STUDY ON GOOD NAVIGATION STATUS - GOOD NAVIGATION STATUS IN ACCORDANCE WITH THE TENT-T GUIDELINES

by

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ABSTRACT

On behalf of the European Commission a pan-European consortium[2] conducted a study to substantiate the concept of GNS referred to in article 15(3)b of the TEN-T guidelines[3]. This article stipulates that “rivers, canals and lakes are maintained so as to preserve Good Navigation Status (GNS) while respecting the applicable environmental law”. The following definition was developed during the study: “*Good navigation status means the state of the inland navigation transport network, which enables efficient, reliable and safe navigation for users by ensuring minimum waterway parameters values and levels of service*”. Moreover, GNS is to be achieved considering the wider socio economic sustainability of waterway management transport characteristics. The key focus of GNS is on physical waterway infrastructure.

The main outcomes of the study are:

- a concept for good navigation status,
- a network assessment (identify the existing bottlenecks)
- roadmaps for critical sections of the TEN-T network
- good practise guidelines for implementation of the GNS concept (a manual that shall serve as guidance for waterway administrations on how to achieve and maintain a Good Navigation Status on the European waterway network by 2030)
- exemptions criteria (criteria for justification of exemption of the minimum requirements on draught (2.5 m) and heights under bridges (5.25 m), in accordance with article 15 of the TEN-T guidelines)

The paper will focus on the guidelines towards achieving a Good Navigation Status and on exemptions criteria for not reaching the TEN-T minimum requirements (related to draught and height under bridges).

INTRODUCTION

One of the objectives of the Trans-European Transport Network (TEN-T network[4]) is to ensure that European waterways are well integrated in the European transport system, promoting as much as possible inland navigation as a sustainable transport mode. The TEN-T guidelines stipulate that, by 2030, navigable waterways of European interest have to achieve "good navigation status". This means that these waterways have to help in reaching the full potential of inland navigation in Europe. However, the TEN-T guidelines do not provide a definition for GNS. On behalf of the European Commission a pan-European consortium conducted a study (*Good Navigation Status – Good Navigation Status in accordance with Article 15(3)b of the TEN-T guidelines*) in order to define the GNS concept together with the Member States, river commissions and users.

The objective of the study is to substantiate the concept of GNS referred to in article 15(3)b of the TEN-T guidelines. This article stipulates that “rivers, canals and lakes are maintained so as to preserve Good Navigation Status while respecting the applicable environmental law”. More specific, the study specifies, in close cooperation with relevant experts, a broadly accepted concept of GNS

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[2] Viadonau, Planco, Inland Navigation Europe, STC-NESTRA and the Flemish Ministry of Mobility and Public Works

[3] Regulation (EU) No 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network.

[4] https://ec.europa.eu/transport/themes/infrastructure/about-ten-t_en

and a common methodology that allows a sufficient level of differentiation to the various corridors and specific demand requirements and transport characteristics.

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This paper will focus on the guidelines towards achieving a Good Navigation Status and on exemptions criteria for not reaching the TEN-T minimum requirements (related to draught and height under bridges).

I represented the Flemish Ministry of Mobility and Publics Works in the pan-European consortium that conducted the study between January 2016 and December 2017.

DEFINITION OF GOOD NAVIGATION STATUS AND IMPLICATIONS

Good Navigation Status definition

The following definition was developed during the study based on the desk research and consultation of the experts and stakeholders:

“Good Navigation Status means the state of the inland navigation transport network, which enables efficient, reliable and safe navigation for users by ensuring minimum waterway parameter values and levels of service”

Moreover, GNS is to be achieved considering the wider socio-economic sustainability of waterway management

Good Navigation Status for inland waterways part of the TEN-T Network

The waterways of international importance included in the TEN-T Network are intended to be part of a sustainable transport system serving the needs of the EU Internal Market. This concerns the waterways of the core and comprehensive TEN-T Network, while for inland waterways the core network equals the comprehensive network.

The GNS shall address the TEN-T Network from the legal point of view. Good Navigation Status has to be achieved (and thereafter preserved) by 31 December 2030 according to the article 38 of the TEN-T guidelines.

The legal text from the TEN-T guidelines is Article 15.3:

Transport infrastructure requirements

1. Member States shall ensure that inland ports are connected with the road or rail infrastructure.

2. Inland ports shall offer at least one freight terminal open to all operators in a non-discriminatory way and shall apply transparent charges.

3. Member States shall ensure that:

(a) rivers, canals and lakes comply with the minimum requirements for class IV waterways as laid down in the new classification of inland waterways established by the European Conference of Ministers of Transport (ECMT) and that there is continuous bridge clearance, without prejudice to Articles 35 and 36 of this Regulation.

At the request of a Member State, in duly justified cases, exemptions shall be granted by the Commission from the minimum requirements on draught (less than 2,50 m) and on minimum height under bridges (less than 5,25 m);

(b) ***rivers, canals and lakes are maintained so as to preserve good navigation status, while respecting the applicable environmental law;***

(c) rivers, canals and lakes are equipped with RIS[5]*.*

The GNS concept aims to fully respect the competences of national authorities in line with the subsidiarity principle and to ensure a common approach for administrations sharing the responsibility for inland waterways of international importance.

Geographic coverage of Good Navigation Status

The following map presents the waterways which belong to the TEN-T Network.

