NAIADES sub-group on Good Navigation Status

(GNS sub-group)

Expert recommendations for the development of future TEN-T policy and the revision of the TEN-T regulation

Chair: DG MOVE
Co-chair: Ivo ten Broeke
Rapporteur: CCNR Secretariat
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Authors

Gernot PAULI, CCNR Secretariat

Raphael WISSELMANN, CCNR Secretariat

Kai KEMPMANN, CCNR Secretariat

Executive summary

As Rapporteur of the GNS sub-group, the CCNR Secretariat drafted this report on expert recommendations for further development of the EU TEN-T policy, taking into consideration the results of Report No.1 of the GNS sub-group on “Draft recommendations for the development of common, harmonized guidelines/standards for Good Navigation Status”, and the report of the correspondence group[1] in support of achieving the Good Navigation Status and setting up appropriate objectives for rivers and canals, “Proposals for appropriate GNS objectives for rivers and canals”.

The report analyses the findings from the answers given by members of the GNS sub-group who responded to DG MOVE’s emails of 13 January, 3 April and 15 July 2020. (See also **Annex 1, Annex 2, Annex 3** and **Annex 4**.) In these e-mails, DG MOVE asked for recommendations for inland waterways (IWW) to meet users’ requirements for seamless navigation under a changing climate, taking into account the different characteristics of waterways (canals, impounded and free-flowing rivers) as well as for proposals for the future policy for TEN-T in relation to the development of IWW.

The members of the GNS sub-group have identified - based on their practical experience in the management of inland waterways - several issues in the TEN-T regulation which, in their professional opinion, **hinders the implementation** of the provisions such as the Good Navigation Status. The members highlighted that **inland waterways cannot be governed in the same way as road and rail infrastructure** and thus **recommend adaptation to the TEN-T policy and the TEN-T Regulation.** Members proposed the implementation of a **corridor approach** and to **give more room** in the TEN-T regulation for consideration of the different **hydro-morphological characteristics** of free-flowing and impounded rivers as well as canals. Members are reminded that maintenance and upgrade of inland waterways is **working with nature**. Therefore, provisions for the development of inland waterway transport need to take account of **environmental protection**, **climate change adaptation and resilience**, as well as other EU policies such as the **Green Deal** and Digital Europe. They also highlight the fact that inland waterway transport needs to **respect other water uses**. In addition, the members of the GNS sub-group suggest considering new developments and new challenges, such as **smart shipping**, **cyber security** and **pandemic resilience**.

[1] In 2017, the European Commission acknowledged the Member States’ request for more appropriate objectives for rivers and canals and proposed to the CCNR to set up a correspondence group together with experts from other European countries and river commissions on this matter.

Follow-up of previous and current reports

Date	Comment
July 2019	Proposals for appropriate GNS objectives for rivers and canals, conclusions and recommendations of the Correspondence Group in support of achieving the Good Navigation Status and setting up appropriate objectives for rivers and canals
August 2019	Draft recommendations for the development of common, harmonized guidelines/standards for Good Navigation Status
26.03.2020	Report on trends for future TEN-T policy
19.06.2020	Draft report on expert recommendations for the development of the future TEN-T policy and the revision of the TEN-T regulation
11.09.2020	Final Report on expert recommendations for the development of the future TEN-T policy and the revision of the TEN-T regulation
22.03.2021	Revised report on expert recommendations for the development of the future TEN-T policy and the revision of the TEN-T regulation with an additional chapter on conclusions by DG MOVE

Legal notice

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1. Background information

Under the Contract MOVE/D3/SER/2019-387/SI2.797735, work package 8, the CCNR Secretariat was requested by DG MOVE to analyse answers provided by GNS sub-group members in reply to DG MOVE's emails of 13 January, 3 April and 15 July 2020 on the recommendations for the future TEN-T policy. (See also **Annex 1**, **Annex 2, Annex 3** and **Annex 4**.)

In the above mentioned emails, DG MOVE asks for recommendations for inland waterways (IWW) to meet users' requirements for seamless navigation under a changing climate taking into account the different characteristics of waterways (canals, impounded and free-flowing rivers) as well as for proposals for the future policy for TEN-T in relation to the development of IWW.

As Rapporteur of the GNS sub-group, the CCNR Secretariat drafted the following report on expert recommendations for further development of the EU TEN-T policy. The report analyses the answers given by members of the GNS sub-group who responded to DG MOVE's emails (hereafter referred to as **Members, meaning one or more**), namely Austria, Belgium, Czech Republic France, Germany, the Netherlands, Poland, Romania and Slovakia, as well as CCNR, Danube Commission, International Sava River Basin Commission, UNECE, EBU, ESO, EFIP, INE and Pro Danube. The report also recalls conclusions of the Report No 1 "Draft recommendations for the development of common, harmonized guidelines/standards for Good Navigation Status" (hereafter referred to as Report No. 1) as adopted by the NAIADES II implementation group.

The terms of reference of the GNS sub-group contain further requirements regarding the reporting of the GNS sub-group and the rapporteur: the GNS sub-group reports on all its activities to the NAIADES II implementation group. Reports of the sub-group addressed to the NAIADES II implementation group should contain a maximum of 50 pages excluding annexes and shall include a report of the common findings and a set of conclusions and recommendations. To this effect a rapporteur shall be appointed. The rapporteur will prepare and coordinate the reports of this sub-group on the basis of all members' written contributions and of relevant material and events identified by the group members and/or the European Commission.

The following main deliverables shall be presented by the GNS sub-group:

1. draft recommendations for the development of common, harmonised guidelines/standards for Good Navigation Status (delivered October 2019);
2. draft recommendations for IWW to meet users' requirements for seamless navigation under a changing climate, taking into account the different characteristics of waterways (canals, canalised rivers[2], free-flowing stretch) (to be delivered by October 2020);
3. overall draft recommendations on the future policy for TEN-T in relation to the development of IWW (to be delivered by February 2021).

However, in the above-mentioned email of 13 January 2020, DG MOVE informed the members of the GNS sub-group that the work of the GNS sub-group had been originally aligned with the work on the evaluation/revision of the TEN-T Regulation. Due to the decision on shortening the deadline for the presentation of the draft proposal for the revision of the TEN-T Regulation, it seems to be necessary to reschedule deliverables of the GNS sub-group. The new deadline for the presentation of the draft proposal for the revision of the TEN-T Regulation is now spring 2021. Hence, DG MOVE proposes to merge deliverables 2 and 3 and prepare recommendations for the future policy for TEN-T in relation to the development of IWW by the end of 2020.

[2] In the following addressed as impounded rivers

2. Proposals for future TEN-T policy and for revision of the TEN-T Regulation

2.1 Proposals for future TEN-T policy

2.1.1 General proposals and principles

The **TEN-T policy** shall provide an **overarching framework** for the development of sustainable and climate change resilient infrastructure, which includes the EU climate and sustainability objectives.

A **definition for Minimum Requirements (MR)** needs to be elaborated and the **definition for GNS**, as proposed in the sub-group's first report[3], needs to be adapted to take into consideration latest developments, such as terminology used.

The **TEN-T Regulation** shall contain the **principles** and **main definitions** and shall stipulate the **parameters for MR and GNS**. The TEN-T regulation shall be complemented with a mandate for the European Commission to adopt **appropriate acts** and **guidelines** to further specify provisions, for example on the functioning of the corridor approach or on the elaboration of reference water levels in corridors. The **TEN-T regulation shall make reference to relevant acts** and **guidelines**. This shall **give more room** within the TEN-T regulation for consideration of the different **hydro-morphological characteristics** of free-flowing and impounded rivers, as well as canals, and more possibilities for adaptation to different regional needs.

Target values for MR parameters and for GNS parameters[4] should hence not be integrated into the TEN-T Regulation. These should be agreed upon in the corridors or where applicable in the international cooperation mechanisms such as river commissions or other established structures of bi-/multilateral cooperation[5] following procedures which could be stipulated in guidelines. Once agreed upon, the Corridor Coordinator could give the agreed target values for MR to the European Commission. The European Commission could then adopt the target values for MR for each corridor by means of a relevant act. The target values for GNS are not subject to these relevant acts.

Rivers, unlike roads and rail, are characterised by their particular hydro-morphology. A river such as the Rhine cannot be maintained or developed in the same way as the Danube or the Elbe rivers. Within a corridor or even a single river, the hydro-morphology varies. Thus, a river section at the source has to be maintained or developed in a different way than a section closer to the mouth[6]. It is for this reason that future provisions on MR and GNS need to be adapted to provide more room for better consideration of natural conditions and different hydro-morphological characteristics.

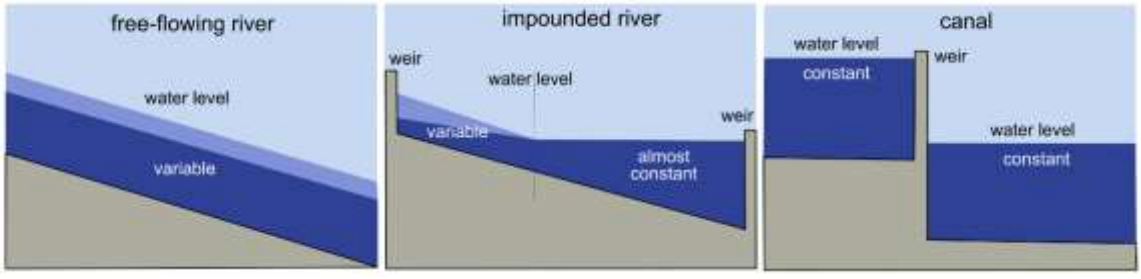


Figure 1: Hydro-morphological characteristics of waterways

[3] "Good navigation Status (GNS) 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."

[4] For an example of GNS parameters and target values, see chapter 2.1.4 on Good Navigation Status

[5] Not all European countries connected by IWW are members of river commissions. There can be UNECE or regional cooperation such as decisions of the Danube Ministers Meetings or bilateral and multilateral cooperation between countries (e.g. the cooperation between Belarus, Poland and Ukraine on the E 40 restoration project).

[6] For an example of setting of targets for rivers with changing hydro-morphological characteristics, see CCNR's Waterway profile of the Rhine in annex 5 to this report.

