Stakeholder mapping and analysis in Collaborator sites

Deliverable 4.1

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Abstract (for dissemination, 100 words)	This report presents the stakeholder mapping in European and International Collaborator sites of the RECONECT project. In RECONECT, stakeholders are identified according to their role related to the hazard and to NBS. Across all Collaborator sites, partners are generally well aware of authorities and the roles they play, particularly during a hazard. Media is represented the least. The representation of the commercial sector was higher in European collaborators whilst civil society had higher representation amongst International Collaborators.

Keywords	Nature-based solutions, disaster risk reduction, stakeholder mapping, co-creation, participatory approaches

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Executive Summary

Effective stakeholder participation is an important element in RECONECT's social innovation approach. Engaging stakeholders in the co-creation process of implementing NBS in a focus area should start with a broad identification of stakeholders, followed by their analysis and ultimately with their involvement in the process. This deliverable focuses on the stakeholder analysis in RECONECT Collaborator sites as a first step in the NBS co-assessment and planning phase.

The report first introduces the methodology followed to 1) identify stakeholders that should be included in relation to the hazard and the Nature-Based Solution (NBS); 2) map stakeholders according to groups and roles; and 3) analyse stakeholders' stakes in relation to the hazard and the NBS, and to determine the level of participation desired from each stakeholder.

The rigorously designed mapping process piloted in RECONECT and explained in this report is aimed at providing the Collaborators with a more balanced representation of different types of stakeholders in order to ensure representation of different interests, experiences and views in the process of identifying suitable NBS. The outcomes from stakeholder mapping are the entry point in the subsequent steps of the co-creation process.

The process of stakeholder mapping has shown that European Collaborators have good knowledge of key authorities spanning different roles as well as levels of authority. By contrast, civil society is better represented among International Collaborator sites than among the European ones. A reflection from all Collaborators was the difficulty of mapping stakeholders in relation to the NBS, which may be due to the fact that at time of the mapping the Collaborators had not yet defined their focus areas or specific NBS. This highlighted the importance of defining and focusing on the main challenges and goals to be able to better understand the landscape of actors.

Having in mind that the stakeholder mapping at the very beginning of the project in Collaborator sites resulted in somewhat unbalanced representation of different stakeholder groups and in difficulties in recognising the important actors, particular attention for ensuring a balanced representation of stakeholders will be paid in further co-creation process in Collaborator sites within RECONECT.

The stakeholders identified in the inception phase of an NBS project are the starting point for subsequent project activities. It is therefore recommended that the stakeholder mapping aimed at NBS co-creation should initially be based on good comprehension of the main challenges and goals and with a balanced representation of different stakeholder groups and roles, while it should continuously be scrutinized during the NBS project implementation.

The methodology piloted here is applicable beyond RECONECT. The experiences from applying it are of general interest for researchers (within and beyond RECONECT) who are interested in co-creation approaches, as well as implementing actors working with aspects related to water governance, risk management, hydrometeorological hazards, and spatial planning.

Annex B of this report refers to the "Stakeholder database for Collaborator sites" as a separate Excel file. The file can be made available upon request.

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1 Introduction

1.1 Background

Implementation of nature-based solutions (NBS) for hydro-meteorological risk reduction offers the possibility to break away from traditional practices and enable to reconnect our land management practices and developments with nature in order to achieve multiple benefits to services and functions of ecosystems. According to Olsen and Bishop (2009), such measures are potentially more cost-effective and adaptable than traditional hard engineering measures. However, cost-effective design and implementation of NBS is only part of the answer. Of equal importance is the ability to effectively place them in diverse local and cultural contexts and integrate them into broader land and risk management strategies. It is therefore of crucial importance to understand the complexity of each case and to design the NBS in a way that minimizes social/economic losses and environmental impacts, increases resilience to hydro-meteorological hazards while achieving multiple co-benefits.

Examples of large scale NBS for disaster risk reduction (DRR) which can provide proof-of-concept for their upscaling and replication is currently lacking and there is a clear need to enhance their evidence base through demonstration within the European reference framework. RECONECT is an interdisciplinary international project that aims to contribute to European reference framework on NBS by demonstrating, referencing and upscaling large-scale NBS and by stimulating a new culture for land use planning that links the reduction of risks with local and regional development objectives in a sustainable way.

In order to contribute effectively to the above goals, RECONECT draws upon a number of Demonstrator and Collaborator sites (Figure 1). These have been carefully selected to cover a range of local criteria including (i) climatic and geographic conditions, (ii) type of hydro-meteorological hazards (floods, storm surges, droughts, landslides), (iii) vulnerability to these hazards, and (iv) governance structures and social/cultural settings. Besides these criteria, the potential for collaboration and upscaling has also played a role in the selection process. The Demonstrator sites are divided in two types: Demonstrators type A are the cases where the co-creation (i.e., co-assessment and planning, co-design, co-implementation, operations and maintenance, and co-monitoring and evaluation) of NBS will be carried out during the project, while Demonstrators type B are the cases where such works are already implemented and will serve as the reference cases.

The Collaborator cases in RECONECT are envisaged as the cases inspired by the Demonstrator sites. By sharing the RECONECT knowledge and experience with the Demonstrators, the main activity of the Collaborators is the development of the pre-feasibility studies for implementation of NBS in their focus areas. The pool of Collaborator cases consists of European and International Collaborators (Table 1).

In RECONECT, activities related to the work with Collaborators are coordinated and executed in WP4 “Overcoming barriers, upscaling and synergies with Collaborators”. These activities focus on mapping points of interaction between Demonstrators and Collaborators through a supply and demand analysis; assessing the key barriers to the implementation of NBS and exploring ways to overcome them; obtaining better understanding of local acceptability, sustainability and feasibility of NBS in Collaborator sites; organizing, facilitating and monitoring knowledge generation and sharing between Demonstrators and Collaborators within an upscaling strategy; and co-producing a framework for future action encompassing land and sea-based policies of relevance to selected NBS.

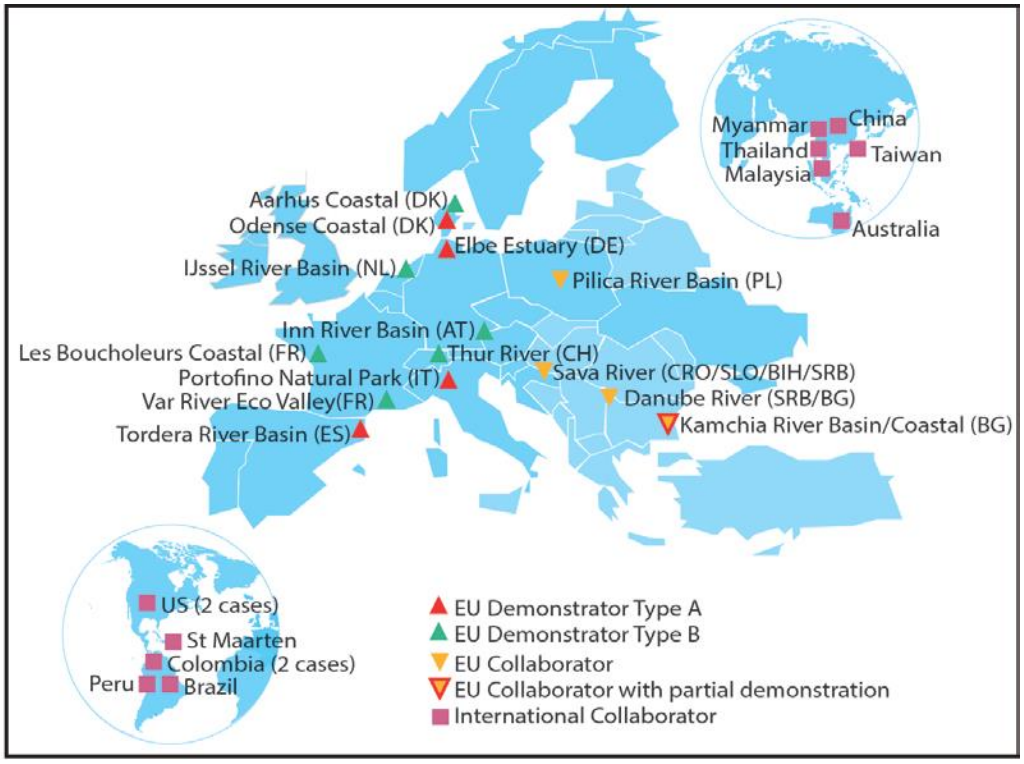

Figure 1 RECONECT network of cases

Table 1 Collaborator sites in RECONECT

EUROPEAN COLLABORATORS		
EC1: Kamchia River Basin	Bulgaria	BDCA, VARNA
EC2: Pilica River Basin, focus on the Luciaza river	Poland	Warsz, ERCE
EC3: Sava River Basin with tributaries a. Bosut River b. Drina/Jadar River c. Kolubara/Tamnava River	Croatia, Serbia	PRONING, UNBELGR, IWACONS
INTERNATIONAL COLLABORATORS – Asian Collaborators		
IC1: Chao Phraya River Basin	Thailand	HAII
IC2: Greater Tainan Coastline	Taiwan	NCKU
IC4: Klang River Basin	Malaysia	MONASH
IC6: Chindwin River basin	Myanmar	SEI
IC7: Tarago River basin	Australia	MONASH
INTERNATIONAL COLLABORATORS – South American Collaborators		
IC3: Rio do Couves	Brazil	ITA, TUHH
IC10: Piura River Basin	Peru	TUHH
IC11: Rio Frio, Magdalena	Colombia	IHE
IC12: Cañaveralejo, Lili and Melendez River basins	Colombia	IHE
IC13: St. Maarten	The Caribbean	IHE

1.2 RECONECT's Social Innovation Approach

Effective stakeholder engagement is an important element in RECONECT's social innovation approach, presented in RECONECT deliverable D1.2. Social innovation involves the ways in which people are creating new and more effective answers to the challenges that societies face and embedding these solutions in a way that address societal needs. A social innovation approach underpinned by co-creation (as the means through which participation of stakeholders takes place) gives stakeholders a voice, allowing them to present their concerns and be part of the creative process.

RECONECT's social innovation approach involves stakeholders in different co-creation stages of NBS implementation: co-planning and assessment, co-design, co-implementation and co-monitoring and evaluation (Figure 2). Ultimately, the stakeholders are also one of the pillars for the upscaling process, in which social innovation leads to a transformative change and allows NBS to be more widely adopted. The co-creation process is a continuous process because a new cycle of co-planning and assessment can be initiated after the comprehensive co-evaluation of the implemented NBS.

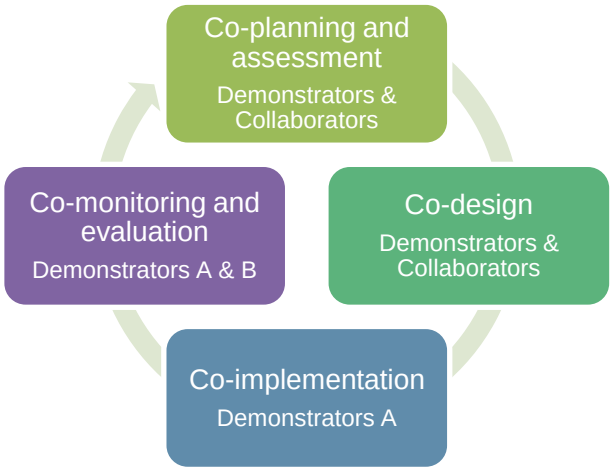

Figure 2. Co-creation of NBS: active engagement of stakeholders in different stages of NBS implementation.

1.3 About this report

Engaging stakeholders in the co-creation process of implementing NBS in a focus area should start with a broad identification of stakeholders, their analysis and consequently their involvement in the process.

This deliverable focuses on the stakeholder mapping in RECONECT Collaborator sites as a first step in the co-planning and assessment phase of the NBS implementation. The stakeholder analysis for the Demonstrator sites is the subject of deliverable D2.1.

The methodology for the stakeholder mapping and analysis is laid out in D1.2 "Social Innovation Approach" but is also presented briefly in section 2 of this deliverable. Rigorously designed mapping process piloted in RECONECT is aimed at providing Collaborators with a more balanced representation of different stakeholder groups to ensure representation of different interests, experiences and views in the process of identifying suitable NBS. Section 3 provides the results of the stakeholder analysis carried out in the Collaborator sites. The final section concludes with recommendations for the application of the methodology in the context of replication of NBS.

Annex A contains the stakeholder mapping information for each site. The mapping data is collected into a database (Annex B) that serves as a departure point for Collaborators' engagement with local stakeholders throughout the RECONECT project in the subsequent steps of the co-creation process.

2 Methodology for stakeholder analysis

Broadly defined, stakeholders are persons, groups, or organizations who have a concern in a process or in a geographical area through residence, employment, or interest. While stakeholder inclusion is a defining element in any co-creation approach, identifying who has something at stake is more challenging than it may first appear. In the absence of a robust methodology, stakeholder identification can easily turn into a subjective selection of easily accessible or well-known actors. It is therefore recommended that the stakeholder analysis is carried out before engaging in the NBS implementation process.

The stakeholder analysis methodology presented here responds to calls for adopting 'multi-level or multiscale governance' approaches to risk reduction (Archer et al. 2014). This requires horizontal coherence, which refers to interactions between or among actors across different sectors at the same societal level, for example, between the national level governmental and non-governmental actors. It also requires vertical coherence, which refers to interactions between actors from the same sector but working at different (e.g., jurisdictional) levels, for example, national and municipal governments (Segnestam 2015). Furthermore, the methodology aims at mainstreaming an inclusive approach to adaptation that integrates community and other forms of knowledge into the assessment and planning, and the design stages of the NBS process.

In multi-level governance it is important to understand the role and dynamics of (public, private or civil society) institutions functioning at different levels because they play a role in at least three ways: they structure the nature of impacts and vulnerability through governance and communications; they create a system of incentives in which individual and collective actions take place; and they control access to resources and information which shape practices locally (Agrawal et al. 2009).

The methodology proposed for the stakeholder analysis, as described in D1.2, consists of three steps: (1) identification, (2) mapping, and (3) involvement. These steps are described in more details in the following subsections.

2.1 Step 1: Stakeholder identification

How to ensure that all relevant stakeholders are considered and democratically involved in the co-creation process of NBS, considering questions related to social cohesion and equity?

The stakeholders may be self-identified or selected by others. They may represent themselves directly, be represented by a group or organization, or represent their community or particular interest groups (Forrester et al., 2008). It is also important to explore whether there are individuals, groups, or organizations that perceive the NBS as disadvantageous and their reasons for doing so, as these stakeholders are likely to voice strong opposition to the NBS and in some cases even block any attempts of implementing an NBS. Acknowledging these stakeholders and inviting them to the discussion could have a positive impact upon the dynamics of the decision-making process, flash any potential physical, social, or environmental risks associated to the NBS, and help address and mitigate potential negative impacts from the NBS upon the physical, institutional, and social structures of a place.

Own networks are often the starting point in a co-creation process. Stakeholders who have established a relationship of trust with the person leading the work are more likely to be responsive and dedicated in the subsequent steps. However, there is a need to go beyond own networks. This can be done through snowball sampling, for instance of experts in the

field and according to predefined groups and roles. Groups and roles are defined according to the objectives and area of focus in a project.

Stakeholder groups. The stakeholder groups should represent the main sections of society, which in the case of RECONECT include authorities from governmental agencies, political representatives, civil society, commercial sector, academia, media, and international and transnational organizations (Table 2).

Table 2 Stakeholder groups in RECONECT

Stakeholder (SH) group	Description
SH1: Authorities	Local, national, or regional governmental organizations with key decision-making power, and/or assigned with overseeing, monitoring or evaluating management plans. In centralized governance systems, regional or national governments might be directly responsible for managing the area. In decentralized systems, the allocation of responsibilities may not be as distinct and have for instance, a local agency responsible for building permits and a regional agency responsible for disaster relief.
SH2: Political representatives	Citizens elected to political office on behalf of their fellow citizens who do not hold political office. It is important to involve elected representatives as they are the ones who are most likely influenced by the decisions taken – or not – locally (reflected on votes).
SH3: Civil society	Individuals, civil society groups, or NGOs that have been involved in the area and issue in question and/or that may affect, gain, or be affected by the hydro-meteorological hazard(s) or the NBS.
SH4: Commercial sector	Businesses, entrepreneurs, companies, and corporations that may affect, gain, or be affected by the hydro-meteorological hazard(s) or the NBS. These actors may be involved in the construction of the NBS or may be impacted by the hazard. These may include service-providers, local businesses, producers, tourist operators, or insurance companies, to name a few.
SH5: Academia	The scientific community with thematic expertise and experience in the area.
SH6: Media	Media (mass media, print media, digital media, social media) has unparalleled reach and power to change minds and behavioural patterns and can further accelerate mitigation and adaptation by bringing DRR stories to wide audiences. To fulfil this potential, media must be brought to the table as a partner rather than just a messenger.
SH7: International and transnational organizations	These could be intergovernmental organizations composed by states (e.g., the Council of Europe, the International Council for the Exploration of the Sea, the Black Sea Commission, the Helsinki Commission). They could also be non-governmental (e.g., the International Sava River Basin Commission, Baltic Sea Action Group, Marine Stewardship Council).

It is important that all relevant stakeholder groups are present, and that each stakeholder *only represent one group at a time* (i.e., a stakeholder cannot wear two hats in the same stakeholder group) in order to avoid a potential conflict of interest. The group should be formed by individuals as well as by group representatives who have the support and confidence of the people they are representing, who have the knowledge relevant to the

issues to be discussed or willing to acquire the necessary information, and who can make the time commitment to actively participate during the whole process. Care should be taken not only to include those that are commonly consulted.

Stakeholder roles. *While stakeholders can only represent one group, it is possible for them to have several roles.* The role of each stakeholder will vary across contexts. For instance, authorities will probably not have the same role or mandate across all cases, particularly when contrasting centralized and decentralized governance systems. Table 3 includes descriptions of different roles identified in RECONECT and examples of stakeholders that potentially fit the description. Ultimately, the Collaborators need to look at their own context and identify the role that each stakeholder has in their locality.

Table 3 Stakeholder roles in RECONECT

Stakeholder role	Description	Examples
Decision makers	Stakeholders in a position to make and execute decisions concerning a society or community (not necessarily executing them – see the following category). They can be from different (local, national, regional) levels	Representatives of government ministries, state agencies, and departments, staff in national or local administrations, members of parliament, donors, and their governments
Implementers	Stakeholders responsible for the execution or implementation of plans and policies	National authorities, NGOs, regional agencies, civil protection authorities
Coordinators	Stakeholders that coordinate a variety of actors for the implementation of plans and policies	Umbrella organizations (governmental or not)
Providers of expert knowledge	Stakeholders that provide expert knowledge and information such as research or site-specific data	Think tanks, consultants, universities, insurance companies, but also the tourist industry, energy (gas or oil) or electricity providers, extractive or food-producing companies, local informants from civil society
Funders/sponsors	Stakeholders that finance activities in the site. These may refer to governmental agencies but also private and non-governmental financing for instance research or local engagement	Public agencies, ministries, banks, international organizations, private sector actors
Lobbyists	Broad category that refers to individuals, associations and organized groups attempting to influence decision making	Individuals in the private sector, corporations, legislators, parliamentarians, government officials, advocacy groups (interest groups), financial agencies, multi-stakeholder partnerships between state and non-state actors
Mediators	Widely recognized officially posted or unofficial stakeholders with a responsibility or mandate to mediate and facilitate communication between different sections of society	Think tanks, local associations, private consultancies, journalists, influencers, knowledge-brokers, religious and other individual leaders from civil society

Following identification of stakeholders, they can be mapped according to representation, i.e., according to their groups and roles. A fictitious example is provided in Table 4. Notice how stakeholders only represent one group but may play different roles. As many stakeholders as deemed feasible can be included, but a balance between the roles is ideal. If there are too many stakeholders providing expert knowledge and too few able to influence decisions or implement actions, the result might become a knowledge-rich workshop, but with very few possibilities to influence practice. If, on the contrary, there are too many stakeholders with decision making roles and too few stakeholders with expert knowledge (including knowledge on everyday experiences like local knowledge), the process could easily become top-down with potentially little anchorage in everyday practices.

Table 4 Example of stakeholder map based on groups and roles

Stakeholder group	Name, position and organization	Role						
		Decision makers	Implementers	Coordinators	Knowledge provider	Financer	Lobbyists	Gatekeeper
SH1: Authorities	Regional coordinator, Contingency agency	☐	X	X	☐	☐	☐	☐
	Municipal council, Municipality	X	X	☐	☐	☐	☐	☐
SH2: Political Representatives	Union representative	☐	☐	☐	☐	☐	X	☐
	Elected town council representative	X	☐	☐	☐	☐	X	☐
SH3: Civil Society	Representative of association for local inhabitants	☐	☐	X	X	☐	X	X
	House owner	☐	☐	☐	X	☐	☐	X
SH4: Private Sector	Insurance company	X	☐	☐	X	☐	X	☐
	Private company	☐	☐	☐	X	☐	X	☐
SH5: Research	Climate adaptation unit, government agency	☐	☐	X	X	☐	☐	☐
	Researcher, University	☐	☐	☐	X	☐	☐	☐
SH6: NGO/IGO	Transboundary commission	☐	☐	X	X	☐	☐	☐

2.2 Step 2: Stakeholder mapping

In the context of RECONECT, the stakeholder analysis focuses on the relevant hazard as well as NBS being considered, both of which vary from case to case. Once the identification of stakeholder groups and roles is completed, the next step is to determine to what extent they affect and/or are affected by the hazard and/or the NBS.

