



The Hague International Model United Nations

Forum: EVC2

Issue: Developing individualized approaches to effective water management in order to secure access to clean freshwater resources

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Introduction

Water, a fundamental resource essential for all life, is facing unprecedented strain and becoming an increasingly scarce commodity. The converging pressures of exponential global populations, shifting climate patterns exacerbated by human activity, and rapid industrial expansion have dramatically surged the demand for clean freshwater. Traditional, "one-size-fits-all" approaches to water management, often implemented with little regard for local contexts, are demonstrably insufficient to address the complex and diverse challenges posed by this growing scarcity. This paper argues that developing individualized, context-specific strategies is crucial for effectively managing water resources and ensuring their sustainable availability for future generations.

Water scarcity is not merely an environmental concern; it is a global crisis with far-reaching and devastating implications for human health, food security, economic

development, and geopolitical stability. Consider the stark reality: according to the World Health Organization (WHO), approximately 2 billion people lack access to safely managed drinking water services, and contaminated water can transmit diseases such as cholera, typhoid, and diarrhea, contributing to an estimated 485,000 diarrheal deaths each year. These health repercussions disproportionately affect vulnerable populations, particularly in developing nations, perpetuating cycles of poverty and hindering social progress.

Historically, control over water resources has been a source of both cooperation and conflict. From ancient civilizations relying on irrigation systems along the Nile and the Tigris-Euphrates rivers to modern-day disputes over transboundary water sources like the Mekong or the Nile, access to water has shaped political landscapes and influenced power dynamics. Water scarcity can be weaponized as a tool to exploit or maintain inequality between nations. For example, upstream countries controlling river flows can exert significant leverage over downstream nations dependent on that water source for agriculture, industry, and basic human needs, potentially leading to political instability and even conflict. This has been seen in various regions, where dam construction or diversion projects have sparked tensions between neighboring countries. Furthermore, water scarcity can exacerbate existing social inequalities within nations, with marginalized communities often victims of inadequate access to clean water and sanitation.

Historically, water management has often been approached in a fragmented manner, with different sectors competing for water resources, leading to inefficient and unsustainable practices. However, the growing recognition of the interconnectedness of water, land, and ecological systems has prompted a shift towards more integrated approaches, albeit often without sufficient local adaptation.

By adopting individualized water management strategies, tailored to the specific hydrological, social, economic, and environmental conditions of each region, we can optimize water use, minimize environmental impact, enhance resilience to climate change, and mitigate the potential for conflict. This report will explore the key principles and practical applications of this individualized approach, drawing on real-world examples to illustrate their effectiveness and highlighting the urgent need for a paradigm shift in how we manage this precious resource.

Definition of key terms

Individualized Water Management:

Tailoring water management strategies to specific regions or communities, considering their unique hydrological, climatic, social, and economic conditions.

Example: Implementing rainwater harvesting systems in arid regions and advanced wastewater treatment plants in urban areas.

Water Scarcity:

A condition where the demand for water exceeds the available supply.

Example: California's periodic droughts, leading to water restrictions and rationing.

Water Security:

Ensuring sustainable access to adequate quantities of clean water for human consumption, agriculture, industry, and ecosystems.

Example: Australia's investments in desalination plants to secure water supplies during droughts.

Integrated Water Resources Management (IWRM):

A holistic approach to water management that considers all relevant factors, such as social, economic, and environmental aspects.

Example: The Murray-Darling Basin Plan in Australia, which aims to balance the needs of agriculture, environment, and urban areas.

Climate Change:

Long-term shifts in global or regional climate patterns.

Example: Rising global temperatures leading to more frequent and intense droughts and floods.

Sustainable Water Use:

Using water resources in a way that meets present needs without compromising future generations' ability to meet their own needs.

Example: Implementing efficient irrigation techniques to reduce water consumption in agriculture.

Water Conservation:

Reducing water consumption through various methods, such as fixing leaks, using water-efficient appliances, and practicing water-saving habits.

Example: Implementing water-saving measures in households and industries.

Water Efficiency:

Using water resources wisely and minimizing waste.

Example: Installing low-flow showerheads and toilets to reduce water usage.

Water Quality:

The chemical, physical, and biological characteristics of water, determining its suitability for various uses.

