

Legal recognition of rainwater harvesting rights: A comparative study between the United States and the European Union

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Abstract---Global interest in rainwater harvesting is steadily increasing as a sustainable approach to enhancing water security and mitigating the impacts of floods and droughts. This article seeks to analyze the legal status of the right to harvest rainwater within two distinct legal systems: the United States (a federal system based on state laws) and the European Union (a European regulatory framework with national applications). The descriptive-analytical and comparative methodologies were employed, relying on legislative texts (laws, decrees), executive regulations, judicial decisions, and academic studies issued between 2015–2025. The findings indicate that the United States suffers from significant legislative fragmentation among states and the absence of a federal framework expressly recognizing rainwater rights, whereas the European Union has taken regulatory steps in the field of treated water reuse but recognition of rainwater harvesting as an independent right remains a variable national matter. The study concludes that a tangible legal gap exists in both systems: the absence of a unified legal framework balancing the protection of traditional water rights with the promotion of sustainable harvesting mechanisms. The paper proposes legal frameworks for incorporating the “right to harvest rainwater” into water rights systems along with mechanisms for environmental protection and distributive justice.

Keywords---Rainwater right, Rainwater harvesting, Comparative law, United States, European Union.

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Introduction

1. General Background

Increasing hydrological variability due to climate change, rapid urban growth, and pressures on traditional water resources have driven public policies to seek local and sustainable solutions, most prominently rainwater harvesting. This simple and flexible technique enables consumers and institutions to collect rainwater for non-potable uses or, after suitable treatment, for potable consumption, thereby reducing pressure on supply networks and minimizing polluted runoff. At the same time, rainwater harvesting raises legal and regulatory challenges related to ownership of water resources, allocation priorities, protection of existing water rights, and public health.

2. Research Problem

While many studies have examined the technical and environmental aspects of rainwater harvesting, little attention has been given to the comparative legal dimension between systems with divergent institutional frameworks. This study therefore poses a novel question: How can a comparative legal framework be designed that recognizes the right to harvest rainwater while safeguarding traditional water rights, protecting public health and the environment, and ensuring distributive justice among users within the context of the U.S. federal system and the EU's multi-level governance system?

3. Literature Review

- **Krouse (2025):** Conducted an analytical study of rainwater harvesting in the United States, underscoring disparities among states and their implications for water and environmental management. The study concluded that the lack of a unified framework leads to substantial variation in the benefits realized from harvesting programs.
- **Bretsen (2018):** Focused on Colorado's experience, analyzing the challenges of reconciling traditional water rights with modern rainwater harvesting practices. The study revealed that this tension continues to obstruct the development of sustainable policies.
- **Raimondi et al. (2023):** Provided a comprehensive review of scientific literature on rainwater harvesting and treatment, emphasizing that technological progress alone is insufficient without accompanying policies, standards, and public awareness.
- **Radonic (2019):** Examined the social and political dimensions of rainwater harvesting programs in the U.S. Southwest, concluding that effectiveness depends heavily on community participation, economic incentives, and an expanded conception of "conservation."
- **Alam et al. (2022):** Studied community-level models with a focus on justice and sustainability, showing that participatory governance and incentive design are crucial for equitable distribution of benefits.
- **Holland-Stergar (2018):** Offered a comparative analysis of rainwater harvesting policies across the United States, Australia, and India, demonstrating the potential for diverse legal models to inform flexible regulatory approaches.

4. Research Gap

The literature highlights two intertwined gaps:

1. The absence of a comparative legal analysis offering a normative conception of the right to rainwater harvesting that integrates environmental, constitutional, and administrative considerations.
2. The scarcity of actionable proposals tailored to federal and confederal systems.

These gaps limit legislators' capacity to adopt balanced solutions, underscoring the necessity of this article in enriching legal discourse and producing outputs capable of legislative adaptation.

