



***Improvement of the Danube in Hungary – CEF-Study Section Szob
– Southern border***

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CRITICAL SECTIONS – BOTTLENECK & SHALLOW

General objectives:

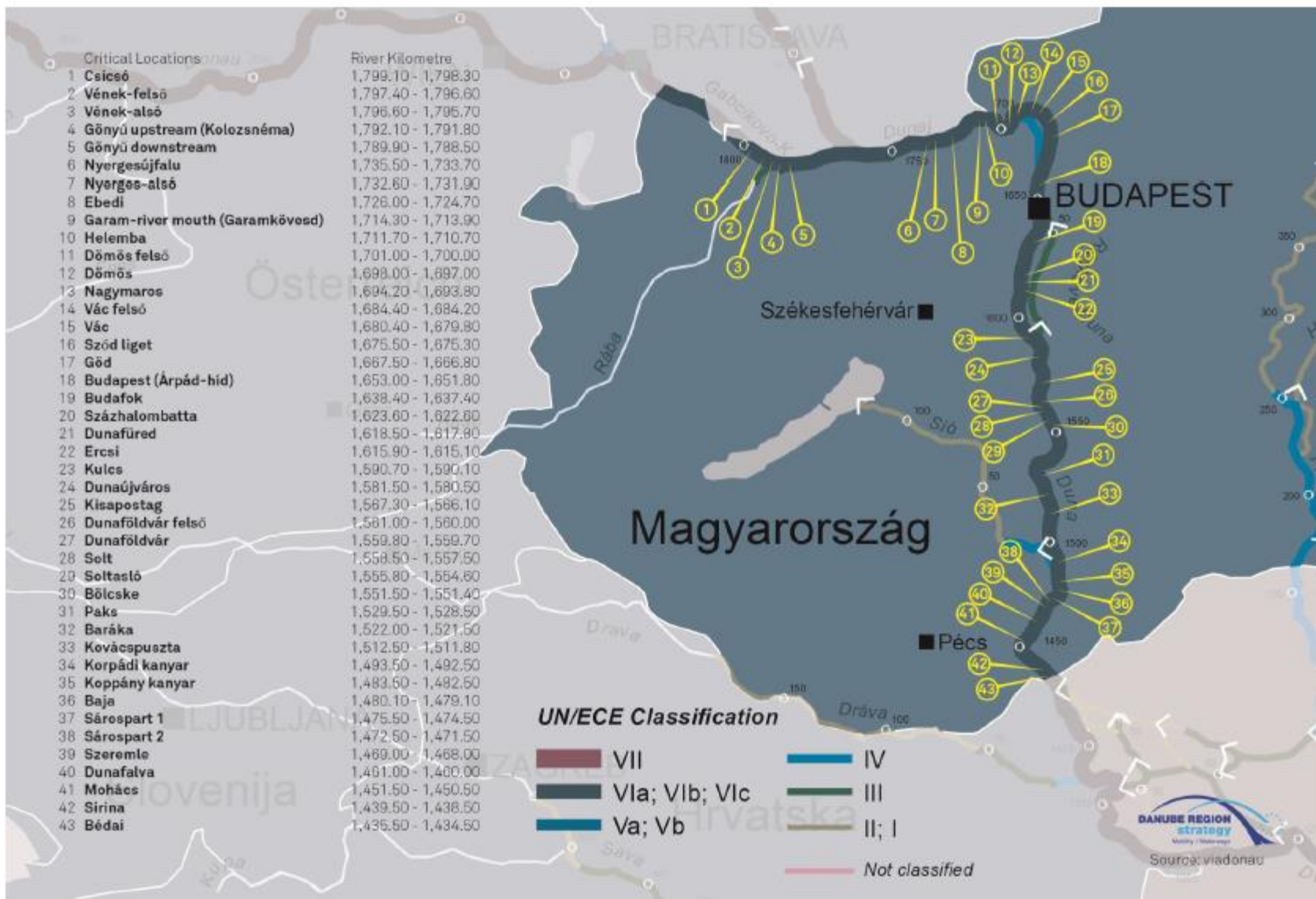
- **development of navigation conditions** of the Danube in Hungary
- the parameters of the fairway would meet the international requirements for the complete section (AGN Agreement and the recommendations of the Danube Committee)
- In case of feasibility, it is in harmony with the demand for ensuring the Hungarian and transit transports.
- effective preparations considering the water-sector, flood protection, environment and nature protection aspects
- the **removal of critical sections** in order to achieve the parameters of the TEN-T core network

