

# **DROUGHT MANAGEMENT FROM LEGAL AND TECHNICAL PERSPECTIVE IN HUNGARY**

**A DISCUSSION PAPER by János Fehér, GWP Hungary Foundation**



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## 1. INTRODUCTION

This report is prepared in the framework of the *Knowledge transfer in drought issues due to climate change for Armenia* project. The project is funded by the Visegrad Fund (Project ID 22220260). The lead organisation of the project is Global Water Partnership Central and Eastern Europe in collaboration with Global Water Partnership Poland, Country Water Partnership – Armenia, Global Change Research Institute CAS and Global Water Partnership Hungary Foundation.

The paper will discuss the Hungarian drought management from legal and technical perspective, but first, it is worth to overview, in brief, the integrated water management and integrated drought management concepts.

The basic concept of water management says: the water management is a planned scientific, technical, economic and administrative activity aimed at optimally coordinating the water balance of nature with the needs of society.

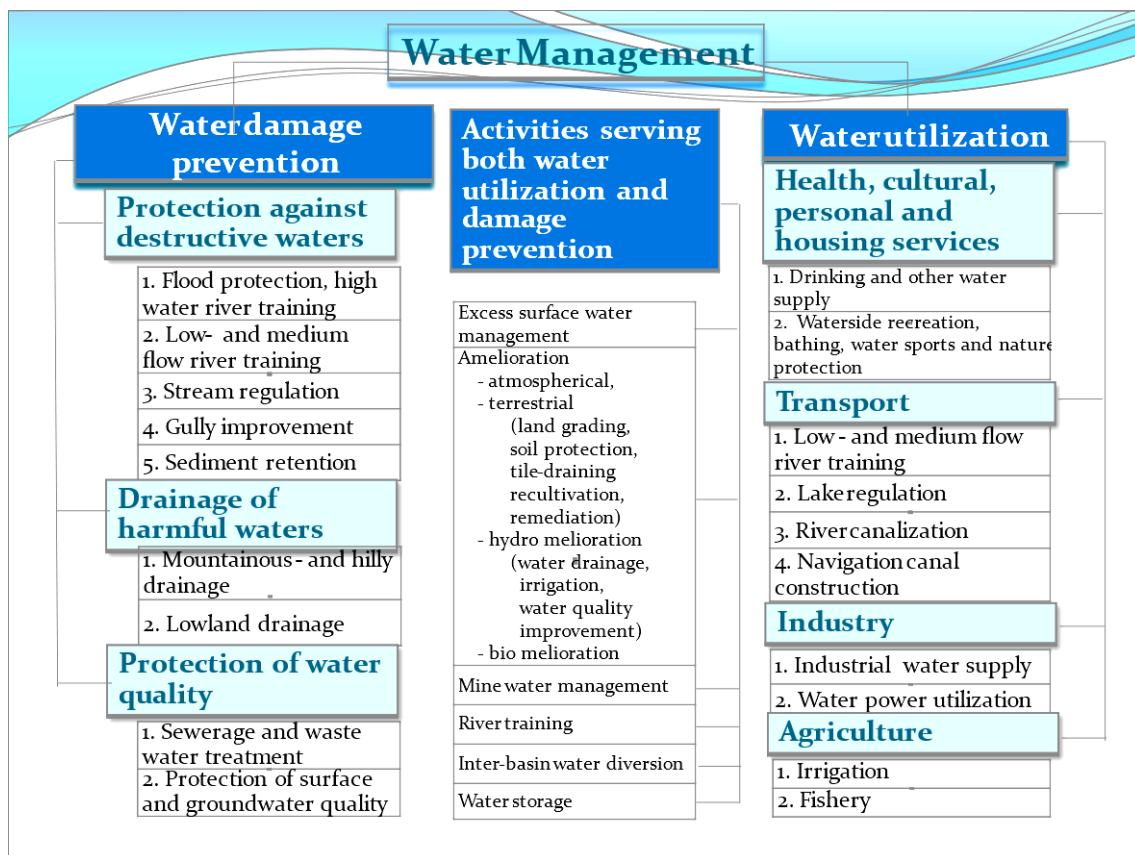
Taking into account the concept, the main tasks of water management are:

- Long-term management of water resources
- Extraction of water according to the justified demand (quantitatively, qualitatively) for
  - the population,
  - agriculture and
  - industry
- The best efficient use of extracted water, preferably multiple recycling
- Collection, treatment, cleaning of used water, and returning it to the natural cycle
- Quantitative and qualitative protection of natural waters
- Special aquatic ecosystems and habitats protection and maintenance
- Protection against water damage
- Regulation of runoff (river beds)
- Maintenance of waterways
- Water storage
- Facilitating the extraction of water energy and using hydropower
- For all this, various technical planning, construction and maintenance of facilities.

Water management activities can be divided based on the territorial principle.

The activity according to location	Water damage prevention	Water utilization
water management along rivers	river, lake and stream regulation; river, oxbow and lake management, flood protection	natural and artificial water way, hydropower utilization, water environment recreation
municipal water management	municipal water management water course and land management channelling, sewerage disposal and cleaning	municipal water supply, bath, swimming pool water use, hot water and medicinal water utilization
regional / territorial water management	inland water management, inland water drainage and inland water protection, agronomic water management, drainage, erosion protection	reservoir, irrigation, lake management, agricultural wastewater utilization

Water management activities can also be divided based on water damage prevention and water utilization tasks.



The management of drought and water shortage does not appear directly in the traditional water management classification system, but at the same time it affects most water management activities and tasks. It is now obvious that modern drought and/or water shortage management must be based on similar principles and practices as the integrated water resources management.

In the following chapter a short summary is given about the integrated water resources management method.

## 2. OVERVIEW OF THE INTEGRATED WATER RESOURCES MANAGEMENT

Integrated water resources management (IWRM) is a comprehensive approach to the sustainable development, allocation, and management of water resources in an integrated manner. It recognizes that water is a finite and essential resource that is interconnected with various social, economic, and environmental aspects of human life.

A concise, one-sentence definition of IWRM is defined by the Global Water Partnership (GWP) is as follow: “IWRM is a **process**, which promotes the *co-ordinated development* and management of **water**, land and related resources, in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems”

IWRM aims to balance the competing demands for water among different sectors and stakeholders, including agriculture, industry, domestic use, and the environment. It takes into account the entire water cycle, including the availability, quality, and quantity of water, as well as the interactions between surface water and groundwater.