The stakeholders are affected (positively or negatively) by (a) the hydro-meteorological hazards they are exposed to, and/or (b) the planned/implemented NBS in the case study area and beyond. The stakeholders can also affect the hazards and/or the NBS by (c) increasing or decreasing the risk of turning the event into a disaster, and/or (d) the choice and implementation of the NBS.

A stakeholder rainbow diagram (Burgers and Farida 2015) can help visualize the stakeholder selection carried out in the first step and flesh out potential imbalances in representation (see Figure 3). For example, it could happen that, after step 1, the actors in decision-making positions are overrepresented in the pool of stakeholders whilst the actors potentially affected by the NBS are underrepresented. Alternatively, there may be equal representation in the number of stakeholders, but with very uneven stakes in the process which could lead to the failed analysis of the issue in question.

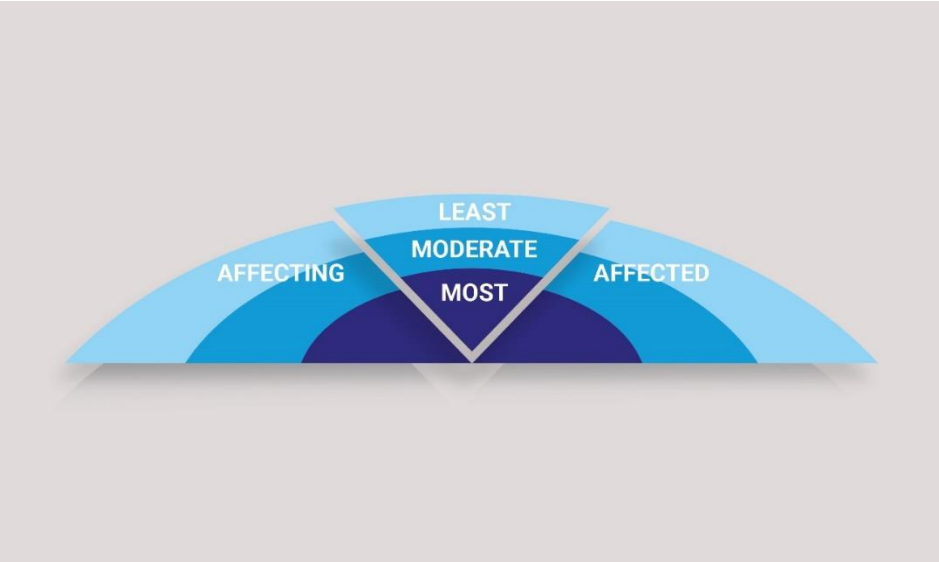

Figure 3 Rainbow diagram for stakeholder mapping

Adapted from Burgers and Farida (2015)

In RECONECT, two rainbow diagrams are used for each Collaborator case: (1) for stakeholders affecting the hazard or being affected by the hazard, and (2) for stakeholders affecting the NBS or being affected by the NBS.

In the first diagram (hazard-affecting and hazard-affected stakeholders), the category “Affecting” should include actors that may be causing, to different extent, the hazard to turn into a disaster. This could, for instance, be connected to urban planning policies, lack of funding mechanisms for DRR, aging infrastructure, or refusal of landowners to collaborate in mitigation and adaptations actions. The category “Affected” should include the stakeholders that are exposed to the hazard(s) according to their vulnerability and the level they experience negative effects. Based on stakeholders’ groups and roles (Table 2 and Table 3), the actors representing these issues should be invited to participate.

The second rainbow diagram (NBS-affecting and NBS-affected stakeholders) may include stakeholders that may be affecting (e.g., the decision, the production, or the location of) the NBS. The stakeholders being – negatively or positively – affected by the NBS should include actors that may receive multiple benefits, alternatively negative impacts, from implementing the NBS. The diagram may also include the stakeholders that are indirectly affected by the flow of water coming from the NBS site (e.g., authorities responsible of water bodies receiving the inflows from the NBS site).

It is likely that the stakeholder analysis process requires a series of iterations as the advancement of the co-creation process might put the relevance of the initial selection into question. For instance, the initial identification of stakeholder groups and assessment of their roles might be deemed irrelevant in the rainbow diagram because they might turn out to be less influential or less affected than initially thought. At the same time, if the identified groups (or individuals representing these groups) are not willing to participate in the process (or participate to the extent needed), it will be necessary to find alternative stakeholders.

Also, there may be stakeholders that are relevant in the context of the hydro-meteorological hazards that are not relevant in the context of the NBS, and vice versa. It is also possible that some stakeholders will both be affected by and affecting. Stakeholders could also be relevant to include in both the hazard and in the NBS diagram.

Depending on the stage at which the site is with regards to the identification of hazards and implementation of solutions, it might be difficult to fill out a complete diagram already during the first iteration. For example, it may be clear which hazard will be the focus of the study, but not which NBS is feasible at this point. In such case, there are two options: one is to consult some of the stakeholders from the first rainbow diagram (focusing on the hazard) to assess whether there is an interest in a specific solution. Alternatively, based on the hazard and a literature review, an NBS can be suggested, and thereafter consult with some of the stakeholders from the first rainbow diagram, whether this would be a feasible option. Based on the identified NBS, the rainbow diagram for the NBS can be filled out, even if the solution being assessed is only exploratory.

A participatory process of stakeholder analysis should seek to involve the stakeholders themselves in co-defining their own role in the process, since results from the first iteration of the stakeholder mapping will merely highlight the researcher's own perceptions. Therefore, the stakeholders could be invited to co-define their own role in the issue (and the project). Practically, this could be done by allowing stakeholders to place themselves in the rainbow diagram.

2.3 Step 3: Stakeholder involvement

How much should stakeholders be involved and when? Once the stakeholders, their roles, and the extent to which they either affect or are affected has been identified, it will be important to find ways in which each stakeholder can participate effectively. It should be considered not only which stakeholders are needed at different stages to obtain the necessary inputs, but also their willingness to participate and the interests they might have at the different stages of the process.

Figure 4 depicts an adapted version of a typology of participation developed by Arnstein (1969), Mostert (2003), and Basco-Carrera et al. (2017) is adapted. It includes one level of non-participation (uninvolved), three levels of low participation (awareness, information and consultation) and three levels of high levels of participation (discussion, co-design and co-decision making). As more involvement is required from stakeholders, the number of individuals interested and available in taking part in the process is likely to decrease.

In theory, stakeholders that are most affected and most affecting should be participating at a high level (e.g., co-decision making), and conversely stakeholders which are less affected but also less affecting can afford to be involved to a lower degree. Parties that are more affected by an NBS or by a hazard and that are affecting the NBS or the hazard the least should also be highly involved in the co-creation process. However, in practice participation depends on many other, sometimes pragmatic aspects, ranging from willingness to be involved, to time availability, competing interests, overcommitted actors, etc. It is necessary to be aware of powerful stakeholders that allow, facilitate, and encourage the involvement of other stakeholders or conversely prevent their participation, and ensure that all stakeholders feel free to make their voices heard.

Figure 4 Stakeholder involvement: levels of participation

Adapted from Basco-Carrera et al. (2017, 100)

3 Stakeholder analysis in Collaborator sites

To facilitate the mapping and analysis of stakeholders in RECONECT Collaborator sites, templates were provided to Collaborator project partners in advance. Two online webinars were scheduled with European Collaborator partners, and later also with International Collaborator partners, to review the methodology, provide examples, gather feedback, ensure the methodology met the needs of the cases, and adjust the methodology according to the feedback gathered during the calls.

Some of the adjustments made to the methodology following the webinars were related to the definitions of stakeholder roles, the inclusion of one more stakeholder group to include transboundary organizations, but also the application of the methodology.

Whilst stakeholder mapping and analysis is a part of RECONECT's social innovation approach (described in D1.2) and is mainstreamed across the project, the timing and sequence of the methodological steps, including stakeholder mapping and analysis, varies across the case studies depending on the stage of assessment and implementation they currently are at. Thus, different Collaborators have different extents of insights and collaboration with stakeholders at this initial stage of the project. Consequently, Collaborator partners with more knowledge of the case and actors were able to fully follow the first iteration of the stakeholder mapping methodology, whilst a full stakeholder mapping for Collaborator sites like Colombia, Thailand or Myanmar was not possible at this stage.

Most Collaborator partners have different amounts of information on current situation and hazards in their respective focus areas. Most of them were not yet at the stage of selecting specific NBS, so identifying the stakeholders involved in NBS implementation was therefore difficult for them at the early project stage. For this reason, all stakeholder groups and roles in relation to the hazard and NBS were included in the mapping, without clarifying the stakeholders' roles in the NBS process.

Determining level of participation was another part of the methodology that was too early to duly implement. Lastly, this initial mapping by the Collaborator partners has neither been shared with nor adjusted by their stakeholders. It is expected that the Collaborators will gain successive understanding of the context and actors while advancing toward implementation of NBS and consequently adjust their stakeholder mappings and analyses.

The aggregated results for Collaborator sites of stakeholder groups, stakeholder roles, and stakeholder groups and roles in relation to the rainbow diagrams are described, while information obtained from individual Collaborators is given in Annex A. Several of the International Collaborator sites were not able to send their results at the publication of this deliverable and are therefore not included in the analysis.

3.1 Stakeholder groups

The representation of stakeholders across all Collaborator sites is shown in Figure 5. The Authorities (SH1) group clearly predominates, with nearly 120 individuals included in the group. Most Collaborators have included multiple authorities in order to cover multiple municipalities, and in the case of the Sava River Catchment even to cover different countries, cut across by a river basin. Additionally, several cases have included different levels of authorities (local, regional and national), different departments or sections within a municipality (e.g., Mayor's office, the office for spatial planning), and different sectors (e.g., forestry, agriculture).

Political Representatives (SH2) is a more homogenous group composed by local, district and commission representatives. Most Collaborators have included 2-3 stakeholders under this category.

Most stakeholders in Civil Society (SH3) include local, national as well as well-known international non-governmental organizations (NGOs). Several cases have also included community cooperatives and water management boards. Interestingly, few cases have included local inhabitants that are not represented by community associations or other local organizations. Civil society is the second most represented group, but there is still a large difference from SH1.

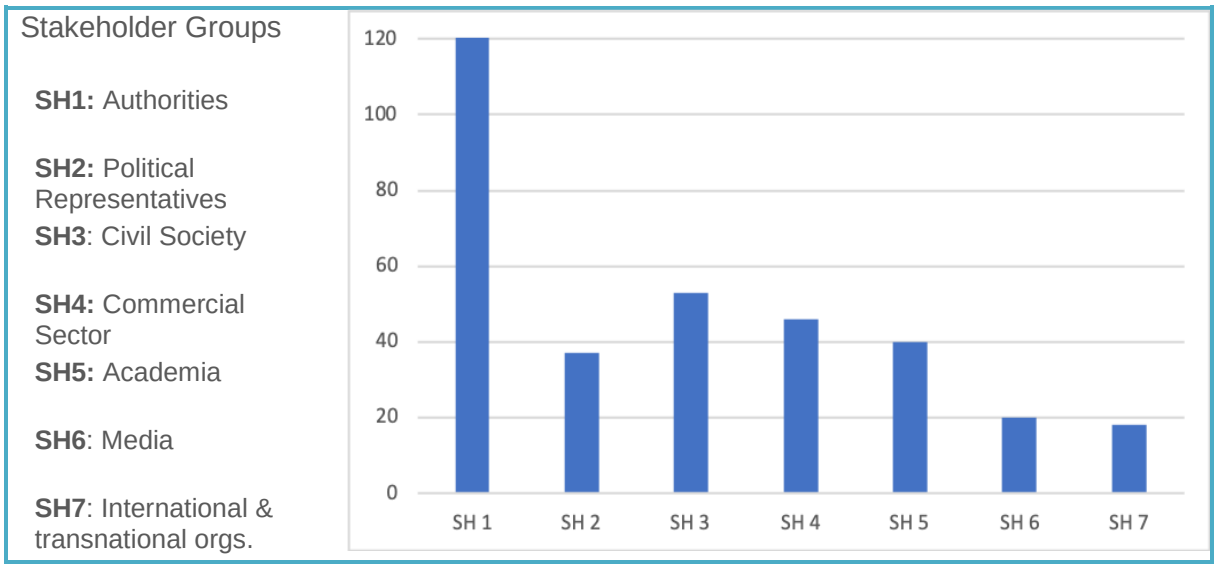

Figure 5 Stakeholder Groups in all Collaborator sites

The Commercial Sector (SH4) includes enterprises related to tourism including hotels and leisure activities; companies providing infrastructure and services such as housing, water, electricity and energy provision; credit and insurance companies; and multinationals. Some of the Collaborator sites at early scoping stages have not yet identified stakeholders in this group (e.g., IC12 Cañaveralejo, Lili and Melendez River basins in Colombia, and IC6 in Myanmar).

Not so surprisingly, most stakeholders in Academia (SH5) group are universities and research consultancy organizations.

The last two stakeholder groups –Media (SH6) and International and Transnational Organizations (SH7) – are the least represented groups. In SH6, most Collaborators include traditional media like newspapers, local radio stations, governmental communications channels, and journalists. Surprisingly, Collaborators did not identify online or social media. Some Collaborators have not yet identified stakeholders in SH6 (Malaysia, Australia, IC12 in Colombia, and Thailand). SH7 is more relevant for Collaborator sites with river basins spanning across national boundaries (e.g., Sava River). However, even Collaborator sites with basins located within national jurisdictions identified UN organizations and regional organizations as relevant.

Looking closer at the European Collaborator sites only (Figure 6), representation across groups is somewhat different from the total numbers in Figure 5. The Authorities (SH1) is still the most represented group, not only in aggregated form but also across all European

Collaborator sites. Commercial Sector (SH4) and Academia (SH5) have higher representation than Civil Society (SH3) in total number of stakeholders.

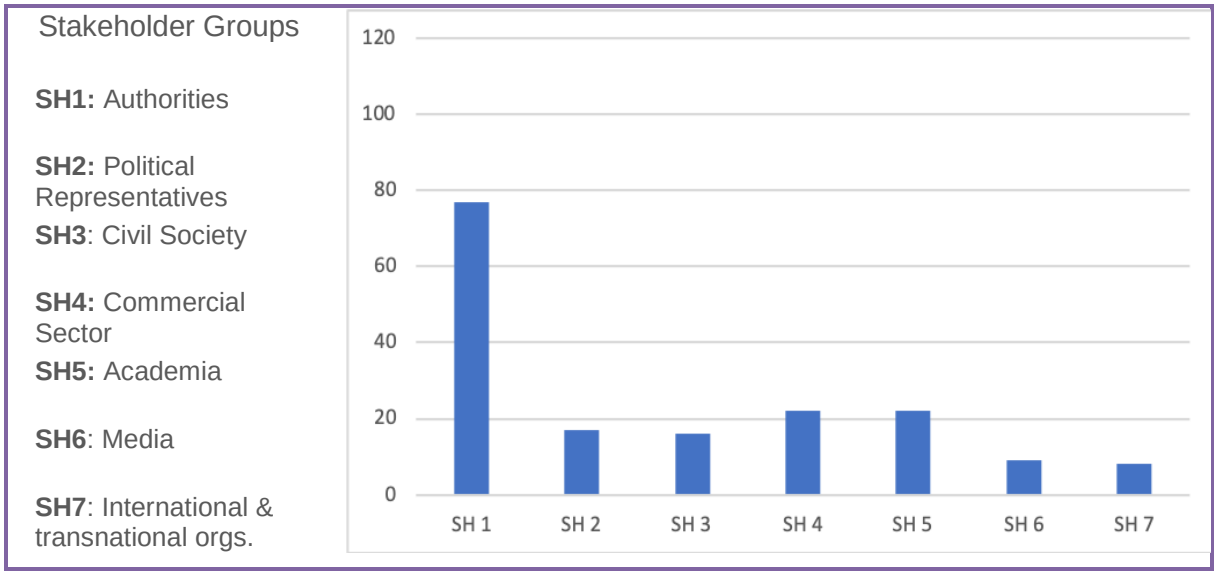

Figure 6 Stakeholder Groups European Collaborator sites

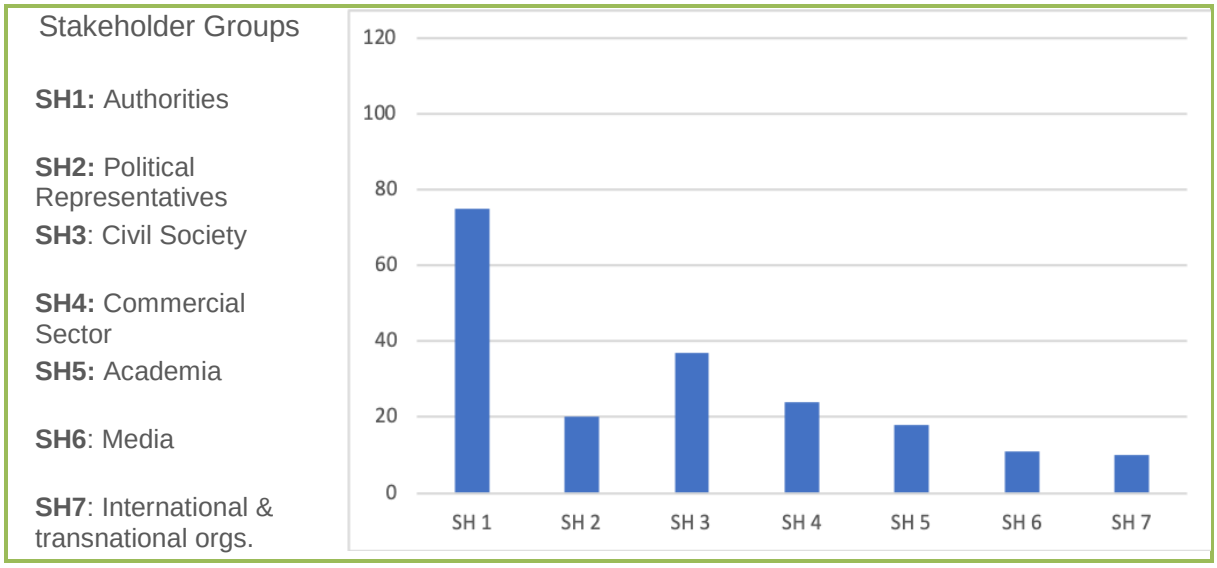

Figure 7 Stakeholder Groups International Collaborator sites

Figure 7 shows representation of stakeholders in International Collaborator sites. The Authorities (SH1) is the most represented group, but the difference compared to the other groups is smaller than in the European Collaborator sites. Civil Society (SH3) is the second largest group. The two least represented groups Media (SH6) and International and Transitional Organizations (SH7) are the same as in the European Collaborator sites, although the latter has slightly more representation than in the European Collaborator sites.

3.2 Stakeholder roles

Whilst the stakeholders can only represent one group, they can play different roles. Consequently, the number of stakeholders per roles can be larger than the number of

stakeholders per group. Figure 8 shows the aggregated results of Stakeholder Roles per group across all Collaborator sites. As can be seen, each stakeholder group has a variety of roles, except for Media (SH6) that has a prominent Mediator role. All other stakeholder groups have more roles, but some roles are more dominant in some groups than in other. For example, Decision makers are highly represented in Political Representatives (SH2) and somewhat less in Authorities (SH1). Providers of expert knowledge are highly represented in Academia (SH5), Commercial Sector (SH4) and Civil Society (SH3). The Authorities (SH1), as the most represented group, is seen as having the most roles to a similar extent (all roles except Lobbyist and Mediators).

