Expansion Process of Local Community Activities Stimulated by Urban River Restoration in Okazaki City, Japan

Processus d'expansion des activités communautaires locales stimulées par la restauration de la rivière urbaine dans la ville d'Okazaki, au Japon

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RÉSUMÉ

Cette étude a examiné la valeur potentielle des initiatives de restauration des rivières urbaines pour contribuer à l'adaptation au changement climatique, en se concentrant sur le cas de la ville d'Okazaki, au Japon. Le processus d'expansion des activités depuis 2015 a été analysé, en mettant l'accent sur les perceptions de la communauté et la reconnaissance des membres impliqués. La recherche a utilisé une approche qualitative, en analysant des documents locaux et en interrogeant des membres clés de ONE RIVER, un groupe de citoyens locaux. L'étude de cas a démontré que les activités locales ont commencé par la restauration des rivières urbaines et se sont ensuite étendues pour englober l'adaptation au changement climatique basée sur la communauté. En outre, il a été observé qu'un sentiment d'appropriation de l'adaptation au changement climatique a été cultivé grâce aux activités locales stimulées par la restauration des rivières urbaines. Premièrement, la communauté a reconnu l'attrait naturel des divers services écosystémiques des rivières, et deuxièmement, elle a perçu un lien caché entre l'environnement fluvial et sa propre vie. Nos résultats indiquent que la restauration des rivières urbaines serait bénéfique pour l'adaptation au changement climatique engagée par la communauté en la rendant accessible aux processus naturels dynamiques, en renforçant la sensibilisation des parties prenantes aux services écosystémiques polyvalents des rivières et en cultivant le sentiment d'appartenance de la communauté.

ABSTRACT

This study examined the potential value of urban river restoration initiatives in contributing to climate change adaptation, focusing on the case of Okazaki City, Japan. The process of activity expansion from 2015 was analyzed, with particular emphasis on the perceptions of the community and the recognition of the involved members. The research employed a qualitative approach, analyzing local documents and interviewing key members of ONE RIVER, a local citizens' group. The case study demonstrated that the local activities commenced with the restoration of urban rivers and subsequently expanded to encompass community-based climate change adaptation. Additionally, it was observed that a sense of ownership over climate change adaptation was cultivated through local activities stimulated by urban river restoration. Firstly, the community recognized the natural appeal of the diverse river ecosystem services, and secondly, it perceived a hidden connection between the river environment and one's own life. Our findings indicated that urban river restoration would benefit community-engaged climate change adaptation by making it accessible to dynamic natural processes, enhancing stakeholders' awareness of the multifaceted river ecosystem services, and cultivating a community's sense of ownership.

KEYWORDS

Climate change adaptation, Community engagement, Nature-based Solutions, Sense of ownership, Urban river restoration + Adaptation au changement climatique, engagement communautaire, solutions fondées sur la nature, sentiment d'appartenance, restauration des rivières urbaines

1 INTRODUCTION

1.1 Background

Urban river restoration can demonstrate a multitude of values to our society from the various aspects of the socio-ecological systems, including economic, cultural, and ecological factors (Sabbion, 2016; Mishra & Shivani, 2024). River restoration improves hydrologic, geomorphic, and/or ecological processes within a degraded watershed, aiming to replace the natural system's lost, damaged, or compromised elements (Wohl *et al*., 2015). In particular, river restoration in urban areas aims to simultaneously regenerate ecosystems and enhance human well-being (Zingraff-Hamed *et al*., 2017). Nevertheless, despite the considerable social and cultural value of rivers in urban areas (Kondolf & Pinto, 2017), there are inherent limitations to the extent to which ecosystems can be improved through enhancements to water quality and riverbanks, primarily due to spatial constraints (Bernhardt & Palmer, 2007).

Therefore, urban river restoration emphasizes environmental education and community building (Kondolf & Yang, 2008). This community development process can demonstrate its latent value to society beyond ecosystem regeneration and well-being. For example, those values of urban river restorations may contribute to climate change adaptation, particularly in sustainable water resource management, by cultivating a community's sense of ownership. However, the potential value of urban river restoration processes for community-engaged adaptation still needs exploration.

The Okazaki City in Japan provides an illustrative example of a local initiative initially focused on urban river restoration that has subsequently expanded to encompass the long-term maintenance of a sustainable environment in climate change, including extreme flooding and drought. A local citizens' group, designated as *ONE RIVER*, is engaged in various activities, including river environmental education, forest utilization, rice field experience programs, and urban rain garden promotion. It is anticipated that the sense of ownership over climate change adaptation was cultivated through the expansion of local activities. Consequently, the case study serves as an effective means of verifying the potential value of urban river restoration processes.

