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Co-financed by the European Union
Trans-European Transport Network (TEN-T)

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Study on desired information distribution of winter navigation – WINMOS project report (sub-activity 4:5)

1. INTRODUCTION

Winter Navigation Motorways of the Sea (WINMOS, www.winmos.eu, 2012-EU-21008-M) is a Swedish, Finnish, Estonian project to create infrastructure for future winter navigation. It is co-financed by the European Union Trans-European Transport Network (TEN-T). WINMOS aims to develop the maritime winter navigation system, improve environmental performance and secure ice breaking resources. All stakeholders within the Baltic Sea maritime transport system are affected during severe winters when the whole Baltic Sea is covered by ice.

The WINMOS project consists of seven different activities. The Activity 4 is about the development of the Icebreaking Management Network, IBNet. The objective of Activity 4 is to make information about icebreaking operations easily available for all stakeholders concerned with winter navigation. It will assess the needed measures for adapting the Icebreaking Management System, IBNet, for communication with relevant external IT-systems in order to make desired information available for stakeholders within the maritime logistics. The aim of sub-activity 4:5 is to gather relevant information that stakeholders find most helpful to perform their duties for safer and more economically efficient winter navigation and logistic chain.

The desktop study concerning the distribution of desired information from IBNet to a wider shipping and logistic community has been carried out. The study consisted of a survey including a questionnaire sent via email to different organizations related to winter navigation. Some answered the questionnaire via phone interviews. The aim of the survey was to find out what information is considered valuable for building safer and more economically efficient winter navigation and logistic chains. The main outcome of the survey was to identify the most essential information for the end-users and to solve how information distribution of winter navigation could be

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improved and developed further. The overall aim is to improve the efficiency of winter navigation, to increase predictability and to better serve the needs of logistic chains.

2. RESULTS OF THE SURVEY

The survey was sent to 232 different organizations in September and October 2015. Most of the questionnaires were sent to organizations located in Finland (147) and Sweden (74). The rest of them (11) were sent to organizations located in Europe. Altogether 88 responds were received. Most of the responds were received via email questionnaires and some of them via phone interviews. A clear majority of the respondents operate from Finland (66), approximately a fourth operate from Sweden (20), and a couple in some other country (2) (see Figure 1).

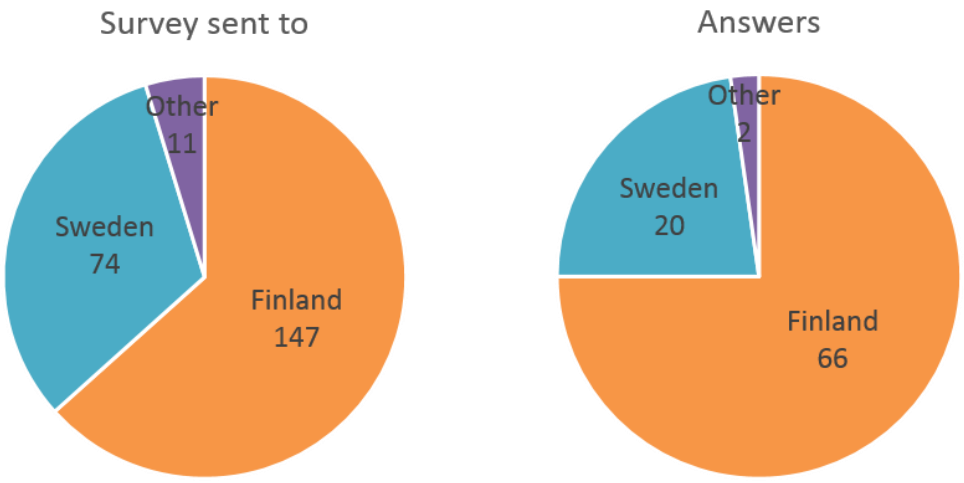

Figure 1. Survey was sent to 232 organizations and totally 88 answers were received.

Most of the respondents are shipowners (31) and ports (16). Fourteen (14) charterers or cargo owners participated the survey as well as eleven (11) agents or shipbrokers. Additionally, other respondents are senior-officers (5), port operators (4), pilots (2), an icebreaker (1), authorities (2), and others (2).