Example: Treating wastewater to remove pollutants before discharging it into water bodies.

Water Governance:

The systems of rules, institutions, and practices that shape how water is allocated, used, and managed.

Example: The establishment of water user associations to collaboratively manage shared water resources.

Water Infrastructure:

The physical systems and facilities, such as dams, canals, and pipelines, used to store, transport, and distribute water.

Example: Building reservoirs to store water for future use.

Water Footprint:

The total volume of freshwater used to produce goods and services.

Example: The water footprint of a cotton t-shirt includes the water used for cotton cultivation, textile production, and garment manufacturing.

Blue and Green Water:

Blue water: Water extracted from surface or groundwater sources.

Green water: Water stored in the soil and used by plants.

Example: Rice cultivation uses both blue water for irrigation and green water for soil moisture.

Background information on the topic

Origin of the crisis

The global water crisis is a multifaceted challenge with several interconnected origins. Rapid population growth places increasing strain on water resources as demand rises for domestic, agricultural, and industrial uses. Climate change exacerbates this issue through shifting weather patterns, leading to more frequent and intense droughts and floods, which disrupt water availability and increase water stress. Pollution from industrial, agricultural, and urban sources contaminates water sources, reducing their quality and availability for human consumption and ecological health. Furthermore, inefficient water use practices, such as outdated irrigation techniques, leaky infrastructure, and wasteful consumption habits, contribute significantly to water scarcity.

The scale of the problem

The scale of the global water crisis is alarming. Over two billion people currently reside in countries experiencing water scarcity, and this number is projected to increase significantly. By 2025, it is estimated that half of the world's population could be living in water-stressed areas. Access to safe drinking water remains a significant challenge for millions, leading to the spread

of waterborne diseases and increased mortality rates. The economic consequences of water scarcity are severe, impacting agricultural productivity, industrial output, and overall economic growth.

Previous attempts to solve the crisis

Various approaches have been implemented to address the water crisis. Infrastructure development, such as the construction of dams, reservoirs, and water treatment plants, aims to improve water storage and supply. Water conservation efforts, including the promotion of water-saving technologies like drip irrigation and efficient appliances, play a crucial role in reducing water consumption. Policy and regulatory measures, such as water use regulations, pricing mechanisms, and environmental standards, are essential for sustainable water management. International cooperation is vital for sharing knowledge, technology, and resources to address this global challenge effectively.

Major developments and future outlook

Recent years have witnessed significant developments in water management. Technological advancements in desalination, water treatment, and irrigation technologies offer promising solutions to water scarcity. A growing emphasis on sustainable water management practices, such as integrated water resource management (IWRM), has emerged, promoting a holistic approach to water resource planning and management. Addressing climate change is crucial for mitigating the impacts on water resources and ensuring long-term water security.

Despite these advancements, significant challenges remain. Securing adequate funding for water infrastructure development and sustainable water management initiatives is a major obstacle. Effective water governance is essential to ensure equitable access to water resources and their sustainable use. Raising public awareness about water scarcity and promoting water conservation practices among individuals and communities is crucial for long-term solutions.

Major parties involved and their views

China

Stance: China has a complex relationship with water, facing issues of both water scarcity and waterlogging. The country has invested heavily in water infrastructure projects, such as the South-North Water Transfer Project, to address regional water imbalances.

Actions: China has implemented strict water conservation measures and has been actively involved in international water cooperation, particularly in the context of transboundary river basins.

India

Stance: India faces significant water challenges, including water scarcity, pollution, and inefficient water use. The government has launched several initiatives to address these issues, such as the National Water Mission and the Pradhan Mantri Krishi Sinchayee Yojana.

Actions: India has invested in water infrastructure, promoted water conservation practices, and implemented policies to improve water governance.

United States

Stance: The US has a diverse water landscape, with regions facing both water scarcity and water abundance. The country has a long history of water management, with federal agencies like the Environmental Protection Agency (EPA) and the U.S. Bureau of Reclamation playing key roles.

Actions: The US has implemented various water policies, including the Clean Water Act and the Endangered Species Act, to protect water quality and aquatic ecosystems.

European Union (EU)

Stance: The EU has a comprehensive water policy framework, including the Water Framework Directive, which aims to achieve good ecological status for all water bodies. The EU has also been active in international water cooperation, particularly in transboundary river basins.