Common understanding on the different hydrological characteristics of waterways (see also figure 1):

- Free-flowing rivers have a variable water level. Hence, navigable channel depth and headroom under bridges have to be referenced to a suitable reference water level and are thus also variable.
- Canals have water levels that can be considered almost constant. However, in practice, upper and lower operating water levels do exist. Draught and headroom under bridges have to be referenced to the proper water level but can be considered as almost constant.
- Impounded rivers may have both canal and free-flowing river characteristics. In this case, the upper part of the impounded section generally has a variable water level. At the lower part of the section, the water level is usually controlled by a weir and thus almost constant. However, this characteristic may also depend on the discharge. Hence, different water levels need to be assessed and modelled, and the appropriate water level needs to be taken into account for referencing draught and headroom under bridges.

To prevent a degradation of inland waterways regarding navigable channel depth or respectively draught, bridge height and availability of inland navigation infrastructure, a **non-deterioration principle** should be implemented. This principle could be seconded by a **principle on protection, enhancement and restoration** of inland waterways.

Degradations, which are not caused by **direct human action**[7] or by **omitting necessary actions**[8], shall **not be considered in the implementation of the above-mentioned principles** and **shall thus be excluded** and therefore not seen as deterioration. However, Member States shall be encouraged to strive for **climate change resilience** in developing inland navigation infrastructure.

By applying the above-mentioned principles, together with supporting funding instruments, **exemptions** from the provisions become less important, but the principle shall remain in the TEN-T regulation.

2.1.2 Corridor Approach

The GNS sub-group's understanding of the intention of the TEN-T network is that the network shall stimulate a sustainable multi-modal transport network through corridors in Europe.

Members suggest that convincing Member States to develop their inland waterway infrastructure by highlighting advantages of inland waterway transport compared to other transport modes and offering incentives to upgrade inland waterway infrastructure and services, should be prioritised.

Members agreed that the corridor approach should be applied to the following tasks:

- setting of corridor specific target values for MR and GNS[9],
- identifying and reducing bottle necks in the corridors,
- ensuring cross border and inter-corridor continuity, as well as
- fostering coordination, while
- providing appropriate balance between environmental / ecological needs and transport sector requirements.

[7] A direct human action could be a measure to achieve WFD objectives, leading to alterations of navigable channel depth.

[8] For example, omitting dredging to maintain the agreed navigable channel depth can be understood in this regard as omitting a necessary action.

[9] For a proposal for setting of target values for MR and GNS parameters see Report No 1 "Draft recommendations for the development of common, harmonized guidelines/standards for Good Navigation Status"

The GNS sub-group already agreed at its first meeting[10] that the future TEN-T policy shall have a corridor approach at its heart, considering existing international coordination mechanisms such as e.g. river commissions or other established structures of bi-/multilateral cooperation.

However, there was no discussion in the sub-group on how target values could be stipulated at corridor level. Two fundamentally different approaches are prominent, top-down and bottom-up approaches, both of which have advantages as well as disadvantages. The top-down approach is easy to implement and to govern for the European Commission. However, it is difficult for the European Commission to take into account regional and local particularities such as hydro-morphological characteristics of river or canal sections. Inadequately selected target values lead to an increased demand on Member States for exemptions, and thus to a higher administrative burden and less development of inland navigation. In contrast, the bottom-up approach provides well adapted target values for river and canal sections. However, there is a risk that agreed target values are not ambitious enough and hence would lead to smaller rather than beneficial improvements of navigation conditions on inland waterways. The bottom-up approach also limits the possibilities for the European Commission to steer the future development of inland waterways to fund-granting for selected projects.

Therefore, it seems important to describe in a legally binding document the rules and methods of operation (modus operandi) or at least the framework for an efficient coordination mechanism.

Note from the co-chair and the rapporteur:
The rapporteur, in coordination with the co-chair, proposes a mixed approach considering elements of both top-down and bottom-up approaches. Target values for minimum requirements shall be set by the European Commission as a principle, based on prior agreements in the corridors.

- *Where international cooperation mechanisms such as river commissions already exists, target values shall be agreed first at the level of the river commissions and thereafter reported to the Corridor Coordinator. The Corridor Coordinator reports on the agreed target values for MR parameters to the European Commission. The European Commission stipulates the target values for MR parameters for each corridor by means of a relevant act.*
- *Where no river commissions exist, target values for MR are discussed in the corridor forum and thereafter reported to the European Commission. The European Commission stipulates the target values for MR parameters for each corridor by means of a relevant act.*
- *For TEN-T core network inland waterways not assigned to a TEN-T core network corridor, the Member States propose, in coordination with the European Commission, appropriate target values for MR. The European Commission stipulates the target values for MR parameters for each corridor by means of a relevant act.*
- *If no agreement can be reached, the European Commission can set target values for MR through relevant acts.*

The target values for GNS are also agreed in the corridors or where applicable in the river commissions. However, to ensure enough room for better consideration of natural conditions and different hydro-morphological characteristics in the implementation of GNS, these target values shall not be stipulated by relevant *act by the European Commission, but could be subject to mutual agreements within each corridor. The process for the determination of target values for the Waterway Profile of the Rhine[4] could act as a blueprint for the processes to be elaborated and implemented.*

For the coordination process suggested above, guidelines need to be developed or - where they already exist - further elaborated based on the afore-mentioned principles.

The involvement of the Corridor Coordinator guarantees that the multi-modal character of the TEN-T corridors is taken into account in the process of stipulating target values for MR and GNS. This should,

[10] See also chapter 6.1: Conclusions from the first meeting of the GNS sub-group of Report No 1 “Draft recommendations for the development of common, harmonized guidelines/standards for Good Navigation Status”

for example, ensure sufficient headroom under bridges, so that more containers can be transported on inland waterways instead of on roads. Special attention shall be given to inland ports, as they are important hubs for intermodal transport.

2.1.3 Minimum Requirements (MR)

Today the TEN-T Regulation provides concrete target values for the MR parameters. However, at its first meeting, the GNS sub-group was reluctant to adhere, among others, to a minimum draught of 2.5m to be maintained for 365[11] days per year.

The GNS sub-group proposes that target values for MR parameters shall be agreed upon in the corridors. This should take into account target values already stipulated in existing regional or corridor-based agreements, such as the AGN agreement or the Waterway Profile of the Rhine, as well as hydro-morphological characteristics of canal and river sections. The target values for MR parameters shall thereafter be adopted by the European Commission by relevant act (see also 2.1.2 on the corridor approach).

In addition, the principles on non-deterioration and on protection, enhancement and restoration guarantee that target values agreed in the corridors are not below the values maintained today by Member States.

The maximum navigable channel depth is a function of physical conditions, such as hydro-morphological characteristics, and resources available for waterway maintenance. Thus, a better maintenance of waterway infrastructure would at least counterbalance, if not – in some sections - overweigh, the benefit of deepening the navigable channels.

2.1.4 Good Navigation Status (GNS)

Today, no parameters and no target values are stipulated, neither in the TEN-T policy nor in the TEN-T Regulation for GNS. The Report No.1 includes proposals by the Correspondence Group[12] for GNS parameters and target values and states in chapter 6.2:

> *"GNS shall focus on vertical dimensions only, since horizontal dimensions such as navigable channel width depend on local geography to avoid any incoherency with existing regulation. […] On free-flowing and impounded river sections, navigable channel depth is referred to instead of draught, because actual depth in these sections is very dependent on the particular local situation. Unlike canals, rivers can have sandy or gravelly river bottoms, which are subject to dynamic changes and thus to changes in available depth. Hence, waterway administrations publish an available minimum navigable channel depth instead of a permissible draught.*

GNS parameters and their target values will be at the heart of a GNS concept. A GNS shall take into account both hard and soft GNS components, whereby the latter need to be further developed by the GNS sub-group. The most important aspect for the revision of provisions on GNS is to allow more room for better consideration of the different hydro-morphological characteristics of free-flowing and impounded rivers as well as canals for Member States, so that they can implement GNS on their national waterways and at the same time respect the hydro-morphological characteristics of the waterway sections. In other words, the hydro-morphological characteristics of a waterway determines how the objective of efficient and reliable navigation can be met. In addition, the framework conditions set by other Directives (e.g. WFD) and by available financial means needs to be considered.

[11] As Art. 15 (3) a) on Minimum Requirements does not contain an availability target value for draught, it was first interpreted by some experts and representatives of the European Commission as 2.50 m draught on 365 days a year.

[12] In 2017, the European Commission acknowledged the Member States' request for more appropriate objectives for rivers and canals and proposed to the CCNR to set up a correspondence group together with experts from other European countries and river commissions on this matter.

Hard GNS components (also addressed as GNS parameters) comprise:

- navigable channel depth for free-flowing or impounded rivers or respectively
- draught for canals
- bridge height
- lock or movable bridge availability

These proposed hard GNS components shall take into account the hydro-morphological characteristics of free-flowing and impounded rivers. For navigable channel depth or respectively draught and bridge height, reference water levels need to be agreed upon where not yet implemented. See figures below for proposals on parameters and target values for GNS[13] on free-flowing and impounded river sections and canals as well as on terminology.

Good Navigation Status	Navigable channel depth			Bridge clearance			Locks and movable bridges
	Navigable channel depth	Reference water level *6	Availability	Headroom *5 recommended for standard container transport	Reference water level 4	Availability	Availability *2
	[m]		[days per year]	[m]		[days per year]	[days per year]
GNS A	≥ 2.80	Hydrostatic/ Reference low water level	343 *3	≥ 9.10	Highest navigable water level	360	365 (24/7)
GNS B	≥ 2.50	Hydrostatic/ Reference low water level	343	≥ 7.0	Highest navigable water level	360	365 (24/7 upon request)
GNS C	≥ 2.50	Hydrostatic/ Reference low water level	[300/290] *7	≥ 5.25	Highest navigable water level	360	365 (minimum 16 hours per day)

Figure 2: Example for free-flowing and impounded river sections

Good Navigation Status	Draught			Bridge clearance			Locks and movable bridges
	Draught	Reference water level	Availability *2	Headroom *5 required for standard container transport	Reference water level	Availability *3	Availability *4
	[m]		[days]	[m]		[days per year]	[days per year]
GNS A	≥ 3.0	Lowest operating water level	360	≥ 9.10	Highest operating water level	365	365 (24/7)
GNS B	≥ 2.80	Lowest operating water level	360	≥ 7.0	Highest operating water level	365	365 (24/7 upon request)
GNS C	≥ 2.50	Lowest operating water level	360	≥ 5.25	Highest operating water level	365	365 (minimum 16 hours per day)

Figure 3: Example for canals

[13] See also chapter 6.2 of Report No 1, "Draft recommendations for the development of common, harmonized guidelines/standards for Good Navigation Status"

