river basin management. As a result, a total of 36 publications were found to be related to stakeholder engagement in IRBM for the tropical and non-tropical regions as shown in Figure 5. While six publications were not available for access, the rest of the publications were further reviewed to highlight the important findings from the research studies. A detailed search of peer-reviewed publications revealed all the papers detailing the stakeholder engagement in IRBM as shown in Figure 6, with the number of publications for each year in the range of the years 2000–2022. There was an increase in publications for the years 2012, 2015, and 2021. Other years showed an average of one to two publications annually.

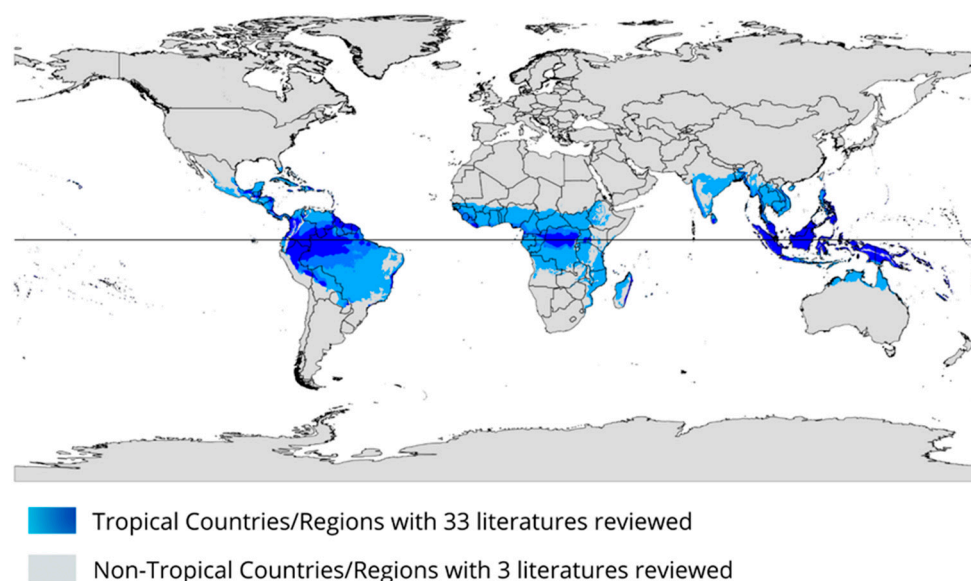


Figure 5. Number of literature studies reviewed for the Tropical and Non-Tropical Regions, with figure adapted from Beck et al. (2018). [38]. <https://creativecommons.org/publicdomain/zero/1.0/>, accessed on 20 July 2022.

For non-tropical regions, particularly in Europe, one of the four key components is enabling inclusive multi-stakeholder governance. This advocates the adoption of governance models that manage the availability of water for all sectors and purposes for river basin management based on the true value of water, thus using fit-for-purpose governance mechanisms [30]. The legal mandate for stakeholders' participation is stated in Article 14 of the EU Water Framework Directive, whereby "every Member States shall encourage the active involvement of all interested parties in the implementation of this Directive, especially in the production, review and update of the river basin management plans [31].

Based on the findings, in many countries within the EU, public participation is mandatory with the view of achieving an amicable solution to any water issue, thus ensuring the successful implementation of IWRM at the river basin level [26,32]. On the other hand, the Alliance for Water Stewardship (AWS) has strongly advocated for the concept of water stewardship, which is an action- and result-oriented resource management framework for establishing a sound social-ecological governance, whereby there will be an equitable allocation and sustainable use of shared water resources [33]. The twin goals of the stewardship are human well-being and ecosystem resilience, which shall be achieved through stakeholders' engagement focusing on the integration of social and ecological processes [34].

For tropical regions, for example in Zimbabwe, a study has found that due to the uneven playing field, stakeholders from the rural area have low representation in the consultation meetings arranged by the water agency, and when they are present, they contribute little despite the devolution that has taken place during the water reform process [35]. The voice or concerns of the local community, the indigenous people, the youth, and women should not be neglected when an engagement is planned.