Figure 1 : Map of TEN-T Inland waterways

It is clear that GNS is not limited only to the "Core Network Corridors[6]", it has a wider scope. It does cover all waterways according to article 38 of the TEN-T guidelines including for example the (isolated) inland waterways in Sweden, Finland, Lithuania, Italy, Portugal and Spain. Moreover, although not part of the TEN-T Network, also smaller waterways (e.g. CEMT II and III class waterways) and waterways in non-EU Member States may benefit from application of the GNS concept and related good practices in waterway planning and maintenance.

The GNS concept is based on best practices and state of technology in the EU and is valid as well for inland waterways of international importance in EU neighboring countries. Through the presentations and discussions about GNS at the 60th and 61st Working Party meetings on Inland Waterway

[5] River Information Services

[6] http://ec.europa.eu/transport/infrastructure/tentec/tentec-portal/site/maps_upload/SchematicA0_EUcorridor_map.pdf

Transport at United Nations Economic Commission for Europe (UNECE) in Geneva (Switzerland), it became clear that representatives from countries such as Ukraine and Moldova are also very interested in the GNS concept and application. This will help to facilitate efficient international trade and transport with the EU and to develop inland waterway transport in these countries.

Good Navigation Status Components

The following scheme presents the components of GNS with the distinctions between hard and soft components:

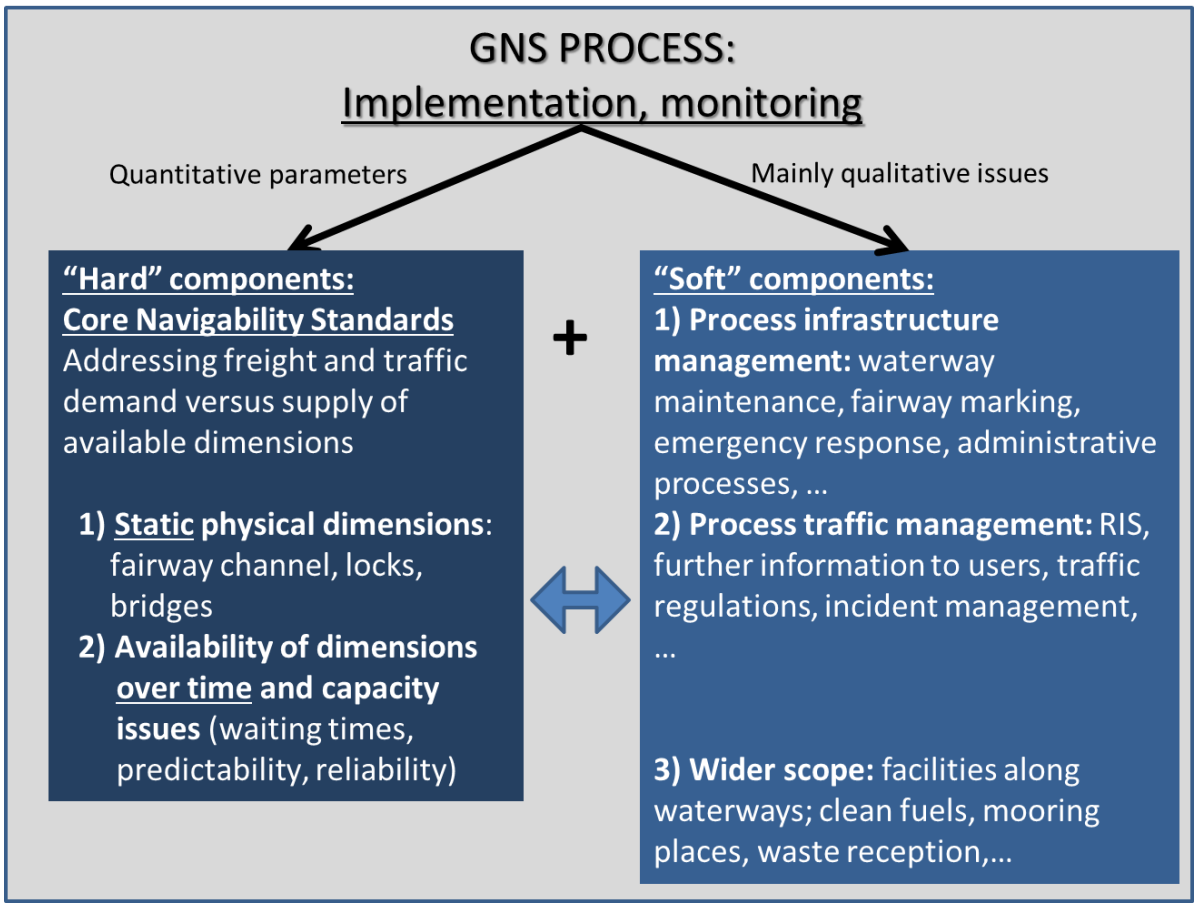

Figure 2: Schematic view on the GNS Concept

It shall be noted that external developments shall be taken into account in the GNS process. This may be the development of transport demand (e.g. shifting freight flows origin-destinations, growing/decreasing commodities, etc.), impact of climate change (changing water levels) as well as innovations which may lead to new possibilities to improve navigation on waterways and the waterway management (e.g. more advanced surveying and monitoring approaches).

Specification GNS "hard" components

- The "hard" components shall have the following characteristics:
  - focus on physical waterway infrastructure as direct output of waterway management activities and measures;
  - coherent set of measurable quantitative indicators (presenting the parameter value) applicable to the entire TEN-T waterway network identified according to a common methodology making GNS measurable and comparable on sections of the TEN-T waterway network;
  - they are directly targeted by TEN-T guidelines and/or (trans)national agreements and regulations such as the European Agreement on Main Inland Waterways of International Importance (AGN).