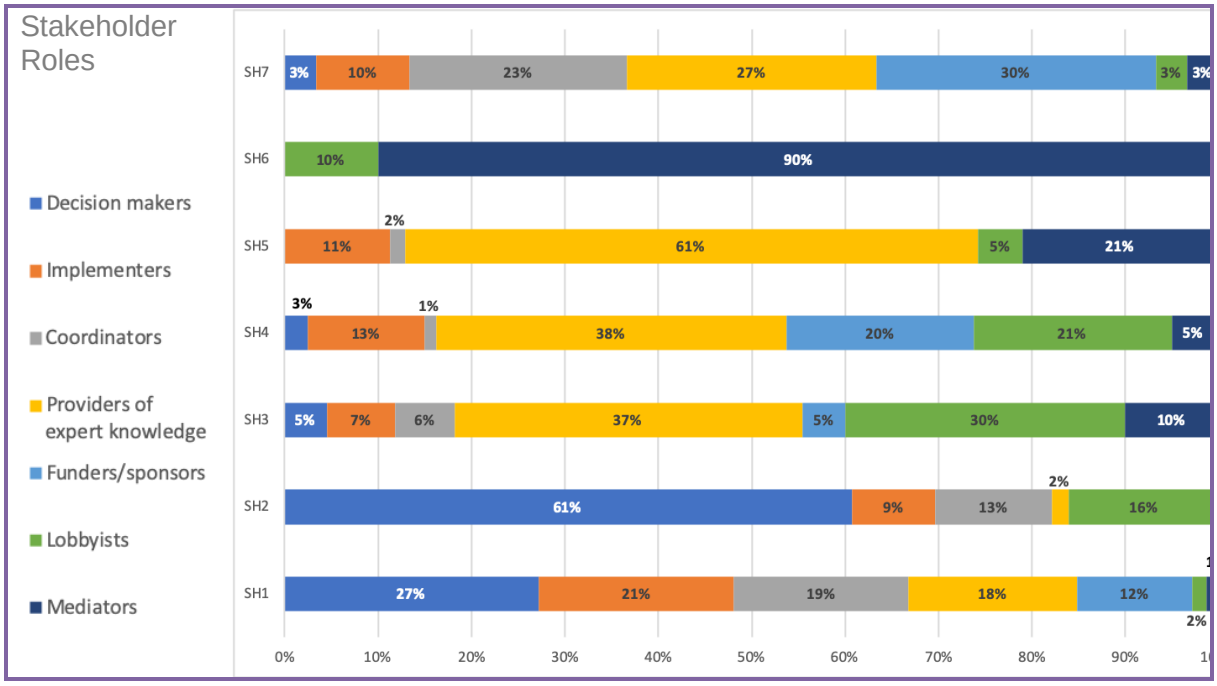

Figure 8 Stakeholder Roles per Group in all Collaborator sites

Figure 9 shows results of Stakeholder Roles per group in European Collaborator sites. The figure shows that the most represented Authorities (SH1) group is also the most diverse in terms of roles. Their most predominant role is Decision makers, followed by Implementers, Coordinators, and Funders/Sponsors. The Political Representatives (SH2) is one of the most homogenous groups composed of Decision makers and Lobbyists. Stakeholders in Civil Society (SH3) have roles as Implementers, Providers of expert knowledge, Lobbyists, and Mediators. Commercial sector (SH4) is diverse and composed of all roles except from Decision makers. Academia (SH5) plays a role as providers of Expert Knowledge, Lobbyists, and Mediators. Media (SH6) is the only group with only one role: Mediators. Lastly, International and Transnational Organizations (SH7) primarily play a coordinating role, but are also Lobbyists and Mediators.

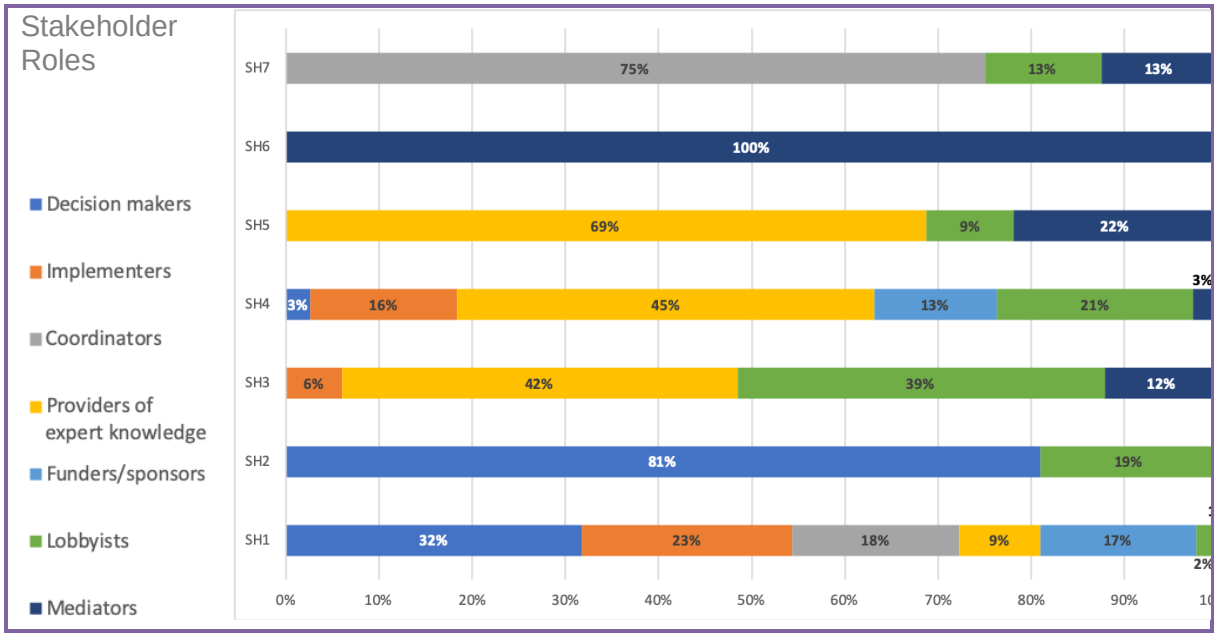

Figure 9 Stakeholder Roles per Group in European Collaborator sites

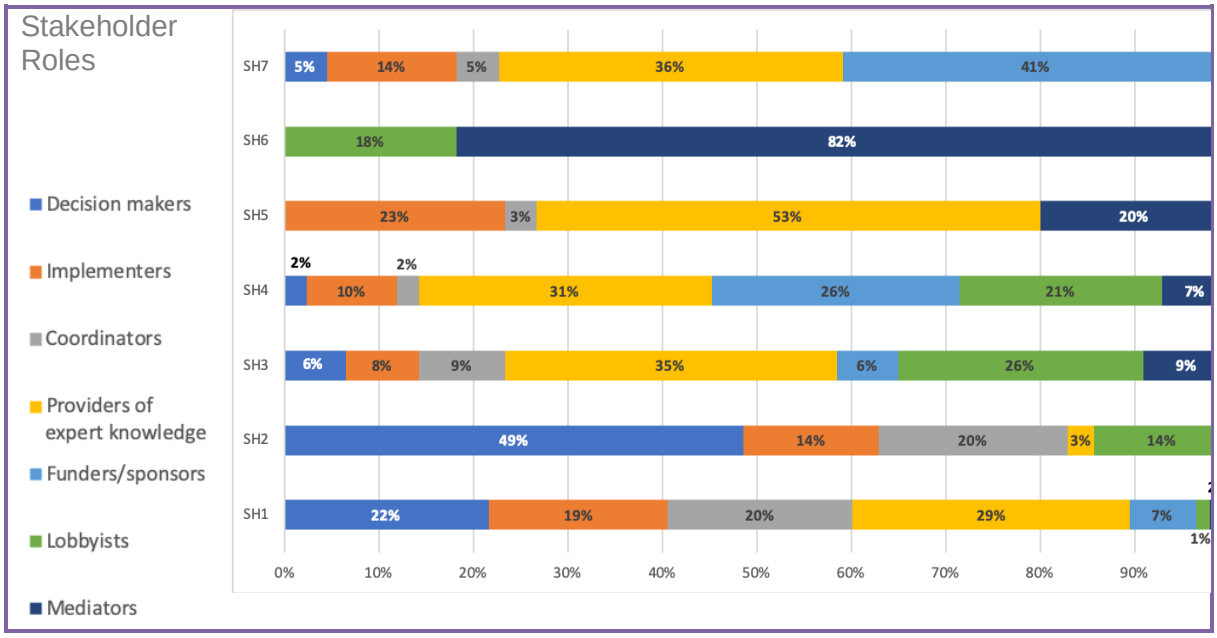

Figure 10 Stakeholder Roles per Group in International Collaborator sites

Results for the Stakeholder Roles per group for International Collaborator sites are shown in Figure 10. The largest Authorities (SH1) group is represented by all stakeholder roles. The most predominant roles are Coordinators, followed by Decision makers and Implementers. Most Political Representatives (SH2) are Decision makers, Coordinators, and Implementers. From Civil Society (SH3), most stakeholders have a role of Providers of expert knowledge and Lobbyists. Commercial sector (SH4) includes Providers of expert knowledge, Lobbyists, and Funders/sponsors. Most stakeholders in Academia (SH5) are also Providers of expert knowledge, but also Implementers and Mediators. Media (SH6) is the most homogenous group amongst International Collaborator sites, composed of Mediators and Lobbyists.

International and Transnational Organizations (SH7) have the roles as Providers of expert knowledge and Funders/sponsors.

3.3 Stakeholders affecting or being affected by the hazard

To show the complexity that stakeholders face in relation to both hazard and NBS, we use the example of Authorities (SH1) in the European Collaborator sites, the group with most details in the mapping. Figure 11 shows how they are classified as affecting and/or being affected by the hydro-meteorological hazards and to what extent (most, moderate, or least). This information was captured in the project by using a rainbow diagram in the stakeholder mapping process (see Figure 3) in combination with the information on the roles of each stakeholder. Note that the rainbow diagrams complement the below diagrams by showing (i) all stakeholder groups together, and (ii) how much (most, moderate, least) a stakeholder within a stakeholder group affects or is affected by a hazard since the stakeholder groups are disaggregated in the rainbow diagrams.

Apart from Decision makers and Funders/sponsors, Authorities are considered by the Collaborators to be affecting the exposure and vulnerability to the hazards more than they are affected ('Affecting' is generally taller than 'Affected' in Figure 11). They are also in almost all roles seen as being among those that are affecting the most, but also those who are among the most affected (blue colour in Figure 11). All the Collaborators included some of the stakeholders both as affecting and as being affected. This is an indication of them being directly exposed to the hydro-meteorological hazard(s) or of there being two sides to the same coin. For example, in the case of EC2 Pilica the Collaborator included the municipalities in the category of those affecting the most since they are in charge of land use planning and rainwater management. But they were also classified as being among those who are the most affected due to the destruction of municipal facilities. As an example of there being two sides of the same coin, EC1 Kamchia explained that part of Municipalities' responsibilities was making decisions regarding the reduction of the flood risk and implementing flood management measures within and outside urban areas, hence they were among those affecting the exposure the most. At the same time, they were classified as being affected the most since there was public discontent because flood management was not considered adequate.

With only one European Collaborator assigning the role of Mediator to one of the authorities and in total three being assigned the role of Lobbyists, it is not surprising that those two roles do not or hardly show in the figure as affecting or being affected. The role that has the most diverse pattern is Provider of expert knowledge. More than a half of the stakeholders within this role are the least affecting the hazard, but the extent to which they are affected by the hazard is evenly distributed. In all three European Collaborator sites in the Sava River catchment (Bosut, Drina, and Kolubara), the national hydrometeorological services were said to have the role of knowledge providers, but they were seen as affecting the risk to a small degree by failing to provide timely flood warnings. EC1 Kamchia had more Authorities with the role of Provider of expert knowledge than the other European Collaborator sites. They were categorized as affecting from the most to the least and being affected from the most to the least.

The stakeholders with the other roles (in some cases in addition to being Providers of expert knowledge), in comparison, were said by the European Collaborators to be affecting the 'most'. Another exception to that, apart from the role of Provider of expert knowledge, was those with the Funder/sponsor role who was seen as mainly affecting the hazard moderately.

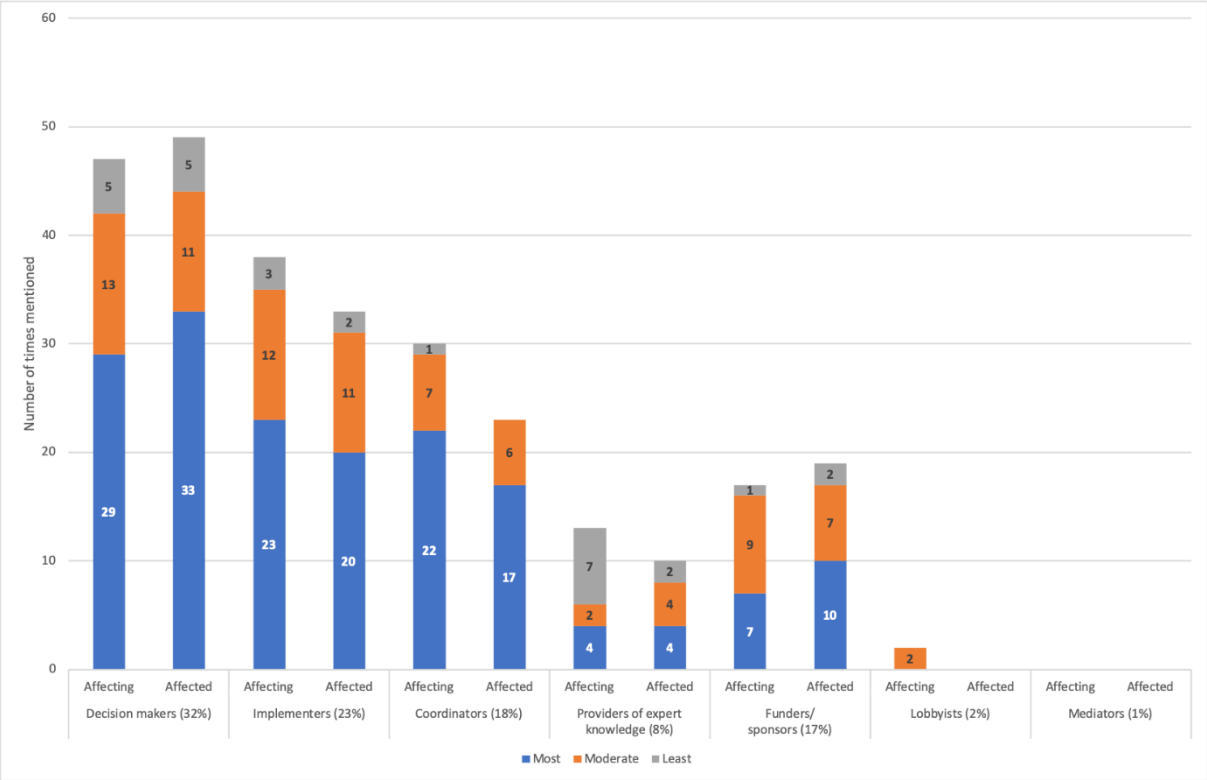

Figure 11 Affecting and/or being affected by the hazard – SH1 in European Collaborator sites

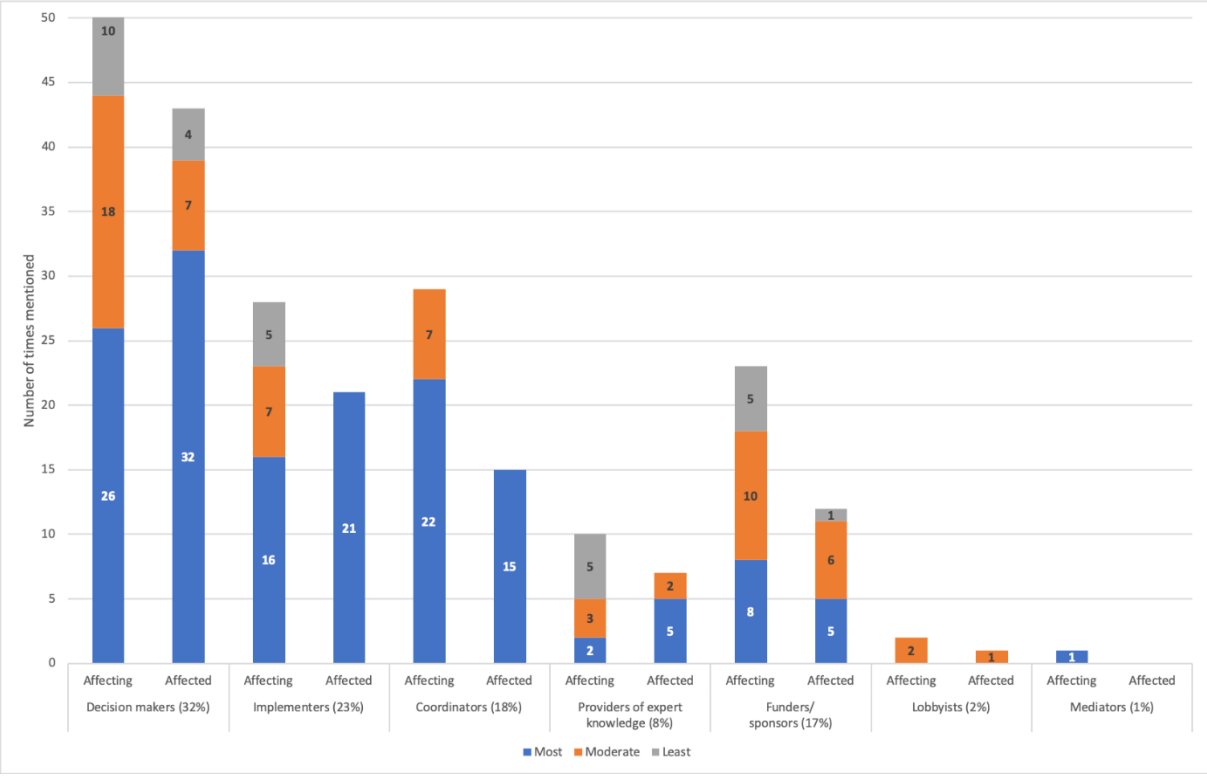

Figure 12 Affecting and/or being affected by the NBS – SH1 in European Collaborator sites

3.4 Stakeholders affecting or being affected by the NBS

A separate rainbow diagram was used to map which of the stakeholders are affecting and/or being affected by the NBS (see Figure 12 for the example of SH1). In total, there were more Authorities affecting and/or being affected by the hazard than by the NBS. This might be because the European Collaborators have not yet been able to map all stakeholders involved in the NBS, since at this early stage of the project many of them do not have yet a clear picture of which NBS might be feasible. A question, however, is whether NBS might involve fewer stakeholders than the broader phenomenon of the hydro-meteorological hazards at large. Another question is if a stakeholder mapping for another type of DRR measure (i.e., not nature-based), would result in other affecting and/or affected stakeholders.

There were also larger differences between the number of affecting and affected by the NBS in Figure 12 than that seen in Figure 11, which may be due to the fact that the NBS are only in the beginning of the planning and assessment stage. Hence, it may still be difficult to discern what the impacts will be. This imbalance is expected to change as the activities in the European Collaborator sites progresses and emphasizes the need for a re-mapping of stakeholders throughout the NBS planning stage.

There are several similarities between Figure 11 and Figure 12, but also differences. There are large differences among the Decision makers, with more affected than affecting in relation to the hazard and fewer Decision makers being affected than affecting the NBS.

The roles of Implementers and Coordinators are more evenly affected or affecting in relation to the hazard. It is worth noting that Implementers and Coordinators are considered to be among those that were the most affected by the NBS. This was especially the case in Kamchia River (EC-1) and Pilica River (EC-2). In both cases a clear majority of the Authorities with the Implementer role were thought to become most affected by the NBS.

However, the mapping in Pilica was the only one that identified possible negative impacts for two of the stakeholders, where a potential failure of the NBS “may damage hydrological object downstream”. Otherwise, both Kamchia and Pilica considered the impacts largely positive in the case the NBS proved to be effective. For example, “Gain the benefits of good climate change adaptation planning”, “NBS may increase forest resilience”, and, in the case of municipalities in Pilica, “NBS may positively affect stormwater management”.

In the case of Funders/sponsors, the number of stakeholders affecting the NBS was larger than for the hazard, which can be explained by the expectations those stakeholders have when it comes to providing institutional, technical, and financial support, and creating the necessary conditions for the implementation of the NBS.

4 Conclusions

At the beginning of the NBS planning process, the Collaborators identified the largest number of stakeholders from the Authorities group. They have a good knowledge of key Authorities spanning different roles as well as levels of authority. However, there is an overrepresentation of the Authorities across all Collaborator sites, but this is particularly sharp amongst the European Collaborators. One explanation for this is that several cases have followed the physical conditions when identifying stakeholders, for example the flow of water that in some cases cuts across different municipalities. Another explanation is that Collaborators may have more experience of cooperating with municipalities than they have with other stakeholders.

The European and the International Collaborator sites differ in terms of representation across the other six stakeholder groups. An interesting point is that the Civil Society is better represented among International Collaborator sites than among the European Collaborator sites, potentially illustrating different cultures of cooperation.

A good stakeholder mapping process is the basis for facilitating a co-creation process throughout the NBS co-creation cycle by helping identify windows of (political, financial) opportunity; creating ownership and thereby commitment of actors involved; increase acceptance and relevance of the research produced; increase transparency of the process; and increase representativeness of results, as the data collected stems from a rigorous process where informants have been carefully selected and able to be heard.