The key principles of IWRM include:

1. **Integrated approach:** IWRM promotes the coordinated management of water resources across different sectors and administrative boundaries, recognizing the interdependencies between them.
2. **Sustainability:** It seeks to ensure the long-term availability of water resources by considering both present and future needs, as well as the preservation of ecosystems and the environment.
3. **Stakeholder participation:** IWRM emphasizes the involvement of all stakeholders, including communities, government agencies, NGOs, and private sector entities, in the decision-making process to achieve a more inclusive and equitable water management.
4. **Demand management:** IWRM focuses on efficient water use, conservation, and demand-side measures to optimize water allocation and reduce wastage.
5. **Water governance:** It highlights the importance of effective institutions, policies, and legal frameworks to enable transparent, accountable, and participatory water governance.
6. **Ecosystem protection:** IWRM recognizes the intrinsic value of ecosystems and aims to protect and restore them, considering the ecological functions and services provided by water resources.

By implementing IWRM, countries and regions can strive for sustainable and equitable water management, addressing water-related challenges such as water scarcity, water pollution, climate change impacts, and conflicting water uses.

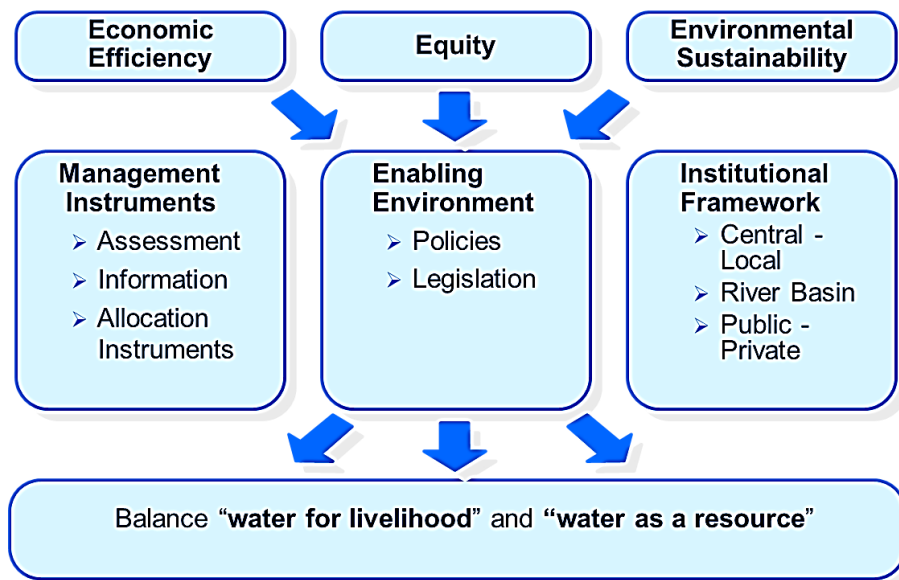
The main pillars of IWRM are often described using a four-fold framework. These pillars provide a holistic approach to water management and guide the implementation of IWRM principles. The four main pillars of IWRM are:

1. **Social Equity:** This pillar emphasizes the need for fair and equitable access to water resources and services for all stakeholders. It recognizes the importance of involving marginalized and vulnerable groups in decision-making processes and ensuring that water allocation and management are not biased against any particular social group. Social equity also addresses issues such as gender equality, poverty alleviation, and the provision of basic water services to underserved populations.
2. **Economic Efficiency:** This pillar focuses on optimizing the economic benefits derived from water resources and promoting efficient water use. It involves assessing the economic value of water, implementing cost-effective measures for water allocation and management, promoting water pricing mechanisms that reflect its true value, and encouraging water-saving technologies and practices. By maximizing economic efficiency, IWRM aims to achieve sustainable economic development while minimizing wastage and negative impacts on the environment.
3. **Environmental Sustainability:** This pillar recognizes the critical importance of maintaining the health and integrity of ecosystems in water management. It involves protecting water resources from pollution, safeguarding aquatic habitats, preserving biodiversity, and ensuring the sustainable use of water for ecological purposes. Environmental sustainability also includes measures to mitigate the impacts of climate change on water resources, such as adaptation strategies and the integration of climate considerations into water management plans.



4. **Institutional Governance (Institutional Framework, Management Instruments):** This pillar addresses the need for effective institutions, policies, and legal frameworks to support integrated water management. It involves establishing clear roles, responsibilities, and coordination mechanisms among government agencies, water users, and other stakeholders. Institutional governance also encompasses transparent decision-making processes, participatory approaches, and capacity building initiatives to strengthen the overall governance of water resources.

These pillars work together to provide a comprehensive and balanced framework for the implementation of IWRM. They recognize the interconnectedness of social, economic, and environmental aspects of water management and promote a multi-stakeholder approach to achieve sustainable and equitable outcomes.



Similar to water management, the management of drought and water scarcity must also be managed in an integrated manner and coordinated with integrated water management activities.

### 3. CONCEPT OF INTEGRATED DROUGHT MANAGEMENT

Integrated drought management (IDM) is a holistic approach to managing droughts that involves the coordination and integration of various strategies and measures to minimize the impacts of drought on human societies and ecosystems. IDM recognizes that drought is a complex and multi-faceted phenomenon, requiring a comprehensive and coordinated response from multiple sectors and stakeholders.