5. Contribution of the Study

The contribution of this article lies in:

- Presenting a comparative analysis of U.S. and EU frameworks (laws, decrees, pilot programs, judicial rulings).
- Proposing a rights-based definition of the “right to rainwater harvesting,” including its conditions (volumes, environmental safeguards, potential compensation).
- Offering practical policy recommendations for reconciling traditional water rights with the promotion of sustainable solutions.

6. Methodology

This study adopts two complementary approaches:

- **Descriptive-analytical method:** Reviewing legislative texts (laws, decrees, regulations), governmental reports, and academic sources.
- **Comparative method:** Examining the U.S. federal system (state laws, precedents, pilot projects) against the EU’s multi-level framework (EU regulations, national and regional applications).

Chapter One: The Legal Framework of Rainwater Harvesting in the United States of America

1. General Framework and Distinctive Features

The American legal system grants broad authority to individual states in managing their water resources. As a result, rules governing rainwater harvesting vary considerably between **riparian states**—which base rights on land adjacency to water bodies—and **prior appropriation states** in the West, which allocate rights according to a “first in time, first in right” principle (Dellapenna, 2011).

Within this context, rainwater is often categorized as “**diffused surface water**” until it enters a defined watercourse or undergoes a transformation altering its natural state. This categorization raises legal ambiguities regarding the ownership of rainwater and whether it can be regulated as an independent right (Bretsen, 2018).

2. Legislative Examples (Selected States)

- **Colorado:** Historically one of the most restrictive states, Colorado long feared that rainwater harvesting would conflict with the rights of farmers and senior appropriators. Consequently, the state imposed strict limitations, permitting only narrow pilot programs under statutory authorization. In subsequent years, limited reforms were introduced, allowing certain forms of harvesting under stringent conditions (Water Education Colorado, 2025; Bretsen, 2018; Colorado State Univ. Extension, 2025).
- **Washington:** The Department of Ecology issued interpretive policies affirming that collecting rainwater from rooftops for small-scale domestic uses does not require a water right, provided such collection does not divert flows from streams or negatively impact water sources (Krouse, 2025).
- **Texas:** In contrast, Texas has adopted a flexible model, with state legislation and local incentives encouraging household-level rainwater systems, subject to technical and public health requirements (Scott, 2014).

3. Selected Statutory Texts and Judicial Cases

Washington State Policy – Ecology Rainwater Policy (2019–2022):

“Collecting rainwater from roofs for small-scale use does not require a water right if it does not divert flow from streams or impact water sources.”

This text illustrates that such collection is not considered a vested legal right but is tolerated as long as it remains limited in scope and does not interfere with pre-existing water rights.

Colorado Revised Statutes – Title 37 (Water Law):

Statutory provisions prohibit rainwater collection that alters the natural flow in a manner inconsistent with senior rights unless expressly authorized.

This reflects the primacy of vested rights under the prior appropriation doctrine, subordinating rainwater harvesting to traditional entitlements.

Nebraska v. Colorado (litigation):

Court filings debated whether large-scale rainwater harvesting projects could constitute unlawful appropriation or injury to the rights of other states within shared basins. This case underscores the interstate implications of extensive harvesting and the judiciary's scrutiny in balancing competing rights and interests.

4. Constitutional Issues and Takings Claims

Legal scholarship discusses the potential for **takings claims** under the U.S. Constitution if states impose restrictions or confer privileges concerning rainwater harvesting, especially in the western states where water rights are treated as constitutionally protected property interests (Bretsen, 2018). In addition, experimental programs for large-scale harvesting have sparked constitutional disputes and conflicts between water districts and users (Nebraska v. Colorado; Water Education Colorado, 2025).

5. Partial Conclusion on the U.S. Framework

The U.S. framework is characterized by procedural flexibility yet deeply rooted in strong historical water rights doctrines. The absence of a unified federal framework leads to wide disparities in protection and regulatory conditions across states, generating legal risks for large-scale expansion of rainwater harvesting technologies. Without adequate mechanisms for compensating adversely affected rights, a nationwide recognition of a “rainwater right” remains difficult to achieve.