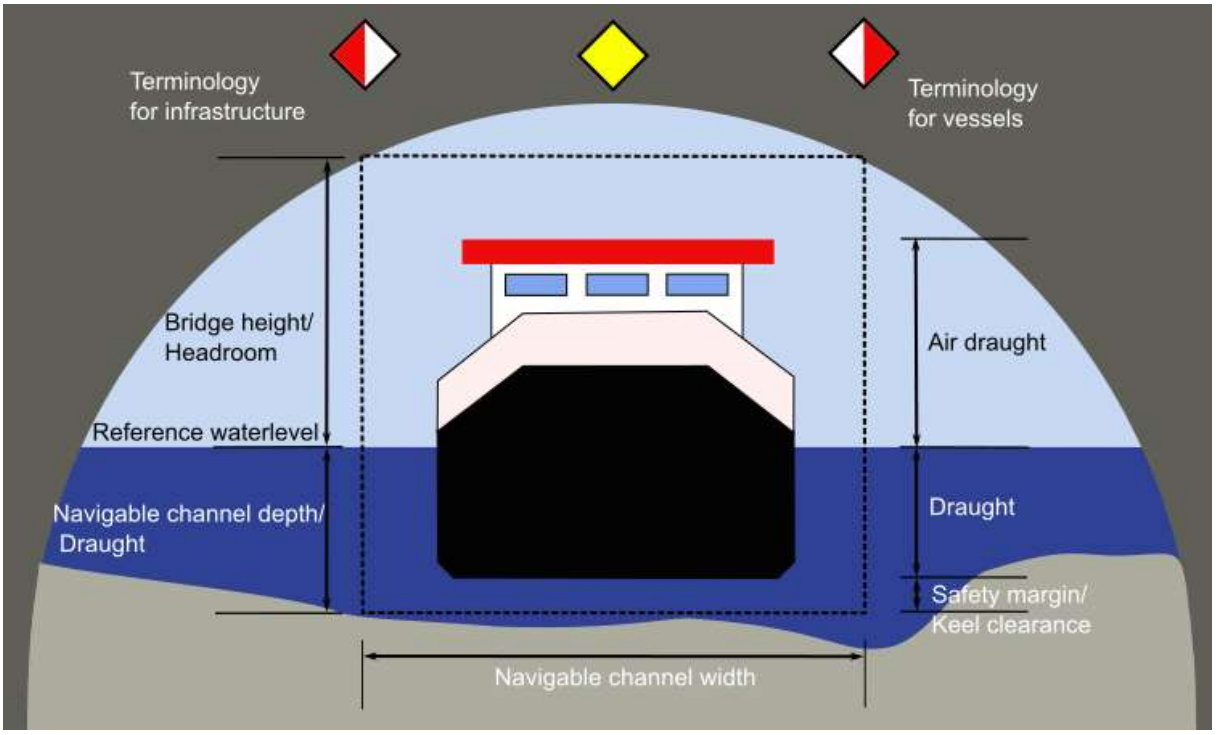


Figure 4: Proposal for a common terminology

A non-deterioration principle regarding navigable channel depth or respectively draught, bridge height and lock availability shall be implemented to prevent negative alterations of GNS. By implementing the principles on non-deterioration and on protection, enhancement, and restoration and by providing funding/financing incentives, Member States shall be motivated to strive for higher GNS.

For the implementation of a non-deterioration principle, European Coordinators for core network corridors, river commissions and Member States need to agree on a reference status, such as current target values taking into account target values already stipulated in existing regional or corridor-based agreements and the hydro-morphological characteristics of canal and river sections. Where no target values are yet defined, the existing situation might be used as a reference. **Target values for MR and GNS** can be stipulated independently and can thus vary. They may also **vary within a corridor or a waterway**, depending on the hydro-morphological characteristics of the waterway section (see also explanation in 2.1.1).

Soft GNS components, also referred to as services, focus on reliability and availability. However, these soft components were never the subject of a deeper discussion in the GNS sub-group. Hence, a common understanding of such soft components that contribute to efficient, reliable and safe navigation, as well as to the goals of the European Green Deal and Digital Europe, still needs to be developed. Nevertheless, services to be part of soft GNS components were already proposed:

- River Information Services[14]
- sufficient and high-quality berths
- alternative fuels infrastructure[15]
- adequate density of inland ports with adequate connection to intermodal and synchromodal transport

Target values for the proposed services, if needed, shall be stipulated at corridor level or if applicable by existing international cooperation mechanisms such as river commissions. In addition, coordination

[14] To be understood in the general sense of information services in general and not in relation to the RIS-directive (2005/44/EC), as there might be future services, not covered by implementation regulation to the RIS directive

[15] To be understood in the general sense of fuels infrastructure and not in relation to the alternative fuels infrastructure directive (2014/94/EU)

mechanisms shall be implemented to coordinate at corridor level maintenance, for example maintenance and upgrade works on inland waterways, as well as incident and calamity management.

Note from the rapporteur:
Availability in the context of soft components is to be understood as whether or not a service exists and can be used, such as a berth.

2.1.5 River Information Services (RIS) and other digitally supported services

RIS today play an important role for the digitalisation of IWT. Further development of RIS is suggested, including new services as well as new standards for future services today, not hitherto digitally supported. A clear delimitation of the regulatory content between the different legal instruments seems desirable.

The TEN-T policy could contribute to the further development of RIS and other services by stimulating implementation of such services. Whether the provision of certain additional services – if not yet covered by the RIS Directive - shall become mandatory should be decided on the corridor level, for example as a minimum level of service.

2.1.6 Inland waterway infrastructure

The existing inland waterways and their infrastructure need to be made fit for future. New concepts such as “smart” waterway infrastructure and new challenges such as cyber security, transport of high cube containers or pandemic resilient infrastructure operation, may also be taken into account for future TEN-T policy.

The TEN-T policy should consider inland waterway infrastructure as part of Europe’s critical transport infrastructure, leading Member States to establish coordinated strategies to make inland waterway infrastructure cyber proof, and to ensure continuity in case of cyber-attacks.

It now becomes apparent that infrastructure operation needs to be also pandemic resilient. Member States should - together with infrastructure operators - set up pandemic plans to guarantee a maximum availability of infrastructure, such as locks, movable bridges, ports, terminals and traffic centres.

2.1.7 Climate change

Inland navigation is a key transport mode for industries depending on transport of dry and liquid mass goods as well as for containers. It plays an important role in the European Commission’s strategies for mobility and transport as well as for the Green Deal, aiming toward zero emission transport. However, inland navigation is, possibly more than other transport modes, vulnerable to climate change effects, such as floods, but particularly to droughts. In flood periods, navigation is halted when the critical highest navigable water level is exceeded, usually for a few consecutive days only. Before and after exceeding the highest navigable water level, inland navigation can operate at maximum capacity. Contrary to this, low water periods have more severe effects on inland navigation, as before and after extreme low water, the available fairway depth is significantly reduced, causing a reduction of transport capacity even before critical low water levels are reached.

The severe negative effects of extreme low water could be studied as was the case, for example, in 2018 on the Rhine. This low water period led to a significant decrease in goods transported on one of the most important European waterways and to negative effects for the whole economy, as the majority of IWW transports could not be overtaken by other transport modes. However, according to a study[16]

[16] The study can be downloaded on the website of the ICPR: https://www.iksr.org/en/topics/low-water

by the ICPR, the low water in 2018 was not related to climate change effects. Nevertheless, it does show which negative effects climate change might have in the future.

Other projects such as the RheinBlick 2050 project[17] are coordinated by the CHR (International Commission for the Hydrology of the Rhine Basin). This scientific research project rendered the same conclusions in 2010 as the study of the ICPR from 2018: while impacts of climate change on river flows can be expected in the far future (between 2071 and 2100), no clear signal of increased periods of low flows and high flows can be derived from the analysis now, nor in the near future (until 2050).

The TEN-T policy should thus take into account a zero-emission and resource efficient economy to support EU climate change mitigation strategies. To increase resilience of inland waterway infrastructure, climate change adaptation strategies need to be implemented in the TEN-T policy. All measures to increase inland waterway infrastructure resilience shall be eligible for funding and financing. Measures to increase resilience might however need to be regionally adapted, as climate change effects might vary within the EU.

Climate change adaptation requires inland waterway infrastructure to be more resilient towards both floods and low water. The latter is coming into focus in the context of repeating extreme low water periods in major European waterways. Water management in the context of prevention and management of major droughts might need to be completely rethought. Water management, in the light of climate change, should consider all options and potentials on different scales and acceptable locations, such as safeguarding water in upstream parts of river systems to make them available for the downstream system in times of extreme low water. An approach such as this can only be successful and accepted by society if it serves multiple needs.

2.1.8 Key Performance Indicators (KPI)

In order to achieve a uniform understanding of the term, and the possible associated objective of the principle, a general definition of KPI should be agreed. A proposal for a general definition to be integrated into the TEN-T regulation could be elaborated by the GNS sub-group.

In principle KPI's are tools to measure elements of, or activities within, a corridor. A KPI consists of a definition on what and how to measure as well as a unit. A KPI does not set target values, neither for MR nor for GNS. Instead it provides a measurement result or respectively accumulated data to monitor the development of the corridor. A KPI could be, for example, on navigable channel depth to monitor MR and GNS target values on navigable channel depth, and it could also be on traffic intensity monitoring vessels passing a sector. Hence, there are no obligations for Member States in the stipulation of KPIs other than the sheer collection and provision of required measurements/data.

KPIs should be chosen among those indicators presented in the report on "Draft recommendations for the development of common, harmonised guidelines/standards for Good Navigation Status" and the study "Guidelines towards achieving a Good Navigation Status". The latter report, however, does not give recommendations, but simply lists the topics. Experience shows that the already existing list of KPIs needs to be adapted with the objective of drastically reducing the amount of KPIs, focus on essential KPIs and on data availability in Member States. A meaningful KPI needs data, regularly collected over an extended period, to produce reliable information. It is only on the basis of reliable information from which robust policy responses can be derived.

KPIs already implemented in the corridors could also be used for the monitoring of infrastructure development in the context of GNS.

[17] http://www.khr-chr.org/en/project/impact-regional-climate-change-discharge-rhine-river-basin-rheinblick2050

The members of the GNS sub-group should develop such a list of KPIs for the TEN-T core waterway network as they have in-depth knowledge of data availability in their Member States. To reduce the administrative burden on all parties involved and to develop harmonised data sets, existing data systems shall be exploited as much as possible.

2.1.9 TEN-T network

There is yet no common agreement in the GNS sub-group on whether the TEN-T core network shall include inland waterways of CEMT class III and below, or whether these waterways shall form an extended comprehensive network.

