

## APPROACHES TO THE USE OF HISTORICAL WATER MANAGEMENT FACILITIES WITHIN THE FRAMEWORK OF RECREATION AND TOURISM

*Miloš Rozkošný<sup>1</sup>, Kuei-chen Lin<sup>2</sup>, Miriam Dzuráková<sup>1</sup>*

<sup>1</sup> *T. G. Masaryk Water Research Institute, p. r. i., Czech Republic, Mojmirovo nám. 16, 612 00 Brno, Czechia*

<sup>2</sup> *Institute of History and Philology, Academia Sinica, Taiwan, 115130 Yen Chiu Yuan, Taiwan*

<https://doi.org/10.11118/978-80-7701-087-0-0034>

### Abstract

The protection, preservation and use of industrial heritage, including water management facilities and their systems, are among the main areas of care for historic buildings and monuments around the world. The purpose of the article is to compare approaches to the possible use of preserved or reconstructed historic water management facilities and their equipment (not only the buildings themselves, the premises of the facility complexes, but also machines, tools for operation and maintenance, etc.) within the framework of recreation for residents of the surrounding environment and tourism for visitors to the places and areas in which these facilities are located. In many cases, this is part of secondary use, when the original function of the facilities has ended. In some cases, it is necessary to balance the requirements for maintaining a defined functionality with the need to present this historic heritage, the purpose of which is also to promote awareness of the field of water management, related industries and the historical development of the area. The article is based on research on sites in the Czech Republic and Taiwan.

**Key words:** Industrial heritage; restoration of historical buildings; use of historical buildings

### Introduction

Water (water management) structures of various origins, ages and purposes are witnesses to the development of human civilization and evidence of technical skill. Today, we view these objects as an integral part of our industrial (cultural) heritage. This in itself represents a very diverse group of structures, which at the same time represent a wide range of often incommensurable qualities (Ryšková, Dzuráková, 2022). The question of society's relationship to industrial structures, but also to furniture and production know-how, has been a relatively frequent topic for several decades. In accordance with the principles of TICCIH (The International Committee for the Conservation of the Industrial Heritage), emphasis is gradually being placed on identifying the technical and technological values of industrial structures, on the degree of authenticity and continuity of function, on the description of the technological flow and systemic links of the objects. These criteria are subsequently incorporated into the process of assessing the significance of the given structures from the perspective of monument protection, together with traditionally used architectural, artistic-aesthetic and urban planning criteria and historical contexts.

### Materials and methods

The methodology of the research work is based on a search of professional literature, methodological guidelines of state administration institutions, legislation in the fields of water management, protection of cultural monuments, which are valid or available for the territory of the Czech Republic and Taiwan. Subsequently, a field survey was carried out in selected locations, focused on documenting the condition of selected objects and/or functional units of water management objects, approaches to reconstruction, maintenance and use, whether for the performance of selected water management functions or the performance of other social functions. The obtained data was evaluated by comparative analysis, which will allow comparing the condition and approaches in both countries, which are characterized by different conditions from many perspectives (climatic conditions, cultural and social customs, etc.), but from the perspective of the development of water management are characterized by similar processes, the development of technologies and individual fields (water management, collection and treatment of wastewater, implementation and use of irrigation, development of hydropower).

### Results

The Czech Republic and Taiwan maintain above-standard relations. Cooperation is very strong, especially in the areas of economy, technology, science and culture, and is accompanied by frequent

informal political contacts. In the European context, the Czech Republic is one of Taiwan's closest partners.

The protection of technical monuments and industrial heritage in the Czech Republic is mainly enshrined in the Act on State Monument Care. The National Monument Institute (NPÚ) plays a key role in practical protection and in the decision-making process on granting monument protection, which professionally assesses the value of objects, keeps records of monuments and issues opinions on their modifications. In the case of industrial heritage, not only age is assessed, but also technological, architectural and historical value (Ryšková, Dzuráková, 2022). The aim is to preserve authentic structures and technical equipment, even though objects are often adapted for new uses (for example, cultural centers or apartments). The entire system is therefore based on a combination of legal protection, expert assessment and a controlled permitting process, which is intended to ensure that industrial heritage does not disappear, but can also be used sensitively in the present.