Stakeholder mapping and analysis as a prerequisite for the co-creation process should be made before engaging in the NBS implementation to ensure involvement of the different stakeholders from the very beginning of the NBS project. The stakeholder mapping by RECONECT Collaborators has shown some imbalances in their results, while the Collaborators reflected on the difficulties in the mapping in relation to NBS. These may be attributed to the fact that they are only in the beginning of the NBS planning and assessment stage and had not yet defined their focus areas or specific NBS. The imbalances and difficulties are expected to change with the progress of NBS projects in Collaborator sites and with the growing comprehension of the challenges and the goals of a NBS project throughout the co-creation process.

Obtaining some balance between representation of stakeholders is important to ensure an inclusive approach that integrates community and other forms of knowledge into the assessment and design stage of the NBS process. An inclusive approach is in turn important to be able to assess potential co-benefits as well trade-offs of NBS across society. Furthermore, having a predominant group of stakeholders with decision-making, financing, or implementing roles, could hinder an enabling environment for broad participation and deliberation, and instead lead to a top-down process.

The stakeholders identified here will be the starting point for subsequent activities in WP4, including co-producing baseline assessment of institutional and governance structures (Task 4.2) assessing the acceptability, feasibility and sustainability of NBS (Task 4.5), and co-assessing regulatory, economic and social barriers for establishing and upscaling NBS (Task 4.6). In this subsequent work, a particular attention will be paid to ensuring a balanced representation of stakeholder in the co-creation process.

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Annex A Results per Collaborator site

This Annex includes the results of the Collaborators' stakeholder mapping. Several of the International Collaborator sites (IC3 Rio do Couves, Brazil; IC5 Yangtze River Basin, China; IC8 Trinity River Basin, USA; IC9 The San Francisco Bay Delta, USA; and IC10 Piura River Basin, Peru) had, at the publication of this deliverable, not yet sent their results and are therefore not included below. In addition, IC11 Rio Frio, Colombia and IC12: Cañaveralejo, Lili and Melendez River Basins, Colombia had no rainbow diagrams for the NBS since they were still undetermined in regard to the NBS. Moreover, stakeholders that are indirectly affected by the flow of water coming from the NBS site may not have been identified yet.

A.1 EC1: Kamchia River Basin, Bulgaria

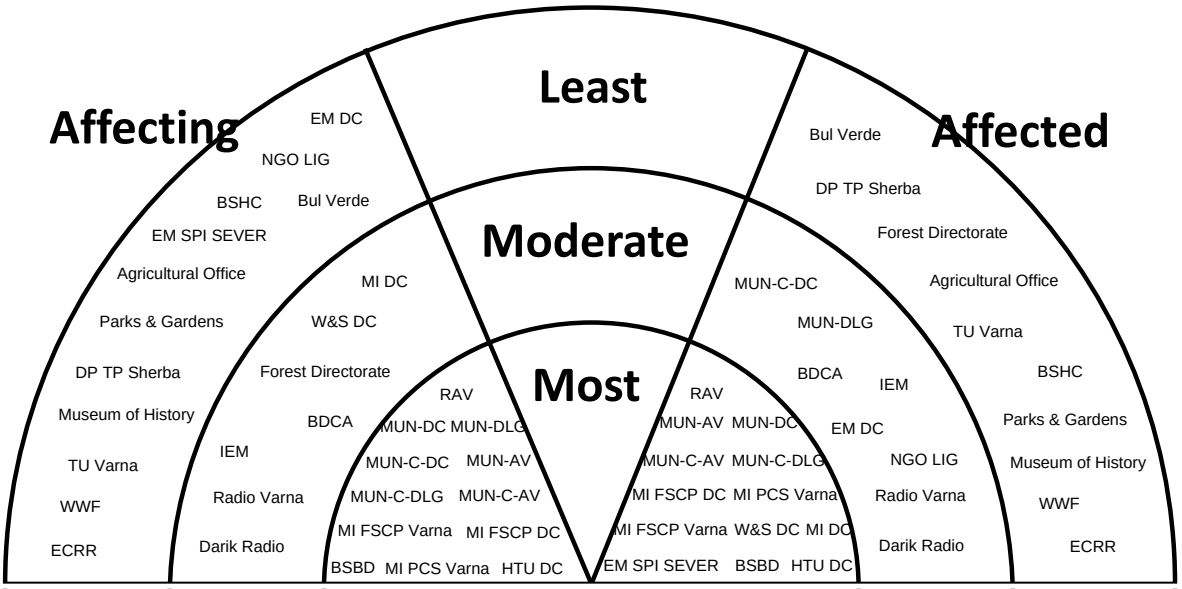
A.1.1 Stakeholder Groups and Roles, EC1

Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders/Sponsors	Lobbyists	Mediators
SH1: Authorities	**Stoyan Passev,** Regional Governor Regional Administration of Varna	X	☐	X	☐	☐	☐	☐
	Krassimira Anastasova, Mayor of Dolni Chiflik Municipality of Dolni Chiflik	X	☐	X	☐	☐	☐	☐
	Arch. Yordan Pavlov, Deputy Mayor of Dolni Chiflik Municipality of Dolni Chiflik	X	X	☐	☐	☐	☐	☐
	Arch. Georgi Mitev Chief Architect of Dolni Chiflik Municipality of Dolni Chiflik	X	X	☐	☐	☐	☐	☐
	Rosina Koleva, Director, Municipality of Dolni Chiflik, Directorate of spatial planning, tourism, transport and municipal property	X	X	☐	☐	☐	☐	☐
	Georgi Georgiev, Mayor of Dalgopol Municipality of Dalgopol	X	X	☐	☐	☐	☐	☐
	Milan Dimitrov, Chief Architect of Dalgopol Municipality of Dalgopol	X	X	☐	☐	☐	☐	☐
	Emanuil Manolov, Mayor of Avren Municipality of Avren	X	☐	X	☐	☐	☐	☐
	Aleksandar Trichkov, Chief Architect of Avren Municipality of Avren	X	X	☐	☐	☐	☐	☐
	Commissar Tihomir Totev, Director, Ministry of Interior, Regional Directorate of Fire Safety & Civil Protection - Varna	☐	X	☐	X	☐	☐	☐
	Chief Inspector Anton Angelov, Chief of Sector Ministry of Interior, Prevention and Control Sector - Varna	☐	X	☐	X	☐	☐	☐
	Chief Inspector Ilko Todorov, Chief of Regional Service Ministry of Interior, Regional Service of Fire Safety and Civil Protection - Dolni Chiflik	☐	X	☐	X	☐	☐	☐
	Senior Inspector Georgi Hristov, Chief of Section, Ministry of Interior, Section Dolni Chiflik	☐	X	☐	X	☐	☐	☐
	Dr. Ivo Bozov, Responsible Physician; Emergency Health Care, Branch - Dolni Chiflik	☐	X	☐	X	☐	☐	☐
	Desislava Konsulova, Director, Bulgarian Black Sea River Basin Directorate	X	☐	☐	☐	X	☐	☐
	Jasmina Keranova, Director of Planning Department,	X	☐	☐	☐	X	☐	☐

Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders/Sponsors	Lobbyists	Mediators
	Bulgarian Black Sea River Basin Directorate, Planning Department							
	Veselin Cheshmedjiev, Director of Remote Office Regional Forest Directorate of Varna, Remote Office in Dolni Chiflik	☐	☐	☐	X	☐	☐	☐
	Konstantin Slavov, Head of Agricultural Office, Municipal Agricultural Office of Dolni Chiflik	☐	☐	☐	X	☐	☐	☐
SH2: Political Representatives	**Zheko Zhekov,** Chairman of the Municipal Council, Municipality of Dolni Chiflik	X	☐	☐	☐	☐	☐	☐
	Zlati Zlatev, Chairman of the Municipal Council, Municipality of Dalgopol	X	☐	☐	☐	☐	☐	☐
	Svetlana Georgieva, Chairman of the Municipal Council, Municipality of Avren	X	☐	☐	☐	☐	☐	☐
SH3: Civil Society	**Petar Parvanov,** Chairman of the Board, NGO "Local Initiative Group Dolni Chiflik-Byalla"	☐	☐	☐	☐	☐	X	**X**
SH4: Commercial Sector	**Atanas Atanasov,** Deputy Director, North-East State Enterprise, DP TP Sherba State Hunting Farm	☐	☐	☐	X	☐	☐	☐
	Petar Katrev, Head of Sub-Section, Water & Sewer - Varna Ltd., Sub-Section Dolni Chiflik	☐	☐	☐	X	☐	☐	☐
	Dimitar Milev, Head of HTU Dolni Chiflik, Irrigation Systems Joint Stock, Varna Cherno More Branch, HTU Dolni Chiflik	☐	☐	☐	X	☐	☐	☐
	Veselin Vasilev, Responsible Officer, Power Operational Region VII, Department "EM SPI SEVER" - Varna of Electric Distribution North Joint Stock	☐	☐	☐	X	☐	☐	☐
	Daniela Sarbakova, General Manager, Bul Verde Ltd. (Vegetable Growing Company, Land Owner)	☐	☐	☐	X	☐	☐	☐
	Galina Stoyanova, General Manager, Parks and Gardens Ltd., Design and Consultancy	☐	☐	☐	X	☐	☐	☐
SH5: Academia / Research	**Lyudmil Ikonomov,** Executive Director, Institute for Ecological Modernisation (IEM)	☐	☐	☐	X	☐	☐	☐

Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders/Sponsors	Lobbyists	Mediators
	Valeri Penchev, Executive Director, Black Sea - Danube Association of Research and Development (BDCA)	☐	☐	☐	X	☐	☐	☐
	Dorina Dragancheva, Head of Department, Bulgarian Ship Hydrodynamics Centre, Department of Coastal Hydraulics	☐	☐	☐	X	☐	☐	☐
	Hristo Krachunov, Associate Professor, Technical University of Varna, Department of Environmental Engineering	☐	☐	☐	X	☐	☐	☐
	Mariana Filipova, Professor, Botanist, Museum of Natural History in Varna	☐	☐	☐	X	☐	☐	☐
SH6: Media	**Daniela Stoynova** Journalist Radio Varna	☐	☐	☐	☐	☐	☐	X
	Plamen Petrov Journalist Darik Radio	☐	☐	☐	☐	☐	☐	X
SH7: International and transnational organizations	**Martin Janes** Chief Expert Water ECRR	☐	☐	☐	☐	☐	X	X
	Stoyan Mihov Chief Expert, Waters WWF DCR	☐	☐	☐	☐	☐	X	X

A.1.2 Rainbow Diagram for the Hazard, EC1



Agricultural Office – Municipal Agriculture Office Dolni Chiflik

BDCA – Black Sea - Danube Association of Research and Development

BSBD – Bulgarian Black Sea Basin Directorate

BSHC – Bulgarian Ship Hydrodynamics Centre, Department of Coastal Hydraulics

Bul Verde – Bul Verde Ltd. (Vegetable Growing Company, Land Owner)

DP TP Sherba – North-East State Enterprise, DP TP Sherba State Hunting Farm

ECRR – European Centre for River Restoration

EM DC – Emergency Health Care Branch - Dolni Chiflik

EM SPI SEVER – Power Operational Region VII, Department "EM SPI SEVER" - Varna of Electric Distribution North Joint Stock

Forest Directorate – Regional Forest Directorate - Varna, Remote Office Dolni Chiflik

HTU DC – Irrigation Systems Joint Stock, Varna Cherno More Branch - HTU Dolni Chiflik

IEM – Institute for Ecological Modernisation

MI DC – Ministry of Interior, Section Dolni Chiflik

MI FSCP DC – Ministry of Interior, Regional Service of Fire Safety and Civil Protection - Dolni Chiflik

MI FSCP Varna – Ministry of Interior, Regional Directorate of Fire Safety and Civil Protection – Varna

MI PCS Varna – Ministry of Interior, Prevention and Control Sector (PCS)- Varna

MUN-C-AV – Municipal Council of Avren

MUN-C-DC – Municipal Council, Municipality of Dolni Chiflik

MUN-C-DLG – Municipal Council of Dalgopol

MUN-AV – Municipality of Avren

MUN-DC – Municipality of Dolni Chiflik

MUN-DLG – Municipality of Dalgopol

Museum of History – Museum of Natural History – Varna

NGO LIG – NGO "Local Initiative Group" Dolni Chiflik-Byalla

Parks & Gardens – Parks and Gardens Ltd., Design and Consultancy

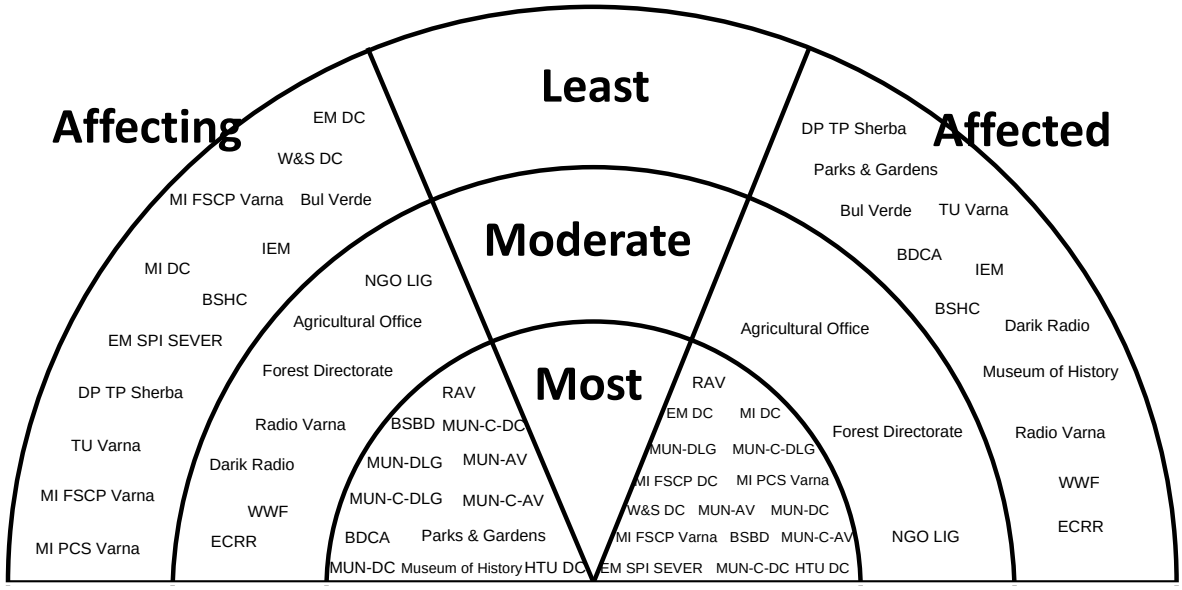
RAV – Regional Administration of Varna

TU Varna – Technical University of Varna, Department of Environmental Engineering

W&S DC – Water & Sewer - Varna Ltd., Sub-Section Dolni Chiflik

WWF – WWF DCR Bulgaria

A.1.3 Rainbow Diagram for the NBS, EC1



For legend, see preceding section

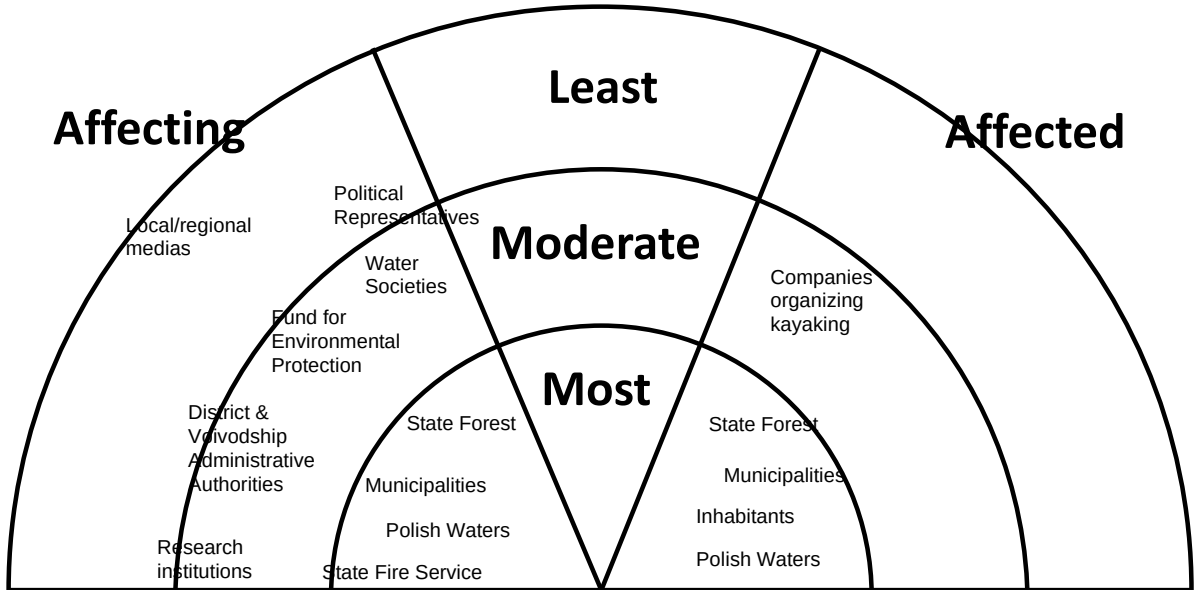
A.2 EC2: Pilica River Basin, Luciaza river, Poland

A.2.1 Stakeholder Groups and Roles, EC2

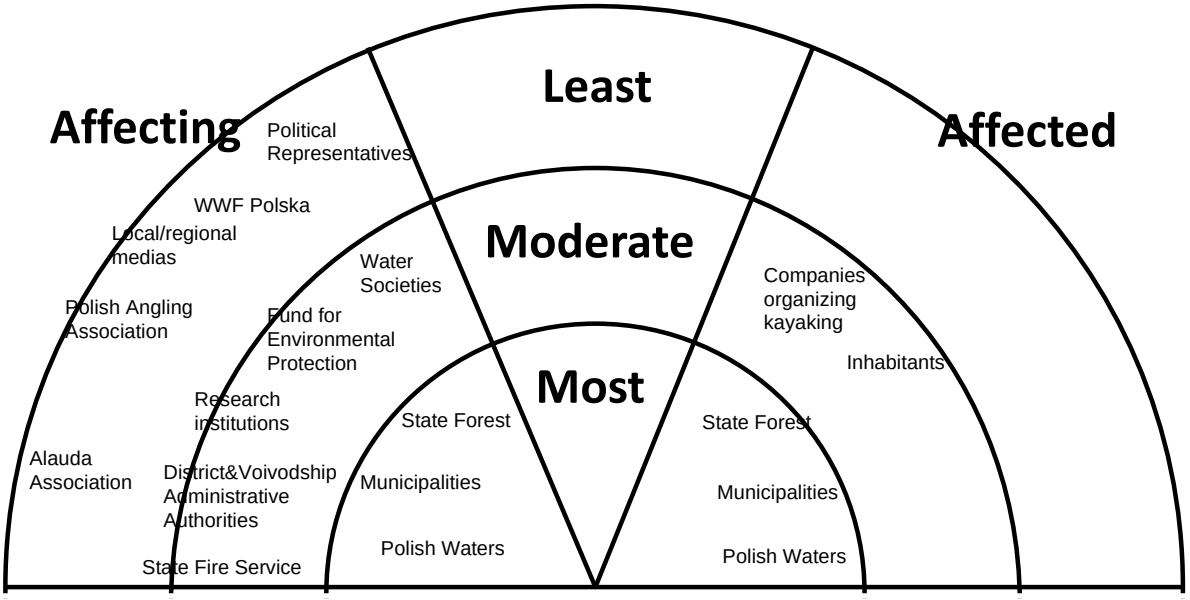
Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders / Sponsors	Lobbyists	Mediators
SH1: Authorities	National Water Management Authority – Polish Water	X	☐	X	☐	☐	☐	☐
	Regional Water Management Authority in Warsaw – Polish Water	X	X	X	☐	☐	☐	☐
	Water Catchment Administration in Piotrków Trybunalski – Polish Water	X	X	X	☐	☐	☐	☐
	Water Supervision Administration in Piotrków Trybunalski – Polish Water	☐	X	☐	☐	☐	☐	☐
	Regional directorates of the State Forest in Łódź	X	☐	X	☐	☐	☐	☐
	State Forest - Forest districts in Piotrków Trybunalski	X	X	☐	☐	☐	☐	☐
	Gorzkowice Municipality	X	X	X	☐	☐	☐	☐
	Rozprza Municipality	X	X	X	☐	☐	☐	☐
	Sulejów Municipality	X	X	X	☐	☐	☐	☐
	Wola Krzysztoporska Municipality	X	X	X	☐	☐	☐	☐
	Kodrąb Municipality	X	X	X	☐	☐	☐	☐
	Masłowice Municipality	X	X	X	☐	☐	☐	☐
	Łęki Szlacheckie Municipality	X	X	X	☐	☐	☐	☐
	Piotrków Trybunalski Municipality	X	X	X	☐	☐	☐	☐
	Moszczenica Municipality	X	X	X	☐	☐	☐	☐
	Grabica Municipality	X	X	X	☐	☐	☐	☐
	District Administrative Authority Piotrowski	☐	☐	X	☐	☐	X	☐
	District Administrative Authority Radomszczański	☐	☐	X	☐	☐	X	☐
	Marshal's Office of the Lodz region	X	☐	X	☐	X	☐	☐
	Landscape Parks Complex of the Lodzkie Voivodship	X	X	☐	X	☐	☐	☐
	Agricultural Advisory Center in Bratoszewice	☐	☐	☐	X	☐	☐	X
	National Fund for Environmental Protection and Water Management	☐	☐	☐	☐	X	☐	☐
	Regional Fund for Environmental Protection	☐	☐	☐	☐	X	☐	☐

Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders / Sponsors	Lobbyists	Mediators
	and Water Management in Łódź							
	Municipal Headquarters of the State Fire Service in Piotrków Trybunalski	☐	X	☐	X	☐	☐	☐
SH2: Political Representatives	Elected Towns Council Representative	X	☐	☐	☐	☐	X	☐
	Member of the Polish Parliament	X	☐	☐	☐	☐	X	☐
	Councilors provincial council	X	☐	☐	☐	☐	X	☐
	Councilors of the district	X	☐	☐	☐	☐	X	☐
SH3: Civil Society	WWF Polska	☐	☐	☐	X	☐	X	☐
	Polish Angling Association	☐	X	☐	X	☐	X	☐
	Alauda Association	☐	☐	☐	X	☐	X	☐
	Water Society	☐	X	☐	☐	☐	☐	☐
	Inhabitants	☐	☐	☐	X	☐	☐	☐
SH4: Commercial Sector	Agricultural Chamber of the Lodzkie Voivodship	☐	☐	☐	☐	☐	X	☐
	Łódź Convention Bureau (Polska Izba turystyczna Oddział w Łodzi)	☐	☐	☐	☐	☐	X	☐
	Companies organizing kayaking	☐	☐	☐	☐	☐	X	☐
SH5: Academia / Research	Lodz University of Technology	☐	☐	☐	X	☐	☐	☐
	European Regional Centre for Ecohydrology PAS	☐	☐	☐	X	☐	☐	☐
	Warsaw University of Life Sciences - SGGW	☐	☐	☐	X	☐	☐	☐
	University of Lodz	☐	☐	☐	X	☐	☐	☐
	Institute of Meteorology and Water Management – National Research Institute (IMGW-PIB)	☐	☐	☐	X	☐	☐	☐
SH6: Media	Local/regionals newspapers	☐	☐	☐	☐	☐	☐	X
	Local radio	☐	☐	☐	☐	☐	☐	X
	Regional televisions	☐	☐	☐	☐	☐	☐	X
SH7: International and transnational organizations		☐	☐	☐	☐	☐	☐	☐

A.2.2 Rainbow Diagram for the Hazard, EC2



A.2.3 Rainbow Diagram for the NBS, EC2



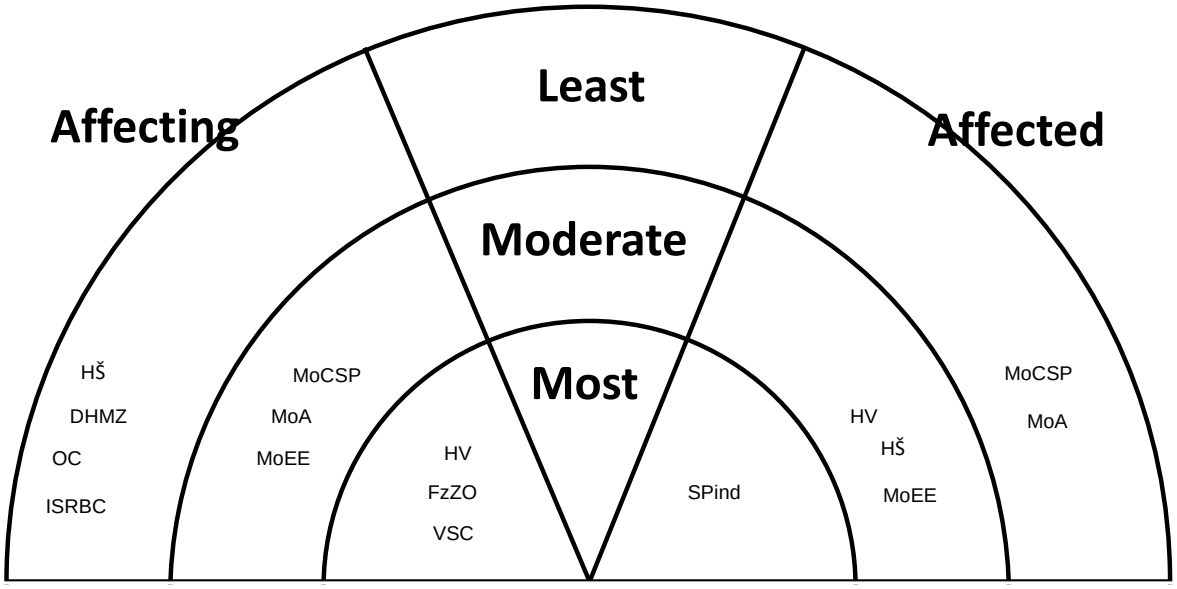
A.3 EC3: Sava River Catchment with tributaries, Serbia & Croatia

A.3.1 Stakeholder Groups and Roles, Bosut

Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders / Sponsors	Lobbyists	Mediators
SH1: Authorities	HRVATSKE VODE Legal entity for water management	X	X	X	☐	X	☐	☐
	HRVATSKE ŠUME Croatian forests agency	X	☐	X	☐	X	☐	☐
	State Hydrometeorological Service of Republic of Croatia - DHMZ	X	X	☐	X	☐	☐	☐
	Vukovarsko – Srijemska County	X	☐	☐	☐	X	☐	☐
	City of Vinkovci	X	☐	☐	☐	X	☐	☐
	Županja Municipality	X	☐	☐	☐	X	X	☐
	Ministry of Agriculture	X	X	☐	☐	X	☐	☐
	Ministry of Environment and Energy	X	X	☐	☐	☐	☐	☐
	Ministry of Construction and spatial planning of Republic of Croatia	X	X	☐	☐	X	☐	☐
	The Environmental Protection and Energy Efficiency Fund	X	X	X	☐	X	☐	☐
SH2: Political Representatives	Representative of Vinkovci	X	☐	☐	☐	☐	☐	☐
	Representative of Županja	X	☐	☐	☐	☐	☐	☐
SH3: Civil Society	WWF Croatia	☐	☐	☐	X	☐	X	☐
	Hrvatsko šumarsko društvo (Croatian Forestry Society)	☐	☐	☐	X	☐	X	X
	Ekološko društvo Zeleni Osijek (Ecologic Association Green Osijek)	☐	☐	☐	X	☐	X	X
	Zelena Akcija (“Green Action”)	☐	☐	☐	X	☐	X	X
SH4: Commercial Sector	Public company HEP (Electric Power agency of Croatia)	☐	X	☐	X	X	X	☐
	Insurance Company “Croatia” Zagreb	☐	☐	☐	X	☐	☐	☐
	”Proning dhi Ltd.” Zagreb	☐	☐	☐	X	☐	☐	☐

Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders / Sponsors	Lobbyists	Mediators
	"Spačva Ltd" Vinkovci	☐	☐	☐	☐	☐	☐	X
	Croatian Motorways Ltd. (HAC)	☐	X	☐	X	X	X	☐
SH5: Academia / Research	University of Zagreb, Faculty of Forestry	☐	☐	☐	X	☐	X	X
	University of Osijek	☐	☐	☐	X	☐	☐	X
SH6: Media	Journalists from Vinkovačke novosti,	☐	☐	☐	☐	☐	☐	X
	Croatian National TV (HTV)	☐	☐	☐	☐	☐	☐	X
SH7: International and transnational organizations	International Sava River Basin Commission (ISRBC)	☐	☐	X	☐	☐	☐	☐
	International Commission for Protection of the Danube River (ICPDR)	☐	☐	X	☐	☐	☐	☐

A.3.2 Rainbow Diagram for the Hazard, Bosut



DHMZ – State Hydrometeorological Service of Republic of Croatia

FzZO – Fund for environmental protection

HAC – Croatian motorway company

HŠ – Croatian Forests

MoCSP – Ministry of Construction and Spatial Planning

MoEE – Ministry of Environment and Energy

OC – Insurance company "Croatia"

SPind – SPAČVA wood industry

HV – Croatian Waters

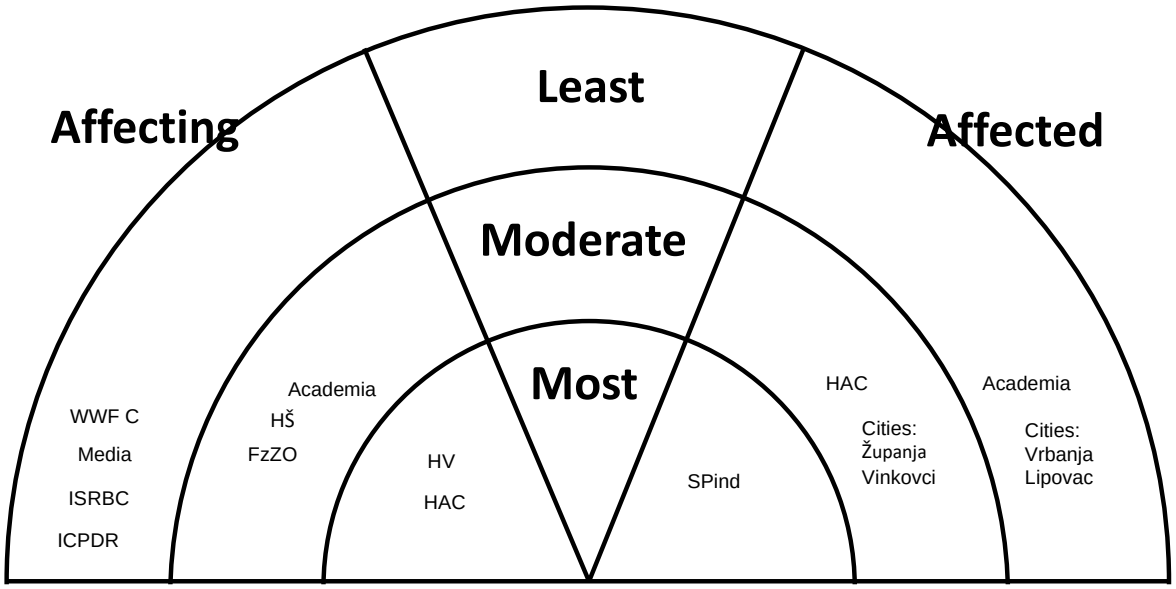
ISBRC – International Sava River Basin Commission

MoA – Ministry of Agriculture

WWF C – World Wildlife Fund Croatia

VSC – Vukovarsko Srijemska County

A.3.3 Rainbow Diagram for the NBS, Bosut



FzZO – Fund for environmental protection

HAC – Croatian motorway company

HŠ – Croatian Forests

HV – Croatian Waters

ISBRC – International Sava River Basin Commission

ICPDR – International Commission for Protection of the Danube River

SPind – SPAČVA wood industry

WWF C – World Wildlife Fund Croatia

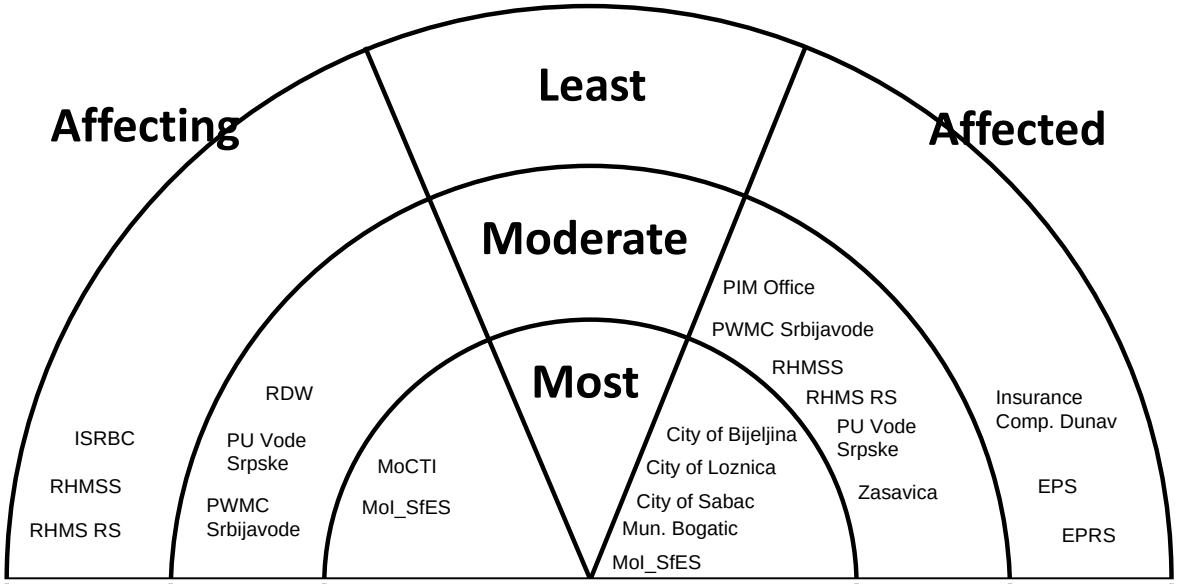
A.3.4 Stakeholder Groups and Roles, Drina[1]

Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders / Sponsors	Lobbyists	Mediators
SH1: Authorities	Public Water Management Company Srbijavode (RS)	X	X	X	☐	X	☐	☐
	Republic Water Directorate (RS)	X	☐	X	☐	X	☐	☐
	Ministry of Interior - Sector for Emergency Situations (RS)	☐	X	☐	☐	☐	☐	☐
	Municipality of Bogatić (RS)	X	☐	☐	☐	X	☐	☐
	City of Šabac (RS)	X	☐	☐	☐	X	☐	☐
	City of Loznica (RS)	X	☐	☐	☐	X	☐	☐
	City of Bijeljina (BiH-RS)	X	☐	☐	☐	X	☐	☐
	Ministry of Construction, Transportation and Infrastructure (RS)	X	☐	X	☐	X	☐	☐
	Public Investment Management Office (RS)	☐	☐	☐	☐	X	☐	☐
	Republic Hydrometeorological Service of Serbia (RS)	☐	☐	☐	X	☐	☐	☐
	Hydrometeorological Service of Republika Srpska (BiH-RS)	☐	☐	☐	X	☐	☐	☐
	Public Institution Vode Srpske (BiH-RS)	X	X	☐	☐	☐	☐	☐
	Ministry of Agriculture, Forestry and Water Management (BiH-RS)	X	☐	X	☐	☐	☐	☐
	Ministry of Spatial Planning, Construction and Ecology (BiH-RS)	X	☐	X	☐	☐	☐	☐
SH2: Political Representatives	Representative of Bogatić (RS)	X	☐	☐	☐	☐	☐	☐
	Representative of Loznica (RS)	X	☐	☐	☐	☐	☐	☐
	Representative of Šabac (RS)	X	☐	☐	☐	☐	☐	☐
	Representative of Bijeljina (BiH-RS)	X	☐	☐	☐	☐	☐	☐
SH3: Civil Society	WWF Serbia	☐	☐	☐	X	☐	X	☐
	Zasavica special nature reserve (RS)	☐	☐	☐	X	☐	X	☐

[1] The stakeholders included are from the Republic of Serbia (RS) and Republika Srpska, the entity within Bosnia and Herzegovina (BiH-RS).

Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders / Sponsors	Lobbyists	Mediators
	PSSS Valjevo (RS)	☐	☐	☐	X	☐	☐	☐
SH4: Commercial Sector	Public company EPS (Electric Power Industry of RS)	☐	X	☐	X	X	X	☐
	Public company EPRS (Electric Power Industry of BiH-RS)	☐	X	☐	X	X	X	☐
	Insurance Company ”Dunav osiguranje” (RS)	☐	☐	☐	X	☐	☐	☐
	”Zavod za vodoprivredu” Bijeljina (BiH-RS)	☐	☐	☐	X	☐	☐	☐
	”Institut za vode” Bijeljina (BiH-RS)	☐	☐	☐	X	☐	☐	☐
SH5: Academia / Research	University of Belgrade, Faculty of Forestry (RS)	☐	☐	☐	X	☐	X	X
	Jaroslav Cerni Institute (RS)	☐	☐	☐	X	☐	☐	X
	University of Belgrade Faculty of Mining and Geology (RS)	☐	☐	☐	X	☐	☐	X
	Institute for Biological Research ”Sinisa Stankovic” (RS)	☐	☐	☐	X	☐	☐	X
	University of Bijeljina, Faculty of Agriculture (BiH-RS)	☐	☐	☐	X	☐	☐	X
SH6: Media	Journalists from Šabac (RS), Loznica (RS) and Bijeljina (BiH-RS)	☐	☐	☐	☐	☐	☐	X
SH7: International and transnational organizations	International Sava River Basin Commission (ISRBC)	☐	☐	X	☐	☐	☐	☐
	International Commission for Protection of the Danube River (ICPDR)	☐	☐	X	☐	☐	☐	☐

A.3.5 Rainbow Diagram for the Hazard, Drina



EPS – Electric Power Industry of Republic of Serbia

EPRS – Electric Power Industry of Republika Srpska

ISBRC – International Sava River Basin Commission

MoCTI – Ministry of Construction, Transportation and Infrastructure

MoI_SfES – Ministry of Interior - Sector for Emergency Situations

PIM Office – Public Investment Management Office

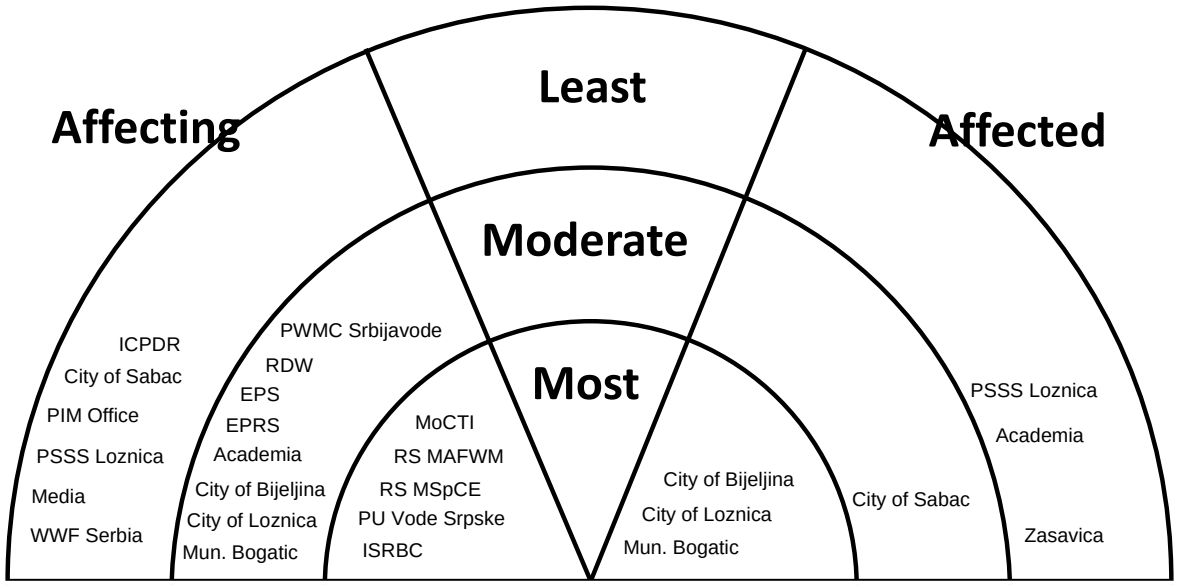
PWMC Srbijavode – Public Water Management Company Srbijavode

RHMS RS – Hydrometeorological Service of Republika Srpska

RHMSS – Republic Hydrometeorological Service of Serbia

RWD – Republic Water Directorate of Serbia

A.3.6 Rainbow Diagram for the NBS, Drina



EPS – Electric Power Industry of Republic of Serbia

EPRS – Electric Power Industry of Republika Srpska

ICPDR – International Commission for Protection of the Danube River

ISBRC – International Sava River Basin Commission

MoCTI – Ministry of Construction, Transportation and Infrastructure

PIM Office – Public Investment Management Office

PWMC Srbijavode – Public Water Management Company Srbijavode

RS MAFWM – Republic of Srpska Ministry of Agriculture, Forestry and Water Management

RS MSpCE – Republic of Srpska Ministry of Spatial Planning, Construction and Ecology