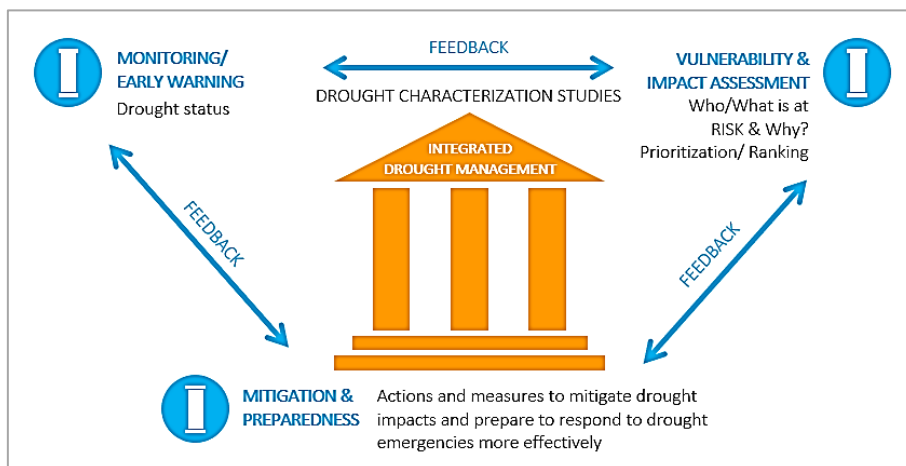
The concept of IDM emphasizes proactive and long-term planning, rather than reactive crisis management, to build resilience and reduce vulnerability to drought. It involves integrating different elements of drought management, including monitoring and early warning systems, risk assessment, mitigation measures, preparedness planning, response strategies, and recovery efforts.

The key components of Integrated Drought Management (IDM) include:

1. **Drought Monitoring and Early Warning Systems:** This component involves the collection and analysis of data related to weather patterns, precipitation, hydrological

conditions, soil moisture levels, and other relevant indicators. Early warning systems are developed to detect and forecast drought conditions, enabling proactive responses.

2. **Risk and Impact Assessment:** This component focuses on assessing the vulnerability and potential impacts of drought on different sectors and regions. It involves evaluating the socio-economic, environmental, and agricultural consequences of drought to identify high-risk areas and populations.
3. **Planning and Preparedness:** IDM emphasizes the development of drought management plans and preparedness measures before drought events occur. These plans outline strategies and actions to mitigate the impacts of drought, including water conservation measures, water allocation mechanisms, and agricultural practices that enhance drought resilience.
4. **Water Allocation and Demand Management:** This component emphasizes the efficient allocation and management of water resources during drought conditions. It involves prioritizing water use, implementing water-saving measures, promoting water-efficient technologies, and managing water demands across different sectors.
5. **Stakeholder Engagement and Participation:** IDM recognizes the importance of involving all relevant stakeholders in the decision-making process. This includes government agencies, local communities, water users, non-governmental organizations, and other entities. Stakeholder engagement ensures that diverse perspectives are considered, and collaborative approaches are adopted in drought management strategies.
6. **Information and Knowledge Sharing:** This component focuses on the dissemination of information and knowledge related to drought management. It involves raising awareness about drought risks, sharing best practices, promoting capacity building, and facilitating the exchange of experiences and lessons learned among stakeholders.
7. **Monitoring, Evaluation, and Learning:** IDM emphasizes the continuous monitoring and evaluation of drought management measures to assess their effectiveness. This component enables the identification of successful strategies and areas for improvement. Lessons learned from previous drought events inform future response and adaptation strategies.



By integrating these key components, IDM aims to enhance drought resilience, minimize the impacts of drought on various sectors, and promote sustainable water resource management. It recognizes that drought is a complex and dynamic phenomenon that requires a holistic and multi-disciplinary approach for effective management.

#### **4. INTEGRATED WATER RESOURCES MANAGEMENT AND INTEGRATED DROUGHT MANAGEMENT NEXUS**

Integrated Water Resources Management (IWRM) and Integrated Drought Management (IDM) are closely related concepts that share a common objective of sustainable water management. While IWRM focuses on the overall management of water resources, IDM specifically addresses the challenges posed by drought conditions. The nexus between IWRM and IDM lies in their complementary approaches and the recognition that drought management is an integral part of effective water resources management.

1. **Holistic Approach:** Both IWRM and IDM adopt a holistic approach to water management. They recognize that water resources are interconnected and that managing them effectively requires considering various sectors, stakeholders, and environmental factors. By integrating water management efforts, both concepts aim to achieve sustainable use, conservation, and allocation of water resources.
2. **Risk Management:** IWRM and IDM prioritize risk management strategies. IWRM aims to identify and manage risks associated with water resources, such as water scarcity, pollution, and conflicting water demands. IDM, on the other hand, focuses specifically on managing the risks and impacts of drought. By integrating drought management within IWRM frameworks, strategies can be developed to proactively address drought risks and enhance overall water security.
3. **Stakeholder Engagement:** Both IWRM and IDM emphasize the importance of stakeholder engagement and participation. Effective water management requires the involvement of various stakeholders, including government agencies, local communities, water users, and NGOs. By engaging stakeholders in the decision-making process, both concepts seek to incorporate diverse perspectives, build consensus, and promote ownership of water management actions.
4. **Planning and Preparedness:** Both IWRM and IDM emphasize the importance of planning and preparedness. IWRM promotes the development of comprehensive water management plans that consider multiple uses, environmental sustainability, and climate change adaptation. IDM advocates for the development of drought management plans and preparedness measures to mitigate the impacts of drought events. By integrating IDM within IWRM frameworks, water management plans can incorporate specific strategies for managing drought conditions.
5. **Information and Data Management:** Both IWRM and IDM rely on accurate and up-to-date information for decision-making. This includes data on hydrological conditions, water availability, water quality, and socio-economic factors. By sharing information and promoting data collection and analysis, both concepts aim to improve the understanding of water resources and support evidence-based decision-making.

By integrating IDM within IWRM frameworks, water managers can enhance their capacity to anticipate and respond to drought events, incorporate drought risk assessments in water planning, and implement measures that improve overall water resilience. This integration helps ensure that drought management is not treated as a separate issue but is integrated into the broader framework of sustainable water resources management.

## 5. DROUGHT POLICY FRAMEWORK AND REGULATIONS IN HUNGARY

The integrated drought and water scarcity management concept reviewed in the previous chapters, if a country wishes to apply it properly, requires the implementation of a number of legal, regulatory and institutional measures.

In the following, we provide an overview of how Hungary handles the issue of drought and water shortage, when we discuss the following:

### Drought Policy Framework

- How drought management is regulated in Hungary at national and regional level?
- What legislations are in place in the legal framework of drought management?

### Governance

- The governance system of drought policy, planning and management.
- Specifics of drought management strategy including definition of drought and water scarcity.
- Relief and response measures to be taken in during the occurrence of drought.
- Order of priority established for the allocation of water to users in case of drought.