In Taiwan, the protection of technical monuments and industrial heritage is primarily regulated by the Cultural Heritage Preservation Act. Its administration falls under the Ministry of Culture and the specialized agency Bureau of Cultural Heritage (BOCH), with local governments also playing an important role. Industrial heritage (e.g. former factories, sugar refineries, mines, railway facilities or ports) is considered part of cultural heritage alongside traditional historical monuments. The emphasis is on so-called adaptive use, i.e. preserving the historical structure of a building while reusing it for new functions (e.g. converting factories into cultural centers or galleries).

The approach to the new use of historical water management facilities and their functional units in the Czech Republic and Taiwan differs in many respects, although both systems are based on a common goal, which is the preservation of technical and cultural heritage and its adaptation to the current needs of society.

In the Czech Republic, it is typical that the technical and functional continuity of water management facilities is often maintained. Structures such as weirs, mills or hydroelectric power plants often remain part of the active infrastructure, for example within the framework of river regulation or energy production. The adaptation of these facilities is rather gradual and in parts, combining the original technical function with new uses. A typical example is mills that continue to be used as small hydroelectric power plants, or facilities that simultaneously fulfill technical, residential or recreational functions. This approach can be described as a model where the “function persists”, while the connection to the landscape and the water network also plays a significant role, which allows at least partial preservation of the original operation. In addition, there is a second line of adaptation, where historical facilities are converted into housing, offices or cultural facilities, but these are often individual, rather isolated projects than large-scale area conversions.



Fig. 1: View of the historic pumping station of the water utility complex, which serves as a museum, part of an educational and entertainment water park, and as a backdrop for cultural and social events (Taipei, Taiwan).

In Taiwan, the situation is different, as there is more often a complete transformation of former water management areas. The original technological function usually disappears and the objects are transformed into cultural parks, museums or creative spaces. The result is large-scale revitalized complexes that serve as new cultural destinations and places of public life. This approach can be

summarized as a model where “the function ends, but the object lives anew”, with the emphasis placed on the cultural and social value of the place and its new identity. Differences are also evident in the area of museum and cultural use. In the Czech Republic, partial musealization is often involved, when, for example, waterworks or mills are converted into technology museums, while the rest of the object can remain in other operations or be used privately. In Taiwan, on the other hand, it is common for entire areas to be revitalized at once, for example former waterworks or industrial complexes that are transformed into so-called heritage parks or cultural districts, often with significant support from the state or cities and with an emphasis on tourist and cultural effects.

A significant difference is also reflected in the preservation of the technical function. In the Czech Republic, a high proportion of “living heritage” remains, as many weirs, mills or hydroelectric power plants still fulfill their original or partially modified function. In Taiwan, on the other hand, most of the historical water management systems have been modernized or replaced, and the original operation has thus ceased in most cases.

Another difference lies in the possibilities of housing and commercial use. In the Czech Republic, individual adaptation is very common, for example, the conversion of mills into family houses, apartments or studios. In Taiwan, this type of use is less widespread and more often the objects are changed into cultural enterprises, cafes, galleries or spaces for the creative industry, with the whole process being more coordinated by cities or state institutions.

There are also differences in the area of tourist use. In the Czech Republic, technical tourism is rather dispersed, for example in the form of educational trails along waterways, canals or rivers (Figure 3). In Taiwan, on the other hand, large concentrated units are being created, such as heritage parks or water culture parks (Figures 1 and 2), which concentrate the interpretation of water management heritage in one place and emphasize its cultural significance.



