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EXPERIENCES ON ECOLOGICALLY ACCEPTABLE FLOWS IN SLOVENIA

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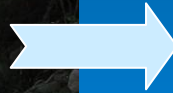
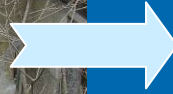
Slovenia



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- INTRODUCTION
- METHODS FOR EAF EVALUATION
- CONCLUSIONS

INTRODUCTION



- **Biological minimum (Decree, 1976)**
- **Criteria for minimum flows (1992-1994)**
- **EAF evaluation on more than 250 river sections with water abstraction/diversion**
- **WFD → New Water Act 2002, Article 71:
ECOLOGICALLY ACCEPTABLE FLOW**
- **Results of fieldwork and experiences were selected criteria**

1) RAPID AND 2) DETAILED METHOD



DECREE, 2009

METHODS FOR EAF EVALUATION

D E C R E E on the criteria for determination and on the mode of monitoring and reporting on ecologically acceptable flow

(OG RS No. 97/2009)

22 articles:

I. GENERAL PROVISIONS

II. CRITERIA FOR DETERMINATION OF EAF

III. THE MODE OF MONITORING AND REPORTING ON EAF

IV. SUPERVISION

V. PENAL PROVISIONS

VI. TRANSITIONAL AND FINAL PROVISIONS

I. GENERAL PROVISIONS (4 Articles)

The content, application, exceptions and the meaning of terms

Exceptions:

- Decree shall not apply to the special use of water from springs in the case of **own supply of drinking water** or as a result of which a **HMWB** is determined
- **BUT if a legally valid water permit comprise the determination of flow values (BM, MF or EAF), this should be considered as EAF under this Decree.**

Meaning of terms:

- Mean Flow (ML)
- Mean Low Flow (MLF)

II. CRITERIA FOR DETERMINATION OF EAF (6 Articles)

A. Hydrological approach:

$$EAF = f * MLF$$

f factor is defined in relation to:

1. Irreversible or reversible WA

drinking water, irrigation, HPP, fish farm

2. The length of river section with reversible WA

Short term WA: $L \leq 100$ m for $F \leq 100$ km²

$L \leq 500$ m for $F > 100$ km²

3. The quantity of withdrawn water

Large-scale WA: $Q_i > MF$

4. The ratio between the MF and MLF

if the ratio between the MF and MLF at the abstraction site exceeds 20, the factor f shall be multiplied by 1,6

5. The ecological type group of watercourses

The values of factor f for reversible WA

| | | Catchment area | | | | |
|--|----------------------|------------------------|---------------------------|---|--|-----|
| Eco type | < 10 km ² | 10-100 km ² | 100-1.000 km ² | 1.000-2.500 km ² and MF < 50 m ³ /s | > 2.500 km ² or MF > 50 m ³ /s | |
| Point WA | | | | | | |
| 1 | 0,7 | 0,7 | 0,5 | 0,4 | | |
| 2 | 0,7 | 0,5 | 0,4 | 0,4 | | |
| 3 | 0,5 | 0,4 | 0,3 | | | |
| 4 | | | | | | 0,3 |
| Short-term WA all year or long WA in dry period | | | | | | |
| 1 | 1,2 | 1,2 | 1,0 | 0,8 | | |
| 2 | 1,2 | 1,0 | 0,8 | 0,8 | | |
| 3 | 1,0 | 0,8 | 0,7 | | | |
| 4 | | | | | | 0,7 |
| Long-term WA in wet period | | | | | | |
| 1 | 1,9 | 1,9 | 1,6 | 1,3 | | |
| 2 | 1,9 | 1,6 | 1,3 | 1,3 | | |
| 3 | 1,6 | 1,3 | 1,1 | | | |
| 4 | | | | | | 1,1 |

