

# Grounded theory methodology and public participation in water management

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**Abstract:** Water resources are under increased pressure in almost all parts of the world. In such circumstances, it is also common to have conflicts between different water sectors (for instance, tourism vs environmental use; municipal and industrial supply vs agricultural water use, etc.), and interest groups. In most cases, related problems could be efficiently solved through the public participation and involvement of stakeholders. Traditional public participation in water management is mostly focused on the problem solving, rather than on other important contexts such as: stakeholders' understanding of the problem; motivation (willingness) to participate; preferences; understanding the solving methodology; and expectations that participatory process will lead to desired solution(s). Approach that has been proven to successfully take into account most of these concerns in managing water related participatory problems is known as Grounded Theory Methodology (GTM). In this paper authors use GTM to analyse data collected within the previous study of stakeholders' selection and prioritization in managing water resources of the Krivaja River basin in Serbia. Extensive data sets include detail information about stakeholders, description of the catchment characteristics, and perception of public participation provided by questionnaires distributed and collected within six months period. Results obtained by GTM are compared with similar case studies from developing as well developed countries.

**Key words:** public participation, water management, Krivaja River, grounded theory methodology

## 1. INTRODUCTION

Public participation (PP) as concept was introduced in 1992, when 178 Governments adopted the Rio Declaration on Environment and Development (UN, 1992) where it is stated that "Environmental issues are best handled with participation of all concerned citizens, at the relevant level". In 1993 public participation was identified as one of seven key elements for the long-term environmental programme for Europe (UNECE, 1993). Since then PP approach became requirement in decisions related to environmental management; one of best known examples of that requirement related to water management is EU Water Framework Directive (EC, 2000).

Although there are many examples of successful application of PP in water management, recent studies show that there are still some unresolved issues that cause unwanted results such are lack of official guidance documentation (Ijjas and Botond, 2004; Challies et al., 2016), lack of coordination between different frameworks that can result in unrelated participatory procedures (Albrecht, 2016), lack of communication between different sectors working on water management (UNECE, 2013), highly variable participation in the planning process (Benson et al., 2014), or rather poor performance of PP and lacking in continuity (Slavikova and Jilkova, 2011).

The reason of unwanted results of PP in water management can be found in traditional public participation approach which is mostly focused on the problem solving, rather than on other important contexts such as: meaning of PP to stakeholders; stakeholders' interpretation of PP; stakeholders' understanding of the problem; motivation (willingness) to participate; preferences; understanding the solving methodology; and expectations that participatory process will lead to desired solution(s). Approach that has been proven to successfully take into account most of these

concerns in managing water related participatory problems is known as Grounded Theory Methodology (GTM). It is defined as ‘an inductive, theory discovery methodology that allows the researcher to develop a theoretical account of the general features of a topic while simultaneously grounding the account in empirical observations or data’ (Martin & Turner, 1986). GTM method was successfully used in many cases related to PP in environmental management (i.e. Reed, 2008; Rault and Jeffrey, 2008; Wesselink et al., 2011; Aggestam, 2014; Waylen et al., 2015; Vente et al., 2016).

Here we used GTM to better and deeper understand attitudes, views and preferences of stakeholders participating in the management of water resources of the Krivaja River basin in Serbia. Obtained results are compared with similar case studies from developing as well developed countries.

## 2. BRIEF DESCRIPTION OF THE GROUNDED THEORY METHODOLOGY

The Grounded Theory Methodology is qualitative research methodology defined by Glaser and Strauss (1967), whose aim was to develop theories grounded in data systematically gathered, compared and analysed; thus, GTM should ‘explain as well as describe’ (Corbin and Strauss, 1990). Although data for grounded theory can come from various sources (interviews, government documents, observations, books), their collection and analysis must be done according to specific canons and procedures given and described in detail in (Corbin and Strauss, 1990). In other words, as Knigge and Cope (2006) state, the grounded theory seeks to find rigorous, verifiable and explicit ways to draw conclusions.

Urquhart et al. (2010) provided “four distinctive characteristics of the grounded theory method:

1. The main purpose of the grounded theory method is theory building.
2. As a general rule, the researcher should make sure that their prior – often expert – knowledge of the field does not lead them to preformulated hypotheses that their research then seeks to verify – or otherwise. Such preconceived theoretical ideas could hinder the emergence of ideas that should be firmly rooted in the data in the first instance.
3. Analysis and conceptualization are engendered through the core process of joint data collection and constant comparison, where every slice of data is compared with all existing concepts and constructs to see if it enriches an existing category (i.e. by adding/enhancing its properties), forms a new one or points to a new relation.
4. ‘Slices of data’ of all kinds are selected by a process of theoretical sampling, where the researcher decides on analytical grounds where to sample from next.”