Fig. 2.: Information board with a plan of the entire water park area with links to still functional water treatment and distribution facilities for the urban agglomeration (Taipei, Taiwan).



Fig. 3: An example of a functional unit of water management systems with a flood control function, irrigation function and transport waterway (Pomoraví, Baťa Canal, Czech Republic), in which the social function (support and use within tourism) has gained importance.

## Discussion

In both countries, methods and ways of adapting and reusing unused industrial objects and complexes have been investigated (Li, Wang, 2025; Fetisov, 2015). In practice, two main ways of further use are distinguished for historical water management objects (mills, weirs, waterworks, dams, canals, pumping stations): (1) preservation or restoration of the water management function and (2) adaptive conversion to another purpose when the original function disappears or is significantly reduced. In the case of water management objects, approaches that lead to the preservation of the continuity of technology in the landscape are generally applied in the Czech Republic, while in Taiwan, approaches that transform the industrial past into a cultural and urban experience are generally applied.

## Conclusion

The approach to the new use of historical water management objects and their functional units in the Czech Republic and Taiwan differs in many respects, although both systems are based on a common goal, which is the preservation of Overall, it can be said that the Czech Republic applies a rather fragmented model of adaptation, where individual objects are incorporated into the current use independently and often retain part of their technical function and links to the landscape. On the contrary, Taiwan uses an area model, in which entire complexes are transformed at once with an emphasis on cultural, social and touristic effects. Both approaches are functional, but differ in the degree of continuity on the one hand and the degree of transformation on the other.

## Acknowledgement

The article was created with the TGM WRI internal grant support (Institutional Research Support, Department 250) as part of the sustainability of the research project DG18P02OVV019 NAKI II Ministry of Culture of the Czech Republic „Historical water management objects, their value, function and significance for the present“.

## References

- Fetisov, O. (2015). Adaptive reuse for new social and municipal functions as an acceptable approach for conservation of industrial heritage architecture in the Czech Republic. *The Civil Engineering Journal*, No. 1, 2015. Doi: 10.14311/CEJ.2015.01.0001
- Li, X. Wang, Y. (2025). Adaptive reuse of industrial heritage sites for sustainable urban development. *Sustainability* [online]. 2025, 12(19), 8054.
- Ryšková, M., Dzuráková, M. et al. (2022). *Methodology for Classification and Evaluation of the Industrial Heritage from the Perspective of Heritage Management - Water Management*. edition: first, Brno: TGM WRI, pp. 382, research for practice, vol. 1. ISBN 978-80-88484-02-8.

## Souhrn

Ochrana, zachování a využití průmyslového dědictví, kam patří i vodohospodářská zařízení a jejich systémy, patří mezi hlavní oblasti péče o historické budovy a památky po celém světě. Účelem článku je porovnat přístupy k možnému využití dochovaných nebo rekonstruovaných historických vodohospodářských zařízení a jejich vybavení (nejen samotných budov, prostor komplexů zařízení, ale i strojů, nástrojů pro provoz a údržbu atd.) v rámci rekreace obyvatel okolního prostředí a cestovního ruchu pro návštěvníky míst a oblastí, ve kterých se tato zařízení nacházejí. V mnoha případech se jedná o součást druhotného využití, kdy původní funkce zařízení skončila. V některých případech je nutné vyvážit požadavky na zachování definované funkčnosti s potřebou prezentace tohoto historického dědictví, jejímž účelem je také podpora povědomí o oblasti vodohospodářství, souvisejícím průmyslu a historickém vývoji oblasti. Článek vychází z výzkumu lokalit v České republice a na Tchaj-wanu.

## Contact:

Ing. Miloš Rozkošný, Ph.D.  
E-mail: milos.rozkosny@vuv.cz

Open Access. This article is licensed under the terms of the Creative Commons Attribution 4.0 International License, CC-BY 4.0 (<https://creativecommons.org/licenses/by/4.0/>)