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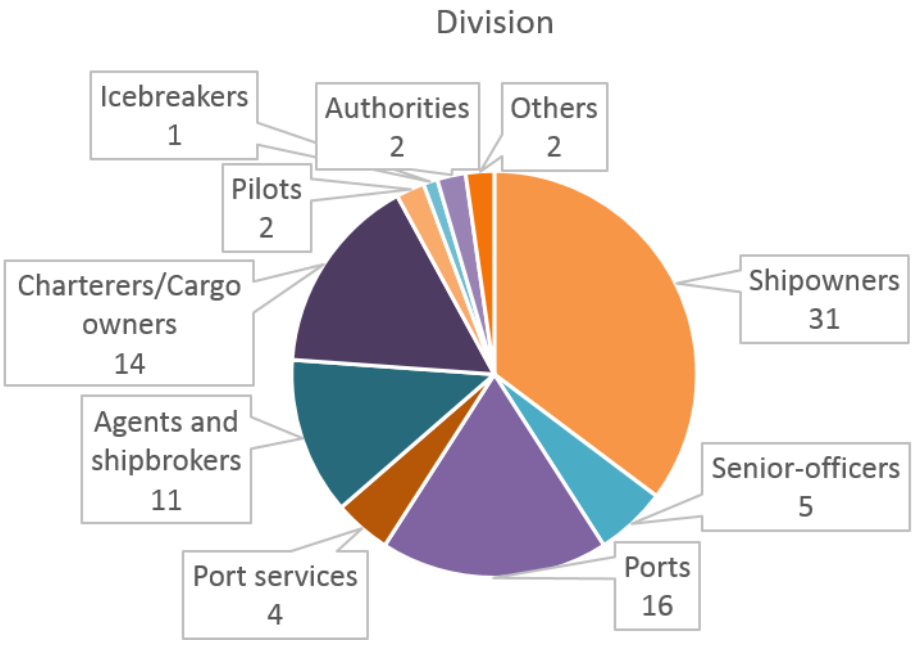

Figure 2. A division of answers between different stakeholders.

2.1. Dependency on winter navigation

Most of the organizations that answered the survey are dependent on winter navigation and only six (6) answered that they are not; four (4) of these are shipowners, one (1) is a charterer/cargo owner, and one (1) is an authority.

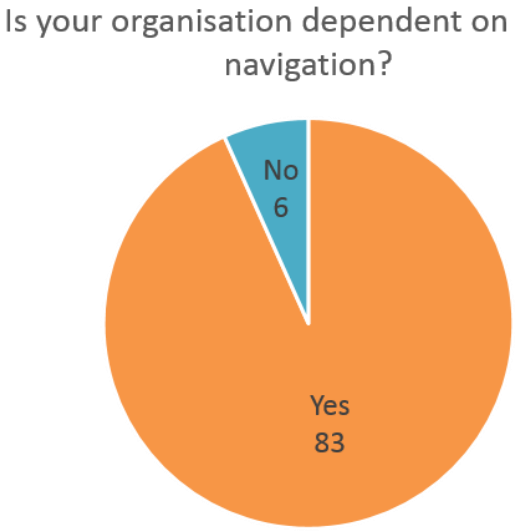

Figure 3. Most of the organizations are dependent on winter navigation.

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2.2. Information sources used in winter navigation

The answers show that the respondents use mainly Finnish information sources, such as websites of the Finnish Transport Agency/Winter navigation (59) and the Finnish Meteorological Institute/Ice conditions (60). Altogether 53 replied that they use Baltice.org website as an information source in relation to winter navigation. It is a joint website (www.baltice.org) where required winter navigation information of the Baltic Sea is available for free of charge. The Swedish Maritime Administration/Winter navigation (32) and the Swedish Meteorological and Hydrological Institute (28) were used as information sources by a relatively same amount of respondents. Even though it appears that the most of the used sources are Finnish, it must be noted that the majority of the respondents were from Finland and thus this may have an influence on the results. It appears like the most of the Finnish organizations use mainly Finnish sources of information and Swedish organizations use Swedish information sources. However, there are many exceptions to this. According to the answers, other sources used in winter navigation are AIS data (speed, locations, ETA), Finnpilot, Marine Tracker, Bottenviken, IBNet, information from local agents, Arctic Sea Ice News & Analysis website (http://nsidc.org/arcticseaicenews/), and different online weather services.