### Drought management

- The drought management and its nexus with implementation of Water Framework Directive in Hungary.
- The current water basin management plans and integration of water use permits in case of drought.

When discussing individual issues, we provide internet links to the original text of the referenced law, decrees (government, ministerial, etc.), as well as referenced studies and documents in all cases where they are available. At the end of this paper, we provide a list of references separately, also together with Internet links.

### 5.1. How drought management is regulated in Hungary?

Hungary established the comprehensive legal framework for water management with the adoption of Act LVII of 1995.

**5.1.1. The Act LVII of 1995 on Water Management** (<https://njt.hu/jogszabaly/1995-57-00-00>), also known as the Water Act, is a key legislation in Hungary that governs the management, use, protection, and conservation of water resources. Here are some of the main features of the Act:

1. **Water Management Authorities:** The Act establishes water management authorities responsible for the administration and implementation of water management policies and regulations. These authorities are responsible for issuing permits, monitoring water resources, and enforcing compliance with water-related laws.
2. **Water Use Permit System:** The Act sets up a water use permit system to regulate the use of water resources. Users who intend to abstract or discharge water in significant amounts are required to obtain a permit. The permits specify the conditions and limitations for water use, including the quantity, quality, and purpose of water use.
3. **Water Conservation and Protection:** The Act emphasizes the protection and conservation of water resources. It prohibits activities that may contaminate or degrade water quality and establishes regulations for preventing and controlling pollution. It also promotes the sustainable use of water resources and encourages water-saving practices.



4. **Water Planning and Management:** The Act requires the development of water management plans at different scales, including river basin and regional plans. These plans identify water management objectives, assess water resources, and propose measures for sustainable water use, flood prevention, and environmental protection.
5. **Water Charges and Fees:** The Act establishes a system of water charges and fees to ensure the sustainable financing of water management activities. Water users are required to pay fees based on the quantity and quality of water used. The revenues generated from these charges are used to support water management and conservation efforts.
6. **Flood Protection and Management:** The Act addresses flood protection and management by outlining measures for flood prevention, forecasting, and emergency response. It establishes flood zones, defines responsibilities of authorities and landowners, and regulates activities within flood-prone areas.
7. **International Water Management:** The Act recognizes the importance of international cooperation in water management, especially in shared river basins. It provides provisions for transboundary water management and encourages collaboration with neighboring countries to address issues of water allocation, pollution control, and joint infrastructure projects.
8. **Public Participation and Information:** The Act promotes public participation in water management decision-making processes. It ensures access to information related to water resources, their management, and associated projects. It also encourages public involvement in water-related consultations and environmental impact assessments.
9. **Penalties and Enforcement:** The Act establishes penalties and enforcement mechanisms for violations of water-related regulations. It outlines fines, sanctions, and other measures to ensure compliance with the law, deter illegal activities, and protect water resources.

Some specific paragraphs in the Act LVII of 1995 on Water Management related to water damage (including drought):

1. § (1.f) Defines the scope of the Act on protection and defense against water damage,  
...
  2. § (1) Defines the State tasks in: ....
    - subpoint k) ... regulation of water damage prevention activities in order to protect against water damage;
    - subpoint l) ... organization, management, control of water damage prevention activities in order to protect against water damage, protection beyond local public tasks; ...
- 15 / C. § ...
- (1) The water user does not have to pay a water supply contribution fee ...
    - subpoint m) ... after the amount of water used for irrigation, fisheries and rice production during the period of permanent water shortage pursuant to paragraph (9), ...
- and
- (9) The expected beginning and end of the period of permanent water shortage, taking into account the hydrometeorological forecasts, shall be published in a notice in the Hungarian Official Journal by the Minister responsible for water management.

Of course, it is not possible to provide regulations for every detail in one law. A complex issue like integrated drought management requires several additional regulations, which complement a framework law, such as Act LVII of 1995 on Water Management of Hungary. In the following chapters we describe those regulations that are related to drought and water shortage.

### **5.1.2. The 232/1996. (XII. 26.) Governmental Decree on the rules of protection against water damage (<https://njt.hu/jogszabaly/1996-232-20-22>)**

The Hungarian Government on the basis of the authorization received in paragraph (5) of § 17 of the Act LVII of 1995 on water management created a government decree on the duties of protection against water damage and the powers of the government commissioner.

The main chapters of 232/1996. (XII. 26.) Governmental Decree on the rules for protection against water damage are:

- Organizations of the national defense management
- The responsibility of the minister responsible for the management of the water administration bodies
- The Government's task during flood and inland water protection
- Local control of the technical tasks of defense
- The Defense Committee
- Preparation for defense
- Obligation of District Water Directorates to provide technical and organizational data
- Resource organization cooperation obligation
- Information on defense preparation
- Ordering defense readiness
- Information on ordering defense readiness
- Duties of the defense manager
- The management system
- Defense duty
- Reports, information
- Evacuation, evacuation
- Measures following the termination of protection
- Final provisions.

The 1. § Defines the purposes of this Decree in connection with drought / scarcity as well:

subpoint 2. technical tasks of protection: during the period of floods, excess inland waters and water scarcity - to preserve the protective and functional capacity of the protective structures;

subpoint 10. harmful water scarcity: a temporary disturbance of the availability or condition of water in an appropriate quantity or quality in a defined area, caused by natural processes or human activity, which may cause damage to natural values or economic goods. Preparing for the defense.

8. § (1) During the preparation for the defense, the duties of the persons obliged to defend:

subpoint (g) \* monitoring of water status and water resources, forecast of water scarcity; "

### **5.1.3. The Act CLXVIII of 2011 on the management of weather and other natural risks affecting agricultural production (<https://njt.hu/jogszabaly/2011-168-00-00>)**

By this act the National Assembly (Parliament) developed

- risk community to mitigate the effects of weather and other natural events affecting agricultural production,
- strengthened the responsibility of farmers based on self-sufficiency,
- made state aid more effective,
- ensured proportionate responsibility for those affected, and
- facilitated the uniform treatment of the effects caused by an unavoidable external weather and other natural damages (force majeure).

Relevant chapters of the Act CLXVIII of 2011 on the management of weather and other natural risks affecting agricultural production:

1. The agricultural weather risk management system and its financial basis
2. Conditions for entitlement to the compensatory allowance
3. Support for weather insurance premiums
4. Provision of data generated during the management of agricultural weather risks, management, publicity.