Figure 1 illustrates application of GTM developed for the analysis of public participation perception in water management in Jordan and Singapore (Al-Najar et al., 2013).

## 3. CASE STUDY

Serbia is candidate country for the EU and one of the first negotiation chapters that is opened is financially demanding Chapter 27 – Environment. Among other alignments required within the Chapter 27, full implementation of Water Framework Directive 2000/60/EC is also foreseen, including introduction of public participation in water management decisions. Experiences of other counties show that introducing PP is long and challenging process since it is entirely different mode of governance (Mostert, 2003). We believe that this process can be accelerated if public fully understand the process i.e. if public awareness of water importance is raised, various stakeholders are identified and involved, awareness of the public’s rights and of the public authorities’ obligations are raised, access to information is assured, etc.

Although Serbian legislation still does not recognize nor regulate public participation in water management, we conducted study based to GTM to assess perception of public participation within

stakeholders involved in managing water resources of the Krivaja River basin in Serbia (Figure 2). It is selected as a case study because it is multifunctional and multipurpose system, with complex decision - making process characterized by the conflict interests of different parties: government, local authorities in municipalities, responsible water management companies, ecologists, public bodies etc. The conflicts are presently sharpened because of the lack of funding, improper legislation or absence of precise water policies, low efficiency in collecting water taxes, difficulties in motivating societal delegates to participate in management, etc. Today, water in Krivaja River basin is managed by public water management company Vode Vojvodine, and three smaller water management companies: Severna Backa, Krivaja and Backa.

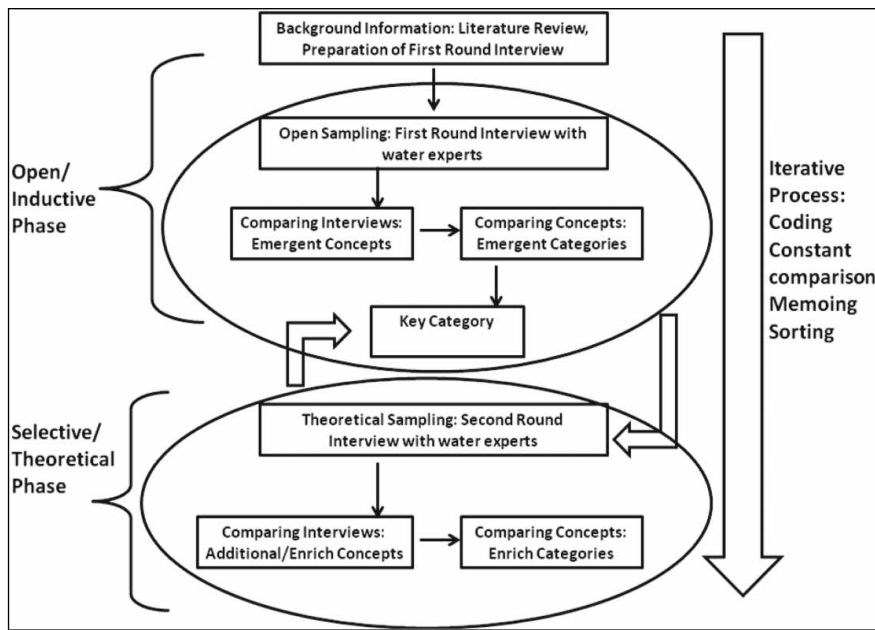


Figure 1. Process of GTM (Al-Najar et al., 2013).



Figure 2. Krivaja River basin, Serbia, with reservoirs (existing, and to be build).

Eight major stakeholders' groups and their sub-groups were identified for Krivaja River basin (Bajčetić et al., 2015):

1. users (irrigation, industry, fishing ponds, tourism),
2. government (ministries and provincial secretariats),
3. water sector (public water management company and regional water management companies),
4. scientific community (university and research institutes),
5. local authorities,
6. non-governmental organizations,
7. citizen's associations, and
8. general public.

### ***3.1 Collection of data and implementation of GTM***

Semistructured interviews, regular mail and e-mail were used to distribute questionnaires to

- 110 legal entities (20 responses received)
- 30 individuals (5 responses)
- public institutions: state institutions, ministries, provincial secretariats, local governments, water management companies, academic bodies, etc. (35 responses), belonging to 8 major stakeholders' groups and their sub-groups as identified in (Bajčetić et al., 2015).