Member States' motivation to form such an extended comprehensive inland waterway network of waterways of CEMT class III and below seems to be to make waterway upgrades eligible for EU funding and financing. It is also believed that to foster cohesion between the regions and their socio-economic growth, it is important to include in the comprehensive network inland waterways of class III or lower, the latter especially in case of their dominant regional economic significance. This could allow regions of lower economic potential (and lower volume of goods to be transported), to avoid deterioration of the quality of inland waterways and maintain the opportunity to develop sustainable intermodal mobility of the transport network. Moreover, establishing the comprehensive network, complementary to the core network, will supports the development of a small vessel fleet, which is currently not sufficiently appreciated. The comprehensive network could be used as a test bed for testing new solutions such as autonomous vessels and logistics solutions such as usage of new design vessels adapted to low water levels. Hence, the development of new technology and services on the smaller branches of waterways (for instance, autonomous ships) and the need to have a last mile connection and delivery service for IWT could justify the inclusion. The principle on protection, enhancement and restoration of inland waterways, together with funding and financing incentives, could be applied to the comprehensive network. A definition for core and comprehensive network could also prevent misunderstandings in application for CEF calls, aimed at either core or comprehensive traffic infrastructure.

By excluding inland waterways of CEMT class III and below, other Member States want to avoid any additional administrative burden for maintenance and operation of these waterways. It could thus be a solution to integrate these waterways into a newly defined comprehensive network while leaving the choice of parameters and the setting of target values to the competent national administration in coordination - where applicable - with river commissions, other established structures of bi-/multilateral cooperation and the TEN-T core network coordinators.

At present, the objectives for the comprehensive network and the core network differ, in particular in terms of different deadlines for the setting-up of the networks, 2030 for the core versus 2050 for the comprehensive network. The proposal to integrate inland waterways of CEMT class III would require the willingness to approach the core network differently than the comprehensive network. If additional objectives are included, then the time limit must be reconsidered.

Further to the CEF calls, it became clear that there are issues in both the TEN-T Regulation and the CEF Regulation[18] which, probably due to the negotiation process prior to adoption, are not completely aligned and thus give rise to different interpretations and misunderstandings with regard to the definition of the core and comprehensive network of inland waterway transport infrastructure. The European Commission decided to classify all inland waterways notified by the Member States to be part of the TEN-T network as core network infrastructures. Hence, comprehensive and core networks for inland waterway transport infrastructure largely overlap - with the exception of some ports which belong to the comprehensive network, only because they do not reach the defined volume threshold. This particular

[18] Regulation (EU) No 1316/2013 of the European Parliament and of the Council of 11 December 2013 establishing the Connecting Europe Facility

situation should be addressed in the revision of the TEN-T regulation and lead to an unequivocal definition of both the core and comprehensive network in order to avoid the current confusion.

The issue of a comprehensive network of waterways should be fully elaborated in the next stages of work on GNS for the future TEN-T policy.

Note from the rapporteur:
After further discussion with members of the GNS sub-group, there is yet no common understanding on whether or not inland waterways of CEMT class III should be included in an extended core or comprehensive network. Some members strictly oppose a consideration of inland waterways of CEMT class III in the TEN-T network, as with a similar reasoning where local/regional roads and rail tracks could be considered for the TEN-T network. Hence, future TEN-T policy should allow a continuation of the discussion.

2.1.10 Funding and financing

In general, the members of the GNS sub-group ask for a globally increased share of inland waterway funding and financing. Within the TEN-T inland waterway core network, all measures which contribute to the achievement of MR and GNS shall be eligible for funding and financing. However, priority shall be given to upgrading inland waterway infrastructure and services over rehabilitation such as major restorations of existing waterways structures (e.g. existing weirs or locks).

To benefit from synergies in the context of the TEN-T corridors, already existing funding and financing instruments could be adapted in a way to also serve the particular funding and financing needs of Member States in the implementation of MR and GNS.

An **instrument to offer incentives** to Member States which strive to achieve higher target values of GNS through differentiated funding should be included. For a possible TEN-T inland waterway comprehensive network, additional funding and financing instruments could be made available by the European Commission to incite Member States to further develop regional waterways that contribute to the better functioning and use of the TEN-T inland waterway core network.

Funding and financing also play an important role in making services more widely available, either by extending the geographical scope of already known and developed services, or by supporting the first-time implementation of new services. The development of technical standards needed for the new services should be supported by research and implementation projects.

2.1.11 Projects

Integrative and multimodal projects, which put together operators, ship builders and shippers, such as Watertruck[5] or Multiregio[6], should be further supported. In addition, the development of new technologies and services on the smaller branches of waterways (autonomous ships for instance), last-mile connection and delivery service for IWT could also be further supported.

2.1.12 Inland ports

The definition of inland ports in the core network does not seem to be sufficiently clear. The criteria to assign inland ports to the comprehensive or core network need to be revised, so that the criteria are clear and transparent.
Inland ports are important elements within the TEN-T network. Hence,

- ports should be considered as cross border links,
- the number of passengers should be included as a criterion, amongst others for designating an inland port as part of the TEN-T network and
- core inland ports are lacking core connections and thus need improvement.

2.2 Proposals for revision of the TEN-T Regulation

The **principles of Minimum Requirements** (MR) as today in Art. 15 (3) a) and of **Good Navigation Status** (GNS) as in Art. 15 (3) b) should be left **in the revised regulation**. This will maintain an equilibrium between other water uses and other regulatory objectives such as achieving the Good Ecological Status/ Potential according to the Water Framework Directive. A further harmonisation of the objectives of the TEN-T Regulation and other legislation seems necessary to ensure synergies with, for example, climate and environmental policies.

A **definition for MR and GNS** should be integrated into the revised TEN-T Regulation.

Parameters for MR and GNS should also be included in the TEN-T Regulation.

Target values for the MR and GNS parameters should however not be stipulated in the TEN-T Regulation. They could rather be agreed upon where applicable in the already existing international coordination mechanisms such as river commissions and thereafter in the corridors and reported to the European Commission by the Corridor Coordinators. The European Commission then adopts the target values for MR through relevant act.

Therefore, the TEN-T Regulation should include a reference to the corridor approach and give a mandate to the European Commission to adopt relevant acts on target values for MR parameters. The target values for GNS parameters, however, are subject to mutual agreement in the corridors. For this process, guidelines need to be elaborated.

The TEN-T regulation could mandate the European Commission to elaborate guidelines in close coordination with the GNS sub-group and the river commissions, or other established structures of bi-/multilateral cooperation and the Corridor Coordinators on processes and methods for determination of target values for MR and GNS parameters.

The **corridor approach** should be applied

- for setting corridor specific target values for MR and for GNS parameters,
- for identifying and reducing bottlenecks in the corridors,
- to improve cross-border continuity and
- to foster coordination, while
- providing appropriate balance between environmental / ecological needs and transport sector requirements.

The **non-deterioration principle** complemented by a **principle on protection, enhancement and restoration** of inland waterways should be newly incorporated into the revised TEN-T Regulation.

Degradations that are not caused by direct human action or by omitting necessary actions[8] **shall not be considered** in the implementation of the above-mentioned principles and shall thus be excluded and therefore **not seen as deterioration**. Nevertheless, the TEN-T regulation shall foresee incentives for Member States which encourage them to strive for climate change resilience in developing inland navigation infrastructure.

The principle of allowing **exemptions** from TEN-T provisions on MR shall remain in the TEN-T Regulation and be completed by allowing exemptions from the provision on GNS[19]. However, the corridor approach will limit the number of exemptions and minimise administrative burden since issues on compliance with target values can be dealt with at corridor level or where applicable within the international cooperation mechanisms, such as river commissions. Procedure for exemptions should

[19] For sections exempted from MR, exemptions from achieving GNS are also required.

not be elaborated and integrated into the TEN-T Regulation. A proposal for a guideline for exemptions could be elaborated in the GNS sub-group as a blueprint for the work in the corridors.

Note from the rapporteur:
The procedure for allowing exemptions should be elaborated after revision of the TEN-T regulation. If a guideline is seen as an inadequate instrument, the TEN-T regulation could include a mandate for the European Commission to adopt a relevant *act on exemptions from the provisions on MR and GNS. The GNS sub-group could provide proposals for the procedure that allows exemptions.*

The TEN-T Regulation could form the legal basis for the **development and implementation of new digitally supported services** other than RIS, especially in the perspective of a smart infrastructure. The implementation of these services would not be required by the TEN-T Regulation. However, if for example these services are provided within corridors, they must adhere to these standards.

The RIS Directive forms and shall continue to form the framework for technical specifications. If Member States or river commissions envisage the implementation of one or more river information services, the technical specifications according to the RIS Directive would then be applicable. The TEN-T Regulation should therefore not prescribe a mandatory implementation of RIS. River information service implementation shall follow the corridor approach.

The TEN-T Regulation could, by analogy with the RIS Directive, form the framework for the introduction and evolution of technical specifications for the establishment of interconnection platforms for intermodal and synchromodal transport. Inland navigation needs to be better connected and integrated in the intermodal transport chain by becoming more transparent, easier to approach for forwarders, and a good service organisation connecting cargo owners, forwarders, transport companies, vessel owners and skippers. RIS offer great possibilities to support this. However, if those interconnection platforms can be seen as additional river information services, the RIS Directive may be better suited to provide the legal framework.

The TEN-T Regulation should include the principle of **Key Performance Indicators (KPI)**. A set of KPIs could be included in a relevant act. The KPI could be an instrument to measure the achievement of MR and GNS.

There is yet no common agreement in the GNS sub-group on whether the TEN-T core network shall include inland waterways of CEMT class III and below, or whether these waterways shall form an extended comprehensive network.

The TEN-T Regulation should serve as a reference for **funding and financing** instruments available to all measures which contribute to the achievement of MR and GNS. The provisions should, in addition to waterway upgrades, also cover rehabilitation, such as major restorations of waterways structures (e.g. weirs and locks).

The KPI could be a support for decision-making in granting incentives and for steering funding and financing instruments.

A definition of **inland ports** should be added to the TEN-T Regulation. The definition from Regulation 1084/2017 (Article 1, No. 156) could be adopted in this regard, defining that an inland port “means a port other than a maritime port, for the reception of inland waterway vessels”. An alternative definition could read as follows: “an inland port is a location where cargo from an inland vessel can be taken ashore and put in a storage, on a train or on a lorry – and vice-versa.”