#### **5.1.4. The 10/1997. (VII. 17.) KHVM (Ministry of Transport, Communications and Water) Decree on flood and inland excess water management.**

With its amendment this ministerial decree contains drought management issues, as well. The amended Decree is in force since 1<sup>st</sup> January 2022. (<https://njt.hu/jogszabaly/1997-10-20-6B>)

The following amended paragraphs are related to drought and/or scarcity issues:

“1. § Those obliged to carry out flood and inland water protection activities shall act in accordance with this Decree when performing technical tasks for the protection of water damage.

In the protection section of the decree specifies:

§ 2. \* (1) During the flood, inland water, local water damage, water scarcity situation and persistent water scarcity period, those obliged to do protection their activities should be done on flood protection lines, inland water protection sections, water scarcity management areas, local water catchment area or in the administrative area of the municipality in question. ' ...

§ 3. (1) \* In the framework of the preparation according to Section 8 (1) (b) of the Government Decree No. 232/1996 (XII. 26.) on the rules for protection against water damage (hereinafter: R.)

... for the prevention and control of water scarcity; ..... must prepare defense plan.

3 / B. § \* (1) In addition to the section protection and general inland water protection plan pursuant to Section 3 (7), District Water Directorate (VIZIG) shall also prepare a water shortage protection plan for each water shortage management area, taking into account territorial specificities and plant management aspects.

#### **5.2. Governance system of drought policy, planning and management**

The lead organizations on drought policy in Hungary are

- Ministry of the Interior, which develops nationwide general drought policy through its background institution OVF (General Directorate of Water Management).
- Ministry of Agriculture, which is responsible for a specific task in connection with drought policy. It defines the period of drought for agricultural plants in a given

year, and determines the level of compensation for farmers following drought events.

In case of drought protection planning the Ministry of the Interior is responsible for developing drought plans through its background institution OVF (General Directorate of Water Management).

**The 10/2020 Order of the Director of OVF (General Directorate of Water Management) on measures relating to prolonged water scarcity periods** (calculation of HDI index, content and procedure of the weekly report of regional water directorates) and its annexes (map and list of water scarcity districts for which reports are to be formulated and submitted to OVF).

As the basis of regional action, 2 types of water scarcity management plans are or to be produced by the District Water Directorates:

12 general water scarcity/drought management plans, covering the territories of the District Water Directorates. These general plans have already been prepared and can be found in the OVF's repository in written form.

84 detailed plans (for each water scarcity/drought districts) – to be formulated by the end of 2022.

These detailed plans describe the specific circumstances of the water directorates and water scarcity districts area from geographical, meteorological, hydrological, water management, infrastructure etc. point of view. It contains also information about the main water resources, agricultural water supply system, needs and possibilities, and a series of measures that can be implemented in order to prevent or mitigate drought effects.

### **Climate Change Action Plans**

The Parliamentary Resolution (<https://mkogy.jogtar.hu/jogszabaly?docid=A18H0023.OGY>) adopted the 2<sup>nd</sup> National Climate Change Strategy ([http://doc.hjegy.mhk.hu/20184130000023\\_1.PDF](http://doc.hjegy.mhk.hu/20184130000023_1.PDF)) and required the Government to prepare Climate Change Action Plans, started with the first plan within six months. Successive Climate Change Action Plans over a 3-year timeframe are the cornerstones for implementing the strategy. The first of these has already been adopted and covers the period of 2018-2020, while the second plan covers 2021-2023. Planning was coordinated by the Ministry of Innovation and Technology. Intersectoral working groups and consultation process with the involvement of sectoral stakeholders ensured that sectoral aspects were reflected in the development of concrete measures.

### **5.3. Drought management strategy**

There are several strategy documents that deal with drought issues.

#### **(1) The 5th National Environmental Protection Program 2021-2026 - draft** (<http://www.hermanottointezet.hu/nkp5skv>)

The Program is a comprehensive domestic strategic planning document of the environment, which provides a framework for all environmental strategies, programs and plans, integrates their main objectives and formulates guidelines for their development. The Program is closely linked to the National Framework Strategy for Sustainable Development as a long-term concept.

The task of the Program is to define the country's environmental goals and the tasks and means – including the drought issues - necessary to achieve them, taking into account the country's



capabilities, society's long-term interests and future development goals, as well as the obligations arising from global responsibilities, international cooperation and EU membership.

## **(2) Second National Climate Change Strategy (2018-2030, with a view to 2050)**

([http://doc.hjegy.mhk.hu/20184130000023\\_1.PDF](http://doc.hjegy.mhk.hu/20184130000023_1.PDF))

Adopted by the 23/2018. (X. 31.) Parliamentary Resolution on the second National Climate Change Strategy for the period 2018-2030, providing an outlook for the period up to 2050.

The Parliamentary Resolution is available at:

<https://mkogy.jogtar.hu/jogszabaly?docid=A18H0023.OGY>

The document contains a review of the first National Climate Change Strategy and a second National Climate Change Strategy in line with new legal requirements, changed socio-economic conditions and the latest scientific findings.

The overarching goals of the climate strategy are:

- 1) Survival and sustainable development in a changing world.
- 2) Getting to know the endowments, opportunities and limitations of the country.

Specific objectives are:

- i) Decarbonisation,
- ii) GIS foundation for the territorial study of climate vulnerability,
- iii) Adaptation and preparation – including the drought issues,
- iv) Ensuring a climate partnership.

## **(3) National Water Strategy (The Jenő Kvassay Plan)**

(<https://www.vizugy.hu/vizstrategia/documents/997966DE-9F6F-4624-91C5-3336153778D9/Nemzeti-Vizstrategia.pdf>)

The National Water Strategy (NWS) is the Hungarian water management strategy until 2030. Its tasks are to setting objectives for water management and for creating the conditions for implementing the measures needed to solve these tasks, creating opportunities for irrigation management, and preventing or mitigating drought damage. In the light of all this, it provides proposal for the development and technical renewal of the technical, scientific, financial and organizational system to be taken in order to avoid the water crisis.

