



# Willingness to participate in the restoration of waters in an urban–rural setting: Local drivers and motivations behind environmental behavior



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## ABSTRACT

Restoration projects might be easier to accomplish, and the projects and their results better supported by local communities if the beneficiaries could be more intensely involved in the projects. The aim of this study was to determine how the setting and cognitive or attitudinal factors explain pro-environmental behavior in the context of small water restoration in an urban–rural setting. We compared the results from three primary contingent valuation (CV) surveys in Finland conducted in different geographical locations: the urban capital region of Helsinki, the peri-urban Kalimenjoki river basin area, and the rural Koillismaa area of northeastern Finland. According to the results, it appears that instead of an urban–rural dichotomy, the willingness to participate in pro-environmental actions by donating money or carrying out voluntary work might be determined by place-related local factors that either motivate or discourage participation in environmental work. Awareness of the local obstacles and drivers for the restoration of watercourses might make it easier to accomplish projects in the future and help in allocating budget funding to the areas where public willingness to participate is limited.

## 1. Introduction

Freshwater ecosystems, such as rivers and streams, are among the most vulnerable ecosystems in the world (Dudgeon et al., 2006; Ricciardi and Rasmussen, 1999). However, rivers, streams, and their adjacent floodplains provide various ecosystem services and associated social and cultural values (Acuna et al., 2013; Brauman et al., 2007; Perni et al. 2012; Sarvilinna et al. 2017; Vermaat et al., 2016). The importance of river ecosystems and their restoration has been widely recognized during the past decades, and their restoration has become a growing industry and a significant component of environmental policies around the world (Barak and Katz 2015; Bernhardt et al., 2005, 2007; Kondolf et al., 2006; Palmer et al., 2014; Trabucchi et al., 2012).

However, despite the global trend in restoration and the goals of several environmental initiatives and programs, such as the Millennium Ecosystem Assessment (MEA, 2005), the Strategic Plan for Aichi, including the Aichi Biodiversity Targets (Diversity CoB 2010), and the goals of the EU Water Framework Directive (WFD) (European Commission, 2000), almost half of European surface water bodies are reported to have a less than good ecological status or potential, with rivers and transitional water bodies being the most affected (EEA, 2015). To meet the goals of the WFD only, European waters need improved water resources management, including mitigation and restoration measures to achieve a good status (Rodrigo, 2017; EEA,

2015). It is estimated that in Finland alone, the annual funding for watercourse restoration, currently EUR 7–8 million per year, should be increased 2- to 3-fold to meet the goals of the WFD (Olin, 2013). Funding is often lacking in sparsely populated rural areas, where populations of endangered species or other conservation priorities exist (Lehtoranta et al., 2017b).

Governmental organizations have typically had a dominant role in environmental management in Europe (Fliervoet et al., 2016). However, the limited resources of governments and recent budget cuts, as well as climate change and societal pressures, have increased the need for collaborative governance in environmental and water management, increasingly transferring the responsibility from governments to various stakeholders (Egilson, 2012; EEA, 2014; Fliervoet et al., 2016; Verbrugge et al., 2017).

As an important group of stakeholders, local inhabitants gain benefits from ecological restoration, i.e. the improvement of their environment (e.g. Aronson et al., 2010; Golet et al., 2006). Thus, the role of the public could be more widely utilized in planning, decision making, and even partially funding environmental management projects in their nearby locations (Golet et al., 2006). In addition, to the role in partly funding projects, public participation can increase accessibility to the decision-making process in river restoration, as well as satisfaction with the project and its results, and the possibility of longer-lasting protection of the restored resources (e.g. Lee and Choi, 2012;