3. DG MOVE Conclusions

DG MOVE would like to thank all members of the GNS group for their active participation in the work of the group as well as for the valuable contribution.

Two reports have been elaborated. Both reports are a good baseline discussion for input for the TEN-T revision but cannot be considered as a final conclusion.

This report sets up for the first time, main general expectation in relation to the development of inland waterways and GNS.

The main step has been done in relation to defining and agreement on the most important elements:

Principles
The TEN-T policy shall provide an overarching framework for the development of sustainable and climate change resilient infrastructure, which includes the EU climate and sustainability objectives. The TEN-T Regulation shall contain the principles and main definitions and shall stipulate the parameters for MR and GNS. The TEN-T regulation shall be complemented with a mandate for the European Commission to adopt appropriate acts and guidelines to further specify provisions.

Corridor approach
The future TEN-T policy shall have a corridor approach at its heart, considering existing international coordination mechanisms such as e.g. river commissions or other established structures of bi-/multilateral cooperation. Member States should be convinced to develop their inland waterway infrastructure by highlighting advantages of inland waterway transport compared to other transport modes, and by offering incentives to upgrade inland waterway infrastructure and services.
The corridor approach should be applied to the following tasks:

- setting of corridor specific target values for Minimum Requirements and Good Navigation Status parameters,
- identifying and reducing bottle necks in the corridors,
- ensuring cross border and inter-corridor continuity, as well as
- fostering coordination, while
- providing appropriate balance between environmental / ecological needs and transport sector requirements.

Good Navigation Status (GNS)
Today, no parameters and no target values are stipulated in the TEN-T Regulation for GNS. However, these will be at the heart of a GNS concept. The GNS parameters comprise:

- navigable channel depth for free-flowing or impounded rivers or respectively/ draught for canals
- bridge height
- lock or movable bridge availability

The target values for the GNS parameters shall take into account the hydro-morphological characteristics of free-flowing and impounded rivers and shall be agreed upon in the corridors or where applicable in the international cooperation mechanisms such as river commissions or other established structures of bi-/multilateral cooperation following procedures which could be stipulated in guidelines.

Minimum requirements (MR)
Today the TEN-T Regulation provides concrete target values for the MR parameters. However, the GNS sub-group was reluctant to adhere, among others, to a minimum draught of 2.5m to be maintained for 365 days per year. Instead, the GNS sub-group suggests that the TEN-T Regulation shall contain the parameters (such as navigable channel depth). Target values for MR parameters (such as 2.50m on 260 days per year) shall be agreed upon in the corridors or where applicable in the international cooperation mechanisms such as river commissions or other established structures of bi-/multilateral

cooperation following procedures which could be stipulated in guidelines. This shall give more room within the TEN-T regulation for consideration of the different hydro-morphological characteristics of free-flowing and impounded rivers, as well as canals, and more possibilities for adaptation to different regional needs. MR target values already stipulated in existing regional or corridor-based agreements shall be taken into account.

However, further consideration should be done on:

1) Soft GNS: the more detailed elaboration of soft GNS components remains open and requires still a more in-depth discussion in order to jointly elaborate a common proposal in this respect.
2) Governance mechanism: The rules and methods how to stipulate target values remain open and require still a more in-depth discussion in order to jointly elaborate a common proposal in this respect.
3) And many other aspects depending on the future TEN-T provisions.

4. Analysis of answers to DGMOVE's email of 3 April 2020

4.1 Proposals regarding current provisions in the TEN-T Regulation

Keeping current provisions (Question 1a)

In general, Members[20] agree that the "spirit" of current provisions shall be kept, albeit proposing modifications, as seen below. The principles of Minimum Requirements (MR) as in Art. 15 (3) a) and of Good Navigation Status (GNS) as in Art. 15 (3) b) should be left in the regulation. This shall maintain an equilibrium with other water uses and other regulatory objectives in the respective regulation, such as achieving the Good Ecological Status/ Potential according to the Water Framework Directive. Members also remind that, in addition, a harmonisation of the objectives of the TEN-T Regulation (achieving the MR/GNS) with, for example, environmental legislation objectives (achieving the Good Ecological Status), is necessary.

However, the provision on MR and GNS needs to be changed to allow more adaptation, based on a corridor approach, to the hydro-morphological characteristics of free-flowing and impounded rivers. The provisions in the TEN-T Regulation should also be completed by provisions or guidelines with clear recommendations for the design of projects that exceed the MR.

Members also support the proposal to leave the achievement of the GNS A/B/C to the Member States on a voluntary basis. The European Commission could create incentives to achieve different levels of the GNS through differentiated funding.

Current MR and GNS parameters (Question 1ba)

Members propose to soften or, respectively, further differentiate the current parameters and target values, for example according to CEMT classes or natural characteristics. Target values for MR and GNS shall be agreed upon on corridor level or where applicable within the existing international cooperation mechanisms such as river commissions. Where TEN-T corridors and river commissions overlap, decisions shall be made in the respective international river commission and reported to the Corridor Coordinator thereafter. Hence, no target values for MR and GNS parameters, such as navigable channel depth or bridge height, shall be kept in the TEN-T Regulation. Lastly, the European Commission should publish guidelines to further elaborate the concepts of MR and GNS.

<u>Navigable channel depth/draught</u>
Members state that inland waterways are not harmonised although they are standardised by the CEMT classification in a way that shows what size of vessels can use the waterway. The main cause of this is that the major waterways are natural rivers, some of which are regulated while others are not. Because of this, a fixed depth of 2.50m for 365 days per year[21] should be abandoned as a prescribed standard by TEN-T policy. The practice of previous years shows that interpretation of the current parameter (2.5m draught) is partly too ambiguous and confusing. Ensuring safe navigation of a vessel at a given draught depends on many factors (hull design, propulsion, speed of navigation, morphological characteristics of the section of the waterway, current or flow etc.)

A proposal on how to handle the depth of a waterway for a revision of the next TEN-T Regulation can be found in the report "Conclusions and recommendations of the Correspondence Group in support of achieving the Good Navigation Status and setting up appropriate objectives for rivers and canals"

[20] Members, meaning one or more

[21] As Art. 15 (3) a) on Minimum Requirements does not contain an availability target value for draught, it was first interpreted by some experts and representatives of the European Commission as 2.50 m draught on 365 days a year.

annexed to the report of the GNS sub-group "Draft recommendations for the development of common, harmonised guidelines/standards for Good Navigation Status".

Members also propose to develop a harmonised approach for determination of reference water levels.

Availability of navigable channel depth/draught

On availability of navigable channel depth/ draught, one Member suggests to further assess the lower threshold of available depth in an inland waterway. When a waterway limits the draught of vessels to 2.00m or less for a longer time span, such as 100 days per year or more, that inland waterway is not suited for commercial inland navigation as it can no longer guarantee a year-long navigation as a reliable transport mode. Hence, such a waterway should not be a part of the TEN-T network.

Headroom under bridges/bridge height

Members note that 5.25m (allows 2 rows of containers) is insufficient for inland navigation to obtain a larger share of transport of containers on that waterway. At minima 7.00m (3 rows of containers) and 9.10m (4 rows of containers) should be the target values. The container market will be using high cube containers within a timespan of just 15 years and therefore requires a free headroom of 8.65m and 11.20m as recommended by PIANC's WG 179 (report yet to be published).

Additional parameters

Members also suggest[22]:

- adding additional parameters such as width of navigable channel,
- adding a particular parameter for "Containers IWT" with different level of services for inland waterway with a high degree of container transport and
- stipulating the depth of the navigable channel at reference water level to a minimum of 2.8 m and to add a maximum number of permissible fords/bottlenecks in a specified waterway section (e.g. 3 pcs / 100 km) as well as curve radii.

Members also state that negative impacts of climate change on discharge and hence on navigable channel depth, should be exempted in the TEN-T Regulation as waterway administrations have no means for climate change mitigation and only limited means for climate change adaptation.

Differentiation of parameters for different types of waterways (Question 1bb)

Members refer to the recommendations as proposed in the report "Draft recommendations for the development of common, harmonised guidelines/standards for Good Navigation Status" and thus to distinguish between free-flowing and impounded rivers as well as canals. Members also recommend differentiating the target values for the parameters in one corridor according to hydro-morphological conditions.

Members remind that the requirements to be met by inland waterways should be designed in a way that the majority of the fleet can generate economic advantages for the shipping sector when the status is achieved. Intensity of traffic should hence be one of the most important parameters to determine investments on inland waterways. In general, the reliability of the transport conditions should be one of the most important targets for inland waterways.

Members are also concerned that there is a risk in focusing on traffic intensity which could turn into a negative downwards spiral, when only taking into account the current situation. Without investment, traffic decreases further. Today's traffic intensity does not reflect the future potential of a waterway and innovation to increase the traffic, which require matching investment.

Members suggest to not only differentiate according to hydro-morphological characteristics, but also according to the type of goods transported, such as liquid cargo or container.

[22] The GNS sub-group did not agree to the proposals under the three bullet points.

A consensus seems to be merging among Members to keep a common set of parameters for all inland waterways regardless of type. Only target values shall be adapted according to hydro-morphological conditions. The parameters should be adhered to the ones established in the AGN Agreement, such as draught, also because most of the Member States of the European Union are party to this agreement. However, not all Member States are party to the AGN agreement.

Definition of GNS in TEN-T Regulation and identification of indicators (Question 1bc)

Good Navigation Status

Members agree that a definition of GNS and the parameters shall be integrated into the TEN-T Regulation. However, their target values could be further determined outside of the TEN-T Regulation, for example in a guideline document. The definition should follow the corridor approach, taking into account already existing international cooperation mechanisms such as river commissions, as proposed in the report “Draft recommendations for the development of common, harmonized guidelines/standards for Good Navigation Status”.

Members add that by moving target values out of the regulation and into a guideline document, the same availabilities including level of services shall be maintained in the forthcoming TEN-T policy.

Minimum Requirements

Members also agree that a definition regarding MR should be added to the TEN-T Regulation and complemented by further recommendations. However, a definition is yet not available and should be developed by the GNS sub-group.

Members suggest stipulating the MR in accordance with the AGN Agreement.

Key Performance Indicators (KPI)

Members recommend to choose the KPIs among those studied in the report on “Draft recommendations for the development of common, harmonized guidelines/standards for Good Navigation Status” and the report published by a group of consultants contracted by DG-MOVE, which has already given an overview of indicators for GNS. However, the latter report does not give recommendations, but simply lists topics. Relevant indicators for the TEN-T Regulation may be the operating hours of locks and movable bridges. An indicator could be the operation of those objects 24/7 in order to place inland navigation in an optimal position to compete with other transport modes. Another issue is the availability of specific RIS to enable inland navigation to become a more reliable partner in intermodal transport chains.