In Australia, for the two water planning projects have been carried out, namely, the Collaborative Water Planning Project 2007–2009 and the Water Planning Tools Project 2008–2010, significant attention was given to developing the necessary tools to identify and engage unorganized or neglected communities, such as the indigenous people and the youth. The views of these stakeholders and local communities have contributed to the enhancement of the ecological balance while maintaining water resources security for the Murray–Darling Basin. This was by considering the application of a more comprehensive approach towards the integrated management of the environmental and water [36]. Measham et al. (2009) [37] reported that for the Lake Eyre Basin in Australia, generic factors

have been well recorded for achieving successful stakeholder engagements based on both on-ground research and the literature for natural resources management engagement.

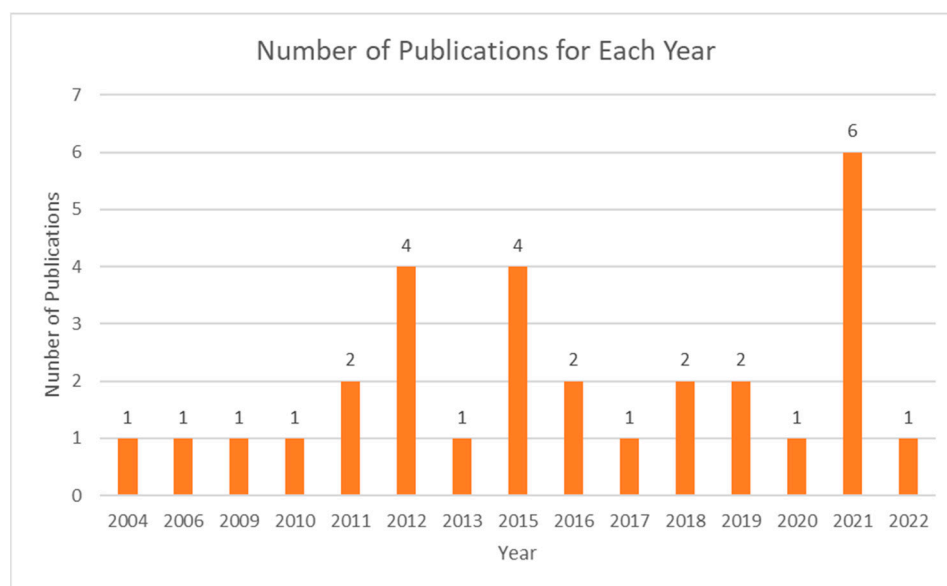


Figure 6. Number of publications on stakeholder engagement framework for IRBM from the years 2000–2022.

3.2. Mechanisms and Contributing Factors for Effective Stakeholder Engagement

From the synthesized review findings on the various mechanisms and factors that contributed to the effectiveness of stakeholder engagement in river basin management, many countries have recorded difficulties implementing IWRM and IRBM as there was a lack of engagement and collaboration between water-related agencies and stakeholders who frequently do not understand each other and have different interests [39]. Currently, in many developing countries, there are still absences or ineffectiveness of stakeholder engagement and public participation in decision-making at the basin, local, and national levels. For example, in northern Chile, the lack of basin-level shared vision has been identified as an obstacle to cooperation and collaboration [40]. Additionally, as pointed out by many researchers, the absence of a ‘shared vision’ is due to the non-existence of basin organizations in Chile [41]. (Dourojeanni et al. 2010). Van Beek and Arriens (2014) [42] pointed out that there is a need for stakeholder engagement and collaboration to be carried out based on the overall IWRM planning cycle.

Despite the importance of stakeholder engagement in IWRM and IRBM, there could be situations where engagement may not be desirable [43] as several research studies have also noted the conditions to decide on the need for collaboration. The need should be based on the ‘three-way test’—whether it is legitimate, fair, or wise. Wondolleck and Yaffee (2000) [44] suggested that the following six conditions should be satisfied before proceeding with the necessary collaboration, that is when: (i) there is a high priority for addressing the issue, (ii) the issue is of great concern for the community involved, (iii) disagreement among the water-related agencies on resolving the issues that arose, (iv) limited resource and shortage of skillsets of the water agencies in resolving the issues, (v) the agency concerned needs the help and cooperation from other agencies to resolve the issue, and (vi) interest among other stakeholders in solving the issue. However, Ansell and Gash (2008) [45] have developed a framework that considered engagement as a process that produces certain outcomes.