- The indicators for GNS “hard” components relate to the physical waterway infrastructure and its use. They will:
  - describe the dimensions of the navigation channel in rivers, canals and lakes (e.g. depth, width, height standards) and of locks, ship lifts and bridges, which are determining the vessel dimensions and will allow a comparison with the target parameter value (e.g. current draught versus target draught);
  - describe the availability of the navigation channel (e.g. closures, available draught during the year) and the availability and capacity of locks, ship lifts and moveable bridges.

- For GNS ”hard” components, at the request of Member States, exemptions may be granted by the European Commission from the TEN-T minimum requirements: in case the target value on the draught (2.5 m) and height under bridges (5.25 m) cannot be reached because of justifiable reasons.

Concerning the “hard” components, it is important to create common understanding where the TEN-T minimum requirement, related to draught and height under bridges, apply. The TEN-T requirements apply specifically to the navigable channel: the part of the waterway in which a targeted depth, width and vertical clearance (navigable cross-section) is maintained to enable continuous navigation.

In relation to the targeted depth, the TEN-T requirements explicitly mention the target value on the draught of the vessels, which is the vertical distance between the waterline and the lowest edge of the keel of a vessel. As regards “draught” for the minimum requirement in the TEN-T guidelines (2.5 m as mentioned above), this is seen as a value of least 2.5 m of possible draught of the vessel while still being able to safely navigate on the section of the TEN-T Network. Local targets shall apply for the respective depth of the navigation channel, taking into account the appropriate safety margins between the bottom of the river, lake or canal and the keel of the vessel. For rocky bottoms, this will be a higher safety margin compared to soils that consist of clay or sand. For the Rhine for example an ‘under keel clearance’ is typically applied between 0 and 50 cm. Moreover, for developing realistic and attainable (local) targets and compliance to the TEN-T requirements for vertical dimensions, waterway administrations have to consider occurrences of variation in water levels and longitudinal and cross currents, in both rivers and canals. Water level fluctuations in waterways occur as a result of differences in discharge, tides, seasonal variations, wind setup, translation waves etc. These fluctuations affect the dimensions of free-flowing rivers and impounded (regulated) waterways, but also causes variations in canals with fairly fixed canal water level.

Regarding free-flowing river sections, target values should be related to reference water levels in these sections, in order to reflect the natural and statistical variations in water discharge. The reference high and lower water levels are of particular importance for the design of the waterway, which refer to the water levels at which the full functionality of the waterway is available to for inland navigation. Higher or lower water levels, relative to the determined reference water levels, may result into restrictions to height under bridges and waterway profile (even obstruction). When determining the reference water levels for a waterway, the probability, severity and duration of the restrictions must be taken into consideration, in case the water level exceed the range of reference water levels. The reference water levels, both high and low, are set by the water management authority and laid down in its management plan.

Specification GNS “soft” components

The ”soft” components include both process-related management aspects of infrastructure (e.g. maintenance, marking) or of traffic (e.g. information to users), which contribute to an improved score on the indicator linked to the ”hard” components. Moreover, the soft components are a compilation of processes and utilities that determine and affect the level of service on and along waterways. For example, improved maintenance processes shall provide a better value for the actual depth (available draught) of the navigation channel of the section. Another example is the more accurate information and predictions about the water levels which allows ship-owners to increase the payload (transport efficiency).

Furthermore, soft components may optionally address a wider[7] scope of inland navigation infrastructure which is not directly related to navigation itself (e.g. facilities along waterways such as

[7] beyond navigation channel, locks, ship lifts and bridges

for clean fuel bunkering, waste disposal, resting places, car-lifts, shore-power, internet connections). For some of these elements also a legal reference is found in the TEN-T guidelines.

Furthermore, it shall be remarked that port, terminal and handling facilities are of key importance to achieve a competitive inland waterway transport operation. However, in Article 15.3b of the TEN-T guidelines GNS is addressing rivers, lakes and canals defined under (Article 14.1 a),b) and c)). Article 15.3b does not explicitly mention the status of related infrastructure, inland ports, associated equipment, telematic applications (RIS) or connections of the inland ports to the other modes in the TEN-T Network. It can therefore be concluded that from a legal viewpoint the focus shall be the quality of the fairway channel.

GNS ”soft” components have the following characteristics:

- Infrastructure and traffic management process components are important for GNS as they influence the level of ambition and achievement of the targets for the GNS ”hard” components (e.g. actual available draught and waiting times).
- The impact of introducing GNS ”soft” components might vary from region to region, depending for example on whether infrastructure management processes are already in place or have to be newly introduced
- Specific EU regulations apply for these components:
    - Implementation of standards set out in the RIS Directive on the comprehensive network (Article 15.3 c)
    - Implementation of the standards set out in the Clean Fuels Directive on the core network (Article 39.2 b)

”Soft” components are not always measurable in a quantitative manner on the TEN-T Network at the level of specific sections. Some can be monitored by means of qualitative descriptions about processes covering multiple sections of the TEN-T Network or even entire corridors. An example may be the description of the information systems in place to provide forecasts about the expected water level situation on the section of the waterway network. (pan-European consortium (2017))

MINIMUM STANDARDS OF A PROCES ON GOOD NAVIGATION STATUS DEVELOMENT

The GNS concept shall include minimum standards for both the process and methodology for achieving GNS in a systematic way for the sections of the TEN-T Network. Member States shall incorporate the GNS process in their waterway management plan. Some countries with a long standing history of inland waterway transport and a large inland waterway transport market will already have these processes into large extent and it makes no sense to repeat or replace what is already there. Consequently, no specific GNS development plan is needed for such situations in order to avoid administrative burden. However, other countries may develop GNS development plans in order to ensure that GNS is being implemented. Furthermore, such plans including GNS processes may be a pre-requisite to apply for co-funding from the European Union for rehabilitation and upgrading works.