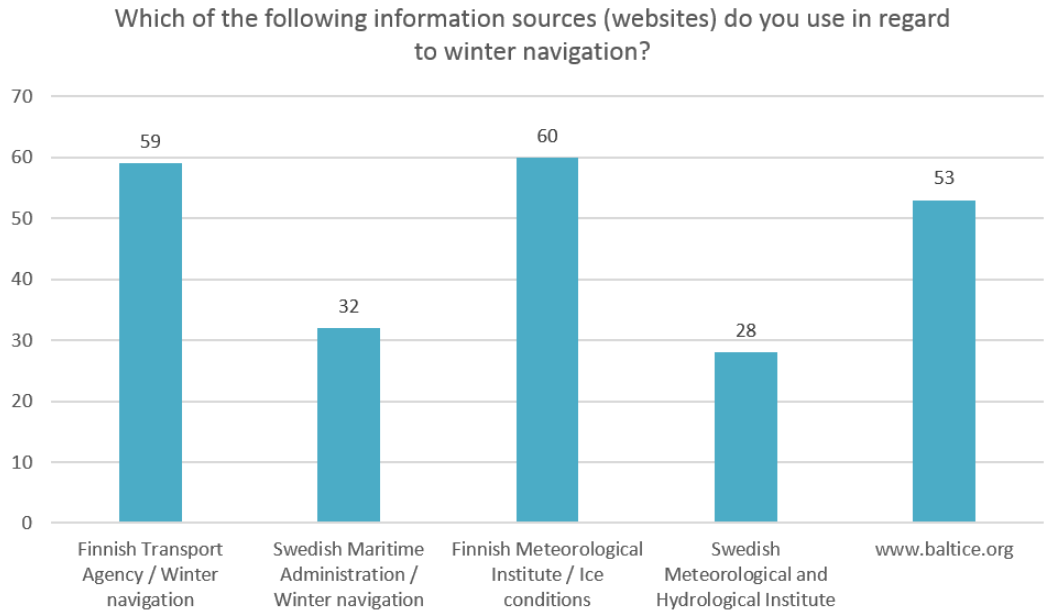

Figure 4. Information sources used for winter navigation available in the internet.

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2.3. Needed information regarding winter navigation

In regard with information distribution, the answers show that there are several important pieces of information that are needed in winter navigation. According to the results of the survey, daily ice charts is clearly the most important information needed in winter navigation. The next most important feature is a combination map in one location combining the information of active ships and icebreakers as well as an ice forecast and traffic restrictions in winter ports. Such a combination map has not been existing during previous ice seasons, but is now created to baltice.org website. All the rest (see Figure 5) are somewhat equally important, but it is quite clear that average waiting time of vessels seems to be the least important. However, many respondents commented that all of the given issues are important to winter navigation and it is hard to say which one is the most important one. All of the information is seen as a unity and they cannot be separated from each other. Other important things besides the given are AIS data, IBNet, and secondary pilot stations.