Specific objectives:

1. Utilizing the results of the **riverbed survey** to find the sections with draught restrictions and to determine sections that need interventions
2. Possessing plans and **obtaining permits** for riverbed interventions improving navigability that fit in the demand for navigability for the Rhine-Danube core network corridor
3. **Environmental impact assessment** of the interventions as per relevant legislation
4. Preparing **tender documents** needed for the public procurement for the intervention tasks



CRITICAL SECTIONS – BOTTLENECK & SHALLOW



TECHNICAL DESIGNING PROGRAM

SITUATION ASSESSMENT STUDY

- Overview of the results and experiences of prior works from 2006;
- Hydromorphological examinations (for the last 30 years);
- International and Hungarian regulations on navigation, EU policies, related projects;
- Determination of narrow sections obstructing navigation;
- New examinations and additional measurements; data processing, evaluation;
- Assessment of best solution ensuring stable navigation conditions; **Selection of the suggested variant.**

DESIGNS FOR WATER RIGHT PERMIT APPLICATION AT ALL SELECTED LOCATIONS

DESIGNS FOR TENDERING (ONLY AT LOCATIONS BETWEEN SZOB AND THE SOUTHERN NATIONAL BORDER)

PRINCIPLES OF INTERVENTIONS FOR ENSURING STABLE NAVIGATION CONDITIONS

MODERN APPROACH, INNOVATIVE SOLUTIONS

PHYSICAL RIVER MODELS, 2D AND 3D HYDRODINAMIC MODELLING

RIVER TRAINING PRINCIPLES

- Prevention of current low water levels and the river bed from further lowering;
- Flood conveyance conditions will not worsen;
- Water supply of side arms is essential;
- Protection of existing and future bank filtering drinking water source is essential;
- Navigation channel of min. 120-150 m width along the stretch between Wien and Belgrade according to the current recommendation of the Danube Commission;
- New Lowest Navigation Water Level (LNWL): LNWL was determined by experts of the Budapest University of Technology and Economics using a water level curve calibrated for the low discharge of 94% durability between 1989 and 2018;
- For designing purposes we created a 'theoretical regulation line' in accordance with the existing river training structures and bed formations.



Technical Variants of assessment of best Solutions

Variant no.	Technical Interventions	Compliance with navigational regulations
Zero	No intervention (current state)	No compliance
I.	Traditional training structures + dredging	Full compliance
II.	Traditional, innovative structures + dredging	Full compliance
III.	Traditional, innovative structures + dredging	Compliance + limited-width (100 m wide) sections
III./A	Traditional, innovative structures + limited dredging	Compliance + limited-width (60-100 m wide) sections



Technological interventions

Hydraulic structures (quarrystone)

- Submerged weir
- Chevron dike
- Groin
- Bank (erosion) protection
- Guide bank

Removal

- River bed dredging
- Demolishing disadvantageous hydraulic structures
- Sediment dredging between groins

Alternative beaconing (fairway designation)

- Bottleneck (100 - 60 m)
- Alternative path lines

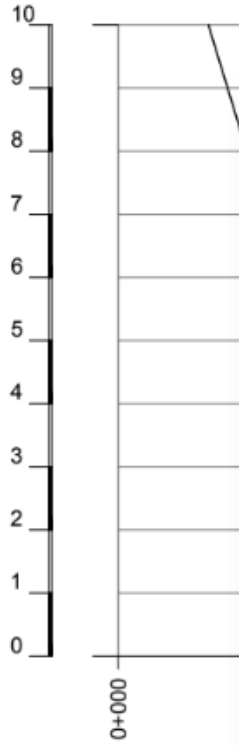


Framework conditions and **expected results** of the selected variant:

- Achieveing (at least) the minimum international navigational requirements
- **Preventing further riverbed subsidence**
- Mitigation of **climate change impacts**
- The lowest environmental and ecological load
 - **Natura 2000** sites
 - **Water Framework Directive**
- Rehabilitaton of specific side arms