Scope of the GNS process: towards GNS in waterway management plan

The GNS process primarily focuses on the “hard” components, or the physical dimensions that make up the core navigability standards (navigation channel – width/depth, lock availability and bridge clearance) on the river, lake or canal.

Furthermore, in order to avoid unnecessary and unacceptable administrative burden for Member States and waterway managers, it is clear that it does not make sense to run again a full-fledged GNS process on stable and well performing waterway sections that already fulfil core navigation standards over a longer period of time. The GNS process and GNS development plan shall focus on the most relevant, critical and volatile issues. Especially sections that have a combination of the following situations shall be in the focus of a GNS development plan:

- Free-flowing waterways: variable width, depth or height dimensions usually occur on free-flowing river sections. These limitations (or rather their unpredictable variations) have a negative impact on the reliability and economic efficiency of inland waterway operations. In the absence of frequent maintenance or rehabilitation works, the set targets for the reference low water level will be compromised, causing insufficient depth on too many days to be able to use

the possible draught of the vessel. As a consequence, inland waterway operators (and their customers) are faced with deteriorated load factors and fluctuating and high freight rates. In many cases fluctuation is due to unavoidable natural circumstances (lack of precipitation), but it may be aggravated due to lack of maintenance or rehabilitation. Severe fluctuations of the available navigable channel depth reduce the attractiveness and competitiveness of inland waterway transport. If there is poor anticipative management, specific attention shall be given to remedial measures and rehabilitation that improve performance of the sections.

- Sections with limited lock availability: limitations in lock availability and capacity will in general lead to unpredictable delays and waiting times. This has a direct negative impact on economic efficiency and reliability of inland waterway operations. Consequently, the share or non-productive operational hours is raised and the on-time reliability of inland waterway transport – usually one of the strongest competitive factors of inland waterway transport – is impaired. GNS measures may aim at increasing the capacity or improving the performance.
- Sections with too limited width, depth or height dimensions: curve radii, width of canals and height of bridges (with generally stable dimensions) can be bottlenecks in certain corridors. The GNS process should be aimed at identifying such limiting infrastructure bottlenecks and produce solutions for their remediation.

A focus on these “hard” or physical components of the waterway infrastructure is legitimate, as these components are direct outcomes of any waterway management measures on the one hand and have the largest economic impacts on inland waterway transport operations on the other. User consultation is a key mechanism to identify bottlenecks in the infrastructure and to discuss the possible solutions.

Key characteristics of a Good Navigation Status process

The proposed process to develop GNS is viewed as a continuous improvement cycle. The proposed process should fulfil the main attributes of integrated waterway management:

- Targeted: Every waterway maintenance, management or rehabilitation activity should be performed within the framework of defined targets, e.g. target values, levels of service, etc.
- Strategic: For a coordinated, effective and efficient achievement of targets, a specific waterway management strategy should be applied, aiming for achieving and maintaining GNS at least by the time-horizon 2030 and maintaining the status from 2030 onwards.
- Multi-disciplinary: Waterways are not only traffic routes but are characterized by a variety of other uses with sometimes conflicting priorities.
- Participatory: Due to the multi-disciplinary character of waterways, participatory management is advisable in order to understand and respect the other uses of waterways. All relevant stakeholders should therefore be engaged in the planning process to achieve and maintain GNS.

in addition, discussions with stakeholders and waterway managers revealed that the GNS process should fulfil following additional requirements:

- Fact-driven: the process should create transparency for all involved parties, that is, (non)compliance with target values should be easily monitored by means of selected performance indicators.
- Minimum administrative burden: the process and reporting efforts should be minimised by means of using available data and digital sources to the maximum extent possible, possibly supported by the EC providing funds to develop the data and interface with TENtec and the legislative backbone (e.g. RIS Directive). Furthermore, it should be pursued to harmonize available databases (e.g. UNECE Blue Book, TENtec and national waterway databases) and mitigate multiple requests and delivery of similar data.
- GNS process as a means to an end: data collection and reporting is not a goal in itself: the GNS process should ultimately result in a well-functioning European waterway system in line with the provisions of the TEN-T guidelines, which is verifiable by monitoring the GNS KPIs on the TEN-T Network and through feedback from transport users, properly taking into account specific conditions such as reference water levels.

It is not the intention of the proposed GNS process to identify or re-define target dimensions for waterway sections at the start of each process cycle. The existing national and supra-national regulations and regimes provide in general a good starting basis for improvement cycles aimed at reaching already agreed targets values. Through the study it became clear that on many waterways meeting the current targets is already challenging (e.g. having sufficient draught on waterways such as the Danube, Elbe and Oder).

On the other hand, the proposed GNS process could provide guidance to waterway managers on how to determine adequate targets for navigation channel dimensions (also for waterways not meeting CEMT[8] IV requirements). This shall be part of a long-term vision or a plan to implement a cyclical process for reaching and maintaining GNS, also based on stakeholder consultations. In this way, the GNS process contributes to improving and monitoring navigability conditions on a permanent basis, supported by waterway administrations experienced in long-term planning and working in cyclical processes.

The proposed GNS process contains six main steps, which are described in the following sections.