In this study, we employed a qualitative approach to examine the expansion process of community-engaged local activities in Okazaki City, Japan, and discuss the potential value of urban river restoration for climate change adaptation. To investigate the cultivation of a sense of ownership, we conducted a detailed analysis of the process, emphasizing the community's perceptions and the recognition of its members. This study addressed the following research question: How can the processes of urban river restoration cultivate a sense of ownership and contribute to community-engaged climate change adaptation? The findings of this study will provide practical and valuable insights for linking nature-based solutions and community-engaged adaptation, which have been noted for their synergistic effects.

1.2 Methodology

This study collected data through a review of pertinent local documents and interviews with key stakeholders. The 31 documents subjected to review served to announce or report on local activities. The documents were analyzed to establish the local community's perception. The target texts were analyzed according to two content areas: the first pertains to the goals of the local activities, and the second pertains to the characteristics or problems of the Otogawa River area. The former represents the community's prospective vision of the Otogawa River area, whereas the latter represents their perceptions of its potential services. The ten years from 2015 to the present were divided into three phases, and each phase will be compared for analysis. Each phase is associated with changes in the policy system of community participation (**Table 1**). Additionally, the community members' awareness was examined based on their statements in the interview surveys. The subjects of the interviews were ten individuals currently members of the local group *ONE RIVER*.

Table 1. Outlines the three phases for the analysis of the evolutionary process of activities

	Duration	***Policy system of community participation***
Phase Ⅰ	2015 ~ 2017	The city government contracted with the NPO *Rita.*
Phase Ⅱ	2018 ~ 2020	The city government granted the use of the riverfront area to the Committee for Otogawa Utilization.
Phase Ⅲ	2021 ~ 2024	The local group *ONE RIVER* has been developing activities that are not contingent upon the city office.

2 RESULTS

2.1 Goals of the Local Activities for Each Phase

Table 2 presents representative descriptions of the goals of the local activities outlined in the reviewed documents. The distinctive descriptions were identified in the goals of the local activities for each phase. In Phase I, the primary objective of local activities was to increase the number of people using the riverfront. Still, in Phase II, the objective developed to find and promote different ways to enjoy the river. Moreover, in Phase III, the goal has been to make people feel connected to the river and promote living with the river.

Figure 1 illustrates the local activities of *ONE RIVER*. The activities have undergone a notable diversification of content, evolving into an organization that is not constrained by the parameters of the city's public projects. These activities were not merely intended to utilize the waterfront or disseminate environmental education but to facilitate the sustainability of the Otogawa River environment. The fundamental principle of *ONE RIVER* is encapsulated in the phrase "carry into the future," indicating that the group sought to appreciate the river in the present and coexist with it in the future.

Table 2. Representative descriptions of the goals or future vision of local activities

Phase Ⅰ: increase the number of people using the riverfront
Give citizens and visitors the feeling that "something interesting is always happening" and increase the number of daily users. For local regional revitalization, to promote interaction between the upper and lower reaches of the Otogawa River.
Phase Ⅱ: find and promote different ways to enjoy the river
The next stage will be to "enhance the attractiveness of the entire city with the strengths of Otogawa" and go beyond the previous stage of "just using Otogawa".
Phase Ⅲ: make people feel connected to the river and promote living with the river
We hope that many people will be able to experience the connection with the river hidden in our daily lives.