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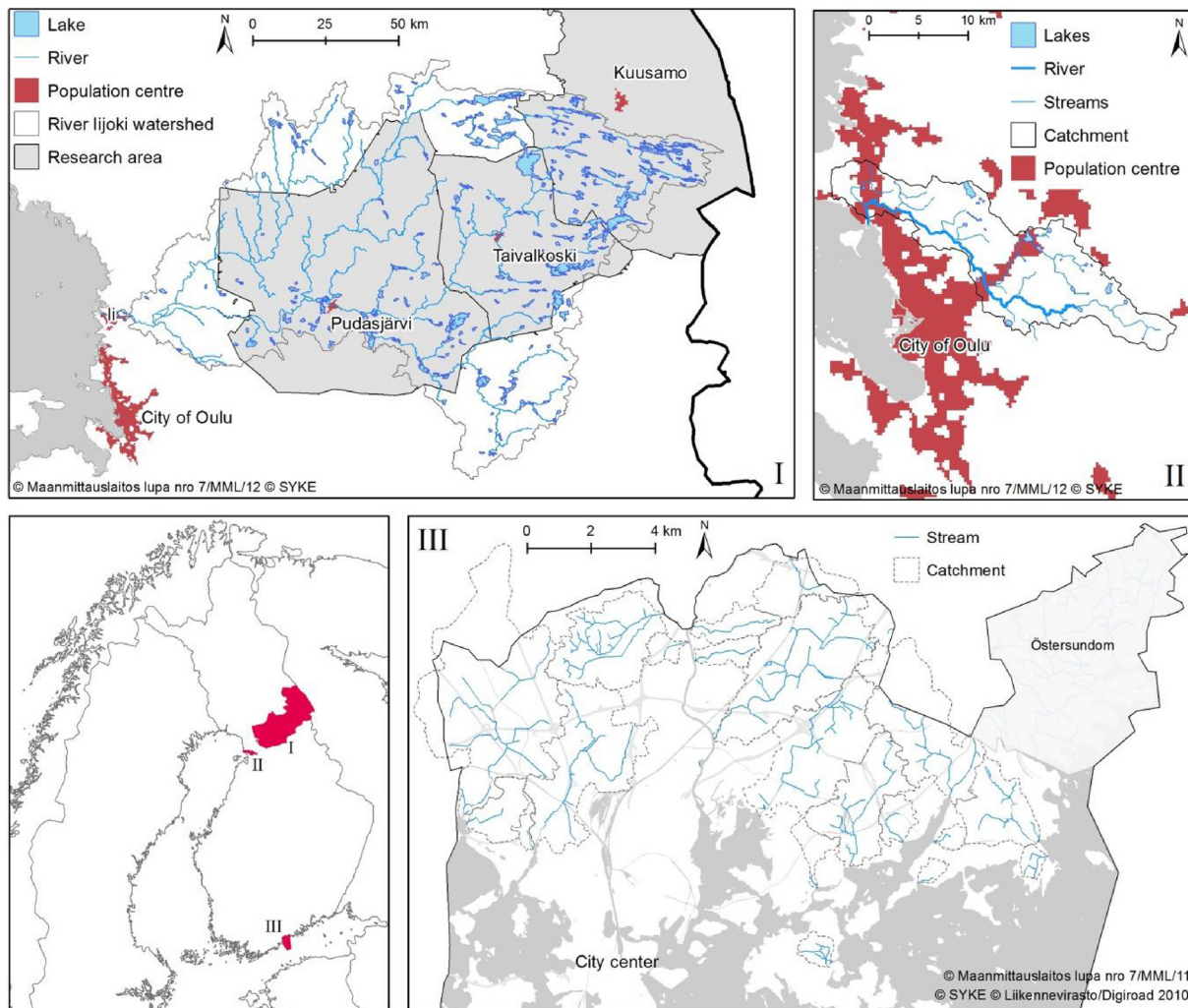


Fig. 1. Maps of the three study areas: the Koillismaa region (I), the City of Oulu region (II), and the capital area of Helsinki (III), and their location in Finland.

Marttila et al., 2016; Phalen, 2009; Tunstall et al., 2000). To improve the effectiveness of projects, it is important that policy makers understand how people value and use resources and what restoration options are important to the public (Alam, 2011).

Several studies have concentrated on rural–urban differences in environmental concern. Many of these have suggested that urban residents may share greater concern about environmental issues than rural residents (Borisova et al., 2013; Salka, 2001; Yu, 2014), while others have claimed that these differences in environmental attitudes and behaviors are diminishing (e.g. Berenguer et al., 2005; Bogner and Wiseman, 1999; Huddart-Kennedy et al., 2009).

Some studies have examined differences in public opinions in the urban–rural setting concerning surface water quality issues (e.g. Borisova et al., 2013), river restoration in the rural–urban or place attachment context (Alam, 2011; Wolters and Hubbard, 2014), public preferences for stream restoration policy (Barak and Katz, 2015; Kenney et al., 2012), and welfare changes related to river restoration (e.g. Bae, 2011; Hanley et al., 2006; Perni et al., 2012). However, very little is known about cognitive, attitudinal, or place attachment factors explaining pro-environmental behavior in the context of small water restoration in the urban–rural setting.

Recognizing the sense of place is essential in environmental management processes, and human access to sense of place benefits should be ensured while promoting biological conservation (Hausmann et al., 2016). Place attachment is often described as a positive connection or emotional bond between a person and a particular place (e.g. Stedman,

2003; Williams and Vaske, 2003). The use of different areas typically has a strong correlation with the distance from the place of residence. Thus, it is likely that local inhabitants use local areas more than average citizens on the national level, and it is also expected that they develop attachment to these areas to a larger degree (Vorkinn and Riese, 2001).

Buijs (2009) and Alam (2011) have investigated the sense of place in the context of river restoration. The former study focused on the assessment of public attitudes towards river restoration and improving the understanding of opposition to it, while Alam (2011) focused on the relationship between public attitudes and ecosystem restoration, especially from a place attachment point of view. In the present study, we were interested in the possible differences in place attachment factors affecting respondent attitudes towards stream restoration locally. These local or regional factors include recreation habits, land ownership, attitudes towards local/regional operators causing a pollution load on water bodies, or pro-environmental behavior in favor of surface waters in general.

This study aimed to increase understanding of the motivations behind attitudes and pro-environmental behavior in the context of watercourse restoration in three geographical areas in Finland to support the local implementation of the WFD. To analyze whether the urban–rural setting and cultural, socio-economic, or attitudinal factors explain the preferences of respondents concerning participation in improving small water quality, we compared the results from three primary contingent valuation (CV) surveys in Finland, all carried out between 2010–14: in the urban capital region of Helsinki, the peri-urban

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