The six steps in the proposed minimum GNS process

Based on various good practice examples the main elements of a minimum GNS process have been formulated and structured in six process steps.

Some of the proposed process steps are already part of the normal procedures in various countries. They therefore reflect usual practice in some countries and would be easily accepted by stakeholders in these countries, notably the waterway managers. A GNS Plan shall refer to these good practices and available documents and waterway management plans. The main added value of this process description is based on the fact that for the first time all process steps are consolidated into one cyclical process, inspired by the good practices and the best process elements encountered throughout Europe during the study.

The proposed GNS process uses the best of both (or rather more) worlds. The resulting GNS process shall normally be carried out in yearly cycles. As it is a cyclic process, the GNS process can basically start in any of the process steps (i.e. should not necessarily start in the monitoring phase). In any case, a description and evaluation of the status-quo is needed as an initial starting point. This may lead to a review of targets and specification (see grey circle).

Achieving GNS by 2030 will require deployment of a process which is characterised by the following six steps:

[8] Classification of an inland waterway according to the European Conference of Ministers of Transport.

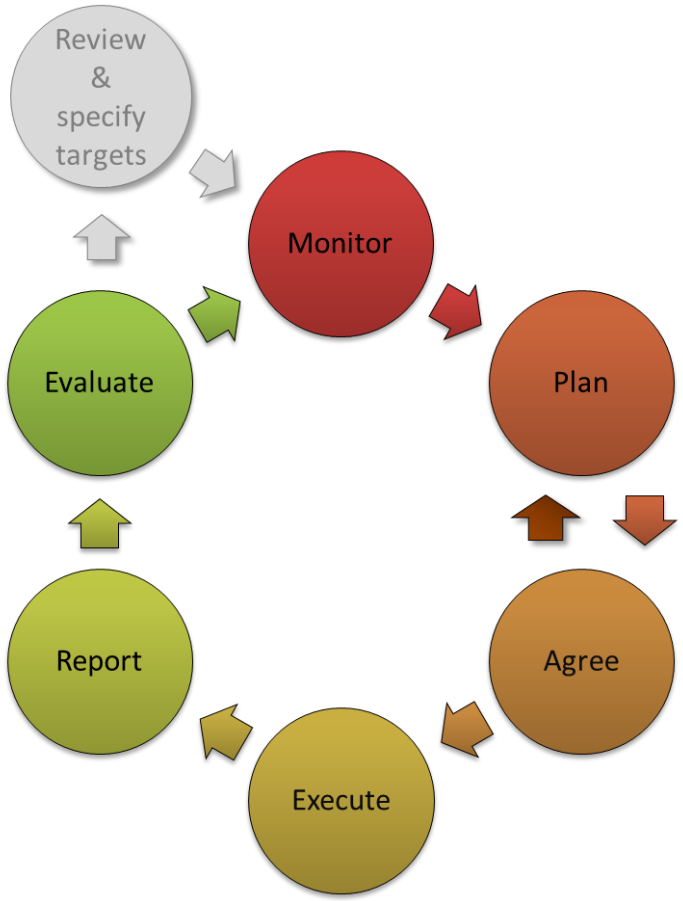

Figure 4 : Schematic view on the six process step to achieving GNS

Step 0: Review & specify targets

It is not the key objective of the proposed GNS process to identify or define new target dimensions for waterway sections at the start of each cycle. Target review and specification is therefore not included as a default, but as an optional, initial process step (if needed). Strategic in-house guidelines and targets, which pertain to fairway maintenance, are normally already in place. Only if overall waterway management targets are apparently lacking with a view to reaching GNS by 2030 (e.g. compared to TEN-T minimum standards on draught and bridge clearance) or if evaluation activities (Step 6) lead to the conclusion that waterway management targets need to be revised or refined, a consultation of stakeholders shall be initiated. This as input for the process to (re)define target values and to agree on a long-term vision to reach the (re)defined target values to achieve and maintain GNS.

Step 1: Monitor and analyse status of the waterway

Topical data on the “hard” components, i.e. the physical status of the waterway are collected in the first step for the TEN-T inland waterways, and optionally/voluntarily this may be extended to smaller waterways and non-EU waterways. Closures for navigation of waterways and the current state of the navigation channel (depth/width) shall be monitored on the basis of hydrographic riverbed surveys. Furthermore lock closures and waiting times at locks and lock availability shall be monitored, for instance through data from electronic lock dispatching tools. Based on the analyses of collected data the most critical waterway sections in the particular year shall be identified.

Step 2: Plan measures

At the end of Step 1 a list of bottlenecks or critical sections in the waterway network is identified by the waterway managers and transport users in view of reaching GNS by 2030 latest. It shall take into account existing plans to improve the navigation conditions. Based on these monitoring results and analyses, the remedial and/or preventative actions and measures need to be defined, planned and presented in waterway management or GNS Plans prepared by Member States. The remedial and/or preventative measures need to be specified and planned, so they can be presented and discussed with stakeholders (Step 3) and later be executed (Step 4). The stakeholders to be officially involved (and to be granted the status of a party to the approval procedure) in the planning phase shall depend

on national provisions and the scope of the project (e.g. navigation authorities, land-owners, national park authorities). A clear and important example in this respect is the close interaction that shall be organised with the environmental requirements and interests stemming from the EU Water Framework Directive (WFD) and the objective to reach Good Ecological Status on European waters.