4.2 Adaptation of current TEN-T waterway network

What parts of the current network should be removed/extended (Question 2a)

Members are of the opinion that no waterways should be removed, but rather more waterways should be added, but only those which add a significant branch to the TEN-T network. As many waterways of the TEN-T network as possible should reach GNS at some point in the future. The TEN-T network will only reach its full potential if the maximum number of waterways of the TEN-T network are connected to each other.

Regarding the decision on whether or not to remove or extend the core TEN-T network, Members suggest that this should be made conditional on expert research and cross-cutting value analysis.

Other Members disagree and do not support an extension of the TEN-T network to inland waterway of CEMT class III or below.

Note from the rapporteur:
It seems that Members who disagree to a possible extension of the TEN-T network regarding inland waterway of CEMT class III and below would like to avoid additional provisions/requirements for these waterways. Members who would like to include these waterways aim for them to be eligible for EU funding for further development. A compromise could be to include these waterways into a comprehensive network without stipulating target values but to offer incentives to the Member States for waterway upgrades.

Exemptions for sections not meeting the TEN-T provisions (Question 2b)

Some Members propose that Members States should be motivated by incentives to develop their inland waterways to meet TEN-T provisions. If the idea of a corridor approach is realised, there will also be no need for lower the target values in the TEN-T regulation or to remove waterways from the TEN-T core network. For sections that are possibly intended for an exemption request or sections not meeting the TEN-T provisions, adjusted targets could be agreed in justified cases. To support such a decision, an impact assessment on the required works to upgrade such waterways and a cost benefit analysis to support or reject upgrading works could be executed.

Members suggest that for waterways not meeting the requirements a clear view of the restrictions should be available. Vessels have several possibilities to adapt to special conditions. Adaptation however may cause additional operational cost for the barge operators. These additional costs could be compensated by economic measures. If those operational compensations cause lower societal costs than investment in waterway upgrades, they could be justified.

Members also suggest that the network should be extended to include those waterway sections that currently do not meet the requirements for the core network. These should form the “comprehensive network” (see also chapter 3.3 on the comprehensive network).

Members also state that no waterways should be exempted from the TEN-T network. Instead, appropriate measures should be implemented in order to enable an effective and economical operation of IWT on the sections concerned.

4.3 Comprehensive network

Should a comprehensive network[23] for waterways be developed? (Questions 3 and 3b)

Note from the rapporteur:
Most of the TEN-T inland waterways of CEMT class IV and above are part of the TEN-T core network.

Some Members agree that a comprehensive network for waterways needs to be developed. It could be useful if all waterways that are class III and below were included in a comprehensive network with a definition of GNS conditions for those waterways. The development of new technology and services on the smaller branches of waterways (autonomous ships for instance) and the need to have a last mile connection and delivery service for IWT could justify the inclusion.

Members who disagree propose instead to also open EU funding for waterways of CEMT class III and below, without integrating them into the TEN-T network. However, only those waterways which contribute to the TEN-T core network should e eligible for funding. In addition, If the idea of a corridor

[23] Art 6 (2) TEN-T regulation: The comprehensive network shall consist of all existing and planned transport infrastructures of the trans-European transport network as well as measures promoting the efficient and socially and environmentally sustainable use of such infrastructure. It shall be identified and developed in accordance with Chapter II.
Art 6 (3) TEN-T regulation: The core network shall consist of those parts of the comprehensive network which are of the highest strategic importance for achieving the objectives for the development of the trans-European transport network. It shall be identified and developed in accordance with Chapter III.

approach is realised, there will be no need to create a comprehensive network because the corridor approach offers enough possibilities for differentiation.

Members remind that the TEN-T Regulation already distinguishes between comprehensive and core networks, the only difference being in infrastructure requirements. In the core network, availability of alternative clean fuels infrastructure is required (see Art. 15 and 39 (b)). Nevertheless, in case of further diversification of requirements for comprehensive and core networks it is not expected that the existing network could be enlarged with many new waterways. It is better to focus on optimizing the navigation conditions on the existing network and create the conditions for intermodal connections, and most of all improve the transport logistics in order to make inland navigation more competitive in traditional continental transport connections in Europe.

However, Members also state that there are other categories of waterways such as transcontinental, international and national waterways which could be taken into account. The parameters for GNS should guarantee the permeability of these waterways for the relevant types of vessels and convoys. Members recommend following the classification of the AGN Agreement.

Parameters for the comprehensive network (Question 3a)

Only few Members answered the question, but those who did so suggest maintaining GNS parameters and adjusting the deadline to achieve target values. Members propose that target values for the comprehensive network should be set at national level.

4.4 Other components to be covered by TEN-T Regulation (Question 4)

Members propose adding next to the hard components also soft components into the GNS concept as proposed in the study “Guidelines towards achieving a Good Navigation Status”.

Members agree that RIS are an important element but suggest that some further development would be necessary. A clear delimitation of the regulatory content seems desirable. The RIS Directive should continue to form the framework for the technical specifications and the TEN-T Regulation could stipulate the application/establishment of RIS within the TEN-T network. The TEN-T Regulation could, by analogy with the RIS Directive, form the framework for the introduction and evolution of technical specifications for an information management system and the establishment of interconnection platforms for intermodal and synchromodal transport.

Other components proposed:

- alternative fuels,
- water management in view of climate change.
- waste reception facilities
- sufficient berths for navigation
- bunkering facilities of all sorts of fuels

Note from the rapporteur:
The TEN-T Regulation could contribute to the further development of RIS and other digital services by stimulating implementation of such services. Whether certain applications become mandatory should be decided on the corridor level.

For instance, the RIS Directive forms and shall continue to form the framework for technical specifications. If Member States or river commissions envisage the implementation of one or more river information service, the technical specifications according to the RIS Directive would therefore be applicable. The TEN-T Regulation should not prescribe a mandatory implementation of RIS. River information service implementation should follow the corridor approach.

4.5 Provisions allowing exemption from TEN-T provisions (Question 5 and 5a)

Members agree that provisions that allow exemptions from TEN-T provisions shall remain in the TEN-T Regulation. However, if the idea of a corridor approach is realised, this will limit the number of exemptions and minimise administrative burdens since issues on compliance with target values can be dealt with at corridor level or, where applicable, within international cooperation mechanisms, such as river commissions.

Members add that Member States should, as far as possible, be encouraged to fulfil the TEN-T requirements. Exemptions should clearly be seen as a last resort. Therefore, there can only be exemptions on the basis of well defined, very strict procedures and parameters. Hence, clearly defined procedures for their assessment and identification need to be developed.

Members agree that the procedure for exemptions should not be elaborated at this stage, since a possible procedure could become quite complex and bureaucratic. A proposal for a guideline for exemptions could be elaborated in the GNS sub-group as a blueprint for the work in the corridors.

4.6 Provisions for inland ports and definition (Question 6)

Members state that it is always preferable to have clear definitions. The definition of the inland ports of the core network are not at all clear. At present, it is nearly impossible to know why one port is in the core network and another one not.

However, Members are also of the opinion that there is no need for changes or additions beyond the requirements of Article 14 of the TEN-T Regulation. With regard to a definition of inland ports, it is suggested to adopt the definition from Regulation 1084/2017 (Article 1, No. 156) (" 'inland port' means a port other than a maritime port, for the reception of inland waterway vessels"). One member suggests an alternative definition as follows: an inland port is a location where cargo from an inland vessel can be taken ashore and put in storage, on a train or on a lorry.

Members also highlight the importance of inland ports and the issues with the TEN-T Regulation:

- ports shall be considered as cross border links,
- the number of passengers should be included as a criterion for designating an inland port as part of the TEN-T network,
- core inland ports are lacking core connections and thus need improvement
- there is a need to clarify the distinction between comprehensive and core inland ports.

4.7 Other ideas about future provisions on the development of IWW (Question 7)

Members' proposals to consider for future provisions on IWT:

- ensure synergies with climate and environmental policy,
- ensure climate compatibility, prevention and precaution,
- ensure climate resilient, thriving and sustainable waterfronts,
- implementation of a principle on protection, enhancement and restoration of inland waterways in the TEN-T Regulation, as implemented in the Water Framework Directive regarding ecological status,
- leave flexibility to Member States so that they can implement operations related to hydraulic management and climate change adaptation,
- monitoring instruments, such as KPIs (Key Performance Indicators) already implemented at the corridors, could be used for the monitoring of infrastructure development in the context of GNS,
- increase globally the share of inland waterway financing,

- already existing funding and financing instruments at corridor level could be adapted in a way to also serve the funding and financing needs of Member States in the implementation of MR and GNS,
- incentive systems for the development / making available of waterway sections as class V waterways,
- all measures which contribute to the achievement or maintenance of MR and GNS shall be eligible for funding and financing,
- zero-emission and resource efficient economy,
- support integrative projects, which put together operators, vessels builders and shippers, such as Watertruck[24] or Multiregio[25],
- connect inland navigation better in the intermodal transport chain by becoming more transparent, easier to approach for forwarders and a good service organisation connecting cargo owners, forwarders, transport companies, vessel owners and skippers,
- develop rules on how to digitise the entire waterway network,
- create a method to keep the same system of reference for water level.

[24] http://www.watertruckplus.eu/
[25] https://npi-magazine.com/featured/projet-multiregio-des-premiers-bateaux-a-partir-de-2021/

5. Analysis of answers to DG MOVE's email of 13 January 2020

5.1 General trends for TEN-T Regulation

Corridor approach

Members propose to base the future TEN-T policy on a corridor approach, taking into consideration existing international coordination mechanisms such as river commissions. This is also in line with Report No. 1.

The corridor approach should be applied at least:

- for setting target values for Minimum Requirements and Good Navigation Status,
- for identifying and reducing bottle necks in the network,
- to improve cross border continuity and
- to foster coordination.

In order for the corridor approach to secure a balance of interests between the European, regional and national levels, a proper governance structure shall be enacted, with prominent roles for the TEN-T core network coordinators, river commissions and Member States. Existing cooperation and coordination mechanisms and platforms (primarily Corridor Fora connecting the European Union with river commissions and Member States) could be adapted to fulfil this purpose. No new governance structures would generally be required to accompany the implementation of the TEN-T Directives including GNS.

Minimum Requirements (MR) and Good Navigation Status (GNS)

Both MR and GNS concepts should be kept in the TEN-T Regulation. In addition, the proposed definition for GNS[26] should be integrated into the TEN-T Regulation.