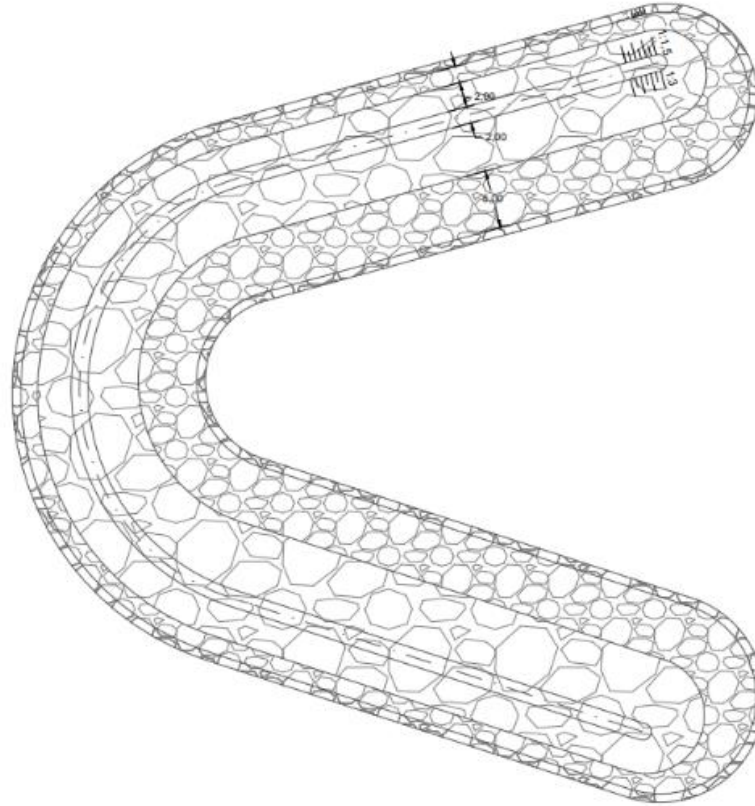


Technological interventions



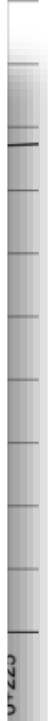
Duna folyásiránya

50.00



80.00

50.00

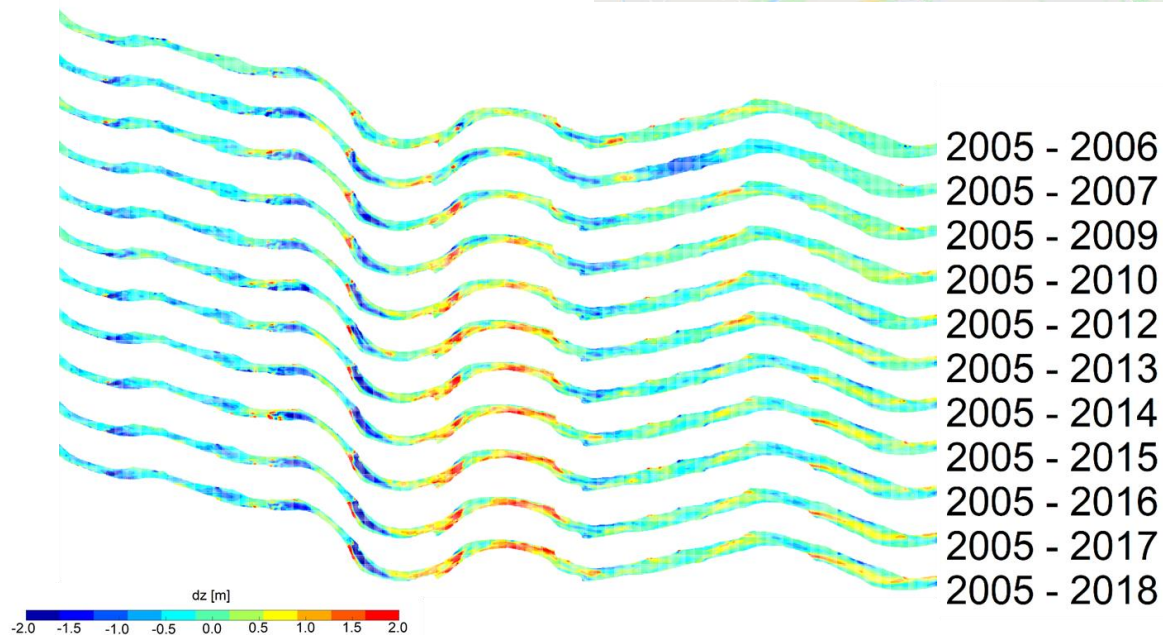


EXAMINATIONS SUPPORTING THE DESIGN PROCESS

EXAMINATION OF THE BED SHAPE

CREATING MAPS OF RIVERBED CHANGES

- Determination of permanently altering and stable bed sections
- For example around 'Gönyü'



2005 - 2006
2005 - 2007
2005 - 2009
2005 - 2010
2005 - 2012
2005 - 2013
2005 - 2014
2005 - 2015
2005 - 2016
2005 - 2017
2005 - 2018

ASPECTS OF ENVIRONMENTAL ASSESSMENT

- Particular attention was paid to nature conservation.
- The variants have been evaluated considering water protection criteria, such as **the vulnerability of significant drinking water resources** along the Danube.
- Regarding climate protection, we considered the effects caused by the growing proportion of waterborne transport, and the probable effects on the emission of greenhouse gases.