Actions: The EU has invested in water infrastructure, promoted water efficiency, and supported research and innovation in water management.

Brazil

Stance: Brazil, with its vast water resources, faces challenges related to water quality, pollution, and deforestation. The country has implemented various policies to protect its water resources and promote sustainable water use.

Actions: Brazil has established protected areas, implemented water quality standards, and promoted sustainable agriculture practices to conserve water resources.

These are just a few examples of major countries involved in water management. Other countries, such as Australia, South Africa, and countries in the Middle East, also face significant water challenges and have implemented various strategies to address them.

Timeline of events

Date	Description of event
March, 14-25 th , 1977	UN water conference, a landmark event that marked the first global recognition of the growing water crisis. It brought together nations to discuss and address the challenges posed by water scarcity, pollution, and inefficient water use.
November, 10 th , 1980	The International Drinking Water Supply and Sanitation Decade, a global initiative aimed at providing access to safe drinking water and basic sanitation facilities to all people.
January, 26-31 st , 1992	The International Conference on Water and the Environment, It produced the Dublin Statement on Water and Sustainable Development , which outlined four key principles that continue to guide water policy and management worldwide. (1) Water is a finite and vulnerable resource, essential to sustain life, development and the environment;

	<p>(2) Water development and management should be based on a participatory approach, involving users, planners and policymakers, at all levels;</p> <p>(3) Women play a central part in the provision, management and safeguarding of water;</p> <p>(4) Water has an economic value in all its competing uses and should be recognized as an economic good (United Nations Publication, 2013).</p>
June,3-14 th ,1992	The Earth Summit, or the United Nations Conference on Environment and Development, laid the foundation for sustainable development, which inherently involves water
March,22-24 th ,2023	UN water conference, renewed global commitment to water security and sustainable water management, conference adopted a comprehensive Water Action Agenda, which outlines a set of voluntary commitments to accelerate the implementation of SDG 6.
2024	The SDG 6 Data Report Meeting 2024 is an annual event where experts and stakeholders gather to review the latest data on water and sanitation
September,20-23 rd ,2024	global event aimed at addressing pressing global challenges, including water scarcity and pollution. The summit brought together world leaders, experts, and civil society to discuss solutions and mobilize action.
2025	The World Social Summit, while not specifically focused on water, has relevance to water-related issues due to its emphasis on social justice, equity, and sustainable development.

UN involvement, relative resolutions, treaties & events

Recent milestone agreements include the 2030 Agenda for Sustainable Development, the 2015-2030 Sendai Framework for Disaster Risk Reduction, the 2015 Addis Ababa Action Agenda on Financing for Development, and the 2015 Paris Agreement within the UN Convention Framework on Climate Change.

UN Resolutions and Declarations

- *Human Right to Water and Sanitation (2010)*
- **Date:** July 28, 2010
- **Resolution Number:** A/RES/64/292

This resolution formally recognized the human right to water and sanitation, emphasizing the essential role of water in human dignity and well-being. It called upon states to take steps to realize this right for all.

- *Sustainable Development Goals (SDGs)*
- **Date:** September 25, 2015
- **Resolution Number:** A/RES/70/1

SDG 6 specifically targets "Ensuring availability and sustainable management of water and sanitation for all." This goal aims to improve water quality, reduce water scarcity, and increase water use efficiency.

While some progress has been made towards SDG 6, it is not on track to be met by 2030. For example, between 2000 and 2015, the proportion of the global population using safely managed drinking water sources increased, but this progress has slowed, and significant disparities remain. Access to safe water has improved, but the number using safely managed sources has not increased at the same pace. Progress on sanitation has been slower than for drinking water. Water use efficiency has increased in some sectors, but overall progress is insufficient. Progress on implementing Integrated Water Resource Management (IWRM) has been slow, with many countries lacking the necessary frameworks and capacities. The overall picture of progress on SDG 6 is complex and varies significantly across regions and countries.

UN Water Conference 2023

This conference brought together governments, civil society, and the private sector to address the global water crisis. It led to the adoption of a comprehensive framework for action, including the UN System-wide Strategy for Water and Sanitation.