Note from the rapporteur:
A reference to MR and GNS should remain in the TEN-T Regulation to maintain an equilibrium between different EU-policy objectives, for example between the GNS as mentioned in the TEN-T Regulation and the Good Ecological Status/Potential as mentioned in the EU Water Framework Directive[27].

Infrastructure fit for future

The TEN-T Regulation should be an overarching framework for sustainable and climate resilient infrastructure, taking into account the EU climate and sustainability objectives.

TEN-T network

There should be a better distinction and better harmonisation of regulations for core and comprehensive network regarding inland waterways and ports.

Potential conflicts

Two potential conflicts were identified. There is no common understanding about when the TEN-T network can be completed and whether smaller waterways should be integrated in the TEN-T network.

Note from the rapporteur:
There might also be no common understanding about whether the network will be completed at all. For a completion of the TEN-T network, target values need to be agreed upon and achieved at a stipulated point in time. This might be in contradiction to the proposed requirement for infrastructure updates (continued improvement), which could be understood as a process without determined target values and thus without a determined end.

[26] As defined in the "Guidelines towards achieving a Good Navigation Status": "Good navigation Status (GNS) 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"

[27] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy

Members who did not respond to DG MOVE's email of 13 January 2020 appear not to want any extension of the network for waterways less than class IV. However, there are also Members who would be in favour, mainly to be eligible for subsidies for the further development of this additional network.

5.2 Trends for Minimum Requirements (MR)

Navigable channel depth vs. draught
Members propose to base the MR for free-flowing and impounded rivers on navigable channel depth. For canals, reference should be made to draught. This is also in line with report No. 1.

Parameters and target values for MR
Target values for MR should be coordinated within the corridor or where applicable by river commissions. Already existing international agreements should be respected.
Parameters are:

- navigable channel depth or respectively draught,
- bridge height and
- lock and movable bridge availability.

Both navigable channel depth and draught should be referenced to reference water levels. The hydro-morphological characteristics of free-flowing and impounded rivers should be respected.

Note from the rapporteur:
Availability for locks and movable bridges is proposed in Report No. 1 as operation hours in days per year or respectively hours per day.
Parameters as proposed above refer to target values, for example the target value of the parameter bridge height could be 5.25m.

Non-deterioration principle
For MR, Members suggest implementing a non-deterioration principle regarding navigable channel depth or respectively draught, bridge height and lock or movable bridge availability.

Note from the rapporteur:
For the implementation of a non-deterioration principle, the members of the GNS sub-group need to agree on a reference status, such as current target state according to the national waterway development plans. Where no target is yet defined, the existing situation might be used as a reference.

5.3 Trends for GNS

Members propose that GNS should include hard and soft components.

Hard GNS components
Members propose the following hard GNS components, also referred to as parameters:

- navigable channel depth, or respectively draught
- bridge height
- lock or movable bridge availability.

Report No. 1 gives an example for parameters and target values in free-flowing and impounded river sections. These hard GNS components or parameters shall take into account the hydro-morphological characteristics of free-flowing and impounded rivers. For navigable channel depth or respectively draught and bridge height, reference water levels need to be stipulated where not yet implemented. Members also suggest implementing a non-deterioration principle regarding navigable channel depth or respectively draught, bridge height and lock availability.

Note from the rapporteur:

For the implementation of a n*on-deterioration principle, the members of the GNS sub-group need to agree on a reference status, such as current target state according to the national waterway development plans. Where no target is yet defined, the existing situation might be used as reference.*
Target values for MR and hard GNS components can be stipulated independently from each other and can thus be different.

Soft GNS components
Members propose the implementation of soft GNS components, also referred to as services, focusing on reliability and availability. Target values can be stipulated at corridor level or, if applicable, by river commissions.
Proposed services are:

- River Information Services,
- sufficient and high-quality berths (with services such as supply of drinking water and shore side electricity, waste disposal facilities),
- alternative fuels infrastructure,
- *"adequate density of public ports".*

In addition, coordination mechanisms should be implemented to coordinate at corridor level works at inland waterways.

Note from the rapporteur:
Availability in the context of soft components is to be understood as whether or not a service exists and can be used, such as a berth.
In addition to the proposal for upgrading infrastructure, upgrade of services or services levels could be discussed in the context of soft GNS components.

Upgrade of infrastructure
Members propose to include a requirement for infrastructure upgrade alongside a non-deterioration principle. Performance upgrades are proposed to "improve quality, availability, continuity and reliability of infrastructure". In addition, "capacity upgrades" are proposed to "achieve higher standards upon modernisation of infrastructure or new constructions".

5.4 Trends for funding and financing

Members state that EU funding is important for maintaining and upgrading existing inland waterway infrastructure. Any measure that aims to achieve the above-mentioned objectives shall be eligible for EU funding.

Note from the rapporteur:
For better use of already available CEF funds, provisions for the application of CEF funds need to be amended to take better account of the specificities of inland waterway infrastructure project requirements.

5.5 Trends for regional waterways

Members state that regional waterways of CEMT class III could be integrated into the TEN-T network, whereas others do not. One member suggests that they shall only be integrated if they contribute to the interoperability of the TEN-T network or to the regional cohesion of the EU. This potential conflict has been identified under 2.1.

Note from the rapporteur:
If regional waterways of CEMT class III are integrated into the TEN-T network, appropriate target values need to be defined for MR and GNS.

List of annexes

Annexed to the analysis

Annex 1 – Email from DG MOVE of 13 January 2020
Annex 2 – Email from DG MOVE of 3 April 2020
Annex 3 – Questions annexed to DG MOVE's Email of 3 April 2020 to help in preparation of replies
Annex 4 – Email from DG MOVE of 15 July 2020
Annex 5 – CCNR's Waterway Profile of the Rhine

Annexed in separate files

Annex 6: Answers to DG MOVE's Email of 13 January 2020

Annex 6.1 – Excel spreadsheet with important Member statements
Annex 6.2 – Email from Vera Hofbauer, Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology, Austria, of 11 February 2020
Annex 6.3 – Email from Sim Turf, Departement Mobiliteit & Openbare Werken, Belgium, of 26 February 2020
Annex 6.4 – Email from Vojtěch Dabrowski, Ministry of Transport, Czech Republic, of 28 January 2020
Annex 6.5 – Email from Tomasz Kocoń, Departament Gospodarki Wodnej i Żeglugi Śródlądowej, Poland, of 14 February 2020
Annex 6.6 – Email from Theresia Hacksteiner, European Barge Union (EBU), of 14 February 2020
Annex 6.7 – Email from Gerard Kester, European Skippers Organisation (ESO), of 17 February 2020
Annex 6.8 – Email from Turi Fiorito, European Federation of Inland Ports (EFIP), of 10 February 2020
Annex 6.9 – Email from Karin De Schepper, Inland Navigation Europe (INE), of 14 February 2020

Annex 7: Answers to DGMOVE's Email of 3 April 2020

Annex 7.1 – Excel spreadsheet with important Member statements
Annex 7.2 – Email from Vojtěch Dabrowski, Ministry of Transport, Czech Republic, of 8 April 2020
Annex 7.3 – Email from Turi Fiorito, European Federation of Inland Ports (EFIP), of 10 April 2020
Annex 7.4 – Email from Perrine Lavelle, VNF, France, of 10 April 2020
Annex 7.5 – Email from Monica Patrichi, Ministry for Transport, Infrastructure and Communication, Romania, of 15 April 2020
Annex 7.6 – Email from Željko Milković, International Sava River Commission, of 15 April 2020
Annex 7.7 – Email from Silvia Csöböková, Ministry of Transport and Construction, Slovak Republic, of 17 April 2020
Annex 7.8 – Email from Markus Grewe, Federal Ministry of Transport and Digital Infrastructure, Germany, of 17 April 2020
Annex 7.9 – Email from Ivo ten Broeke, Ministry of Transport, Public Works and Water Management, Netherlands, of 17 April 2020
Annex 7.10 – Email from Gerard Kester and Theresia Hacksteiner, European Skipper Organisation (ESO) and European Barge Union (EBU), of 19 April 2020
Annex 7.11 – Email from Anthony Kédia, Wallonia-Brussels Delegation at the European Union, Belgium, of 19 April 2020
Annex 7.12 – Email from Sim Turf, Flanders Department of Mobility and Public Works, Belgium, of 24 April 2020
Annex 7.13 – Email from Kai Kempmann, Central Commission for the Navigation of the Rhine, of 30 April 2020

Annex 8: Answers to DGMOVE's Email of 15 July 2020

Annex 8.1 – Email from Desiree Oen, European Commission, of 20 July 2020
Annex 8.2 – Email from Ivo ten Broeke, Ministry of Transport, Public Works and Water Management, Netherlands, of 29 July 2020
Annex 8.3 – Email from Victoria Ivanova, UNECE, of 10 August 2020
Annex 8.4 – Email from Markus Grewe, Federal Ministry of Transport and Digital Infrastructure, Germany, of 11 August 2020
Annex 8.5 – Email from Karin De Schepper, Inland Navigation Europe (INE), of 18 August 2020
Annex 8.6 – Email from Silvia Csöböková, Ministry of Transport and Construction, Slovak Republic, of 24 August 2020
Annex 8.7 – Email from Jolanta Mosór, Departament Gospodarki Wodnej i Żeglugi Śródlądowej, Poland, of 25 August 2020

Annex 1

Email from DG MOVE of 13 January 2020

Dear Members of the Sub – group on the Good Navigation Status,

First of all we would like to wish you all the best in 2020.
We would also like to draw your attention to information which affect the workload of the GNS Sub-group.
In line with ToR for the GNS Sub group , the following main deliverables shall be presented:

1. Draft recommendations for the development of common, harmonized guidelines/standards for Good Navigation Status (delivered by October 2019)
2. Draft recommendations for IWW to meet users requirements for seamless navigation under a changing climate taking into account the different characteristics of waterways (canals, canalised rivers, free-flowing stretch) (delivered by October 2020)
3. Overall draft recommendations on the future policy for TEN-T in relation to development of IWW (delivered by February 2021)

The work of the GNS Sub-group had been originally aligned with the work on the evaluation/revision of TEN-T Regulations.
Due to the decision on shortening the deadline for the presentation of the draft proposal for the revision of TEN-T Regulations, it seems to be necessary to reschedule deliverables of the GNS Sub-group.
The new deadline for the presentation of the draft proposal for the revision of the TEN-T Regulation is now spring 2021. What we would like to propose is to merge deliverable 2 and 3 and prepare recommendations for the future policy for TEN-T in relation to the development of IWW by the end of 2020.