The NWS defines the following four priority and three institutional focus tasks:

1. Water retention and water distribution for better utilization of our waters for supportive water management.
2. Preventive water damage prevention – including drought issues.
3. Gradual improvement of water status to achieve sustainable good status.
4. Quality water utility service and quality rainwater management are tolerable with consumer burden bearing.
5. Improving the relationship between society and water.
6. Renewal of planning and management.
7. Reorganization of the economic regulatory system of water management.

### **5.4. Definition of drought and water scarcity**

There are two different regulations in place to determine a drought situation. One is used by the water management, which is based on a drought index developed by the sector. The other was introduced by the agricultural sector, which is used to compensate for drought damage.

In water management:

**10/1997. (VII. 17.) KHVM (Ministry of Transport, Communications and Water) Decree on flood and inland water protection** (<https://njt.hu/jogszabaly/1997-10-20-6B>)

If the degree of drought according to HDIs (Hungarian Drought Index) justifies it, drought protection alert should be ordered. The degree level depends on the value of HDI's as well as other conditions (e.g.: water quality problem, lack of water supply for authorized water users, etc...)

The Annex 4 of the 10/1997. (VII. 17.) Ministry of Transport, Communications and Water Decree on flood and inland water protection gives the level of droughts and protections as a function of HDI (Hungarian Drought Index). The details of it is as follow:

HDI0 – The baseline drought index, calculated using daily precipitation (P) and daily mean temperature (T).

HDIs – Heat stress adjusted drought index.

Basic parameters are in line with the HDI0. It is assumed that during a heat wave the potential evapotranspiration (PET) is independent of water availability, and losses are realised entirely.

The law regulates the degree of drought according to the value of the index:

0 – no drought	if	HDIs < 1,33	-
1 - mild drought	if	1,33 < HDIs < 1,50	degree
2 - moderate drought	if	1,50 < HDIs < 2,00	degree
3 - intense drought	if	2,00 < HDIs < 3,00	degree
4 – extreme drought	if	3,00 < HDIs	

In agriculture:

**Act CLXVIII of 2011 on the management of weather induced and other natural risks affecting agricultural production** (<https://njt.hu/jogszabaly/2011-168-00-00>)

According to Act CLXVIII of 2011 drought is defined as a natural phenomenon.

In the growing season a given crop is exposed to drought, when in case of 30 consecutive days

- (a) the total amount of precipitation does not exceed 10 mm, or
- (b) the total amount of precipitation does not exceed 25 mm and the daily maximum temperature exceeds 31 °C for at least 15 days.

## 5.5. Relief and response measures to be taken during the occurrence of drought

Hungary applies (i) operational demand measures, (ii) operational supply measures, (iii) economic impact measures and (iv) operational measures for the environment during occurrence of drought depending on the level and prolongation of the drought. The implementation of these measures is determined by legislation.

To operational demand measures:

Act LVII of 1995 on Water Management (<https://njt.hu/jogszabaly/1995-57-00-00>)

1. § (1) \* Scope of the Act f) protection and defense against water damage, ...

15 / C. § ...

(1) The water user does not have to pay a water supply contribution fee ...

- m) ... after the amount of water used for irrigation, fisheries and rice production during the period of permanent water shortage pursuant to paragraph (9), ...

Water Scarcity/Drought Management Plans (12+84)

- 12 general water scarcity/drought management plans have already been prepared, territorially covering the areas of the 12 District Water Directorates (VIZIG). These general plans can be found in the OVF's (General Directorate of Water Management) repository in written form.

- 84 detailed plans (for each water scarcity/drought districts) – formulated by the end of 2022.

These detailed plans describe the specific circumstances of the water directorates and water scarcity/drought district areas from geographical, meteorological, hydrological, water management, infrastructure etc. point of view. It contains also information about the available water resources, agricultural water supply systems, needs (demands) and possibilities, and a series of measures that can be implemented to prevent or mitigate drought effects.

To operational supply measures:

Act CXIII of 2019 on irrigation management (<https://njt.hu/jogszabaly/2019-113-00-00>)

The National Assembly enacted the law in order to protect natural resources, strengthen the adaptability of agriculture, spread irrigation farming and establish irrigation communities.

It regulates

- the rules for the establishment, modification and termination of the right to water irrigation,
- issues related to the preparation of irrigation development plans,
- general rules on compensation for restrictions.

302/2020. (VI. 29.) Government Decree on the implementation of the Irrigation Management Act (<https://njt.hu/jogszabaly/2020-302-20-22>)

It determines:

- the provision for the establishment of an irrigation service
- issues of one-off compensation
- indemnity compensation.

To economic impact compensation measures:

Act CXIII of 2019 on irrigation management (<https://njt.hu/jogszabaly/2019-113-00-00>)

The Parliament created the law in order to protect natural resources, strengthen the adaptability of agriculture, spread irrigation farming, and create irrigation communities.

The law consists of 17 paragraphs. The law entered into force on 1st January 2020.

302/2020. (VI. 29.) Government Decree on the implementation of the Irrigation Management Act (<https://njt.hu/jogszabaly/2020-302-20-22>)

The main chapters of the degree:

1. Provisions regarding the establishment of the irrigation easement
2. One-time compensation
3. Compensation based on demand income
4. Procedure for the recognition of the irrigation community
5. Final provisions.

The government decree has 3 annexes as well.

Annex 1: Calculation of the compensation related to the establishment of the irrigation easement.

Annex 2: Data required for the application for the recognition of irrigation communities.

Annex 3: Data required for an environmental district plan.

To operational measures for the environment:

Hungary's river basin management plan second review - II. Discussion material – 17 May 2021. (<https://vizeink.hu/vizgyujto-gazdalkodasi-terv-2019-2021/vgt3-vitaanyag/>)

The 3<sup>rd</sup> RBMP addresses the issues of climate change and related drought issues. The Background document 8-4 of the 3<sup>rd</sup> RBMP deals with elaboration of possible methods for the prevention and reduction of damage caused by water scarcity (drought), development of action plans.

The following table summarizes the adaptation measures that are already in place or planned to be adapted.