It is important to emphasize that besides the negative effects on nature protection, the planned interventions – in all variants – will probably also have improving effects compared to the present state.

- The mitigation of further bed deepening
- a rise in water level can be achieved during low water periods is favourable for ground water levels and for the water supply of side arms, stopping the current deteriorative tendencies.
- The improvement of the water supply of 12 side arms is planned, and the existing (and planned) spurs will be notched, this way creating a secondary channel which can become a protected habitat against the damaging effects of waves.
- Notching the spurs, creating secondary channel and applying chevron dikes that create habitats are ecologically positive interventions of river training.



Danube Fairway Development Programme

falls under

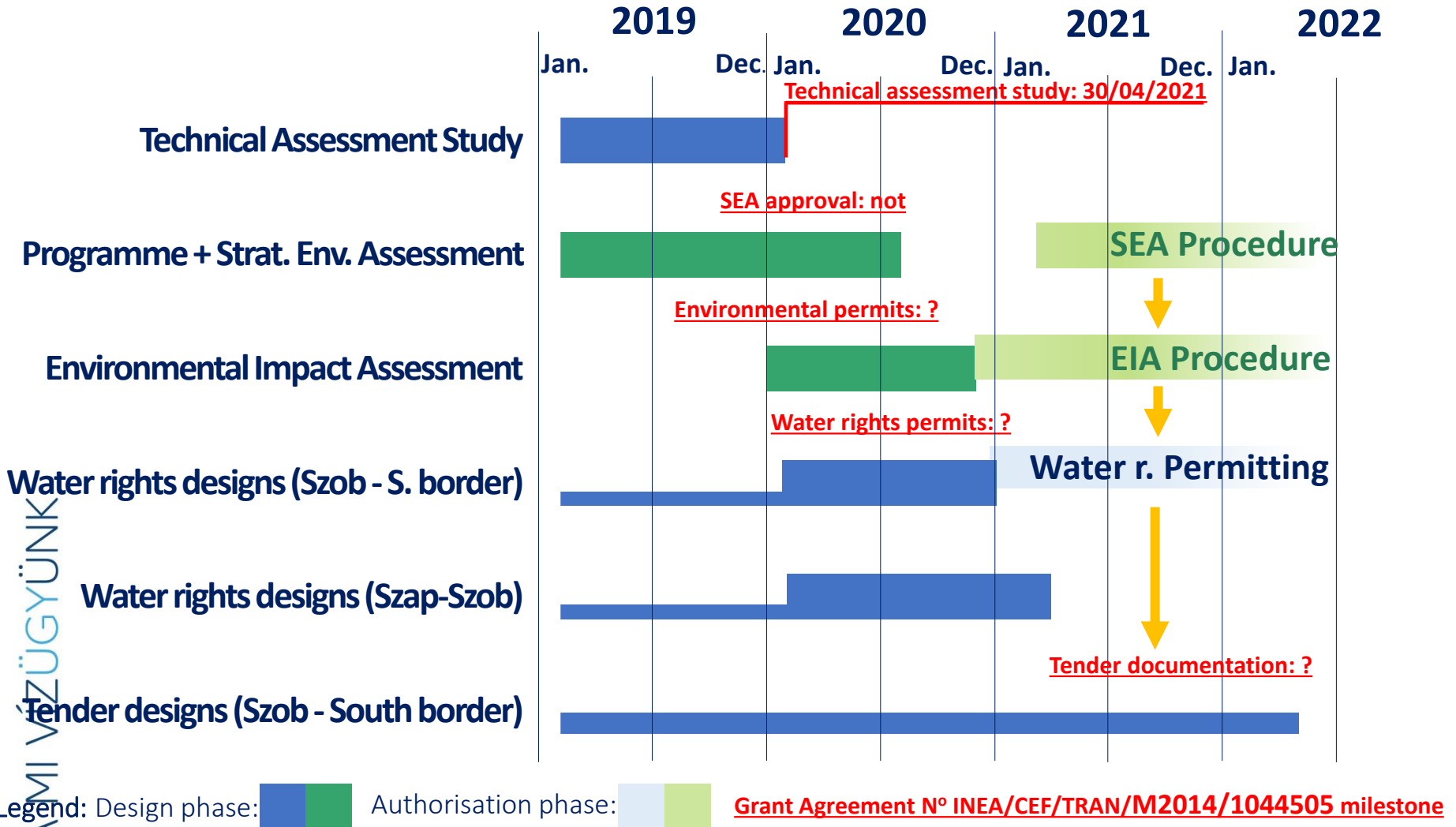
Paragraph 2.(a) in the Article 3 of **Directive 2001/42/EC of the European Parliament and of the Council on the assessment of the effects of certain plans and programmes on the environment**