Step 3: Agree on measures

Stakeholder engagement and acceptance is key to the success of the GNS process. Administrations in charge of maintaining and improving the performance of waterways for navigation need to include stakeholders at various levels and from multiple fields of expertise. Especially critical waterway sections on which the different uses (e.g. ecology, flood protection, recreation) are conflicting or where the achievement of GNS is most heavily disputed will require a process in which all different stakeholders and interest groups are integrated, in order to come to commonly accepted solutions. The basic aim should be the integration of all relevant interests (shipping industry objectives, environmental objectives, fishery, etc.) into the design of measures, thus preventing later barriers and significantly reducing the amount of potential compensation measures. Successful good practices on stakeholder engagement are characterised by regular, recurring and fact-based communication.

Step 4: Execute measures

In most European countries works related to maintenance and improvement activities are carried out by private contractors on the basis of framework agreements covering a time span of several years. Before actual start of the works a briefing meeting shall be carried out. A meeting is scheduled with the contractor in which the details for the measures are finalised. During the maintenance works, work safety supervision as well as ecological and local/technical site supervision should be carried out. If legal or ecological issues occur during the maintenance measures, they have to be clarified in cooperation with involved experts.

Step 5: Report outcomes

The outcomes of fairway management measures have to be properly documented and reported. First of all, the work of possible contractors has to be monitored and controlled. The reports drafted by the (ecological and local) site supervision as well as the final hydrography survey of both the dredging and the dumping sites are analysed for this reason. In addition, information necessary for monitoring of performance indicators is collected. Data are not only processed nationally, but key performance data should also be transmitted to the TENtec database, in order to maintain a topical overview of the navigation status of the various European waterways.

Provision of continuous and target group-specific information on the state of the fairway to the users of the waterway and other stakeholders is key to the GNS process. For example, good practices from the Danube corridor have shown that regular and continuous ex post information on fairway management activities (e.g. dredging activities, fairway channel relocation, hydrographic surveying, lock revision activities) as well as their outcomes (e.g. number of days per month with fairway channel depth of more than 2,50 m, average waiting times at locks) contributes to enduring and committed stakeholder involvement in the GNS process.

Step 6: Evaluate measures

The term "evaluation" is understood as the assessment of the effects that measures have to maintain or upgrade the status waterway with view to reaching GNS targets. This concerns for example the effects of fairway maintenance and rehabilitation measures (i.e. maintenance dredging works or repositioning the course of the navigation channel) on the availability of targeted navigation channel indicators. When it comes to evaluation of width/depth dimensions, it is based on monitoring the hydro-morphological changes in the riverbed and the monitoring of ecological effects of measures. Regarding measures addressing lock availability and bridge clearance, mostly automated data sources (e.g. RIS/NtS[9]) can be used to analyse and evaluate impacts of measures over the past period.
In order to increase customer satisfaction, waterway administrations shall make use of consultative instruments. Anonymous user surveys help to evaluate their performance in connection with regular maintenance activities, or the provision of information, etc.

[9] Notices to Skippers

Organisational approach for the GNS process

This section comments on the possible organisational setting in order to implement the GNS process in practice, while ensuring adequate coordination at the EU level, for the purposes of the functioning of the TEN-T waterways network.

It shall be noted that GNS is a new requirement introduced by the TEN-T guidelines. Administrations and stakeholders affected by the new requirement have to act and address the requirements consequently. The adaptation should not result in additional work load without added value, but rather on a possible change of working practices, on the basis of strengthened cooperation at river basin and European levels, where needed. It shall be noted that many waterway managers already have such GNS processes and cross-border coordination processes established. Additional processes and organisational structures may therefore not always be needed.

In a preliminary manner, the organisational requirements for implementing in practice the GNS process can be summarised in the following points, distinguishing the national level (level 1), the connected international waterways (level 2), the European level (level 3) and pan-European level (level 4):

National Level (level 1)

- A national body will be assigned in charge of the GNS process in each concerned Member State. Typically, this will be the national Ministry of Transport or administrations in charge of national inland waterways.
- The body contributes to the identification / implementation of infrastructure improvements, maintenance works, process traffic management, etc. ("hard" and "soft" GNS components).
- The body identifies sections where targets for the "hard" GNS components cannot be reached for physical or operational reasons and prepares the corresponding requests for exemptions to the minimum TEN-T infrastructure requirements.
- The national body establishes the waterway management plans or similar documents, incorporating the GNS processes. If needed a national GNS development plan is prepared, e.g. in case of processes not yet existing in national waterway management plans, in case of exemptions to be requested or in case of requests to the EU for co-funding of rehabilitation or upgrading projects. The body ensures proper involvement and consultation of stakeholders about service quality levels in the different sections of the inland waterway network and provides information.

Connected international waterways (level 2)

- A body in charge of international coordination of the GNS processes (normally the International River Commissions and/or coordination bodies of macro-regional strategies existing in the EU).
- The international body can act as platform for monitoring the effective achievement of GNS, coordinated cross-border actions and may propose measures adapted to international waterway in question.
- The international body provides technical advice to national authorities, may conduct GNS related studies for the river basin, etc.

European level (level 3)

- European Commission provides a database with up-to-date information on the GNS status of each inland waterway transport section in the TEN-T Network (TENtec system, see figure 5 below), which can be used as a basis for monitoring and network assessments for GNS.
- European Commission provides for a cooperation framework with national bodies, inland waterway transport industry sector representatives, international River Commissions (for example, by means of a formal "Expert Group"), supported by monitoring studies and network assessments (e.g. using TENtec data).
- Cooperation at EU level serves to update and further elaborate GNS guidelines and evaluate, in due time, the progress achieved.
- In the cooperation framework, European Commission consults with the group proposals for granting exemptions.