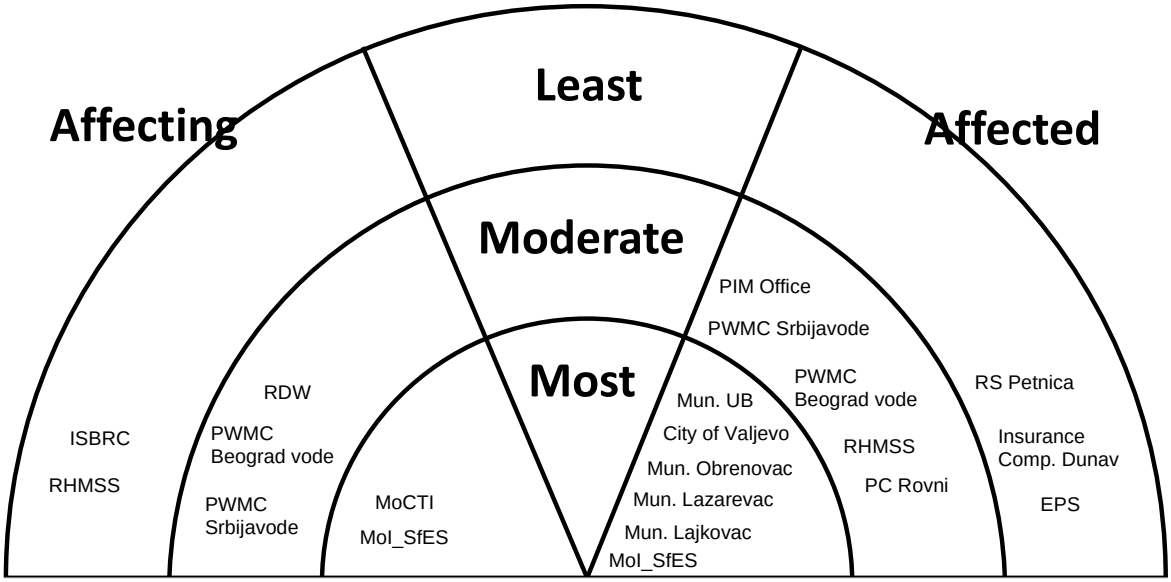
RWD – Republic Water Directorate of Serbia

A.3.7 Stakeholder Groups and Roles, Kolubara

Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders / Sponsors	Lobbyists	Mediators
SH1: Authorities	Public Water Management Company Srbijavode	X	X	X	☐	X	☐	☐
	Republic Water Directorate	X	☐	X	☐	X	☐	☐
	Public Water Management Company Beogradvode	☐	X	☐	☐	☐	☐	☐
	Ministry of Interior - Sector for Emergency Situations	☐	X	☐	☐	☐	☐	☐
	Municipality of Lajkovac	X	☐	☐	☐	X	☐	☐
	Municipality of Lazarevac	X	☐	☐	☐	X	☐	☐
	Municipality of Obrenovac	X	☐	☐	☐	X	☐	☐
	City of Valjevo	X	☐	☐	☐	X	☐	☐
	Ministry of Construction, Transportation and Infrastructure	X	☐	X	☐	X	☐	☐
	Public Investment Management Office	☐	☐	☐	☐	X	☐	☐
	Republic Hydrometeorological Service of Serbia	☐	☐	☐	X	☐	☐	☐
SH2: Political Representatives	Representative of Lajkovac	X	☐	☐	☐	☐	☐	☐
	Representative of Lazarevac	X	☐	☐	☐	☐	☐	☐
	Representative of Obrenovac	X	☐	☐	☐	☐	☐	☐
	Representative of Valjevo	X	☐	☐	☐	☐	☐	☐
SH3: Civil Society	WWF Serbia	☐	☐	☐	X	☐	X	☐
	“Gradac” NGO, Valjevo	☐	☐	☐	X	☐	X	☐
	“Eko dvoriste” NGO, Obrenovac	☐	☐	☐	X	☐	X	☐
SH4: Commercial Sector	Public company EPS (Electric Power Industry of RS), Kolubara mines	☐	X	☐	X	X	X	☐
	Insurance Company ”Dunav osiguranje”	☐	☐	☐	X	☐	☐	☐
	Public Company ”Kolubara”, Regional Water Supply System ”Stubo-Rovni”	X	X	☐	☐	☐	☐	☐
SH5: Academia / Research	University of Belgrade, Faculty of Forestry	☐	☐	☐	X	☐	X	☐
	Jaroslav Cerni Institute	☐	☐	☐	X	☐	☐	☐
	University of Belgrade, Faculty of Mining and Geology	☐	☐	☐	X	☐	☐	☐
	Research Station Petnica	☐	☐	☐	X	☐	☐	☐

Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders / Sponsors	Lobbyists	Mediators
	Institute for Biological Research "Sinisa Stankovic"	☐	☐	☐	X	☐	☐	☐
SH6: Media	Journalists from Obrenovac, Valjevo, Lazarevac and Lajkovac	☐	☐	☐	☐	☐	☐	X
SH7: International and transnational organizations	ISRBC	☐	☐	X	☐	☐	☐	☐
	ICPDR	☐	☐	X	☐	☐	☐	☐

A.3.8 Rainbow Diagram for the Hazard, Kolubara



EPS – Electric Power Industry of Republic of Serbia

ISBRC – International Sava River Basin Commission

MoCTI – Ministry of Construction, Transportation and Infrastructure

MoI_SfES – Ministry of Interior - Sector for Emergency Situations

PIM Office – Public Investment Management Office

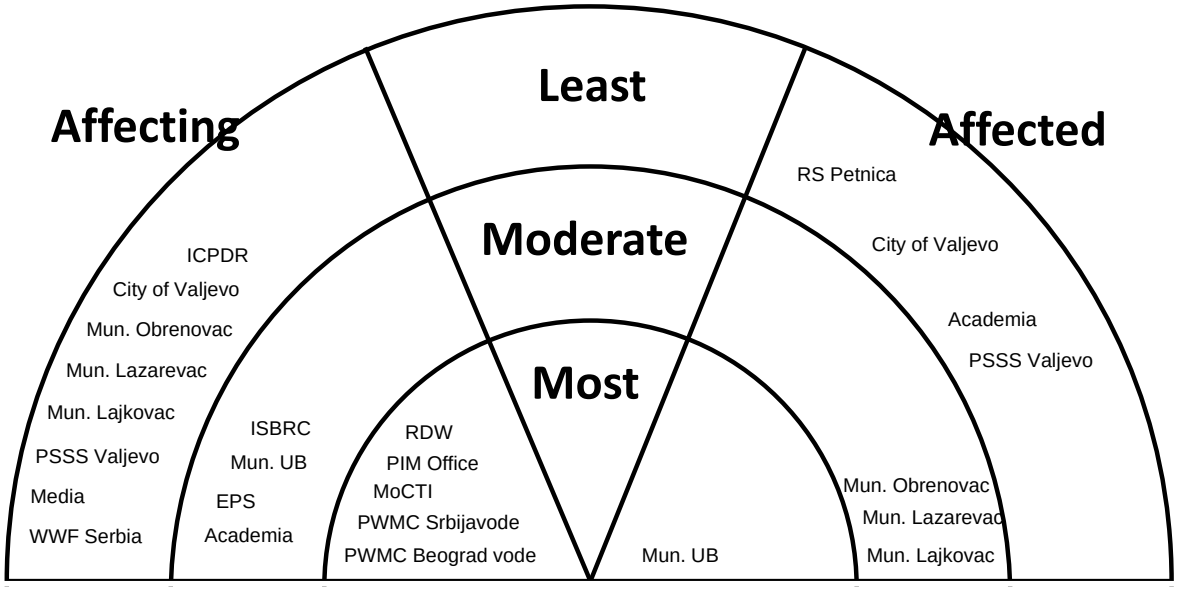
PWMC Beograd vode – Public Water Management Company Beograd vode

PWMC Srbijavode – Public Water Management Company Srbijavode

RHMSS – Republic Hydrometeorological Service of Serbia

RWD – Republic Water Directorate of Serbia

A.3.9 Rainbow Diagram for the NBS, Kolubara



EPS – Electric Power Industry of Republic of Serbia

ICPDR – International Commission for Protection of the Danube River

ISBRC – International Sava River Basin Commission

MoCTI – Ministry of Construction, Transportation and Infrastructure

PIM Office – Public Investment Management Office

PWMC Beograd vode – Public Water Management Company Beograd vode

PWMC Srbijavode – Public Water Management Company Srbijavode

RS Petnica – Research Station Petnica

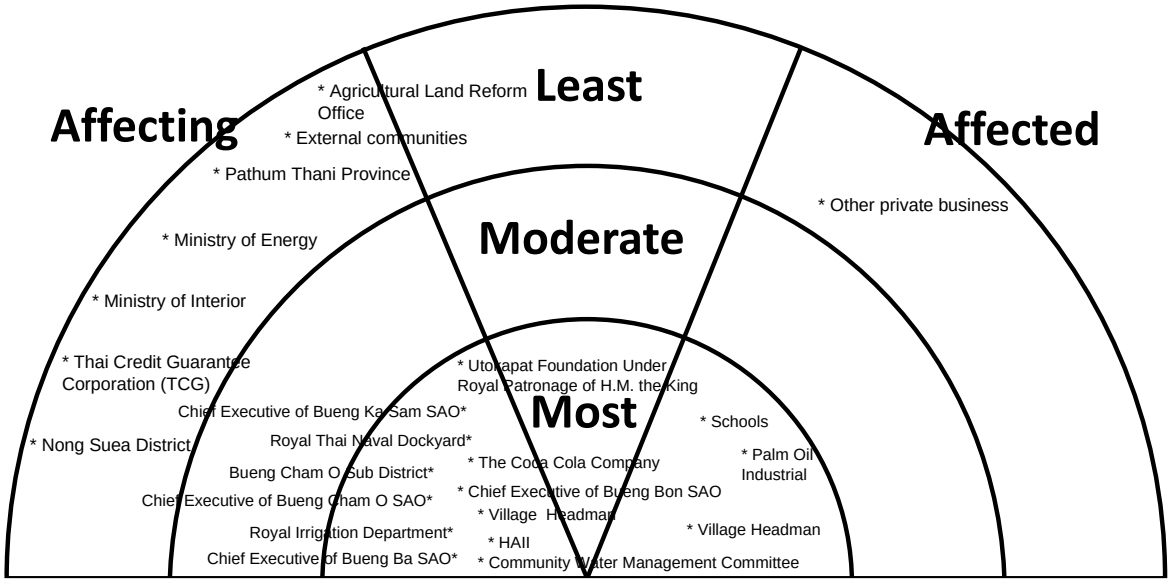
RWD – Republic Water Directorate of Serbia

A.4 IC1: Chao Phraya River Basin, Thailand

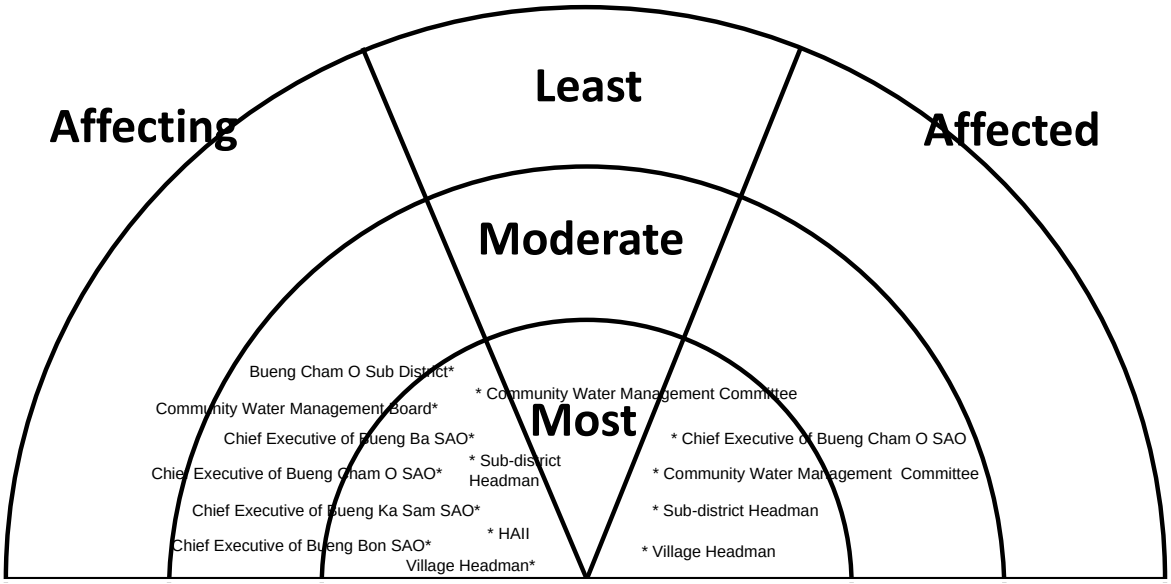
A.4.1 Stakeholder Groups and Roles, IC1

Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders / Sponsors	Lobbyists	Mediators
SH1: Authorities	Royal Irrigation Department	X	☐	☐	☐	☐	☐	☐
	Ministry of Energy	☐	☐	☐	X	☐	☐	☐
	HAII	☐	☐	☐	X	☐	☐	☐
	Royal Thai Naval Dockyard	☐	☐	☐	X	☐	☐	☐
	Agricultural Land Reform Office	☐	☐	X	☐	☐	☐	☐
	Pathum Thani Province	☐	☐	X	☐	☐	☐	☐
	Ministry of the Interior	☐	☐	X	☐	☐	☐	☐
	Nong Suea District	☐	☐	X	☐	☐	☐	☐
	Bueng Cham O Sub District	X	X	☐	☐	☐	☐	☐
SH2: Political Representatives	Sub-district Headman	☐	☐	X	☐	☐	☐	☐
	Chief Executive of Bueng Cham O SAO	X	X	☐	☐	☐	☐	☐
	Chief Executive of Bueng Ka Sam SAO	X	X	☐	☐	☐	☐	☐
	Chief Executive of Bueng Bon SAO	X	X	☐	☐	☐	☐	☐
	Chief Executive of Bueng Ba SAO	X	X	☐	☐	☐	☐	☐
	Village Headman	X	X	☐	☐	☐	☐	☐
SH3: Civil Society	Community Water Management Board	X	X	X	☐	☐	☐	☐
SH4: Commercial Sector	The Coca Cola Company	☐	☐	☐	☐	X	☐	☐
	Thai Credit Guarantee Corporation (TCG)	☐	☐	☐	☐	X	☐	☐
	Utokapat Foundation Under Royal Patronage of H.M. the King	☐	☐	☐	X	X	☐	☐
	Other private business	☐	☐	☐	X	☐	☐	☐
	External community	☐	☐	X	☐	☐	☐	☐
	Palm Oil Industry Factory	☐	☐	☐	☐	☐	X	☐
SH5: Academia / Research	School	☐	X	X	☐	☐	☐	☐
SH6: Media		☐	☐	☐	☐	☐	☐	☐
SH7: International and transnational organizations		☐	☐	☐	☐	☐	☐	☐

A.4.2 Rainbow Diagram for the Hazard, IC1



A.4.3 Rainbow Diagram for the NBS, IC1

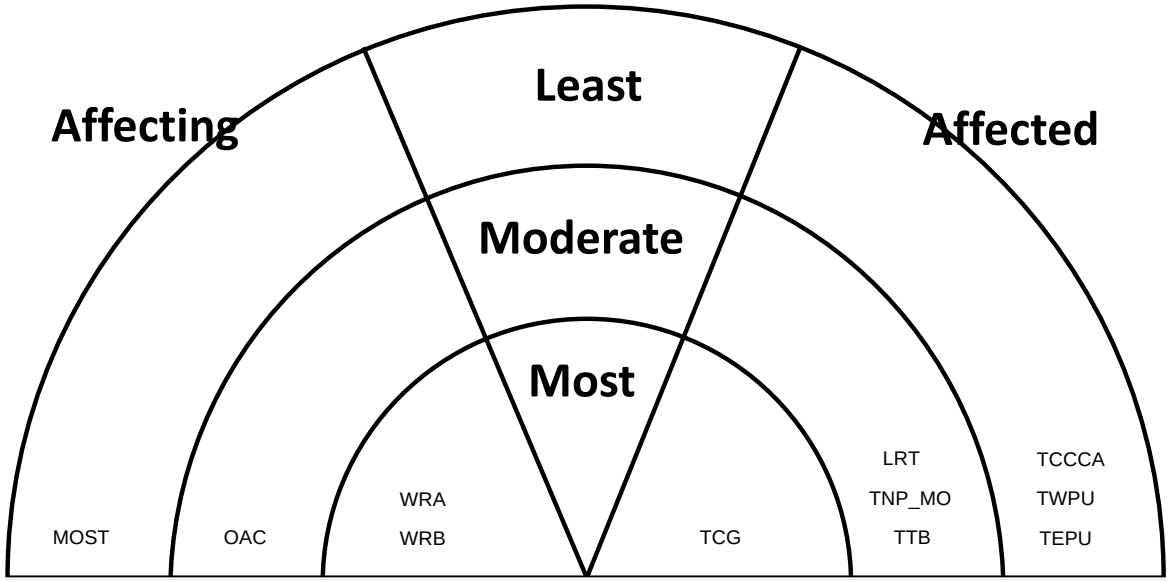


A.5 IC2: Greater Tainan Coastline, Taiwan

A.5.1 Stakeholder Groups and Roles, IC2

Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders / Sponsors	Lobbyists	Mediators
SH1: Authorities	Tainan City Government	X	X	X	☐	X	☐	☐
	Tourism and Travel Bureau, Tainan city Government	X	☐	X	☐	☐	☐	☐
	Water Resource Bureau, Tainan city Government	X	☐	☐	☐	☐	☐	☐
	The 6th River Management Office	☐	X	X	☐	☐	☐	☐
	Water Resources Agency	X	☐	☐	☐	X	☐	☐
	Taijiang National Park Management office	X	☐	X	☐	☐	☐	☐
	Ministry of Science and Technology	☐	☐	☐	☐	X	☐	☐
	Ocean Affairs Council	X	☐	☐	☐	X	☐	☐
SH2: Political Representatives	Tainan City council member	X	☐	X	☐	☐	☐	☐
	Town council member and Village representative	X	☐	X	☐	☐	☐	☐
	Congress Members	X	☐	X	☐	☐	☐	☐
SH3: Civil Society	Tainan Chiku Coastal Conservation Association	☐	☐	☐	X	☐	X	☐
	Taiwan Wetland Protection Union	☐	☐	☐	X	☐	X	☐
	Tainan Environmental Protection Union	☐	☐	☐	X	☐	X	☐
SH4: Commercial Sector	Sinotech Engineering Consultants, LTD.	☐	X	☐	X	☐	☐	☐
SH5: Academia / Research	Department of Hydraulic and Ocean Engineering, National Cheng Kung University	☐	X	☐	X	☐	☐	X
	Institute of Ocean Technology and Marine Affairs, National Cheng Kung University	☐	X	☐	X	☐	☐	X
	Coastal Ocean Monitoring Center, National Cheng Kung University	☐	X	☐	X	☐	☐	X
SH6: Media	Journalists of Tainan	☐	☐	☐	☐	☐	☐	X
SH7: International and transnational organizations		☐	☐	☐	☐	☐	☐	☐

A.5.2 Rainbow Diagram for the Hazard, IC2



LRT – Legislator and Representative of Tainan

MOST – Ministry of Science and Technology

OAC – Ocean Affairs Council

TCG – Tainan City Government

TCCCA – Tainan Chiku Coastal Conservation Association

TEPU – Tainan Environmental Protection Union

TNP_MO – Taijiang National Park Management office

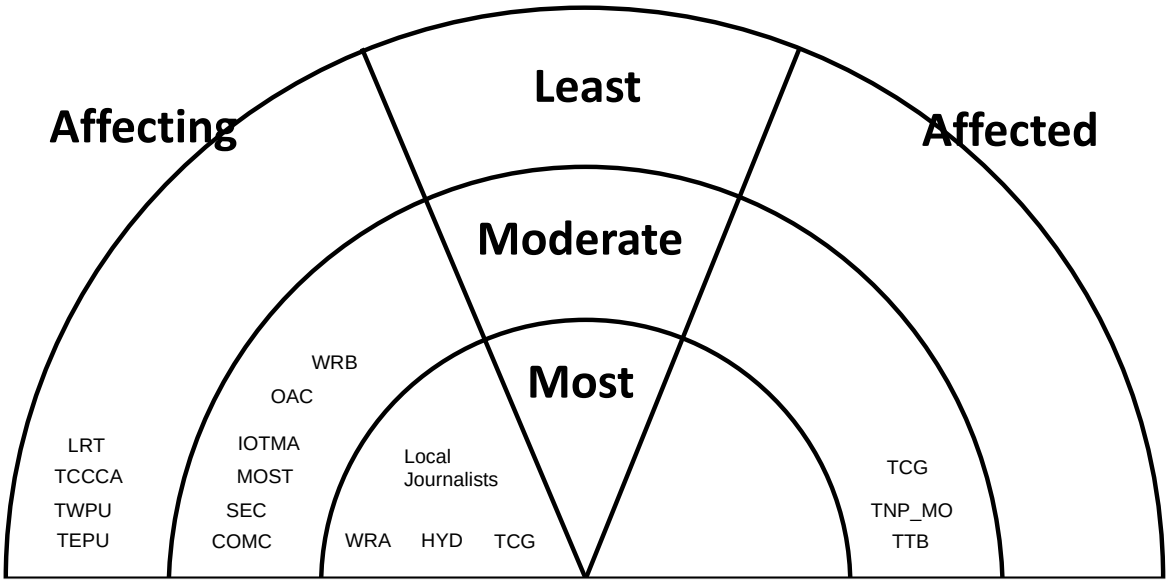
TTB – Tourism and Travel Bureau

TWPU – Taiwan Wetland Protection Union

WRA – Water Resource Agency

WRB – Water Resource Bureau

A.5.3 Rainbow Diagram for the NBS, IC2



COMC – Coastal Ocean Monitoring Center

HYD – Department of Hydraulic and Ocean Engineering

IOTMA – Institute of Ocean Technology and Marine Affairs

LRT – Legislator and Representative of Tainan

MOST – Ministry of Science and Technology

OAC – Ocean Affairs Council

SEC – Sinotech Engineering Consultants, LTD.