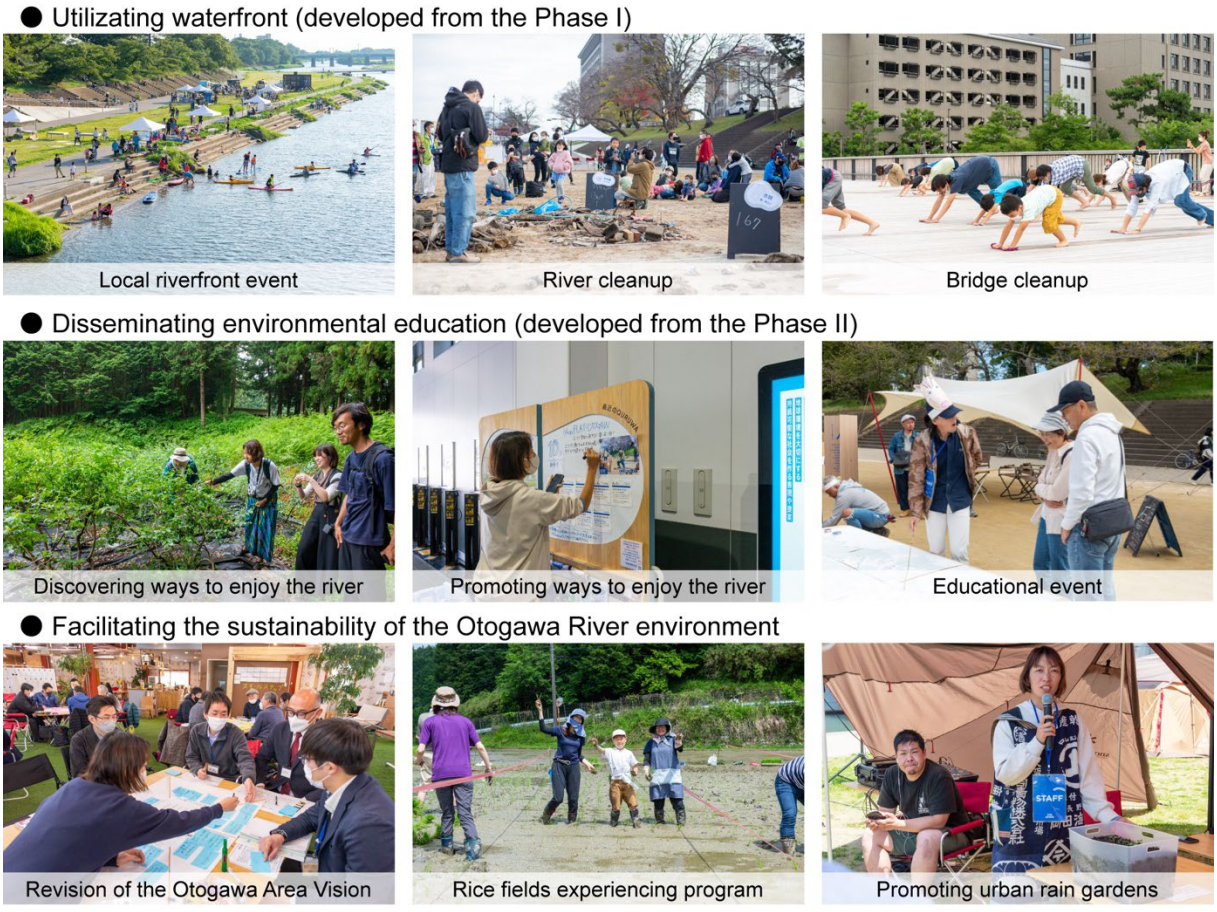

Figure 1. Activities of the local group *ONE RIVER*

2.2 Changes in the Community Perception

As the activities progressed from Phase I to Phase II, the community shifted in perception, demonstrating an increased awareness of the potential for the multiple services of the Otogawa River area. **Table 3** presents representative descriptions of the characteristics or problems of the Otogawa River area. In Phase Ⅰ, the community perceived the Otogawa River area as a place with high potential for use and tourism. Still, in Phase II, the community identified the Otogawa River area as a place where people can enjoy the various ecosystem services. These perceptions can be understood as factors that shape the characteristics of the activities.

Also, the objective of local activities has significantly shifted during the transition from Phase II to Phase III. Whereas the focus in Phase II was on the immediate enjoyment of the river, in Phase III, a broader, long-term vision of sustainable lives in harmony with the river emerged. Consequently, their activities have been expanded to include harnessing the potential of forests and rice paddies to ensure the sustainable maintenance of the river environment within the river basin.

Table 3. Representative descriptions of the potentials or problems of the Otogawa River area

Phase Ⅰ: a place with high potential for use and tourism
The Otogawa Riverfront area is the gateway for tourists from outside the city. There is a strong need to create a bustling place that will serve as a tourist base. The Otogawa River has become "just a view" for most citizens.
Phase Ⅱ: a place where we can enjoy the various ecosystem services
There are things you can only do here. The place with the most open sky. From spring to fall, when the water level rises, you can play in the boats. From fall to spring, when the water level drops, you can play tag on the vast sandy beach that appears. Small fish swim in groups. Wild birds rest their wings and peck for food.

3 DISCUSSION AND CONCLUSION

The study demonstrated that local activities in Okazaki City began with restoring the urban river and subsequently expanded to encompass community-based adaptation. The activities of the local group, ONE RIVER, had multiple objectives. In addition to utilizing the waterfront and disseminating environmental education, they aimed to sustainably maintain the river environment across the entire watershed. These initiatives included reducing the risk of future disasters such as flooding and drought.

It was also observed that a sense of ownership over climate change adaptation had been cultivated in stages through the local activities stimulated by the urban river restoration. The sense of ownership is postulated to have arisen from a perception of the profound connection between the nature of the Otogawa River and the lives of the communities.

The investigation into the expansion process of local activities revealed that urban river restoration processes have the potential value of cultivating a sense of ownership and contributing to climate change adaptation at the local level. Urban river restoration enhances awareness of the multifaceted ecosystem services rivers provide, facilitating access to the dynamic processes of nature. Furthermore, the initiative has facilitated the involvement of stakeholders from various backgrounds, thereby enabling the recognition of the previously unidentified connection between rivers and local communities. The findings of this study provided valuable insights for future community-engaged adaptation strategies integrated with urban river restorations.

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