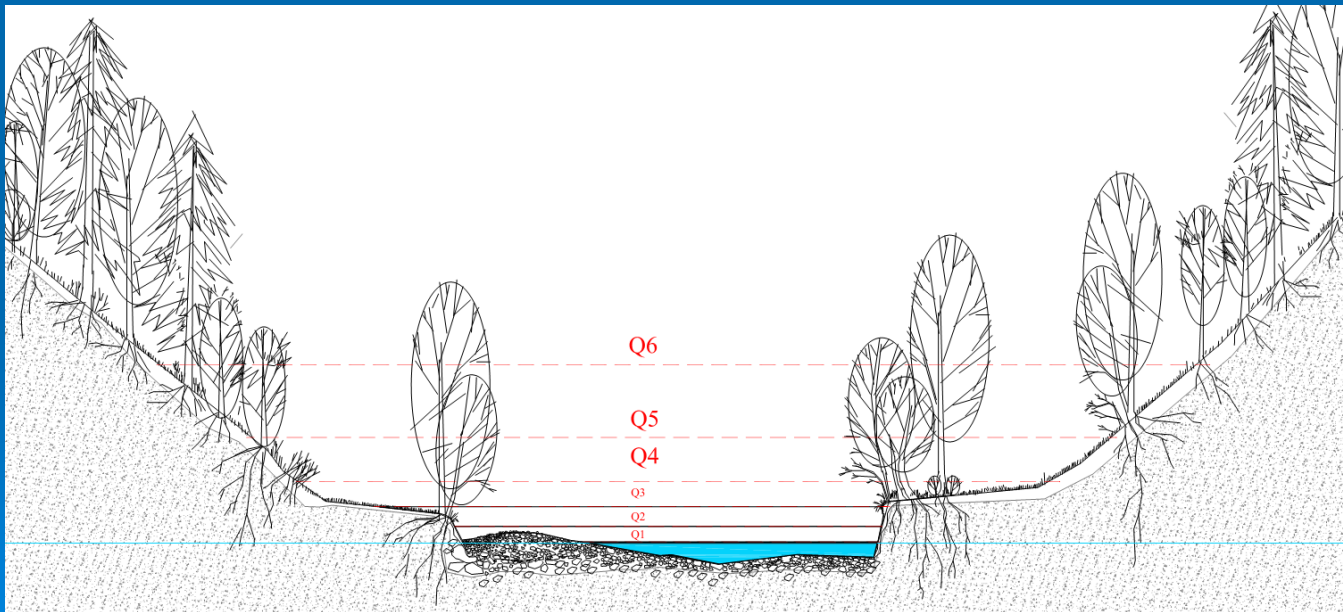
The values of factor f for irreversible WA

| Eco type | Catchment area | | | | |
|--|----------------------|------------------------|---------------------------|---|--|
| | < 10 km ² | 10-100 km ² | 100-1.000 km ² | 1.000-2.500 km ² and MF < 50 m ³ /s | > 2.500 km ² or MF > 50 m ³ /s |
| Small WA all year or large WA in dry period | | | | | |
| 1 | 1,5 | 1,5 | 1,2 | 1,0 | |
| 2 | 1,5 | 1,2 | 1,0 | 1,0 | |
| 3 | 1,2 | 1,0 | 0,8 | | |
| 4 | | | | | 0,8 |
| Large WA in wet period | | | | | |
| 1 | 2,4 | 2,4 | 1,9 | 1,6 | |
| 2 | 2,4 | 1,9 | 0,6 | 1,6 | |
| 3 | 1,9 | 1,6 | 1,3 | | |
| 4 | | | | | 1,3 |

B. Holistic approach:

- EAF may be determined on the basis of a study, submitted by an initiator or applicant for water right.
- The study shall be examined by IzVRS
- The requirements for the preparation of a study: 12 chapters

Ecologically Acceptable Flows:



Determination of EAF in relation to the protection arrangements

- The value of EAF may be changed according to the opinion of the impact of water use on the **fish status** and according to the nature **protection** policies

III. THE MODE OF MONITORING AND REPORTING ON EAF (3 Articles)

The mode of monitoring the EAF

- Facilities for WA must be designed that not to allow WA when the flow at the abstraction site falls below the EAF.

OR

- The water right holder must ensure daily or continuous monitoring of flow or water level



IV. SUPERVISION

- Supervision of the implementation of the Decree shall be carried out by **inspectors**

V. PENAL PROVISIONS

- A fine of between **EUR 4,000 and EUR 125,000** shall be imposed for misdemeanours on legal entities if they: use water in such a way that the EAF is not ensured in compliance with this Decree

VI. TRANSITIONAL AND FINAL PROVISIONS (7 Articles)

Adjustment of f factors

- The values of f factor shall be reviewed for the first time by the end of **2014** at the latest and thereafter every six years.

CONCLUSIONS

- **ADVANTAGES** of methods
- **DISADVANTAGES** of methods
- **THE MAIN DEFICIENCY** of methods
the lack of evidence that defines the exact relationship between the biota and their response to changes in the flow regime
- **ECOLOGICAL FLOW - EU GUIDANCE**