- Inland waterway transport infrastructure works needed for achieving / preserving GNS are identified and noted in the TEN-T Corridors Work Plans. EU Funding / Financing measures are envisaged for those works in the context of CEF / Regional Funds actions.

Pan-European level (level 4)

- UNECE may consider to support the GNS process by means of alignment between GNS development plans and TENtec with AGN and the Blue Book, thus avoiding double work.
- In particular, the coordination and alignment of the navigability standards between EU member States and neighboring countries may be a topic to address at the UNECE platform. Seamless transport across the whole of Europe will also require coordination with non-EU Member States. (Quispel M., Armbrecht H., Turf S. et al (2017))

TENtec

TENtec is the European Commission's information system to coordinate and support the Trans-European Transport Network (TEN-T) policy. TENtec has two main functions:
1.The collation of technical, geographical and financial data to be used to inform policy-making and political decision-making processes related to TEN-T and its associated funding programme, the Connecting Europe Facility (CEF). The core TENtec modules deployed for these purposes are OMC (Open Method of Coordination) and iReport, both of which are accessible through the TENtec Private Portal;
2.Provision of technical support to the Innovation and Networks Executive Agency (INEA) and its grant management functions. This incorporates supporting the necessary workflows for issuing grant agreements after completion of the selection cycle for new projects, including proposal submission and reception, and the required web interfaces. The core TENtec modules deployed to meet these requirements are eSubmission services, Action Status Report, Project Follow-Up, Evaluation and Grant Agreement.
In addition to its primary dual function, TENtec also enables the European Commission to easily compile information and create timely reports and maps. This benefits all parties involved in TEN-T project implementation processes, providing greater transparency, data quality and a systematic up-to-date overview of the budget execution and technical implementation for each TEN-T/CEF project. Another important function of TENtec is its capacity to act as a bridge to the ministries of Member States and other key stakeholders (DG REGIO, DG ENV, EIB and neighbouring countries), including support for transport modelling of future policy and budgetary scenarios, briefings, the mapping of TEN-T/CEF co-funded projects and other layers such as alternative fuels and secure and safe parking.
TENtec also played an integral role in the Core Network Corridor studies, providing vital data collection services and compliance maps built upon selected technical indicators, based on the TEN-T Regulation.
As regards inland waterway infrastructure, detailed data is being collected for the years 2014 and 2015 as regards the waterways, locks, bridge as well as ports and alternative fuel infrastructure. Included are 35 parameters for the inland waterway links, 8 parameters for locks, 9 parameters for lock chambers and 6 parameters for bridges. A number of parameters does address hard components of GNS. This concerns information on the CEMT classification, data on the dimensions of the allowed vessels, data on the maintenance targets for the navigation channel, reference water levels, waiting times at locks, the reliability of the dimensions (e.g. draught), the height under bridges and into what extent the local targets and minimum TEN-T requirements have been reached.
In order to minimise the administrative burden, as much as possible available sources are used to fill TENtec with the values for the parameters. This included also usage of (aggregated) data extracted from Notices to Skippers, Fairway Information Services and ECDIS and RIS Index, which have a legal backbone through the RIS Directive. Moreover, many data are rather static and do not change on a year-by-year basis.
More information about TENtec: **https://ec.europa.eu/transport/themes/infrastructure-ten-t-connecting-europe/tentec-information-system_en**

Figure 5: Explanation TENtec

EXEMPTIONS

This concerns exemptions for not reaching 2.5 m draught or 5.25 m height under bridges according to the article 15(a) in the TEN-T guidelines.

At the request of a Member State, in duly justified cases, exemptions shall be granted by the Commission from the minimum requirements on draught (less than 2,50 m) and on minimum height under bridges (less than 5,25 m).

The TEN-T guidelines require that river, canals and lakes that are part of the TEN-T Network comply with the minimum requirements for class IV waterways according to the CEMT, which prescribes the horizontal dimensions (width and length of the allowed vessel). In addition, the TEN-T guidelines state that as regards the vertical dimensions at least 2,50 m draught for the vessel and 5,25 m passage height under bridges shall be available.

The rationale for the minimum requirements is that inland waterway transport on the TEN-T Network can only fulfil its transportation role when there is sufficient capacity for European cross-border traffic. Local waterway sections on the TEN-T Network which do not have sufficient draught and height under bridges may prevent inland navigation from providing efficient, reliable and punctual services. Such bottlenecks may hamper the functioning of the TEN-T Network and result in negative external costs undermining the full potential of inland waterway transport and its benefits for the EU Internal market.

Some sections of the inland waterways that have been included in Annex I of the TEN-T Guidelines do not meet the specified minimum vertical dimensions. According to the TEN-T Guidelines, infrastructure improvements would be needed to ensure that those sections meet minimum draught and height under bridges by 2030 (all TEN-T waterways are part of the TEN-T Core Network).

Nevertheless, the TEN-T Guidelines foresee the possibility of exemptions for the minimum draught of a vessel of 2.5 m and 5.25 m minimum passage height under bridges. That means that the sections in question can continue to be part of the TEN-T Network even if they involve a limitation on transportation capacity.

The TEN-T guidelines impose three procedural conditions to acquire an exemption for not reaching the minimum dimensions as regards draught and height under bridges:

- The request for exemption has to be formulated and submitted to the European Commission by the concerned Member States.
- The concerned Member State has to "duly justify" the request
- The European Commission has to approve the request.