	Status			Source(s)				Additional information
	applied	planned	Not considered	Drought Mgt Plan	River Basin Mgt Plan	Adaptation Plan/Strategy	Other	
Afforestation and reforestation as adaptation opportunity	x				x			Afforestation is subsidized by Common Agricultural Policy (CAP), but it is not an adaptation tool today. The planting of invasive species (eg. robinia pseudoacacia) is subsidized too. Ecological and adaptation considerations play a marginal role in the allocation of grants.
Use of adapted crops and varieties	x			x	x			CAP (mostly pillar II) includes several measures for that, but their role is marginal.
Conservation agriculture	x			x	x			CAP (mostly pillar II) includes several measures for that, but their role is marginal.
Adaptation options for hydropower plants	x							The operation plan of the HPPs does include measures for low water levels.
Reducing water consumption for cooling of thermal generation plants	x							According to the water resource management hierarchy, emergency plans
Improvement of irrigation efficiency	x			x	x			
Rehabilitation and restoration of rivers and floodplains	x				x			
Adaptation of urban planning: water and energy		x						
Water sensitive urban and building design	x							
Desalinisation			x					Not relevant in Hungary
Adaptation of groundwater management		x		x	x			River Basin Management Plans, National Strategy on Climate Change
Adaptation of fire management plans		x						National Strategy on Climate Change, national and county level forest fire management plans



	Status			Source(s)				Additional information
	applied	planned	Not considered	Drought Mgt Plan	River Basin Mgt Plan	Adaptation Plan/Strategy	Other	
Agro-forestry and crop diversification		x		x	x			CAP (mostly pillar II) includes several measures for that, but their role is marginal.
Adaptation of drought and water conservation plans		x		x	x			
Establishment of early warning systems	x			x				<a href="https://aszalymonitoring.vizugy.hu/">https://aszalymonitoring.vizugy.hu/</a> <a href="https://www.met.hu/idojara/agrometeorologia/aszalyinfo/">https://www.met.hu/idojara/agrometeorologia/aszalyinfo/</a>
Water recycling/water reuse		x		x	x			
Establishment and restoration of riparian buffers	x							Mostly project based, financed by EU and national sources
Restoration and management of coastal wetlands			x					Not relevant in Hungary
Urban farming and gardening	x						x	There are small local civil initiatives like <a href="https://www.varosikertek.hu/">https://www.varosikertek.hu/</a>
Water sensitive forest management		x		x	x			Forest managers are forced to adapt to climate change somehow, as new plantations with the common indigeneous species will not start to grow due to water scarcity. A good practice to provide water for the forests is <a href="#">presented here</a> , but such initiatives are rare.

## 5.6. Order of priority established for the allocation of water to users in case of drought

In Hungary the priority order for the allocation of water to different users in case of drought is defined by Act LVII of 1995 on Water Management (<https://njt.hu/jogszabaly/1995-57-00-00>) in 15. §.

Taking into account the provisions of this law, (1) groundwater may only be used to the extent that the balance of water extraction and water supply is maintained without quality damage, and the requirements for achieving the objectives of the good condition of the waters according to the separate legislation are met. (2) With regard to the quantitative and qualitative protection of usable water resources, water needs can be met primarily from water resources that have not yet been tied up for the purpose of water use. (3) For the use of mineral, medicinal and thermal waters, priority should be given to medicinal and spa use.

The 15. § (4) determines the priority order for allocation of water among different users according to the following:

- a) drinking and public health, disaster relief,
- b) activities of production and services for medical and residential purposes,
- c) animal husbandry, fish production,
- d) nature conservation,

- e) irrigation,
- f) economic,
- g) other (e.g. for sports, recreation, leisure, swimming, tourism) water use.

If a restriction on the use of water becomes necessary, the order of the restriction shall be reversed in the order of allocation specified above, as defined by Act LVII of 1995 on Water Management in section 15 (5).

## **6. DROUGHT MANAGEMENT AND ITS NEXUS WITH IMPLEMENTATION OF WATER FRAMEWORK DIRECTIVE**

### **221/2004. (VII. 21.) Government Decree on certain rules for river basin management** (<https://njt.hu/jogszabaly/2004-221-20-22>)

§ 1. (1) The purpose of the decree is to include in a uniform framework the measures and programs of measures necessary for the achievement and maintenance of the specified good status of waters (hereinafter: good status) and to define the content of the river basin management plan summarizing them, as well as design rules.

(2) The scope of this decree shall apply to river basin management planning and those carrying out the tasks specified therein, as well as to those for whom the programs of measures contain provisions.

§ 8. states: ... In water bodies affected by extreme drought, where the environmental objective cannot be achieved or is disproportionately costly, less stringent environmental objectives may be set than those required to achieve good status.

§ 8. (1) Water bodies affected by human activity or extreme conditions (extraordinary floods, droughts) in accordance with the provisions of § 3. (5) c) and § 12. and § 13., where the environmental objective cannot be met, or its achievement is disproportionately expensive, - under the conditions specified in paragraphs (2) - (5) - environmental goals that are less strict than those prescribed for achieving good status can also be defined.

The national regulation reference to WFD Art.4(6) exemptions allows for temporary deterioration of water body status due to prolonged droughts. The following elements are included in the regulations:

- the deterioration is the “result of circumstances of natural cause or force majeure” (WFD Art.4(6))
- the drought events are “exceptional or could not reasonably have been foreseen” (WFD Art.4(6))
- the exceptional character is validated by “appropriate indicators [which] are stated in the river basin management plan” (WFD Art.4(6)b)
- “all practicable steps are taken to prevent further deterioration in status and in order not to compromise the achievement of the objectives of this Directive in other bodies of water not affected” by the drought (WFD Art.4(6)a)
- these “measures to be taken under such exceptional circumstances are included in the programme of measure” of the river basin management plan (RBMP) (WFD Art.4(6)c)
- “all practicable measures are taken with the aim of restoring the body of water to its status prior to the effects of those circumstances as soon as reasonably practicable” (WFD Art.4(6)d)

- a summary of the effects of the [drought] and of such measures taken or to be taken ... are included in the ... [3rd cycle] river basin management plan (2022-2027)

In the 3<sup>rd</sup> cycle RBMP (2022-2027) of Hungary 11 river water bodies, 4 lake water bodies and 8 groundwater bodies are subject to Art.4(6) exemptions.