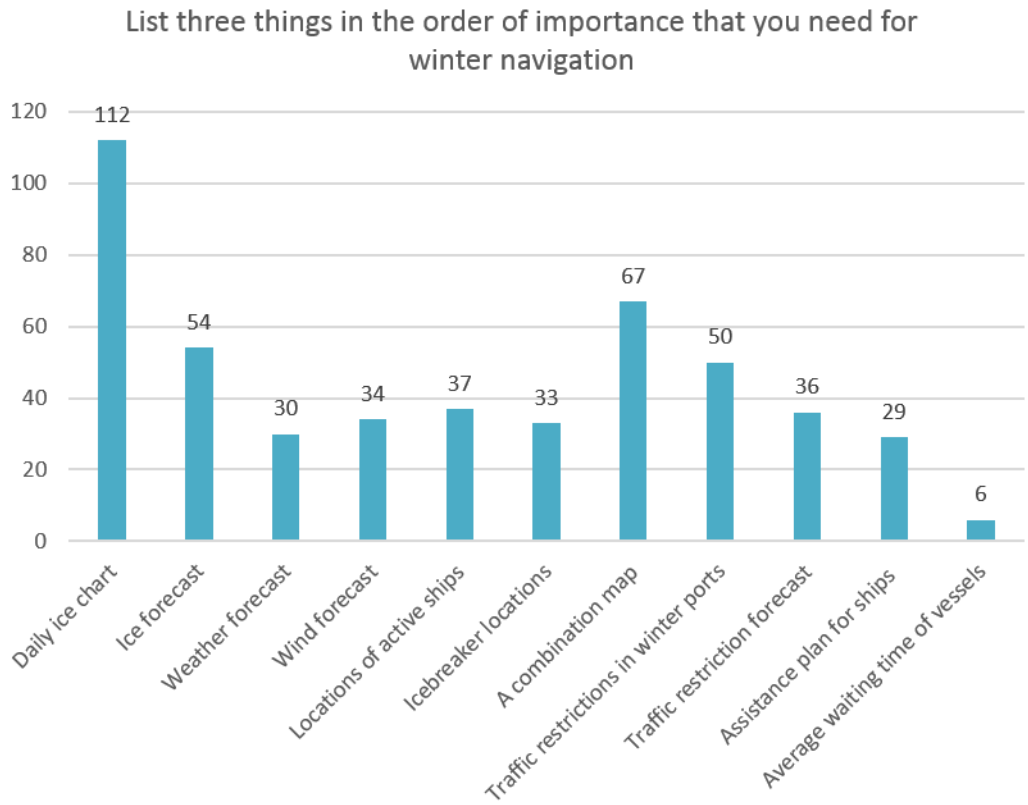

Figure 5. The most important information needed for winter navigation.

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2.4. Missing information in winter navigation

When asked, is there some information missing in regard with winter navigation that could significantly influence the planning of logistics and operations and minimize costs caused by possible winter navigation delays during the ice season, over 70 per cent of the respondents felt that all the necessary information is currently available. However, 24 respondents mentioned that some information is still missing. This is e.g. changes in pilot stations, better and more current information on assistance plans of icebreakers; satellite ice map and ice forecast, and information on where the combination map can be found. It is also important to get the information as soon as possible on whether vessels are escorted and could arrive to the port and in what date they are expected to arrive. Also information on alternative routes is needed and icebreaker assistance plan to be provided in advance. In addition to the missing information, the set ice class restrictions seem to be unclear on starting and ending dates and it is difficult to predict vessel routing during the ice season. Finally, it was mentioned several times that all the needed information is currently available, but it is the matter of getting promptly the most current information. This is an area that could be improved. Communication between ice breakers and other practitioners requires further development.

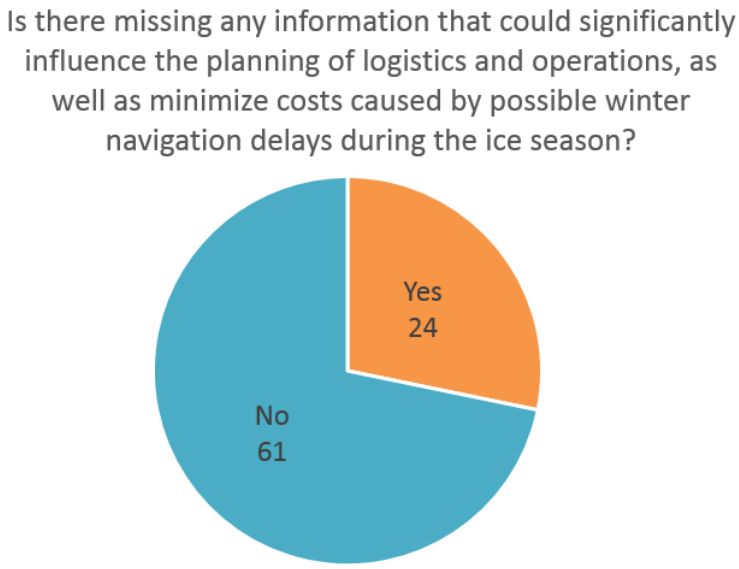

Figure 6. Is there missing any information during the ice season?