The UN System-wide Strategy for Water and Sanitation aims to improve coordination and delivery of water and sanitation priorities across the UN system. By fostering collaboration between UN agencies, it can potentially lead to more efficient resource allocation, avoid duplication of efforts, and offer more comprehensive support to countries in their efforts to achieve SDG 6. The SWS emphasizes equity and inclusivity, potentially leading to greater attention to the needs of marginalized and vulnerable populations. By promoting partnerships with governments, civil society, and other stakeholders, the SWS can strengthen collaboration and increase impact. However, as a relatively new initiative, its full impact will require further monitoring and evaluation.

UN Agencies and Programs

UN Water This inter-agency coordination mechanism brings together UN agencies, programs, and funds to address water-related issues. It promotes integrated water resources management, water efficiency, and equitable access to water.

World Health Organization (WHO) WHO focuses on improving global health through safe water, sanitation, and hygiene. It works to reduce waterborne diseases and promote healthy water practices.

United Nations Environment Programme (UNEP) UNEP addresses environmental issues related to water, including water pollution, water scarcity, and climate change. It promotes sustainable water management and ecosystem conservation.

Regional Organizations and Initiatives

African Ministers' Council on Water (AMCOW): This African Union specialized technical committee promotes sustainable water management in Africa. It focuses on water security, climate change adaptation, and transboundary water cooperation.

European Union Water Framework Directive: This directive establishes a framework for protecting and improving the quality of European waters. It aims to achieve good ecological status for all water bodies.

Asian Development Bank (ADB): The ADB supports water resource management projects in Asia and the Pacific, including water supply, sanitation, irrigation, and flood management.

UN 2023 Water Conference

Held in New York from March 22-24, 2023. The first UN Water Conference in nearly 50 years. Focused on accelerating the implementation of SDG 6: Ensure availability and sustainable management of water and sanitation for all. Adopted the Water Action Agenda, a set of voluntary commitments to achieve water-related SDGs.

UN System-wide Strategy for Water and Sanitation

Launched in July 2024. Provides a framework for UN agencies to coordinate their efforts on water and sanitation. Aims to strengthen the coherence and impact of UN water-related activities.

Other Relevant UN Events and Initiatives:

World Water Day: Celebrated annually on March 22nd to raise awareness about the importance of water.

High-Level Political Forum on Sustainable Development (HLPF): An annual UN forum where member states review progress on the SDGs, including SDG 6.

UN Climate Change Conferences (COPs): Climate change has significant impacts on water resources, and COPs often address water-related issues.

UN Environment Assembly (UNEA): This assembly discusses global environmental issues, including water pollution and water scarcity.

Previous attempts to resolve the issue

International Community and UN Efforts

UN Water Conference 2023: This conference aimed to accelerate the implementation of SDG 6, focusing on water security and sanitation. It highlighted the need for increased investment, technological innovation, and international cooperation.

Sustainable Development Goals (SDGs): SDG 6 specifically targets water and sanitation, emphasizing the importance of equitable access to clean water and sanitation services.

UN Water: This inter-agency coordination mechanism brings together UN agencies to address water-related issues. It promotes integrated water resources management, water efficiency, and equitable access to water.

Regional Initiatives

European Union Water Framework Directive: This directive sets standards for water quality and aims to achieve good ecological status for all water bodies.

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Evaluation of Past Efforts:

While significant strides have been made in addressing global water challenges, several persistent issues continue to hinder progress:

Funding Gaps

Underinvestment in water infrastructure is a significant challenge in many developing countries. These countries often lack the financial resources to invest in essential projects such as dams, pipelines, and treatment plants. Furthermore, water infrastructure often competes with other pressing needs, such as healthcare and education, for limited government budgets. High levels of debt can further constrain a country's ability to invest in water projects, diverting resources towards debt servicing.

Inefficient Water Use

Outdated irrigation techniques, such as flood irrigation, can be highly inefficient, leading to significant water losses through evaporation and runoff. Leaky infrastructure, including aging pipes and canals, can also result in substantial water losses during distribution. Furthermore, water-intensive industries, such as agriculture and manufacturing, can consume large amounts of water, particularly in regions facing water scarcity, exacerbating water stress.