Chapter Two: The Legal Framework in the European Union and at the Level of Member States**1. The General European Framework: From Water Reuse to Rainwater Harvesting**

The European Union has adopted a clear regulatory approach regarding the **reuse of treated water**, most notably through **Regulation (EU) 2020/741**, which establishes minimum requirements for the agricultural reuse of treated wastewater (EU, 2020). This regulation emphasizes quality assurance and risk management but does not explicitly define a “rainwater right.” Rainwater harvesting is therefore often addressed within the scope of urban planning, environmental law, and national or regional legal frameworks (EPA, 2023; Water-Reuse Europe, 2023).

2. Recent National and Regional Legislative Developments (Examples)

- **France:**

Decree No. 2023-835 of 29 August 2023 simplified the procedures and conditions for rainwater use. It introduced provisions to streamline licensing processes and integrated rainwater use into environmental and public health law under certain conditions (Décret n°2023-835, 2023; Gossement, 2023).

- **Flanders (Belgium):**

The Flemish region adopted new regulations (effective 2 October 2023) requiring, in the context of major building or renovation works, the installation of rainwater collection systems. The decree also set minimum tank capacities and specified allowable household uses (Flemish Government, 2023; Brusselstimes, 2023).

- **Germany, the Netherlands, and others:**

Several states have implemented local policies that promote green infrastructure, rainwater harvesting, and local storage solutions. However, details vary significantly depending on national law and public health and environmental standards.

3. Balancing Public Health, Environmental Protection, and Local Empowerment

The European approach places strong emphasis on **technical and health regulation**—quality standards, risk assessments, and monitoring—before authorizing widespread use of rainwater or reclaimed water. This cautious regulatory stance aims to safeguard public health while simultaneously encouraging innovation (EU, 2020; EPA, 2023).

4. Partial Conclusion on the EU Framework

The European Union has taken meaningful steps toward regulating water reuse and integrating rainwater management into urban planning and environmental policies at national and regional levels. However, explicit recognition of rainwater harvesting as an **independent legal right** remains fragmented and inconsistent. Member states differ widely in how they address rainwater harvesting, reflecting local traditions, regulatory cultures, and environmental priorities.

Chapter Three: Comparative Analytical Assessment between the Two Systems

1. Main Axes of Comparison

- **Nature of Legal Recognition:**
 - United States — Characterized by interstate and regional variation, with no explicit federal recognition of a rainwater right.
 - European Union — Practical and health-oriented regulation at the EU and member state levels, but without a unified rights-based definition. (Krouse, 2025; EU, 2020)
- **Legal Risks:**
 - United States — Potential for constitutional **takings claims** and conflicts with entrenched water rights, particularly in the West.
 - European Union — Greater focus on public health and urban planning, with fewer risks relating to private property rights. (Bretsen, 2018; Décret n°2023-835, 2023)
- **Implementation Mechanisms:**
 - United States — State-level statutes, judicial claims, and experimental pilot programs.
 - European Union — EU regulations (on water reuse) complemented by national and regional decrees (e.g., France, Flanders). (Water Education Colorado, 2025; Flemish Government, 2023)

2. Analytical Comparison

Axis	United States	European Union
Recognition of Rainwater Right	Absent at the federal level; varies across states	Absent at EU level; fragmented across national and regional laws
Legal Nature	Rooted in historic property-based doctrines (Riparianism / Prior Appropriation) that often conflict with harvesting	Primarily regulatory and technical in character, focused on public health and environmental protection
Legal Risks	Potential constitutional “takings” claims and conflicts with prior users	Lack of recognition as an autonomous right minimizes litigation risks
Public Health	Less regulatory emphasis compared to the EU	Strict standards on quality and safety
Incentives and Policies	Some states provide incentives (e.g., Texas)	Some member states mandate systems or provide incentives (e.g., France, Belgium)

3. Points of Convergence

Both systems recognize the environmental and economic benefits of rainwater harvesting. Both also face challenges relating to public health, basin management, and the need to integrate stormwater management with water allocation systems.