It cannot be denied that the need to identify and include all relevant stakeholders in an effective manner at the early stage of a project or program is the first essential step in terms of best management practice [46]. The allocation of sufficient time and the application of soft skills are indeed needed for either face-to-face or even virtual dialogue. It is necessary to

hear from all interested parties, develop a shared understanding, explore areas of common interest, and consider ways to compromise [45,47,48].

It is recognized that participants are generally reluctant to contribute fully when the purpose of the host is mainly to give information to stakeholders and the public. Many government agencies failed to recognize that stakeholders will be willing to sacrifice their time and effort in the engagement process if their contributions were useful for better decision-making [49,50] and not for the sake of formality. Hence, the purpose of any engagement needs to be made clear and relevant to the identified stakeholders, according to the levels of participation [51].

Again, according to Carr (2015) [18], the public must be given the assurance that their views will be taken into consideration for the decision-making process, which shall be more transparent and based on evidence rather than political motivations. There is a need to be flexible in managing diverse information and knowledge for the common good of all parties [52]. In addition, the success of effective participation depends largely on the availability of water-related data and information. Many a time, stakeholders may not have the access nor the privilege to relevant information and are therefore reluctant to participate actively.

In developing a new basin management plan for the Lake Ontario and St. Lawrence River areas, Furber et al. (2016) [53] found that the participatory approach based on the 'shared vision planning' has been very successful to minimise conflicts. In a research program which required engaging Native American tribes of the southwestern part of the USA, Chief, Meadow, and Whyte (2016) [54] gave appropriate respect to the culture of the local community by following the necessary tribal protocols and community rules. The need for effective communication has been cited by many authors such as Akhmouch, Aziza, and Correia (2016) [13] and Mott Lacroix and Megdal (2016) [55]. There is always a need to carry out extensive networking to exchange and share good engagement practices both locally and abroad [56].

Hall et al. (2016) [57], in planning the public participation program for the 2015 Montana State Water Plan's Yellowstone Basin, had recommended that stakeholder engagement for the planning of water resources should be for the purpose of obtaining and organizing social and biophysical information and data. The comments from the citizens can be used as the informational basis of planning, and relational basis, but legitimation should not be the objective of stakeholder participation. Pedroso et al. (2015) [58] explored the progress in the IRBM DRR integration with the overall legislation related to environmental policies and heightened the importance of water governance and community-led initiatives for a more successful disaster risk reduction (DRR) initiative planning. Zeng et al. (2006) [59] provided a detailed review of some selected transboundary basins to draw lessons for IWRM contexts with selected basins representing Africa, Asia, Europe, Latin America, and more. Zeng et al. (2006) [59] also mentioned that goals should be identified and prioritized through a stakeholder process for the greater benefit of all concerned.

Darnswadi et al. (2015) [60] performed a stakeholder engagement and analysis field survey to understand the stakeholders' perception of Songkla Lake Basin in Thailand and this reflected the extent of social sustainability of the lake basin constructed. The United Nations (2021) [61] listed several measures on stakeholder engagement during performance partnership grants (PPG) and project implementation related to IRBM based in the USA and North Brazil. Glick et al. (2009) [62] stated that the input from the stakeholders will be critical for making trade-offs that require considerations of the cultural traditions, moral factors, and local history when planning for climate change adaptation related to IRBM in the United States. Ahmed et al. (2021) [63] developed a research methodology and strategy for stakeholder engagement based on the participatory approach to improve groundwater management for the enhancement of agriculture and farming livelihoods in Pakistan.