Climate Change Impacts

Climate change significantly impacts water resources. Altered rainfall patterns, such as increased frequency of droughts and floods, disrupt water availability and quality. Rising temperatures increase water demand for various sectors, while also accelerating evaporation rates. Sea-level rise poses a significant threat, particularly in coastal areas, as it increases the risk of saltwater intrusion into freshwater sources, contaminating drinking water supplies and damaging ecosystems.

Political Instability and Conflict

Conflicts have a devastating impact on water resources. Disrupted water infrastructure, such as damaged pipelines and treatment plants, can lead to water shortages and sanitation problems. Displacement and migration caused by conflict often limit access to safe water and sanitation services for vulnerable populations. Furthermore, water resources themselves can be used as a weapon of war or a tool for political leverage, exacerbating tensions and hindering conflict resolution.

Addressing these challenges requires a multi-faceted approach, including:

Increased investment is crucial for addressing the global water crisis. Investing in water infrastructure, such as improving water supply and treatment systems, is essential.

Additionally, research and development in water technologies are vital for finding innovative solutions to water scarcity and pollution.

Strengthening water governance institutions is crucial for effective water management. Promoting participatory decision-making processes ensures that all stakeholders, including local communities, have a voice in water management decisions.

Adopting water-saving technologies and practices is essential for sustainable water use. Implementing measures like drip irrigation and rainwater harvesting can significantly reduce water consumption in agriculture and households.

Climate change adaptation and mitigation strategies are vital for ensuring water security in the face of a changing climate. Reducing greenhouse gas emissions is crucial for mitigating the impacts of climate change on water resources, such as increased frequency and intensity of droughts and floods.

International cooperation is necessary for addressing transboundary water issues and sharing best practices. Collaborating with other countries allows for the exchange of knowledge, technology, and resources, leading to more effective and sustainable water management solutions.

Raising public awareness about the importance of water conservation and sustainable water use is crucial for fostering individual and collective action. Educating the public on water-saving practices and the importance of protecting water resources empowers individuals to make informed choices and contribute to sustainable water management.

Possible solutions

Improved Water Management

Improved water management involves a holistic approach to managing water resources effectively and sustainably. This encompasses strategies such as Integrated Water Resource Management (IWRM), which considers all aspects of water use, including supply and demand,

quality, allocation, conservation, and environmental protection. It also involves infrastructure development, technological advancements, policy and governance frameworks, and public awareness and participation. Successful implementation requires strong political will, a sound legal and institutional framework, adequate financial resources, reliable data and information, and active public engagement.

Improved water management offers several benefits, including increased water security by ensuring a reliable water supply, reduced water scarcity by optimizing water use, and environmental protection by safeguarding ecosystems. However, challenges remain. Implementing new technologies and infrastructure can be costly, requiring significant upfront investment. Strong political will and effective governance are crucial for the successful implementation and enforcement of water management policies. Furthermore, water scarcity can exacerbate conflicts between different users, particularly in regions with shared water resources.

Climate Change Mitigation and Adaptation

Climate change mitigation and adaptation are crucial strategies for addressing the challenges of a warming planet. Mitigation focuses on reducing greenhouse gas emissions to limit the extent of climate change, which involves transitioning to renewable energy sources, improving energy efficiency, and promoting sustainable land use practices. Adaptation involves adjusting to the inevitable impacts of climate change, such as developing drought-resistant crops, building seawalls to protect against rising sea levels, and implementing early warning systems for extreme weather events. Both mitigation and adaptation are essential for building a climate-resilient future.

Climate change mitigation and adaptation offer several benefits for water resources. Mitigating climate change by reducing greenhouse gas emissions can help reduce the frequency and intensity of extreme weather events like droughts and floods, thereby reducing water stress. Adaptation measures, such as rainwater harvesting and efficient irrigation techniques, can help secure water supplies even in the face of changing climate patterns. Furthermore, climate change mitigation efforts, such as transitioning to renewable energy sources, can have broader environmental benefits beyond water resources. However, challenges remain. Addressing climate change requires significant international cooperation and coordinated efforts among nations. Climate change mitigation and adaptation strategies often

require long-term planning and sustained investment. Additionally, some climate change mitigation measures, such as large-scale biofuel production, can have unintended consequences on water resources, such as increased water demand and competition for land.

