

## A community-sourced visual guide for preserving waterfront views of old towns

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### 【研究の目的と内容】

#### Background and purpose:

This research aims to explore how visual perception of waterfront landscapes can inform the preservation and design of historic urban environments. The study focuses on Matsue and Kurayoshi, two regional cities in Japan where historical development has been closely tied to water systems. Matsue developed as a castle town from the early 17th century, structured around a network of waterways connecting Lake Shinji and the Ohashi River. Earlier settlements in areas such as Shirakata can be traced back to the late 14th century, forming on sandbar terrain and functioning as commercial hubs supported by water-based transportation. Over time, large-scale water management projects, especially those initiated after the 1950s and continuing into recent decades, have transformed the hydrological and spatial relationship between the city and its waterfront. Despite this rich historical context, contemporary urban experiences often fail to fully reflect or communicate these water-based characteristics. In recent years, there has been increasing interest in participatory and community-based approaches to landscape evaluation, where local perceptions and visual experiences play a key role in shaping preservation strategies.

Based on this background, the purpose of this research is twofold:

(1) to clarify how different visual compositions of waterfront environments influence human perception, particularly in relation to historical and cultural landscapes; and

(2) to develop a framework for a community-sourced visual guide that can support the preservation and design of waterfront views in historic towns.

#### Research methodology:

The research adopts a mixed-method approach combining field survey, photographic analysis, questionnaire-based evaluation, and eye-tracking experimentation.

•First, as a preliminary step, we participated in the Shimane Environmental Design Camp in November 2025, where lectures and field investigations provided knowledge on the historical formation of waterfront urban structures. This experience also contributed to establishing a foundation for community-oriented perspectives in landscape evaluation. Subsequently, field surveys were conducted in Matsue and Kurayoshi between December 2025 and January 2026. Approximately 90 photographs were collected for each area, documenting diverse waterfront scenes shaped by historical development and contemporary urban conditions.

•Secondly, the collected images were then analyzed by identifying key visual components, including water surfaces, buildings, vegetation, and sky. Based on the proportional composition of these elements, the photographs were classified into three visual patterns: scenes without a dominant element, scenes with one dominant element, and scenes with two dominant elements. From this classification, three sets of photographic stimuli were constructed.

•Thirdly, an experimental study was conducted in February 2026, involving both questionnaire-based evaluation and eye-tracking measurement. A total of nine participants took part in the experiment. Each participant spent approximately 40 to 90 minutes observing the photo sets and answering questions regarding their impressions of the landscape, with particular attention to waterfront characteristics and heritage buildings. During the observation process, participants' gaze behavior was recorded using an eye-tracking device, generating scan paths, and heatmaps.

### 【研究の成果(本研究によって得られた知見、成果、論文、学会発表、外部資金への応募見込み等)】

At the current stage, the analysis of the experimental results is still ongoing. The research has generated a large and complex dataset, including 2592 heatmaps and scan paths output, approximately 540 minutes of gaze-recording video data for each of the nine participants, and questionnaire responses of 9 participants. Due to the volume and complexity of these data, further time is required to conduct detailed processing and statistical analysis.

This dataset serves as the foundation for developing a community-oriented visual guide for waterfront preservation. The resulting findings and visual materials will be shared with a broader audience, including local communities and

design practitioners, to support discussions on preserving and enhancing waterfront landscapes. The research also contributes to communitybased design initiatives, such as presentations and discussions at the Shimane Design Camp, helping to connect academic insights with public engagement. The research results will be disseminated through academic and public platforms. Academic outputs are planned for presentation at ISAIA in October 2026 and at the Architectural Institute of Japan (AIJ) Chugoku brand conference in March 2027.