Sreeja et al. (2016) [64] commented that the exclusion of coastal reaches in the river basin management plan of the West Coast of India, has resulted in: (i) the extensive use and exploitation of the local groundwater resources, (ii) uncontrolled coastal reclamation,

and (iii) the deprivation of stakeholder roles in the overall basin developmental processes. The Mekong River Commission, MRC (2011) [65] mentioned that in adopting IWRM in the countries concerned, there is a need for broader stakeholder engagement. Under the flood management and mitigation program in Malaysia, Caddis et al. (2012) [66] and Cheah et al. (2019) [67] stated that there is a need to consult and raise awareness among the policymakers and amongst the broader group of stakeholders in the process of policymaking for floodplain and river management. Several conference proceedings also mentioned the importance of stakeholder engagement in IRBM [68]. Smith et al. (2015) [69] showed that the water quality criteria based on the environmental aspect and public health must be integrated with the social and economic goal of those affected, which initiated a 'twin-track' and cross-sector approach of stakeholder engagement and scientific research.

Arcenas (2017) [70] showed several ways for stakeholder engagement and community involvement including turning the monitoring process into communication products for the relevant stakeholders, helping them to be engaged and involved in basin management. Biswas (2021) [71] mentioned that a collective approach that involves stakeholders in the joint management of the watershed is considered the best option to ensure livelihood sustainability and the eco-restoration of the catchment areas. Gilman et al. (2004) [72] stated that the basic premise of IRBM is that the stakeholder should participate in the process and the conservationist can benefit from the lessons shared by the IRBM's practitioners based on their history of stakeholder engagement. Ombara (2021) [73] contended that there is a large gap in the framework for managing transboundary resources in Kenya as they are not capable to support the desired stakeholder participation, synergy, and collaboration. Kishore and Grewal (2012) [74] also mentioned that while formulating a long-term strategy for reducing the risk of disaster, tangible short-term outcomes are equally beneficial to the local communities which will consider them to be critical for the effectiveness of the main stakeholder engagement. Quang et al. (2012) [75] listed the stakeholder engagement process followed by the Vietnam Technology Need Assessment (TNA) for each of the respective stakeholders.

Kinney et al. (2012) [76] reported that the government, landowners, and traditional authorities could work together harmoniously at the local level for Dayi River Basin through stakeholder engagement. Wagley and Karki (2020) [77] described a participatory and integrated watershed management approach with the involvement of multiple stakeholders in the decision-making processes implemented in Nepal. One of the findings from Wagley and Karki (2020) [77] was that incentivized and enabling mechanisms are necessary to account for the historical grievances of the communities as well as to reduce the conflict among the park-people. Anuar et al. (2022) [78] concluded that empowering governance of river basins through Green Courts will lead to unpolluted rivers, a reduction in water treatment costs, and ensure continuous water supply.

Grafton et al. (2019) [79] examined water management practices in five different countries spread across the globe, i.e., Australia, Tanzania, Mexico, the USA, and Vietnam. In order to reduce water risks in relation to water availability, the study proposed the need for a Water Governance Reform Framework (WGRF) which includes key strategic recommendations such as well-defined reform objectives that must be made public, the availability of relevant data, and transparency in decision-making.

Sahay and Perez-Viscasillas (2019) [80] in their master project explored the use of citizen science water monitoring (CSWM) program as a potential tool for influencing water policy and water resources management (WRM) in five representative countries in the Global South region, namely India, Kenya, Malaysia, Philippines, and Mexico. This kind of participatory management which advocates local ownership not only empowers communities through data and science but also provides a platform for the national government to inform local communities about water policy, strategies, and action plans.

There was also a participatory evaluation carried out to compare the stakeholder-preferred management of river basins [81]. Reynaud et al. (2015) [82] applied the participatory approach to outline the development priorities in the Mékrou Transboundary River

Basin, which involved Benin, Burkina Faso, and Niger in West Africa. By bringing together all the scientific knowledge and practical experience of stakeholders at the beginning stage of the project, there will be a greater possibility of quality contributions in decision-making for formulating sustainable water policy.

At the river basin management planning in the Republic of Ireland, it was also concluded that well-resourced communications with an improved collaboration among the stakeholders are essential to delivering effective and efficient water supply and quality [83].