Extensive qualitative and quantitative data sets collected within six months period, included questions regarding detail information about stakeholders, catchment characteristics, perceived level of water scarcity, existing pricing policy, legal and institutional framework, fairness, perceived level of responsibility of authorities and other stakeholders, importance of different groups in managing waters, involvement of public in decision making process, etc.

Using the GTM, we grouped the types of problems and challenges related to PP and recognized as most important or mentioned within the questionnaires, and categorised statements of respondents to four main categories: why PP (scarcity problems, intersectoral cooperation); who should be involved in PP of Krivaja River water management; level of involvement; way of involvement (efficient water use or direct involvement in decision making process). Second set of questionnaires is then sent to quantitatively assess perception of those four categories.

### ***3.2 Results and comparison with other countries***

According to responses, there is scarcity of water, especially in vegetation period. Also, intersectoral cooperation is not satisfactory if views of non-governmental organizations/citizen's associations and citizens are considered.

Figure 3 shows that respondents believes that, in average, highest level of participation in water management regarding planning demands, financing, infrastructure planning and management (decision-making process) should have sector of fishing/outdoor activities, ministries and provincial secretariats and public water management company and regional water management companies. Non-governmental organizations/citizen's associations and citizens are considered as least important to be involved in PP.

If compared with perception of PP in other countries given in (Rault and Jeffrey, 2008) and (Al-Najar et al., 2013), there are more similarities of our results with results obtained in developing countries in distinction between officials and non-officials attitudes and views, objectives of PP and justification of introducing PP.

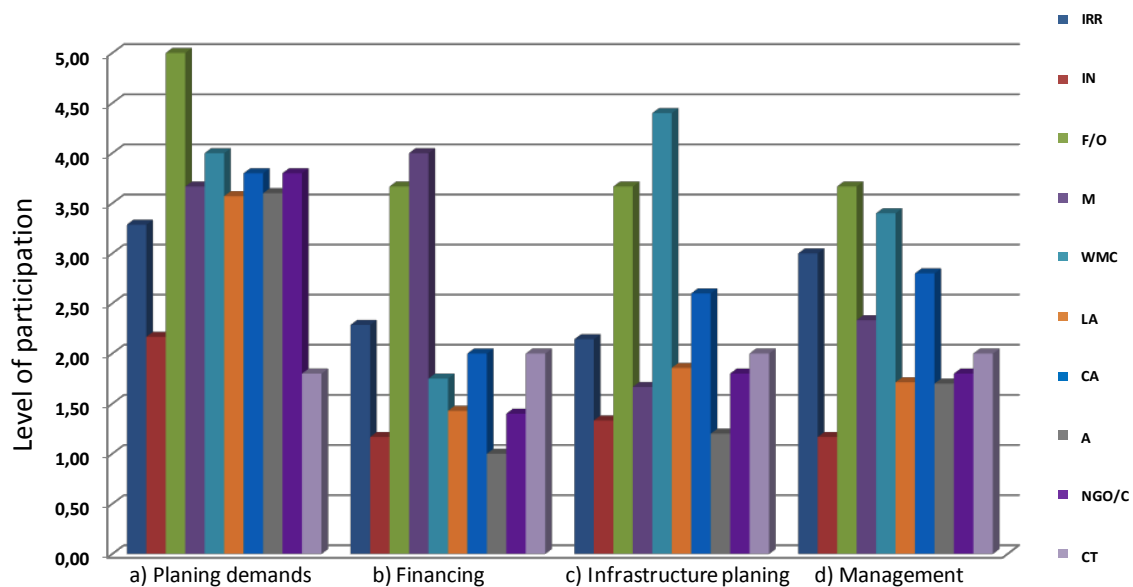


Figure 3. Perception of level of participation in different management issues.

Note: IRR – irrigation sector; IN – industry; F/O - fishing ponds/outdoor activities; M - ministries and provincial secretariats; WMC - public water management company and regional water management companies; LA - local authorities; CA – county authorities; A – academia; NGO/C - non-governmental organizations/citizen’s associations; and CT – citizens.

## 4. CONCLUSIONS

Introduction of PP in water management is long and challenging process aimed to solve complex environmental, economic and societal problems and increase sustainability of decisions. It requires time and effort in order to inform the public and raise wider awareness about the importance of water management, increase willingness of different sectors to participate, change mentality and way of thinking, make processes more democratic and transparent, improve communication between sectors, set mechanisms, set the legal framework, etc.

Data obtained from 60 respondents and analysed with GTM proved that there is a long road in front of Serbia in order to introduce and fully implement PP, similar to most of developing countries with adolescent democracy.