To ensure the proper workflow to feed the possible revision of TEN-T Regulations we would like you to submit your proposals/comments on the following topics:

1) recommendations for IWW to meet users requirements for seamless navigation under a changing climate taking into account the different characteristics of waterways (canals, canalised rivers, free-flowing stretch)
2) proposal for the future policy for TEN-T in relation to development of IWW

by 14 February 2020 at the following functional mailbox MOVE-D3-SECRETARIAT@ec.europa.eu, copy to the following addresses: Marta.WOLSKA@ec.europa.eu and Hugues.VAN-HONACKER@ec.europa.eu

Your input will allow us to prepare the draft document which we would like to discuss with you at the next meeting of the GNS Sub-group which will take place on **24 March 2020 in Budapest**.

Kind regards,

Hugues Van Honacker
and Marta Wolska

Annex 2

Email from DG MOVE of 3 April 2020

Dear Members of the GNS Sub-group,

We hope that you and your family are well and coping with this difficult time.
Due to the cancellation of the meeting in Budapest (scheduled for 24/03) and to ensure delivery of recommendations on the future policy for TEN-T in relation to development of IWW in due time, we have to change our method of work.
As we cannot plan any meeting in the near future we would like to ask those members who have not yet sent their contribution on the future policy for TEN-T in relation to development of IWW, to submit it by 17 April 2020.
Your contribution is essential as without it would not be possible to propose changes into the TEN-T Regulation.
Please find attached questions which may help you in preparation of your reply.
We would like to thank those of you who already contributed and if you would like to add anything else please feel free to do it.
Based on your contributions we will prepare the draft recommendation which we will send for your opinion.

If we want to contribute to the revision of TEN-T, we have to have the first draft of "Recommendations (…)" ready before the summer.

Please provide your opinions by 17 April 2020 at the following functional mailbox MOVE-D3-SECRETARIAT@ec.europa.eu, copy to the following addresses: Marta.WOLSKA@ec.europa.eu and Hugues.VAN-HONACKER@ec.europa.eu

Kind regards,

Hugues Van Honacker
and Marta Wolska

Annex 3

Questions annexed to DG MOVE's Email of 3 April 2020 to help in preparation of replies

To improve the work on the future policy for TEN-T in relation to development of IWW to ensure seamless navigation under a changing climate taking into account the different characteristics of waterways (canals, canalised rivers, free-flowing stretch) we would like to present you questions which can help you structure your opinion.

1. Should we keep the current provisions of TEN-T for waterways in the future?
   a. If yes – why?
   b. If not – what should be changed?
      a. should we stick to the current parameters (2.5 m) or clarify/change them definitely?
      b. should we differentiate parameters for different types of waterways – if yes, what parameters should be introduce?
   c. should we include the definition of the GNS in TEN-T provisions? Should we identify indicators for GNS, what indicators?

2. Should we change (reduce/extend) the current TEN-T waterway network?
   a. What parts of the current network should be removed/extended (what should we do with removed stretches?)
   b. What should we do with exempted stretches or stretches not meeting the TEN-T provisions?

3. Should we create a comprehensive network for waterways?
   a. What should be parameters for the comprehensive network? GNS? National?
   b. If not – why?

4. What other components (besides infrastructure parameters) should be covered by TEN-T provisions?
   e.g. RIS is covered by the current TEN-T provisions – do you see the necessity to keep RIS and/or include some other components for IWW? What components?

5. Is it necessary to keep the provisions allowing exemption from TEN-T provisions?
   a. Should we define the procedure for the exemption?

6. Should we change/precise provisions for inland ports? How should we define inland ports (also taking into account creation of a comprehensive network)?

7. Do you have any other ideas about future provisions on development of IWW?

Please be aware that the objective of this task is to provide the contribution by members of GNS Sub-group to the report, which should be delivered by the GNS Subgroup by the end of 2020: "Future policy for TEN-T in relation to development of IWW to ensure seamless navigation under a changing climate taking into account the different characteristics of waterways".

Annex 4

Dear Members of GNS Sub group,

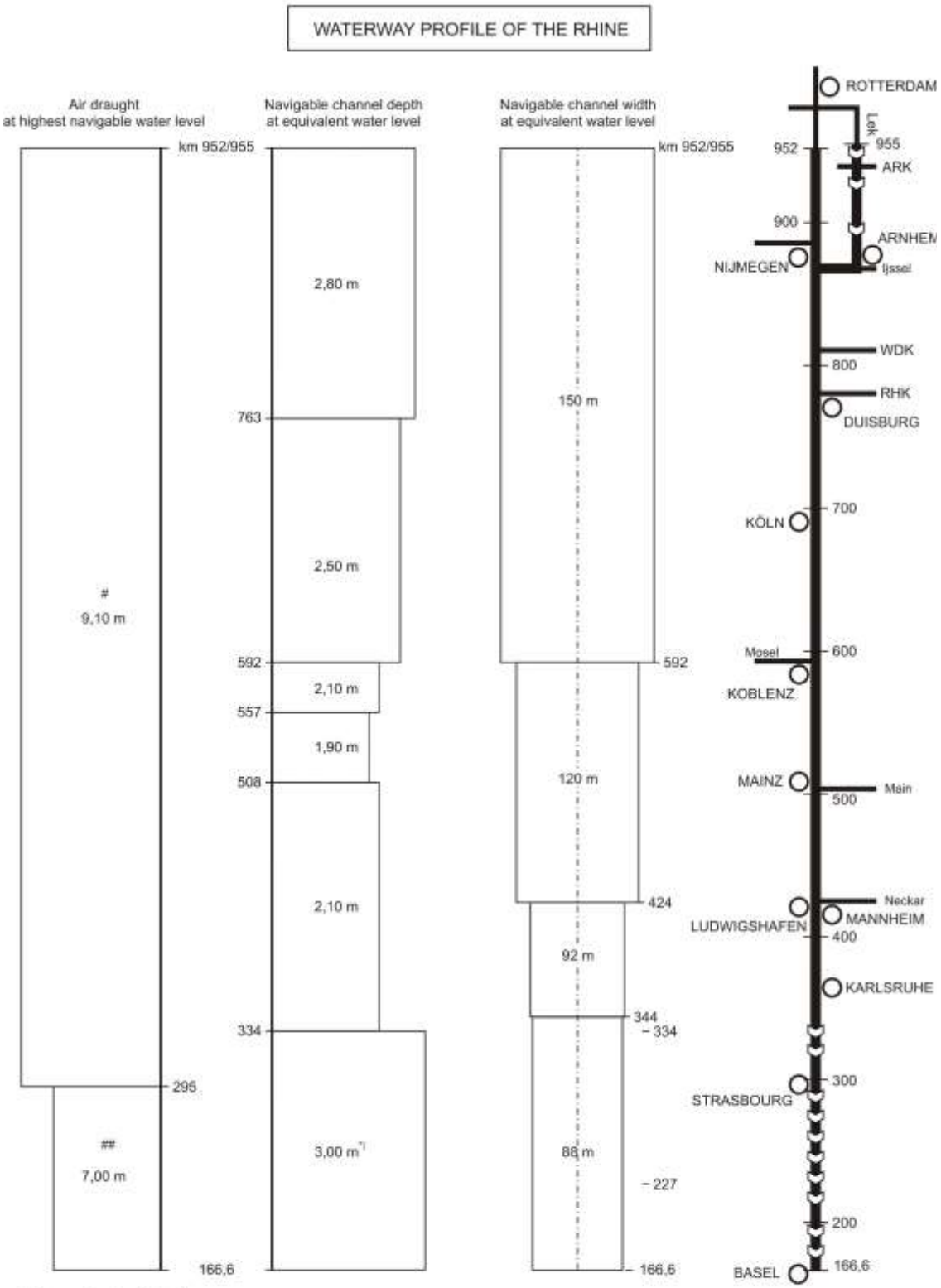
We would like to thank you for your active participation at the last meeting of the GNS Sub group on 9 July.
Please find attached the report we discussed last week and the presentation made by Kai Kempmann (the rapporteur).
As we informed you at the meeting we would appreciate your comments by 10 August 2020.
Please submit your remarks at: K.Kempmann@ccr-zkr.org, Hugues.VAN-HONACKER@ec.europa.eu and Marta.WOLSKA@ec.europa.eu

Best regards,

Hugues and Marta

Annex 5


Edinburgh
DENMARK
Copenhagen
Baltic Sea
LITHUANIA
Vilnius
RUSSIA
Minsk
BELARUS
Leeds
Hamburg
Birmingham
The Hague
POLAND
Warsaw
London
ENGLAND
GERMANY
Cologne
BELGIUM
Frankfurt am Main
Prague
CZECHIA
Katowice
Kiev
Lviv
Luxembourg
Stuttgart
SLOVAKIA
St Helier
Paris
Munich
Vienna
Bratislava
Budapest
CARPATHIAN MOUNTAINS
MOLDOVA
Kishinev
Odesa
FRANCE
Zurich
SWITZERLAND
AUSTRIA
HUNGARY
ROMANIA
Lyon
SLOVENIA
Ljubljana
Zagreb
Milan
Turin
Bordeaux
CROATIA
Bucharest
BOSNIA AND HERZEGOVINA
Belgrade
Sarajevo
SERBIA
Toulouse
Monaco
Ligurian Sea
Gulf of Lion
Marseille
ITALY
Pristina
BULGARIA
Sofia
Adriatic Sea
Rome
Podgorica
Skopje
Tirana
Barcelona
Naples
Bari
Istanbul



*) Guaranteed water depth

\# 1. At the Josef-Kardinal-Frings-Brücke (Südbrücke Düsseldorf, Rhine km 737,10) the air draught of the bridge at HNWL is 8,61 m.
2. At the Kniebrücke Düsseldorf (Rhine km 743,57) the air draught of the bridge at HNWL is 8,82 m.
3. At the road bridge Rheinhausen - Duisburg-Hochfeld (Rhine km 775,29) the air draught at HNWL is 8,88 m.
4. At the road bridge Bonn-Beuel (Kennedy-Brücke Bonn, Rhine km 654,94) the air draught of 9,10 m above HNWL is only available over a width of 115 m.
5. At the road bridge Köln-Deutz (Rhine km 687,93) the air draught of 9,10 m above HNWL is only available over a width of 94 m.

\## At the Europabrücke (Rhine km 293,48) the air draught of the bridge at HNWL is 6,79 m.