4. Points of Divergence

The key divergence lies in the foundational legal approach:

- The **United States** frames rainwater harvesting primarily as a matter of property rights, deeply influenced by the historical distribution of water entitlements.
- The **European Union** frames the issue largely as a **technical and public health matter**, integrated into environmental and planning law, rather than a rights-based entitlement.

Discussion of Findings (in Light of Previous Studies)

- **Convergence with Krouse (2025):**
The findings confirm Krouse’s observation that the United States lacks a clear federal framework. Any adoption of a “rainwater right” would raise significant issues regarding judicial enforcement and compensation for vested rights.
- **Convergence with Bretsen (2018):**
The study reinforces Bretsen’s warning about the potential for constitutional **takings claims** in the American West, should traditional allocations be altered without proper compensatory mechanisms.
- **Extension of Regulation (EU) 2020/741:**
While the EU regulation focuses on the reuse of treated wastewater, this article demonstrates the need for the EU framework to expand toward providing explicit guidance on rainwater harvesting as a tool for demand management and local empowerment.
- **Divergence from purely technical-environmental research:**
Unlike prior works focusing solely on technological or economic aspects (Pandey et al., 2003; Steffen et al., 2013), this study emphasizes the **legal architecture** as a necessary condition for scaling up rainwater harvesting practices.

Proposed Rights-Based Framework (Guiding Principles)

Based on the comparative analysis, the following principles are proposed for integrating the “right to rainwater harvesting” within existing water law frameworks:

1. **Graduated Legal Definition:**
Define the “right to rainwater harvesting” as a **qualified and conditional right** (non-absolute), allowing landowners to collect rainwater within set volumetric or functional limits that do not harm public water values.
2. **Basin-Level Restrictions:**
Prohibit or restrict rainwater harvesting in ways that negatively affect surface water rights within a given basin. Require environmental impact assessments before licensing in sensitive basins.
3. **Compensation and Market Mechanisms:**
Establish mechanisms for compensation or tradable quotas (e.g., water banking) when large-scale harvesting demonstrably interferes with existing rights.
4. **Safety and Quality Standards:**
Adopt technical and health standards for storage and use, drawing from Regulation (EU) 2020/741 and public health practices.
5. **Incentives and Parallel Policies:**
Provide financial or tax incentives for installing harvesting systems, coupled with requirements for reducing runoff and supporting groundwater recharge.

6. Multi-Level Governance:

Empower local authorities to regulate technical details, while regional and national bodies establish overarching protective principles.

Conclusion

This article began with the premise that the absence of a unified legal framework for rainwater harvesting hampers the mainstreaming of sustainable practices and generates conflicts between entrenched water rights and sustainability imperatives. Through a comparative analysis of U.S. and EU frameworks, the study proposed guiding principles for embedding a “rainwater right” in ways that balance legal protection with environmental imperatives.

Key Findings:

1. The United States requires either a flexible federal framework or guiding principles to be applied by states, coupled with compensation mechanisms for affected rights holders.
2. The European Union could expand its regulatory approach beyond technical water reuse to explicitly address rainwater harvesting as part of sustainable water governance.
3. Both systems would benefit from **multi-level governance frameworks** capable of balancing traditional rights with innovative sustainability measures.

Sources and Limitations:

The study relied on legislative texts, official government sources, EUR-Lex documents, peer-reviewed scholarship, and institutional reports (2015–2025). Limitations include uneven availability of state- and country-level data.

Contribution:

The article contributes by offering an updated comparative analysis and a practical rights-based proposal that can serve as a blueprint for legislative reforms and policy design at both national and regional levels.

Recommendations for Future Research:

- Empirical basin-level studies quantifying the impact of rainwater harvesting on existing withdrawal rights.
- Legal-economic analyses of compensation mechanisms (e.g., water banking, quota leasing).
- Expanded comparative research incorporating developing countries to test the generalizability of the proposed framework.
- Long-term public health assessments of household uses of harvested rainwater.

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