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2.5. The required time of receiving information concerning delays during the ice season

Opinions differed to a great extent on when the information of delays should be received. All the options from three hours to three days received almost the same amount of answers. However, the most (31) of the respondents chose that the information is required from 12 to 24 hours before the delay in order to still get back on schedule with normal activities and reasonable costs. Totally 29 answered that the information is needed 3-12 hours before and 21 considered 1-3 days as an appropriate time.

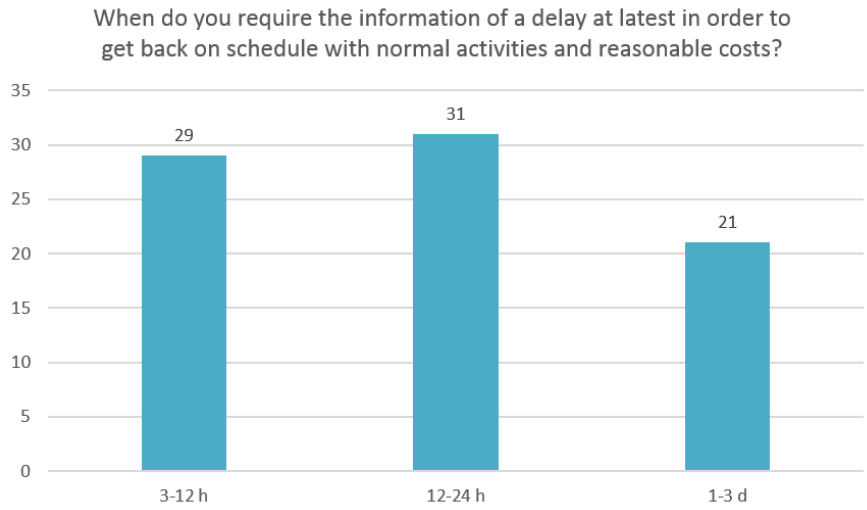

Figure 7. Information of a delay required at latest.

2.6. Changes made in transportations due to delays caused by ice conditions

In regard to changes that need to be made in transportations due to delays caused by ice conditions, the answers differs depending on the type of the organization in question. It seems that many consider these questions targeted to charterers and cargo owners, and due to that some organizations did not reply to the question at all. The options were a) 3-12 h, b) 12-24 h and c) 1-3 d.

a. 3-12 h

If a delay due to ice condition is from three to twelve hours long, changes made to transportations might stay in a relatively small scale. With rather minor changes there are still good possibilities to stay in schedule. This kind of a delay usually causes

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overtime work and extra personnel costs. In some cases ship rotations or cargo loading order in the port need to be changed. Due to the delay, a vessel might need to increase its speed in order to stay in schedule, which again increases fuel consumption and costs. In addition, berthing order of the vessels may need to be changed. However, a few respondents said that they do not need to make any changes at all, while some others explain that even this type of delay causes major problems. Some said that there is nothing they can do but wait.

b. 12-24 h

When a delay due to ice conditions is from 12 to 24 hours, more changes need to be made and costs will increase. In addition to the changes mentioned above such as changes in ship rotations, loading orders, and speeding, more actions must be considered in order to stay in schedule. These type of delays may require a chance of a port in question, changed timetables, changes in inbound and outbound order, and sometimes the delay might require changing over to another transportation mode such as road transportation. Additionally, the vessel might have to use an alternative route and some ports might be skipped altogether. These kind of changes naturally cause more overtime work and other extra costs. It can be summarized that a delay from 12 to 24 hours causes much more changes to be made and staying in the schedule is not guaranteed.

c. 1-3 d

If a delay is from one to three days long consequences may be drastic. In addition to all the above mentioned changes, voyages might be cancelled, transportations are redesigned, alternative routes are considered, and more often one might need to switch to use other transportation modes. Sometimes extra storage capacity is required and even production plans need to be changed. All in all expenses increase significantly and the delay may cause major problems especially to charterers and cargo owners. It is unlikely to stay in schedule with these kind of delays.