Justifications and summaries for WFD Art.4(6) drought-caused exemptions have been provided in the 3<sup>rd</sup> cycle RBMP. The 3<sup>rd</sup> cycle RBMP 6.8. background study document contains justifications and summaries for WFD Art.4 (6) drought-caused exemptions. The exceptional character is validated by “appropriate indicators which are stated in the river basin management plan” (WFD Art.4(6)b) with the following indicator: if the average water flow in a watercourse decreases by 20%, it is considered as an indicator that adequately reflects the exceptional situation.

The 3<sup>rd</sup> cycle RBMP in Chapter 8.4.3 on drought risks provides a list of measures with the aim of restoring the body of water to its status prior to the effects of the drought. It was also mentioned that a background document (Background material 8-4: Possible methods for the prevention and mitigation of water scarcity (drought) damage, elaboration of action plans (available at: <https://vizeink.hu/vizgyujto-gazdalkodasi-terv-2019-2021/vgt3-vitaanyag/>) was additionally added to the 3<sup>rd</sup> cycle RBMP.

## **7. AN OVERALL CONCISE SUMMARY OF DROUGHT MANAGEMENT FROM LEGAL AND TECHNICAL PERSPECTIVE IN HUNGARY**

The issue of drought is regulated at national level by law and for the implementation of which several government decrees and ministerial decrees are in force.

The implementing regulations cover the definitions related to drought management, the indicator used and its monitoring, the definition of the responsible organizations, and the manner and extent of compensation for the damage caused by drought.

The so-called Hungarian Drought Index is used to assess the severity of the drought. In addition to meteorological parameters, the moisture status of the upper zone of a given soil is also taken into account when calculating the index.

Hungary operates a financial compensation procedure to alleviate the drought damage of farmers on the basis of a regulated legal framework.

Several drought strategy documents have been prepared at national level, taking into account the priorities of environmental protection, climate change and river basin management.

Based on various drought strategy documents, drought management plans have been developed, such as river basin management plans (national and 4 regional), and water scarcity management plans produced in two levels: (a) the 12 general water scarcity / drought management plans, covering the territories of the District Water Directorates and (b) the 84 detailed plans (for each water scarcity / drought districts) – these 84 plans to be formulated and finalized by the end of 2022.

The 3<sup>rd</sup> cycle RBMP provides a detailed analysis of the drought situation throughout Hungary and lists the planned measures to mitigate damages caused by drought. Based on the detailed analyses, the 3<sup>rd</sup> cycle RBMP formulates exceptions for some river, lake, and groundwater bodies based on WFD Art.4 (6) due to drought effects that may occur in the future.

## LIST OF RELEVANT DOCUMENTS

1. Act LVII of 1995 on Water Management (<https://njt.hu/jogszabaly/1995-57-00-00>)
2. 232/1996. (XII. 26.) Governmental Decree on the rules of protection against water damage (<https://njt.hu/jogszabaly/1996-232-20-22>)
3. Act CLXVIII of 2011 on the management of weather and other natural risks affecting agricultural production (<https://njt.hu/jogszabaly/2011-168-00-00>)
4. 10/1997. (VII. 17.) KHVM (Ministry of Transport, Communications and Water) Decree on flood and inland excess water management. After its amendment it contains drought management as well. The amended Decree is in force since 1st January 2022. (<https://njt.hu/jogszabaly/1997-10-20-6B>)
5. 10/2020 Order of the Director of OVF (General Directorate of Water Management) on measures relating to prolonged water scarcity periods (There is no publicly available link to this document)
6. The 5<sup>th</sup> National Environmental Protection Program 2021-2026 - draft (<http://www.hermanottointezet.hu/nkp5skv>)
7. Second National Climate Change Strategy (2018-2030, with a view to 2050) ([http://doc.hjegy.mhk.hu/20184130000023\\_1.PDF](http://doc.hjegy.mhk.hu/20184130000023_1.PDF))
8. National Water Strategy (The Jenő Kvassay Plan) (<https://www.vizugy.hu/vizstrategia/documents/997966DE-9F6F-4624-91C5-3336153778D9/Nemzeti-Vizstrategia.pdf>)
9. Hungary's river basin management plan second review - II. Discussion material – 17 May 2021. (<https://vizeink.hu/vizgyujto-gazdalkodasi-terv-2019-2021/vgt3-vitaanyag/>)
10. Water Scarcity/Drought Management Plans (12+84)  
(There is no publicly available link to these documents)
11. Drought management plan to determine drought risk management actions and identification of water management measures to improve climate resilience ([http://vizeink.hu/wp-content/uploads/2021/04/Aszaly\\_VGT3\\_2021.pdf](http://vizeink.hu/wp-content/uploads/2021/04/Aszaly_VGT3_2021.pdf))
12. Operational Water Scarcity Assessment and Forecasting System.  
Details are available at <http://aszalymonitoring.vizugy.hu/index.php?view=pattern>
13. The Hungarian Meteorological Service web site on daily drought index and assessment information (<https://www.met.hu/idojaras/agrometeorologia/aszalyinfo/>)
14. Details of Hungarian Drought Index:  
<http://aszalymonitoring.vizugy.hu/index.php?view=info>
15. Details on Hungarian Meteorological Service used Daily Drought Index (NLA) (<https://e-books.hu/dokumentum/159742ce/napi-1%C3%A9pt%C3%A9k%C5%B1-asz%C3%A1lyindex-orsz%C3%A1gos-meteorol%C3%B3giai-szol%C3%A1lat>)



16. 221/2004. (VII. 21.) Government Decree on certain rules for river basin management  
<https://njt.hu/jogszabaly/2004-221-20-22>
17. Background material 8-4: Possible methods for the prevention and mitigation of water scarcity (drought) damage, elaboration of action plans. Available at:  
<https://vizeink.hu/vizgyujto-gazdalkodasi-terv-2019-2021/vgt3-vitaanyag/>
18. Act CXIII of 2019 on irrigation management (<https://njt.hu/jogszabaly/2019-113-00-00>)
19. 302/2020. (VI. 29.) Government Decree on the implementation of the Irrigation Management Act (<https://njt.hu/jogszabaly/2020-302-20-22>)
20. Background material: Climate Risk Analysis.  
<https://vizeink.hu/vizgyujto-gazdalkodasi-terv-2019-2021/vgt3-vitaanyag/>