Pollution Control and Water Quality Improvement

Pollution control and water quality improvement involve a range of strategies aimed at reducing pollution and restoring the health of water bodies. This includes wastewater treatment, which removes pollutants from sewage and industrial wastewater before it is discharged into rivers, lakes, or the ocean. Industrial pollution control measures, such as implementing pollution prevention techniques and using cleaner technologies, help reduce the release of harmful substances into the environment. Additionally, agricultural best management practices, such as cover cropping and reduced tillage, can minimize nutrient runoff and soil erosion, thereby improving water quality. These strategies, combined with effective monitoring and enforcement of environmental regulations, are crucial for protecting water resources and ensuring their long-term sustainability.

Pollution control and water quality improvement offer numerous benefits. Clean water is essential for human health and well-being, reducing the risk of waterborne diseases. Healthy aquatic ecosystems, supported by clean water, maintain biodiversity. Clean water can also boost economic activities, such as tourism and agriculture. However, challenges remain. Implementing stringent pollution control measures can be expensive, requiring significant investments in infrastructure and technology. Enforcing environmental regulations can be difficult, particularly in developing countries. Furthermore, pollution can cross borders, making it challenging to address and requiring international cooperation to effectively manage transboundary pollution.

International Cooperation

International cooperation is crucial for developing effective water management strategies, particularly in securing access to clean freshwater resources. This is essential when water sources cross national borders, requiring collaborative efforts for equitable and sustainable use. Sharing knowledge and technology, mobilizing financial resources, and addressing the impacts of climate change on water resources often necessitate international cooperation.

Facilitating this cooperation involves building trust and partnerships, sharing knowledge and best practices, providing capacity building support to less developed countries, and mobilizing financial assistance. To ensure equitable participation, it is crucial to prioritize local needs and ownership, involve local communities in decision-making processes, establish transparent and accountable mechanisms, and invest in building the capacity of local stakeholders.

International cooperation offers several advantages in water management. It facilitates the exchange of knowledge and expertise among countries, enabling them to learn from best practices and adopt innovative solutions. Collaborative efforts are crucial for addressing complex water challenges, such as transboundary water management, where cooperation among multiple countries is essential. Additionally, international cooperation can mobilize financial resources and attract investments for water projects, particularly in developing countries. However, challenges remain. Political differences and geopolitical tensions can hinder effective cooperation. Concerns regarding national sovereignty over water resources may lead to resistance from some countries. Furthermore, coordinating efforts among multiple countries with diverse interests and priorities can be complex and time-consuming.

Public Awareness and Education

Public awareness and education are fundamental to fostering individual approaches to effective water management. By raising public consciousness about the importance of water conservation and sustainable water use, we can empower individuals to make informed choices and adopt water-saving habits. This can be achieved through various channels, including school curricula, community outreach programs, and targeted media campaigns.

For those in remote areas or with limited access to technology, alternative methods are crucial. Community radio programs can effectively disseminate information and engage communities in water conservation efforts. These programs can feature local experts, share success stories of water conservation, and provide a platform for community members to share their experiences and ask questions. Traveling exhibitions equipped with interactive displays and educational materials can bring water conservation information directly to remote communities. These mobile units can showcase the impacts of water scarcity, demonstrate

water-saving technologies, and provide hands-on activities for people of all ages. Furthermore, traditional storytelling and folk songs can be adapted to convey important messages about water conservation, making the information more accessible and culturally relevant to local communities. By utilizing these diverse approaches, we can ensure that everyone has the opportunity to learn about water conservation and become active participants in sustainable water management practices.

Public awareness and education offer several benefits for water management. Educating the public can promote water conservation and sustainable water use, leading to behavioral changes that reduce water consumption. Involving communities in water management decision-making processes can lead to more effective and equitable solutions. Furthermore, public awareness can mobilize support for water policies and investments, increasing political will for action. However, challenges remain. Reaching marginalized and underserved communities with limited access to education or information can be challenging. Changing people's habits and behaviors can be a slow process, requiring sustained efforts. Additionally, the effectiveness of education and awareness campaigns relies on strong education systems and access to information.

Possible solutions to be researched:

- Atmospheric water harvesting
- Fog nets
- Solar desalination plants
- Advanced leak detection
- Nano-enabled water treatment
- Wastewater mining

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Appendix

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