TCG – Tainan City Government

TCCCA – Tainan Chiku Coastal Conservation Association

TEPU – Tainan Environmental Protection Union

TNP_MO – Taijiang National Park Management office

TTB – Tourism and Travel Bureau

TWPU – Taiwan Wetland Protection Union

WRA – Water Resource Agency

WRB – Water Resource Bureau

A.6 IC4: Klang River Basin, Malaysia

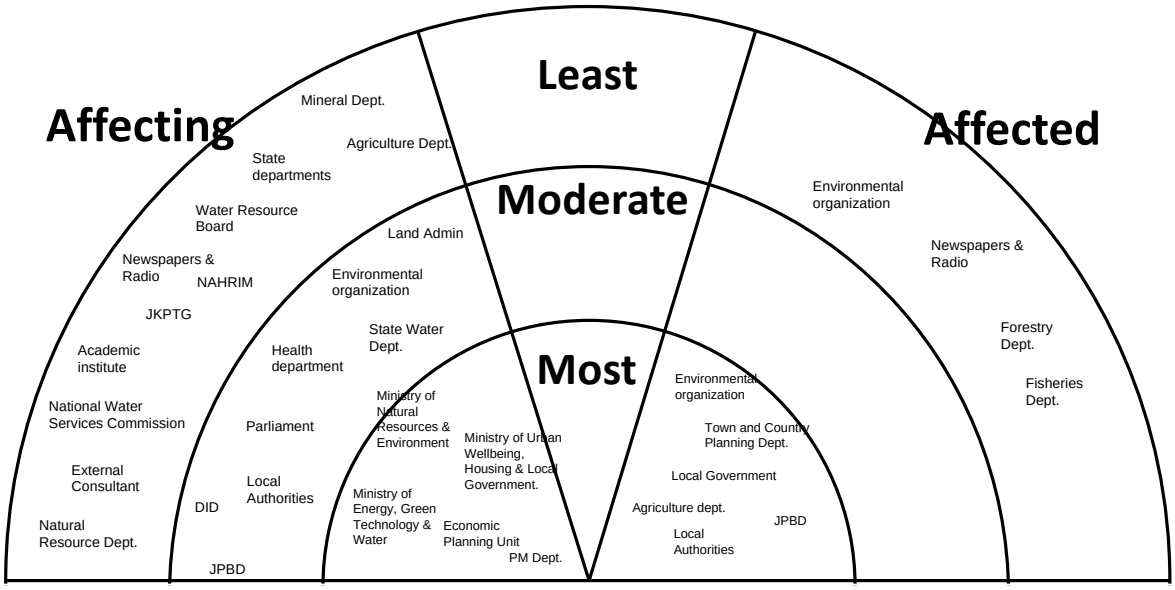
A.6.1 Stakeholder Groups and Roles, IC4

Stakeholder Group	Name, Position and Organization	Role						
		Decision-makers	Implementers	Coordinators	Providers of expert knowledge	Funders/Sponsors	Lobbyists	Mediators
SH1: Authorities	Prime Minister's Department	X	☐	☐	☐	☐	☐	☐
	Ministry of Urban Wellbeing, Housing & Local Government	X	☐	☐	☐	☐	☐	☐
	Ministry of Agriculture & Agro Based Industries	X	☐	☐	☐	☐	☐	☐
	Ministry of Energy, Green Technology & Water	X	☐	X	X	X	☐	☐
	Ministry of Natural Resources & Environment	X	☐	X	X	X	☐	☐
	Ministry of Health	X	☐	☐	X	X	☐	☐
	Town and Country Planning Department	☐	☐	☐	X	☐	☐	☐
	Local Government Department	☐	☐	☐	X	☐	☐	☐
	Economic Planning Unit	☐	☐	☐	X	☐	☐	☐
	Department of Fisheries	☐	☐	☐	X	☐	☐	☐
	Department of Agriculture	☐	☐	☐	X	☐	☐	☐
	Sewerage Service Department	☐	☐	☐	X	☐	☐	☐
	Water Supply Department	☐	☐	☐	X	☐	☐	☐
	Department of Environment	☐	☐	☐	X	☐	☐	☐
	Department of Irrigation & Drainage	X	X	X	X	X	X	X
	Department of Forestry	☐	☐	☐	X	☐	☐	☐
	Department of Mineral & Geoscience	☐	☐	☐	X	☐	☐	☐
	Health Department	☐	☐	☐	X	☐	☐	☐
	JKPTG	☐	☐	☐	X	☐	☐	☐
	Jabatan Pembangunan Bandar dan Daerah	☐	X	☐	X	☐	☐	☐
	Local Authority	☐	X	☐	X	☐	☐	☐

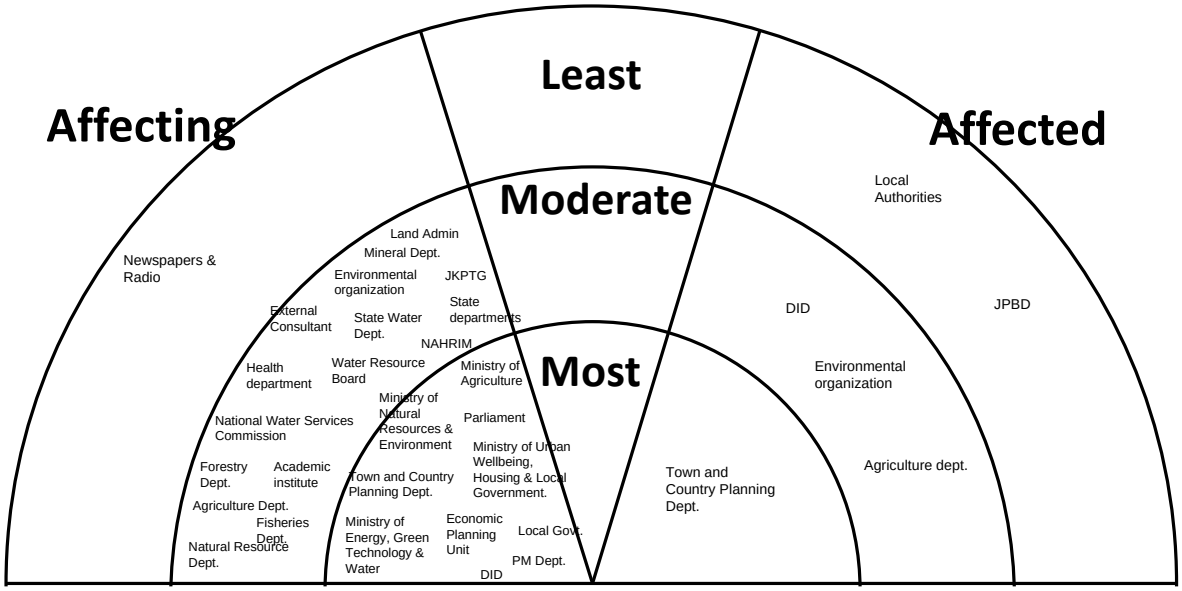
Stakeholder Group	Name, Position and Organization	Role						
		Decision-makers	Implementers	Coordinators	Providers of expert knowledge	Funders/Sponsors	Lobbyists	Mediators
	State EPU	☐	☐	☐	X	☐	☐	☐
	State Fisheries Department	☐	☐	☐	X	☐	☐	☐
	State Agriculture Department	☐	☐	☐	X	☐	☐	☐
	Kawal Selia Air	☐	X	☐	X	☐	☐	☐
	State water agencies	☐	X	☐	X	☐	☐	☐
	State Land Admin	☐	X	☐	X	☐	☐	☐
	State Environment Department	☐	X	☐	X	☐	☐	☐
	State Mineral & Geoscience Department	☐	☐	☐	X	☐	☐	☐
	State Irrigation & Drainage Department	☐	X	X	X	☐	☐	☐
	State Health Department	☐	☐	☐	X	☐	☐	☐
	State Forestry Department	☐	☐	☐	X	☐	☐	☐
SH2: Political Representatives	Parliament	X	☐	X	☐	☐	X	☐
SH3: Civil Society	Water Resource Board	☐	☐	☐	X	☐	X	☐
	State EXCO	☐	☐	☐	X	☐	X	☐
	NAHRIM	☐	☐	☐	X	☐	☐	☐
	National Water Services Commission	☐	☐	☐	X	☐	☐	☐
	National Water Resource Council	X	☐	X	X	☐	☐	☐
SH4: Commercial Sector	External consultants	☐	☐	☐	X	☐	☐	☐
SH5: Academia / Research	University Putra Malaysia	☐	☐	☐	X	☐	☐	☐
	UNESCO IHE Delft. Institute for water Education	☐	☐	☐	X	☐	☐	☐
SH6: Media	Newspapers	☐	☐	☐	☐	☐	☐	X
	Local Radio	☐	☐	☐	☐	☐	☐	X

Stakeholder Group	Name, Position and Organization	Role						
		Decision-makers	Implementers	Coordinators	Providers of expert knowledge	Funders/Sponsors	Lobbyists	Mediators
SH7: International and transnational organizations		☐	☐	☐	☐	☐	☐	☐

A.6.2 Rainbow Diagram for the Hazard, IC4



A.6.3 Rainbow Diagram for the NBS, IC4



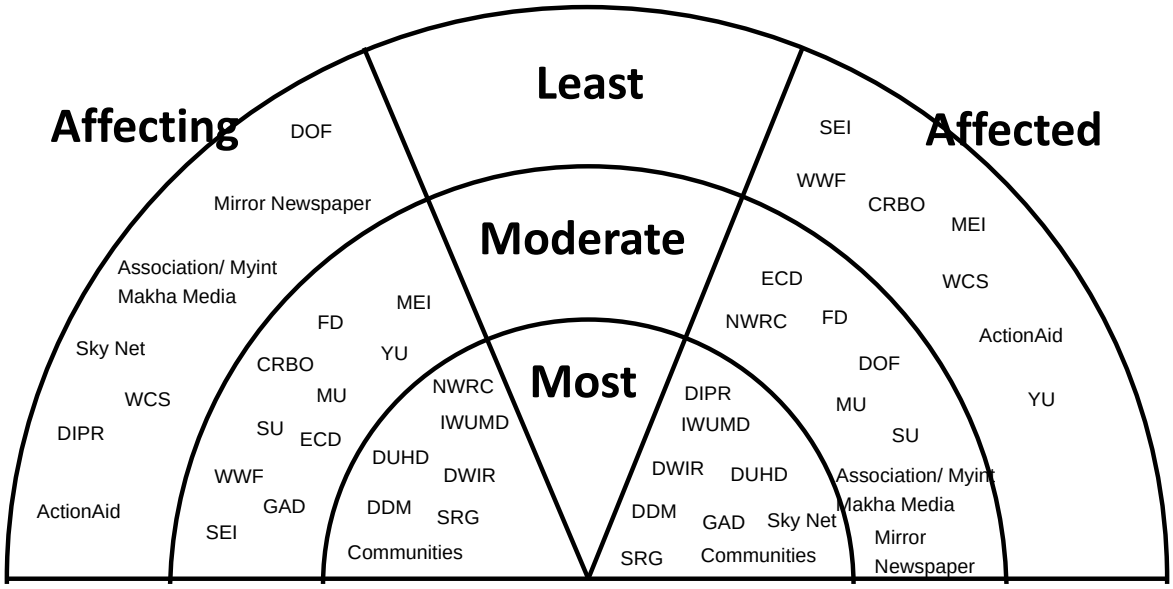
A.7 IC6: Chindwin River basin, Myanmar

A.7.1 Stakeholder Groups and Roles, IC6

Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders/Sponsors	Lobbyists	Mediators
SH1: Authorities	Sagaing Regional Government (SRG)	X	☐	☐	☐	X	☐	☐
	Department of Disaster Management (DDM)	X	X	X	X	☐	☐	☐
	Directorate of Water Resources and Improvement of River Systems (DWIR)	X	X	X	X	☐	X	☐
	Environmental Conservation Department (ECD)	X	X	X	X	☐	☐	☐
	Irrigation and water Utilization Management Department (IWUMD)	X	X	X	X	☐	☐	☐
	Forest Department (FD)	X	X	X	X	☐	☐	☐
	Department of Fisheries (DOF)	X	X	X	X	☐	☐	☐
	General Administrative Department (GAD)	X	☐	X	☐	☐	☐	☐
	Department of Urban & Housing Development (DUHD)	X	X	X	X	☐	☐	☐
SH2: Political Representatives	Chindwin River Basin Organization (CRBO)	☐	☐	X	X	☐	X	☐
	National Water Resources Committee (NWRC)	X	☐	☐	☐	☐	X	☐
SH3: Civil Society	Myanmar Environment Institute (MEI)	☐	☐	☐	X	☐	☐	☐
	Wildlife Conservation Society (WCS)	☐	X	☐	X	☐	☐	☐
	ActionAid	☐	X	☐	X	☐	☐	☐
	Communities	☐	X	X	☐	☐	☐	☐
SH4: Commercial Sector		☐	☐	☐	☐	☐	☐	☐
SH5: Academia / Research	Monywa University (MU)	☐	X	☐	X	☐	☐	X
	Sagaing University (SU)	☐	X	☐	X	☐	☐	X

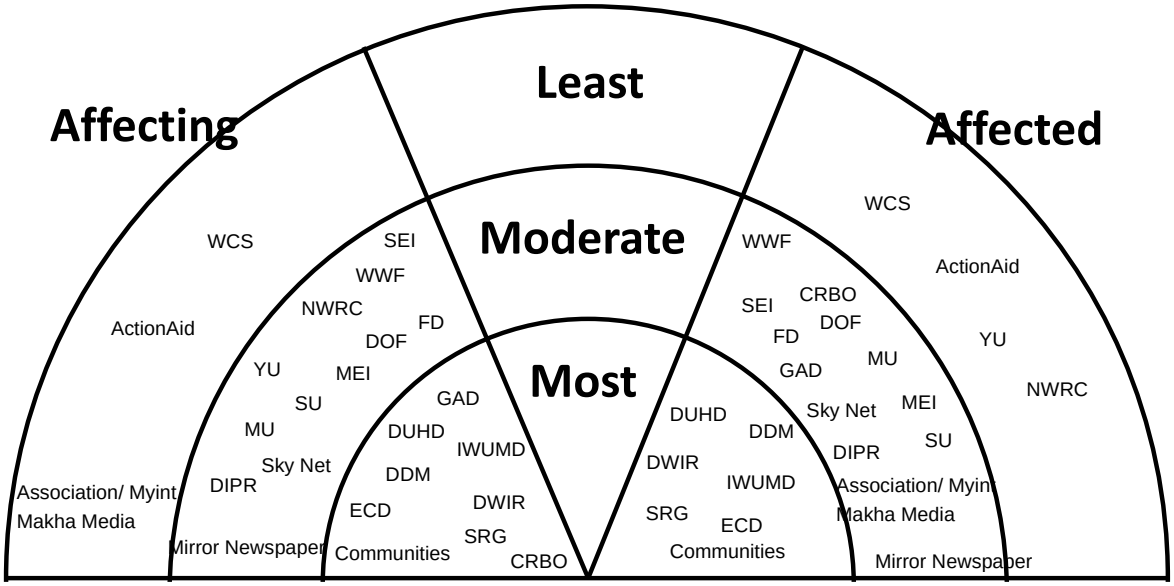
Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders/Sponsors	Lobbyists	Mediators
	Yangon University (YU)	☐	X	☐	X	☐	☐	X
SH6: Media	Department of Information and Public Relation (DIRP)	☐	☐	☐	☐	☐	☐	X
	Sky Net	☐	☐	☐	☐	☐	☐	X
	Mirror Newspaper	☐	☐	☐	☐	☐	☐	X
	Association/ Myint Makha Media	☐	☐	☐	☐	☐	☐	X
SH7: International and transnational organizations	Stockholm Environment Institute	☐	X	☐	X	X	☐	☐
	WWF	☐	X	☐	X	X	☐	☐

A.7.2 Rainbow Diagram for the Hazard, IC6



For legend, see table in the above section

A.7.3 Rainbow Diagram for the NBS, IC6



For legend, see table in the above section

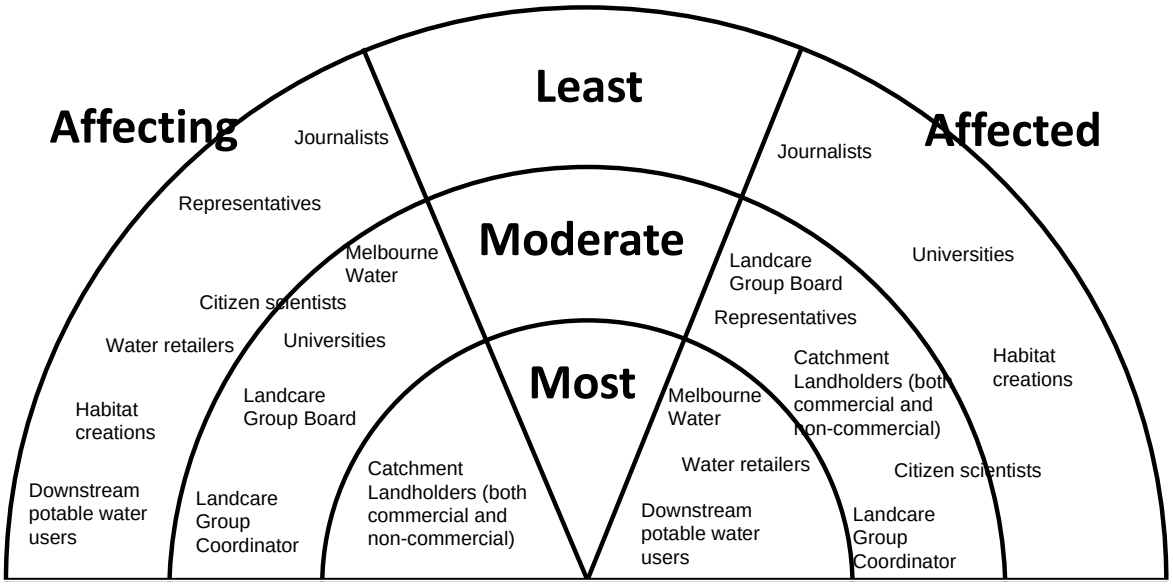
A.8 IC7: Tarago River Basin, Australia

A.8.1 Stakeholder Groups and Roles, IC7

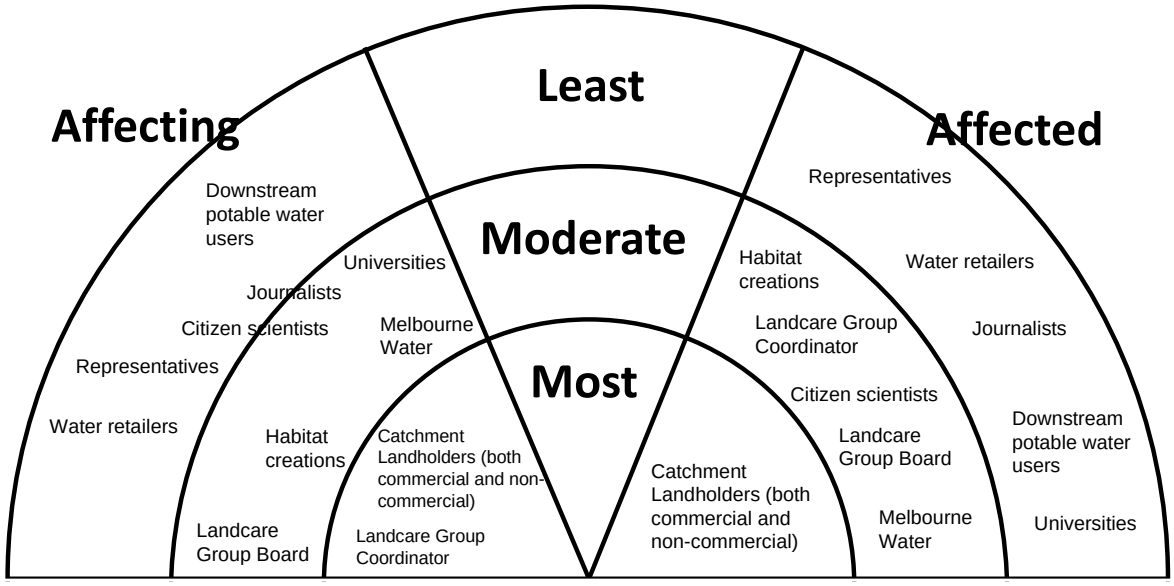
Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders / Sponsors	Lobbyists	Mediators
SH1: Authorities	Melbourne Water	X	☐	X	☐	X	☐	X
SH2: Political Representatives	*Representatives* (Local, state and federal political representatives for Westernport, Mornington Peninsula, Neerim South and Noojee)	☐	☐	☐	☐	☐	X	☐
SH3: Civil Society	*Landcare Group Coordinator* – Neerim and District Landcare Group	X	☐	X	X	☐	☐	X
	Landcare Group Board - Neerim and District Landcare Group	X	☐	X	☐	X	☐	X
	Catchment landholders: non-commercial (Catchment landholders, non-commercial land-use, NBS Hosts))	X	X	☐	☐	X	☐	☐
	Downstream potable water users (end users of water supply from Tarago Reservoir: residents of Westernport, Mornington Peninsula, Neerim South and Noojee)	☐	☐	☐	☐	☐	X	☐
SH4: Commercial Sector *Public corporations	*Habitat Creations* (native vegetation supplier and consultant)	☐	X	☐	X	☐	☐	☐
	Catchment landholders: commercial (Catchment landholders, commercial agricultural land use, NBS hosts)	X	X	☐	☐	X	☐	☐
	Water retailers*	☐	☐	☐	X	☐	☐	☐
SH5: Academia / Research	Monash University	☐	☐	☐	X	☐	☐	☐
	University of Melbourne	☐	☐	☐	X	☐	☐	☐
	Citizen scientists (small programs coordinated by Landcare Group, made up of local residents, usually *Catchment Landholders:*	☐	☐	☐	X	☐	☐	☐

Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders / Sponsors	Lobbyists	Mediators
	Commercial and Non-Commercial							
SH6: Media	*Journalists* (Journalists for media organizations of the West Gippsland region)	☐	☐	☐	☐	☐	X	☐
SH7: International and transnational organizations		☐	☐	☐	☐	☐	☐	☐

A.8.2 Rainbow Diagram for the Hazard, IC7



A.8.3 Rainbow Diagram for the NBS, IC7



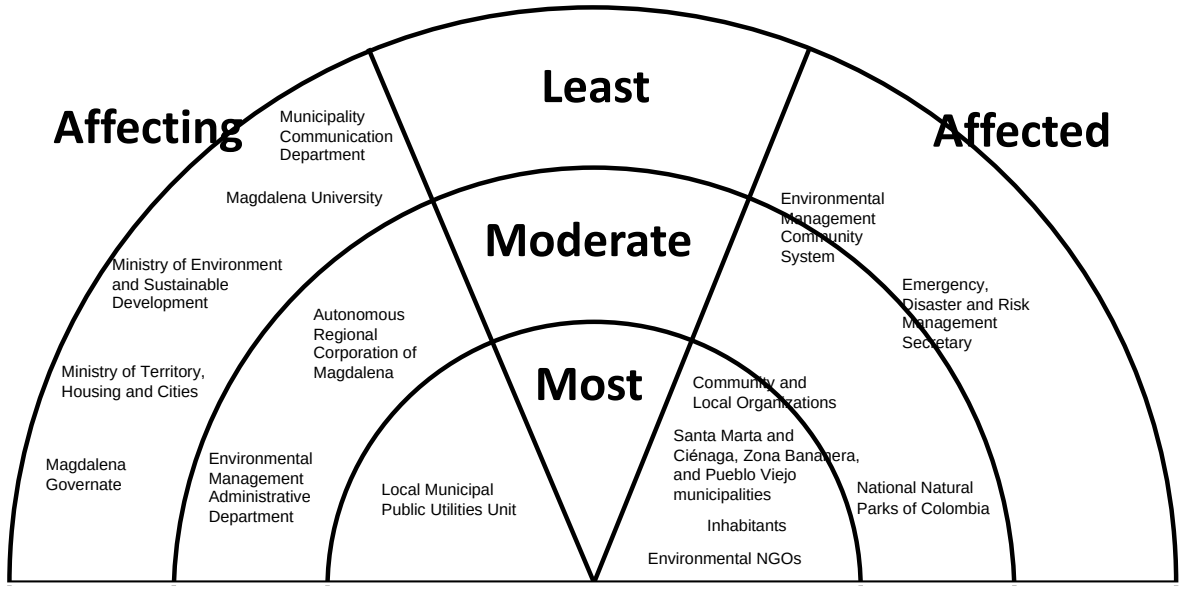
A.9 IC11: Rio Frio, Colombia /Magdalena

A.9.1 Stakeholder Groups and Roles, IC11

Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders/ Sponsors	Lobbyists	Mediators
SH1: Authorities	Environmental Management Administrative Department	☐	X	☐	☐	☐	☐	☐
	Autonomous Regional Corporation of Magdalena	☐	X	☐	☐	☐	☐	☐
	National Natural Parks of Colombia	☐	☐	X	☐	☐	☐	☐
	Magdalena Governorate	☐	☐	X	☐	☐	☐	☐
	Municipal Public Service Company of Santa Marta	☐	X	☐	☐	☐	☐	☐
	Municipal Public Utilities Unit	☐	X	☐	☐	☐	☐	☐
	Emergency, Disaster and Risk Management Secretary	☐	☐	X	☐	☐	☐	☐
	Ciénaga, Zona Bananera, and Pueblo Viejo Municipalities	X	☐	☐	☐	☐	☐	☐
SH2: Political Representatives	Environmental and Sustainable Development Ministry	X	☐	☐	☐	☐	☐	☐
	Territory, Housing and Cities Ministry	X	☐	☐	☐	☐	☐	☐
SH3: Civil Society	Environmental NGOs	☐	☐	☐	X	☐	☐	☐
	Community and Local Organizations	☐	X	☐	X	☐	X	☐
	Indigenous, afro-descendant and peasant communities	☐	X	☐	X	☐	X	X
SH4: Commercial Sector	Productive / agricultural sectors	☐	X	X	X	☐	☐	☐
	Business associations and foundations	☐	X	X	X	☐	☐	☐
	Associations of users and companies providing public services	☐	X	X	X	☐	☐	☐
SH5: Academia / Research	Local Universities	☐	☐	☐	X	☐	☐	☐
SH6: Media	Municipality Communication Department	☐	☐	☐	☐	☐	X	☐

Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders/ Sponsors	Lobbyists	Mediators
SH7: International and transnational organizations		☐	☐	☐	☐	☐	☐	☐

A.9.2 Rainbow Diagram for the Hazard, IC11



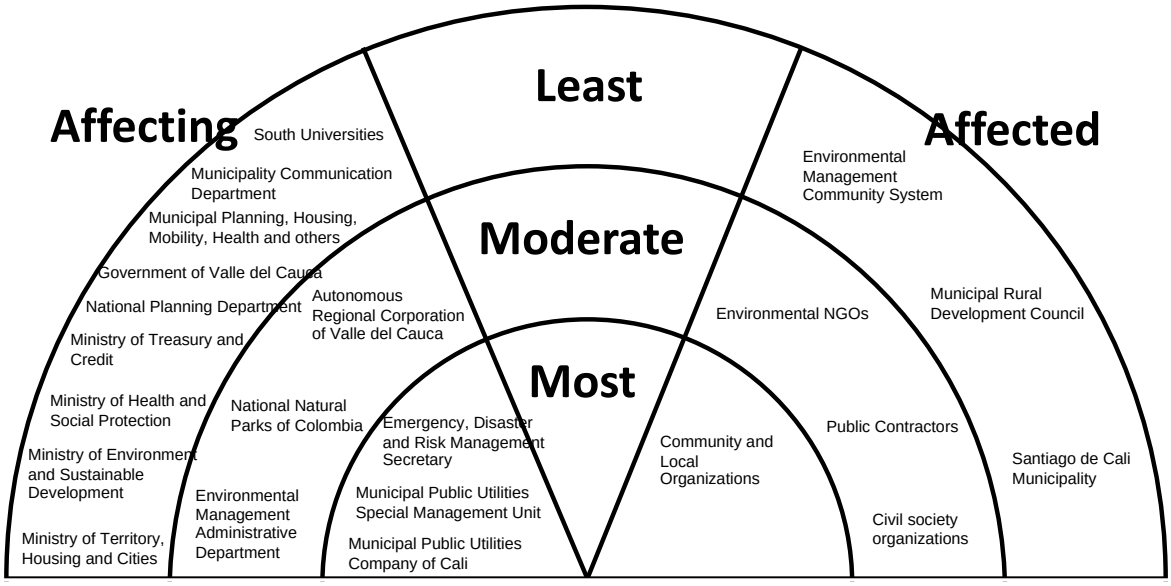
A.10 IC12: Cañaveralejo, Lili and Melendez River Basins, Colombia/Cali

A.10.1 Stakeholder Groups and Roles, IC12

Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders/ Sponsors	Lobbyists	Mediators
SH1: Authorities	Environmental Management Administrative Department	☐	X	☐	☐	☐	☐	☐
	Autonomous Regional Corporation of Valle del Cauca	☐	X	☐	☐	☐	☐	☐
	National Natural Parks of Colombia	☐	☐	X	☐	☐	☐	☐
	Municipal Public Utilities Company of Cali	☐	X	☐	☐	☐	☐	☐
	Municipal Public Utilities Special Management Unit	☐	X	☐	☐	☐	☐	☐
	Emergency, Disaster and Risk Management Secretary	☐	☐	X	☐	☐	☐	☐
	Santiago de Cali Municipality	X	☐	☐	☐	☐	☐	☐
	Municipal Planning, Housing, Mobility, Health and others	☐	X	☐	☐	☐	☐	☐
SH2: Political Representatives	Ministry of Environmental and Sustainable Development	X	☐	☐	☐	☐	☐	☐
	Ministry of Territory, Housing and Cities	X	☐	☐	☐	☐	☐	☐
	Ministry of Health and Social Protection	X	☐	☐	☐	☐	☐	☐
	Ministry of Treasury and Credit	X	☐	☐	☐	☐	☐	☐
	National Planning Department	X	☐	☐	☐	☐	☐	☐
	Government of Valle del Cauca	X	☐	☐	☐	☐	☐	☐
SH3: Civil Society	Environmental NGOs	☐	☐	☐	X	☐	☐	☐
	Community and Local Organizations	☐	☐	☐	☐	☐	X	☐
	Environmental Management Community System	☐	☐	☐	☐	☐	X	X
	Municipal Rural Development Council	☐	☐	☐	☐	☐	X	☐
	Civil society organizations	☐	☐	☐	☐	☐	X	☐
SH4: Commercial Sector	Public Contractors	☐	X	☐	☐	☐	☐	☐
	Private Sector	☐	☐	☐	☐	X	☐	☐

Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders/ Sponsors	Lobbyists	Mediators
SH5: Academia / Research	South Universities	☐	☐	☐	X	☐	☐	☐
SH6: Media	Municipality Communication Department	☐	☐	☐	☐	☐	X	☐
SH7: International and transnational organizations		☐	☐	☐	☐	☐	☐	☐

A.10.2 Rainbow Diagram for the Hazard, IC12



A.11 IC13: St. Maarten, the Caribbean

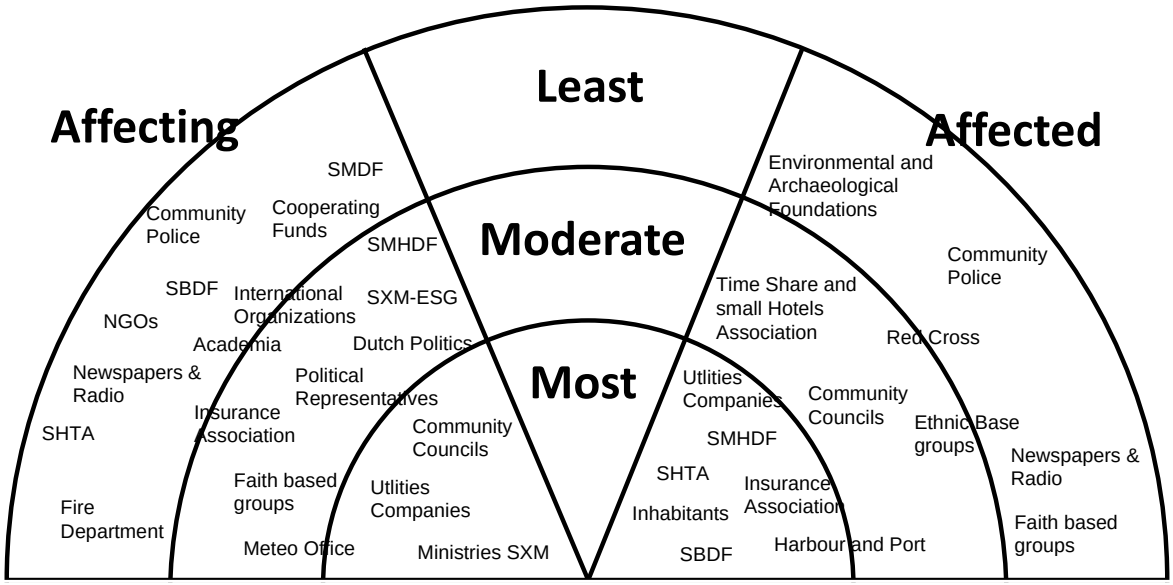
A.11.1 Stakeholder Groups and Roles, IC13

Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders/ Sponsors	Lobbyists	Mediators
SH1: Authorities	Minister Plenipotentiary in the Hague	X	☐	X	☐	☐	☐	☐
	Ministry of Tourism, Economic Affairs, Transport & Telecommunication	X	X	X	☐	☐	☐	☐
	Ministry of Education, Culture, Youth & Sports Affairs	X	X	X	☐	☐	☐	☐
	Ministry of Public Housing, Spatial Development, Environment and Infrastructure - VROMI	X	X	X	☐	☐	☐	☐
	Community Police	☐	☐	X	☐	☐	☐	X
	Sint Maarten Emergency Support Group - SXM-ESG	X	X	X	X	☐	☐	☐
	Meteorological Office	☐	☐	☐	X	☐	☐	☐
	Fire Department	☐	☐	X	X	☐	☐	☐
SH2: Political Representatives	Parliament	X	☐	X	☐	☐	X	☐
SH3: Civil Society	Inhabitants / Households	☐	☐	☐	X	☐	☐	☐
	SUNfed (St. Maarten United NGO Federation)	☐	☐	☐	X	☐	X	☐
	Samenwerkende Fondsen (Cooperating Funds)	☐	☐	☐	X	X	X	☐
	SMDF (St. Maarten Development Fund Foundation)	☐	☐	☐	X	X	X	☐
	Community Councils	☐	☐	☐	X	☐	X	X
	Ethnic base and other community groups	☐	☐	☐	X	☐	☐	X
	Sint Maarten Red Cross	☐	☐	X	X	☐	☐	☐
	The Netherlands Red Cross	☐	☐	X	X	☐	☐	☐
	Nature Foundation	☐	☐	☐	X	☐	X	☐
	Emilio Estate Foundation	☐	☐	☐	X	☐	X	☐
	EPIC (Environmental Detection in the Caribbean)	☐	☐	☐	X	☐	X	☐
	SIMARC (St. Maarten Archeological and Research Centre)	☐	☐	☐	X	☐	X	☐

Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders/ Sponsors	Lobbyists	Mediators
	St. Maarten National Heritage Foundation	☐	☐	☐	X	☐	X	☐
	Rotary Club	☐	☐	☐	X	X	X	☐
	St. Maarten United Ministerial Foundation (SMUMF)	☐	☐	☐	☐	☐	☐	X
	St. Maarten Council of Churches	☐	☐	☐	☐	☐	☐	X
SH4: Commercial Sector	St. Maarten Hospitality and Trade Association (SHTA)	☐	☐	☐	X	X	X	☐
	St. Maarten Business Development Foundation (SBDF)	☐	☐	☐	X	X	X	☐
	St. Maarten Harbor Group of Companies	☐	☐	☐	X	☐	X	☐
	Port of Sint Maarten	☐	☐	☐	X	☐	X	☐
	Time Share Association	☐	☐	☐	☐	X	X	☐
	Small Hotel Association	☐	☐	☐	X	X	X	☐
	Sint Maarten Insurance Association	☐	☐	☐	X	X	X	☐
	United Telecommunication Services (UTS)	☐	☐	☐	☐	☐	☐	X
	NV GEBE (Energy Company of the Windward Islands)	☐	☐	☐	X	☐	☐	X
	TELEM	☐	☐	☐	☐	☐	☐	X
	St. Maarten Housing Development Foundation (SMHDF)	☐	☐	☐	X	☐	X	☐
SH5: Academia / Research	University of St. Maarten	☐	☐	☐	X	☐	☐	☐
	IHE Delft. Institute for water Education	☐	☐	☐	X	☐	☐	☐
	External consultants	☐	☐	☐	X	☐	☐	☐
	American University of the Caribbean	☐	☐	☐	X	☐	☐	☐

Stakeholder Group	Name, Position and Organization	Role						
		Decision-maker	Implementers	Coordinators	Providers of Expert Knowledge	Funders/ Sponsors	Lobbyists	Mediators
	American University of Integrative Sciences	☐	☐	☐	X	☐	☐	☐
SH6: Media	Newspapers	☐	☐	☐	☐	☐	☐	X
	Local Radio	☐	☐	☐	☐	☐	☐	X
SH7: International and transnational organizations	EU (European Union) -Relations	☐	☐	☐	☐	X	☐	☐
	Minister Plenipotentiary in the Hague / Dutch Government	X	☐	☐	☐	X	☐	☐
	World Bank	☐	X	X	X	X	☐	☐
	UNDP (United Nations Development Program)	☐	☐	☐	X	X	☐	☐
	UNESCO (United Nations Education Scientific and Cultural Organization)-St. Maarten	☐	☐	☐	X	☐	☐	☐
	CARICAD (Caribbean Centre for Development Administration)	☐	☐	☐	X	X	☐	☐
	CARICOM (Caribbean Community)	☐	☐	☐	X	X	☐	☐
	SONA (Executing Agency for Development Funds Netherlands Antilles)	☐	☐	☐	X	X	☐	☐

A.11.2 Rainbow Diagram for the Hazard, IC13



Ministries SXM – Ministries of St. Marteen

SMDF – St. Maarten Development Fund Foundation

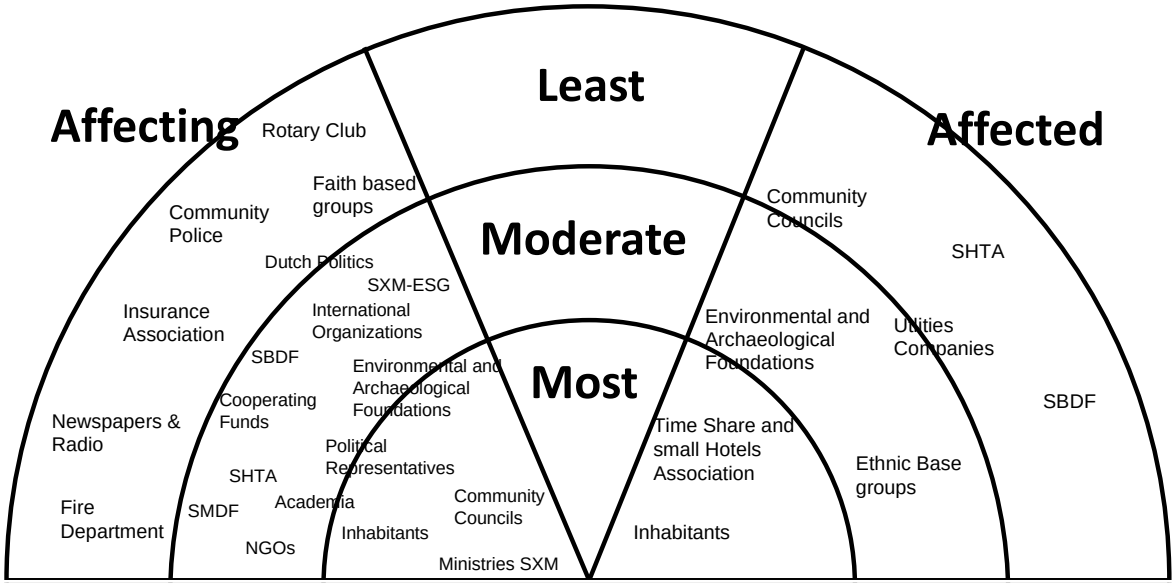
SBDF – St. Maarten Business Development Foundation

SMHDF – St. Maarten Housing Development Foundation

SHTA – St. Maarten Hospitality and Trade Association

SXM-ESG – St. Maarten Emergency Support Group

A.11.3 Rainbow Diagram for the NBS, IC13



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Annex B Stakeholder Database for Collaborator sites

See separate Excel file.