3.3. Stakeholder Engagement as a Form of Social Learning

In many instances, the review findings also showed that stakeholder engagement can be considered as a form of social learning through the interaction of various stakeholders in a meaningful way. Pearson et al. (2010) [84] described social learning as a process that is dynamic in which individuals can take part in new ways of brainstorming to address challenging issues such as river pollution and water demand. To enable social learning, there is therefore a need to possess a wide range of knowledge and information about water and the environment, and to share them in a practical and transparent manner [52].

Many works of literature concurred and supported the view that through the process of social learning, stakeholders' collaboration yields more benefits compared with just one-off public consultation. Learning together will lead to stronger fellowship and will result in better joint management, thus confirming the advantages of different stakeholders' contributions towards the integrated management of natural resources [85]. In other words, stakeholder engagement can turn out to be an opportunity for social learning where water users can better understand scientific and technical issues at hand, acquire new knowledge and skills, and reconcile their views with those of others [86]. This could be particularly so for transboundary basins with complex issues [87,88].

Social learning can also serve as an important process of informing water users about the policy development and implementation strategy of the water authority [89]. Moreover, during the process of social learning, gaps due to power, influence, and institutional differences may be reduced or eliminated, thereby creating mutual trust and developing a common sense of ownership towards sustainable water resources management. In most well-organized stakeholder engagements, there is also the possibility of knowledge transfer and knowledge co-creation apart from social learning. One of the positive aspects of knowledge co-creation between government agencies and citizens is the mutual recognition and respect that will develop while working together towards the same objectives [90].

3.4. Role of Leader in Stakeholder Engagement

From the perspective of river basin management, the findings showed that leadership is very important, particularly at the initiating stage of any engagement process. Based on the review, many works of literature were related to business ethics [91,92], and management. Bryson (2004) [93] has discussed the prominent role and responsibility of a leader in stakeholder engagement. However, it has been observed that there is a marked difference in the public sector involving the aspect of water resources management where the term 'leader' is almost absent, and the leadership of the engagement process is unnoticed and not apparent. This may be due to the research bias of the literature on water and environment management which only touches on the outcomes and factors that contribute to the success of a process. In the initial planning and decision-making stages, the role and commitment of the top leadership were not included, though they were the most vital.

One of the main tasks of a public sector leader in water management is to plan and implement the whole stakeholder engagement process effectively to reconcile any differences among stakeholders, with proper monitoring and evaluation mechanism. Moreover, there is also a need for the leader to ensure a level playing field for all stakeholders in any engagement process [52].

4. Research Gaps and the Way Forward

The review findings showed that many works of literature have been written about the implementation of IWRM and the importance of stakeholder engagement or participation in IRBM. However, based on the systematic bibliometric analysis that was carried out in this study, there were very limited studies on how effective stakeholder engagement should be carried out to enhance the water management at the river basin level.

In view of this gap, there is a need to conduct separate basin studies aimed at formulating an appropriate conceptual framework for effective stakeholder engagement in IRBM. Therefore, in fulfilling this gap and the way forward, the following three sub-sections are possible areas that may be considered for further investigation with the aim of enhancing the implementation of IWRM at the river basin level.

4.1. Functions of IRBM to Include Environmental and Social Concerns

According to the principles of IRBM, water resources management with a sustainability goal can only occur where there is an integrated and coordinated management of the environment and the natural resources are at large. Therefore, the water policy of a given basin should be aligned with and be coordinated in conjunction with policies of other multiple sectors, such as environment, agriculture, land conservation and development, forestry, biodiversity, fisheries, energy, and so on [94]. Hence, it is strongly advocated that there must be a balance between socio-economic and ecological concerns within river basins. In this respect, it is proposed that all such requirements should be clearly reflected in the text documents of both the water policy and legislation of the country concerned.