2.7. Average costs caused by delays due to ice conditions

When asked, what is the average cost to an organization caused by a single delay due to ice conditions, again answers depend on the type of the organization. Often e.g. ports or vessels do not suffer from great costs but on the other hand charterers and cargo owners might have to struggle with much more severe costs. Some respondents felt that it is too difficult to estimate any numbers because the costs are different each time depending on the situation.

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a. 3-12 h

If the delay is from three to twelve hours, costs are quite often manageable. Some organizations do not suffer from any costs if the delay is maximum of twelve hours long. Average costs are somewhere around thousands of euros but it can be as little as hundreds of euros. However, costs may rise even up to ten thousand euros depending on the organization and a situation. One respondent explained that depending on what is transported, the costs can be even millions and a twelve hours delay may be critical depending on the stock.

b. 12-24 h

Expenses increase as delays get longer. Thus, when the delay is from twelve to 24 hours, costs are usually around thousands of euros. According to the respondents of the survey, expenses may be from EUR 1 000 to more than EUR 10 000, sometimes even near to EUR 30 000. Additionally, if the delay causes an interruption in production, costs may rise to hundreds of thousands of euros.

c. 1-3 d

Finally, if the delay is from one to three days long, it usually causes expenses that might be hard to estimate. Based on the responses, a delay this long causes from tens of thousands to hundreds of thousands worth of expenses. Some respondents said that a delay this long costs approximately EUR 10 000 per day. In some cases expenses may rise even up to EUR 100 000. Charterers and cargo owners are usually damaged the most. In a worst case scenario production is stopped and that again may cause severe expenses that are hard to estimate.

2.8. Additional comments

In addition to specific questions asked, some other issues emerged in the survey. Many explained that it was difficult to answer all questions of the survey because the respondents felt that a few of the questions did not concern their organization at all. This was often the case with the last two questions about delays and their consequences due to winter conditions. These questions seemed more targeted to charterers, cargo owners or operators in logistic chains. Some of the respondents stated that the Finnish Swedish cooperation in winter navigation is going quite well and communication is good between the parties. However, the sooner the information is distributed the better. Finally, one respondent explained that a few years ago some vessels suggested exploiting an open water area in the Bothnian Bay instead of following waypoints. This way the voyages to Northern ports could become more cost efficient, although it might be hard to implement in practice.

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3. LIMITATIONS OF THE SURVEY

In general, the questionnaire suited well for its purpose and the answers provided insights on what kind of information is valuable in regard to winter navigation. However, one particular question caused some misunderstandings and thus a few respondents did not follow the given instructions. This was question number three: “List three things in the order of importance that you need for winter navigation”. The idea was to find out only the three most important sources of information. However, some respondents rated all the options from 1 to 10 and some from 1 to 3. The last method was the most difficult to interpret. Hence, a few answers that did not clearly indicate the most important aspects in winter navigation were left out of the results. However, this did not have a significant impact on the results due to the high number of respondents.

Additionally, some respondents did not answer all the questions of the questionnaire. Especially questions from 5 to 7 were sometimes left unanswered. One reason for this is that these respondents did not feel that delays due to winter conditions would cause any significant changes or costs to the respondent’s organization.

4. AREAS OF IMPROVEMENT

This survey discovered that there are no major problems in the information distribution of winter navigation and most feel satisfied with the current level of communication and information distribution between different parties. However, there are still some areas that could be improved.

This survey revealed suggestions on how to improve the information distribution of winter navigation. It can be concluded that many of the respondents felt a need for a combination map that includes all the valuable information in a same map. In addition, it would be essential to inform what the reliable sources of information on winter navigation are, and where this information can be found. One location (website) that combines all the available information on winter navigation or at least sources of information, would benefit many.

ANNEXES
Annex 1. Survey template in Finnish, Swedish and English
Annex 2. Answers to open questions 2, 3, 4, 6, 7, and additional comments