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## REFERENCES

- Aggestam, F., 2014. Wetland restoration and the involvement of stakeholders: an analysis based on value-perspectives. *Landscape Research* 39:680-697.
- Albrecht, J., 2016. Legal framework and criteria for effectively coordinating public participation under the Floods Directive and Water Framework Directive: European requirements and German transposition. *Environmental Science & Policy* 55(2): 368–375.
- Al-Najar, F.O., Ushijima, K., Funamizu, N., 2013. The perception of the public participation approach applied to water management in Jordan. *Water Policy* 15:1078–1093.
- Bajčetić, R., Srđević, B., Srđević, Z., Blagojević, B., Zoranović, T., 2015. Participativno odlučivanje o prioritetima raspodele voda u slivu reke Krivaje u Vojvodini. *Vodoprivreda* 47 (273-278): 287-293 (in Serbian).

- Benson, D., Fritsch, O., Cook, H., Schmid, M., 2014. Evaluating participation in WFD river basin management in England and Wales: Processes, communities, outputs and outcomes, *Land Use Policy* 38:213-222.
- Challies, E., Newig, J., Thaler, T., Kochskämper, E., Levin-Keitel, M., 2016. Participatory and collaborative governance for sustainable flood risk management: An emerging research agenda, *Environmental Science & Policy* 55(2):275–280.
- Corbin, J.M., Strauss, A. L., 1990. Grounded theory research: Procedures, canons, and evaluative criteria. *Qual Sociol* 13:3-21.
- De Vente, J., Reed, M. S., Stringer, L. C., Valente, S., Newig, J., 2016. How does the context and design of participatory decision making processes affect their outcomes? Evidence from sustainable land management in global drylands. *Ecology and Society* 21(2):24.
- European Commission, 2000. Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy [Water Framework Directive], *Official Journal of the European Communities* L 327:1–72.
- Glaser, B.G., Strauss, A.L., 1967. *The discovery of grounded theory*. Chicago: Aldine.
- Ijjas, I., Botond, K., 2004. Participation and Social Learning in the Implementation of the WFD in Agricultural Water Management: Stakeholder Workshops Report. AWP5 Report of the Harmonicop Project. Available online at: [http://www.harmonicop.info/\\_files/\\_down/Hungarian%20National%20SH%20Workshop%20Report.pdf](http://www.harmonicop.info/_files/_down/Hungarian%20National%20SH%20Workshop%20Report.pdf)
- Martin, P. Y., Turner, B. A., 1986. Grounded Theory and Organizational Research. *Journal of Applied Behavioral Science* 22(2):141-157.
- Mostert, E., 2003. The challenge of public participation. *Water Policy* 5(2):179-197.
- Rault, P. K., 2008. On the appropriateness of public participation in Integrated Water Resources Management: some grounded insights from the Levant. *The Integrated Assessment Journal* 8(2):69–106.
- Reed, M. S., 2008. Stakeholder participation for environmental management: A literature review *Biological Conservation* 141(10):2417–2431.
- Slavíková, L., Jílková, J., 2011. Implementing the Public Participation Principle into Water Management in the Czech Republic: A Critical Analysis. *Regional Studies* 45(4):545-557.
- UNECE, 1993. United Nations Economic Commission for Europe, Second Ministerial Conference “Environment for Europe” in Lucerne, Switzerland ([www.unece.org/env/efe/historyofefe/history.en2011\\_2.html](http://www.unece.org/env/efe/historyofefe/history.en2011_2.html))
- UNECE, 2013. United Nations Economic Commission for Europe, Guide to Public Participation under the Protocol on Water and Health, available at: [http://www.unece.org/fileadmin/DAM/env/water/publications/PWH\\_public\\_participation/GuidePublicParticipationPWH\\_WEB\\_EN.pdf](http://www.unece.org/fileadmin/DAM/env/water/publications/PWH_public_participation/GuidePublicParticipationPWH_WEB_EN.pdf)
- United Nations, 1992. Text of the Rio Declaration, available at: [www.un.org/documents/ga/conf151/aconf15126-1annex1.htm](http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm)
- Urquhart, C., Lehmann, H., Myers, M.D., 2010. Putting the ‘theory’ back into grounded theory: guidelines for grounded theory studies in information systems. *Info Systems J* 20:357–381.
- Waylen, K.A., Blackstock, K.L., Marshall, K.B., Dunglinson, J., 2015. Participation–Prescription Tension in Natural Resource Management: The case of diffuse pollution in Scottish water management. *Environmental Policy* 25(2):111–124.
- Wesselink, A., Paavola, J. 2011. Rationales for public participation in environmental policy and governance: practitioners' perspectives. *Environment and Planning A* 43:2688-2704.