The specific procedure and details as regards exemptions need to be formulated and decided upon by the European Commission. However, the following description can be provided as an example how the exemptions could be seen and applied. This description is based on the stakeholder consultations and meetings with experts which took place during the study on GNS.

Nature of the exemptions

In principle, it is conceivable to distinguish between "temporary", "permanent" and operational" exemptions. Such exemptions may be granted based on “ex ante” requests (e.g. permanent exemptions). However, exemptions may also be relevant on the basis of ex post assessments, for example, due to unforeseen circumstances, such as incidents which may block a link or bridge for a long time or due to long low water periods causing limited draught. The thresholds would need to be defined as regards when an exemption is needed, taking into account the added value of the exemption procedure in relation to the involved administrative burden.

Of course a "Temporary" exemptions shall be limited in time. For example, a Member State responsible for the inland waterway section affected by limitations for navigation in draught and/or height under bridges may require time beyond 2030 to execute infrastructure maintenance or works needed in order to meet minimum requirements as regards draught or height under bridges. The European Commission may grant a temporary exemption to bridge such a period.

In exchange, "permanent" exemptions would apply to sections where there is an overwhelming physical impossibility, risk of serious and irreversible environmental damage or otherwise overriding public interest reasons that prevent achieving the minimum requirements as regards draught and height under bridges for navigation.

In addition, it is conceivable to consider "operational" exemptions, for example regarding certain periods of the year where minimum draught cannot be achieved because of meteorological and hydrological conditions while taking into account the statistical method for the reference high/low water levels (e.g. extreme high water, extreme low water periods, ice).
Furthermore, incidents or infrastructure works may cause closures of inland waterways. These cases for “operational” exemptions can be identified and substantiated by means of the reference water levels applicable to the specific waterway stretch as well as thresholds for the duration of closures in relation to the cause or reason for the closure. Moreover, monitoring the dynamic draught levels and height under bridges as well the availability of the network (closures) can be an input for ex post assessments to judge whether an exemption is needed. Possibly this ex post assessment can be done with TENtec data stemming from Notices to Skippers and Fairway Information Services.

Impact of the exemptions

The impact of the draught and height under bridges limitations shall be considered. In principle, the impact can be seen as:

- Small: limitations do not seriously affect the basic functioning of IWT operations;
- Medium: there are traffic restrictions, but IWT operations can still be performed
- High: limitations are a serious TEN-T bottleneck.

Criteria can be defined for the classification, for example by means of calculation of the costs of the limitation for the transport industry. Furthermore, feedback and input from transport user organisations (e.g. EBU, ESO,) may be used to classify the impact. Such classification can also be related to priority setting, e.g. in relation to co-funding by the European Commission for rehabilitation works to improve the performance of the network and making the network compliant with the minimum standards as regards the draught and height under bridges.

Administrative matters to be considered

In connection with the procedure foreseen in the TEN-T guidelines, the following matters would require attention:

<u>Identification of sections requiring exemptions</u>

In advance of the final date for completion of the TEN-T Core Network (2030), waterways sections requiring exemptions for the draught and height under bridges should be identified based on the GNS network assessment and monitoring of depth of navigation channels and height under bridges. Limitations shall be identified and the impact on inland waterway transport operations shall be estimated (small, medium, high). Subsequently, the identification should clarify the nature of the required exemption (temporary, permanent, operational).

<u>Deadline for requesting exemptions</u>

The concerned Member States should request the exemptions to the European Commission well in advance of the 2030 final date. This concerns ex ante assessments, notably as regards the permanent and temporary exemption types. All concerned parties that use the waterways sections in question (operators in cross-European trade, shipping companies, countries/regions linked to the waterways in question, etc.) should be adequately involved. Concerned parties may also provide input or validate the classification as regards the impact on inland waterway transport operations (small, medium, high).

<u>Elements supporting the request for the exemptions</u>

Each waterway section is unique and the reasons for the exemptions would have to be examined on a case-by-case basis taking into account the local conditions.

Exemptions, depending on their nature (temporary, permanent, operational) would require, in principle, solid supporting justification on the basis of:

- Technical / engineering / hydro-morphological / hydrological explanations
- An assessment of the impacts for the environment

- Economic / funding / social arguments

Examination and justification of the exemptions by the European Commission

The responsibility of granting an exemption falls under the responsibility of the European Commission. Each waterway section is unique and, probably, the exemptions and their impacts would have to be reviewed on a case-by-case basis by the European Commission. The European Commission would have to consider possible conditions (e.g. time extensions, compensatory measures, alternative parameter targets to be achieved as regards draught and height under bridges).

Information to third parties

Third parties affected by exemptions to minimum requirements in a particular section of the TEN-T Network should be adequately consulted at the different stages of the process (examination of the request and final decision). (pan – European consortium (2017))

CONCLUSION

The GNS study was an important first step as input for discussion and exchange of knowledge and good practices to be continued on European, regional and national level. Important is to further specify the local targets for GNS, since this requires local knowledge on the market conditions and the hydrology and hydro morphology. Examples are the targets for the depth of the navigation channel and targets for the reliability of navigation.

Another element for further development is the issue of exemptions for not reaching 2.5 m draught and 5.25 m height under bridges. Discussions between the European Commission and Member States are recommended to further elaborate the procedures and approach. It is likely that this will be taken into account in the evaluation of the TEN-T Guidelines in 2023.

REFRENCES

Quispel M., Armbrecht H., Muilerman G.J., De Schepper K., Van Liere R., Turf S. (2017). Final report of the study on Good Navigation Status – Good Navigation Status in accordance with Article 15(3)b of the TEN-T Guidelines

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