(in Hungary: Government Decree No. 2/2005 (I. 11.) on the environmental assessment of certain plans and programs)

→ **Governmental approval** needed



SCHEDULING MILESTONES



AMI VZÜGYÜNK



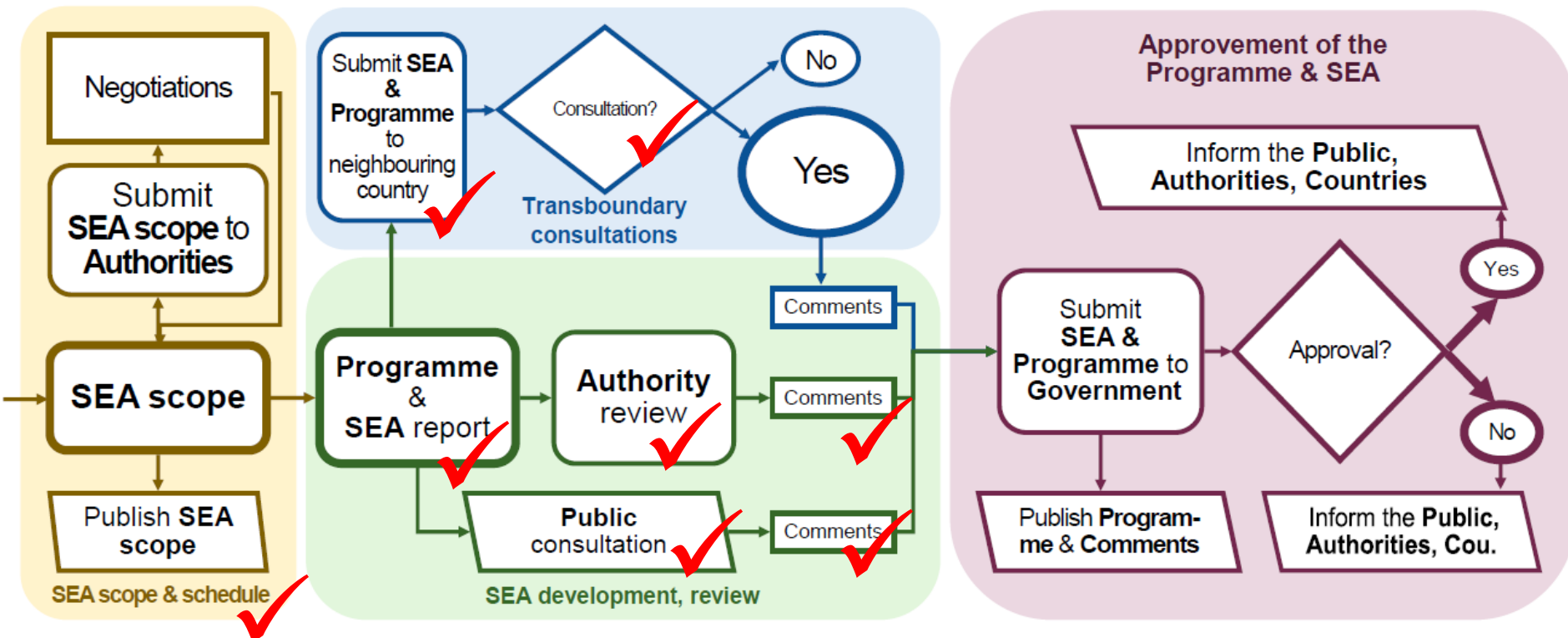
Consultations and finalisation

GA: 30/09/2022

Finalisation of the programme & SEA:

- Section Szob – Southern border – earliest: 30/10/2021

SEA Procedure in Hungary in compliance with 2/2005. (I. 11.) Government Regulation





COMMENTS OF THE PUBLIC

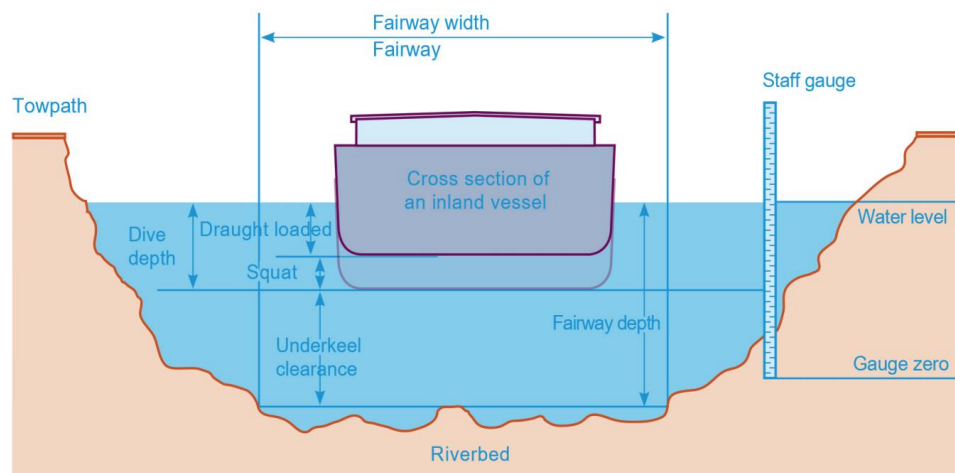
For what reasons do the **design requirements** consider the water level of the 94% river flow duration recommended by the Danube Commission to be relevant instead of the 66% duration included in the UN AGN?



UNITED NATIONS
66% durability
240 navigable day



Danube Commission
94% durability
343 navigable day



Source: via donau.



SEA PROCEDURE SEPARATION



Suggested separation of the SEA procedure



Transboundary consultations

Croatia – full English version of Programme and SEA documentation was submitted to continue the process – the transboundary consultation

Slovak condition of the continuation of the SEA process is to carry out the first phase of consultations on the strategic document within relevant Slovak-Hungarian platforms such as:

- Slovak-Hungarian Commission for Common Watersheds and Border Waters
- Plenipotentiary of the Government of the Slovak Republic for the Construction and Operation of the Gabčíkovo-Nagymaros Waterworks System
- Plenipotentiary of the Government of the Slovak Republic For Water Management Issues on the Border Waters with Hungary
- Plenipotentiary of the Government of the Slovak Republic in the Proceedings before the International Court of Justice The Hague in the Case of the Gabčíkovo-Nagymaros Waterworks System

Thank you for your attention!

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