Currently, almost all types of research on water are confined to the management or governance of the water sector itself. Water, being part of the environment, must be managed from a broader perspective, particularly in conjunction with the management of land-based activities and resources, all of which have a profound impact on the environment and the socio-economic perspectives. As such, future research approaches should include the aspect of stakeholder engagement from the environmental perspective as well. Hence, any stakeholder engagement in IRBM should encompass the whole aspect of socio-environmental issues, which invariably includes water and land management, and not just focus on water alone.

4.2. The Need for a Multi-Stakeholder Platform

Water-related problems are complex and require the involvement of diverse stakeholders from the scientific as well as social disciplines with knowledge and experience in the field of natural resources management, which includes water [95]. Since the early 2000s, the concept of a multi-stakeholder platform (MSP) has become popular for various applications and has adopted different names such as the multi-stakeholder forum, multi-stakeholder partnership, and multi-stakeholder initiative [96].

The concept of MSP calls for collective and sometimes collaborative initiatives, focusing on improving public resources and service deliveries [97]. The strength of such a kind of platform is the ability to bring experts from all walks of life such as the government, civil society organizations, academics, and private sectors to address complex issues that none can do alone [98]. Moreover, another characteristic of MSP is that it focuses on learning by doing; with the application of a systematic mechanism for obtaining feedback [99].

In essence, MSP exists to complement the role of the government in achieving the public delivery role. However, there should be a good balance of relevant stakeholders' involvement, as a study carried out in Tanzania indicated that due to the unbalance of stakeholders, which is monopolized by the government agencies related to water, there is the risk of the unsustainable maintenance of the platform unless it has the continuous support of potential partners or collaborators [95].

One very good example in a recent study demonstrated the use of a digital platform, Basin Futures, for stakeholder engagement [100], which is worth looking into for the effective implementation of a stakeholder engagement framework.

4.3. Whole of Government and Whole of Society Approach

Like many other critical sectors, water management demands the existence of a sound institutional arrangement at the river basin level in order to ensure that good water and environmental practices are adhered to. Elfithri et al. (2012) [101] advocated that in river basin management, there must be strong integration among all government agencies, private sectors, NGOs, and citizens. Chan (2005) [102] suggested that the government must entrust some of its responsibility for river care and management to all relevant stakeholders, including the local communities. Perhaps the time has come for the nation to take a “Whole-of-Government and Whole-of-Society” approach based on the ecosystem framework for the broader environment, social, and corporate governance (ESG) which encompasses, amongst others, the function of sustainable water management. This is where the federal government can work closely with the state governments, local authorities, academics, industries, civil society organizations, and local communities to effectively plan and implement strategies to transform the local natural ecosystem, including water as a strategic enabler for the socio-economic development of the nation.

5. Conclusions

From the systematic review analysis, it is evident that there are several factors that contribute towards effective stakeholder engagement. This includes the methods and approaches employed, the inclusiveness of all relevant stakeholders, the involvement of stakeholders in the early stages of the engagement, the access to relevant information, the incorporation of local knowledge and expertise, and the time and resources made available for the engagement. Moreover, other important factors examined include the purposes of engagement, the commitments and willingness of the participants, and the extent to which stakeholders’ views are incorporated in the decision-making processes.

Many works of literature concurred and supported the view that, through the process of social learning and knowledge transfer, stakeholders’ engagement yields more benefits compared with just one-off public consultation. In terms of leadership, the main tasks of a leader in water management should be to plan and implement the whole stakeholder engagement process effectively with the proper mechanism for monitoring and evaluation.

However, in many countries, multiple aspects of the mechanism and implementation framework for stakeholder engagement in river basin management remain unclear and not well perceived. In addressing these research gaps, research priorities can be placed on formulating a conceptual framework for an effective stakeholder engagement implementation within each river basin, keeping in mind that there is no one framework that can fit all the river basins. Hence, from this review, researchers can set a research agenda to address this gap so that every river basin can have an effective stakeholder engagement framework for more successful river basin management.

Nevertheless, there is also a limitation on the review conducted as the analysis was only based on the three scientific search engines. Further improvement on the review can be done by legally collecting reports from the authority of each river basin to assess the current method and status of stakeholder engagement, and thus further revise, improve, and establish an effective stakeholder engagement framework for IRBM.

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