

## Prioritization of actions in the RAP Noise and short list of actions to be addressed in the first place

Actions are ranked according to their interdependencies. Highest priority is given to actions that do not depend critically on other actions but are themselves required for other actions. Next level is actions that can be initiated immediately but are not preventing other actions from starting. Third and fourth level are actions that depend on other actions (completed partly, or in full) before they can be implemented.

Actions in the RAP are grouped into four categories. For each action below it is indicated by a letter after the number which group it belongs to:

- I: Impulsive sources, RAP actions 1-10
- C: Continuous sources, RAP actions 11-22
- O: Other sources, RAP actions 23-29
- P: Actions involving 3rd parties, RAP actions 30-35

For each action it is indicated which other actions are required for completion. Actions in **bold** are **hard dependencies** (cannot be completed without this action), other actions are soft dependencies (quality will improve with input from this action). Same is true for dependent actions. **Hard dependents** cannot be achieved without this action; soft dependencies will improve the output. Note that hard dependencies in some cases can be split within an action, meaning that progress on for example one particular sound source can proceed in the dependent action as soon as the action above has been completed with respect to this particular sound source.

Actions are prioritized into five groups:

- Actions already achieved
- Actions that can start (no hard dependencies) and have hard dependent actions
- Actions that can start (no hard dependencies) and only have soft dependent actions
- Actions with hard dependencies on other actions
- Actions with 2<sup>nd</sup> order hard dependencies on other actions

Finally, a short list of actions to be addressed in the first place is provided.

No	Text	Comment	Requires	Required for
<b>Actions already achieved, fully or partly</b>				
11-C	Improving accessibility and sharing of monitoring data by operationalisation of the common database for monitoring data on continuous underwater noise	The database is operational	-	13
12-C	Development of common guidelines for reporting of continuous noise levels in the Baltic Sea	Guidelines available, needs periodic update	-	13
<b>Actions that can start and are required for other actions</b>				
2-I	Improve assessment of impact of impulsive noise by identifying important habitats and biologically sensitive areas and periods in the Baltic Sea region, where the introduction of high-energy impulsive noise is likely to have negative impact	Can start, requires input from EG-MAMA, other experts, and research projects, linked to actions 14 and 24. Number 2, 14 and 24 are about identifying habitats but for different noise sources		3,4,5, 9
4-I	Further develop the HELCOM impulsive noise pre-core indicator towards an operational core indicator	In progress, ongoing process; hard dependency: to be harmonized with EU level		
6-I	Identify Best Available Technologies (BAT) related to the abatement of impulsive noise. Among these collect existing national regulations and guidelines aimed to reduce the impact of underwater impulsive noise on the ecosystems of the Baltic Sea and related observations in order to form relevant HELCOM guidelines	Can start immediately and build upon reviews already available from other sources. Implementation can start nationally as some CPs may already have a list of BAT/BEP. These actions can be implemented by activities (e.g. pile driving).		7,9,35,31
10-I	Reduce injury and behavioural disturbance from impulsive noise by establishing common HELCOM criteria for injury and disturbance, as well as common exposure limits	Can start immediately and build upon reviews already available from other sources from CPs and USA (NOAA)		7,9,35
13-C	Increase regional coordination and management of continuous noise sources by establishing a common framework for modelling past, present and future noise levels in the Baltic	In progress	11, 12	16
14-C	Improve assessment of impact of continuous noise by identifying important habitats and biologically	Can start, requires input from EG-MAMA, other experts, and research		18

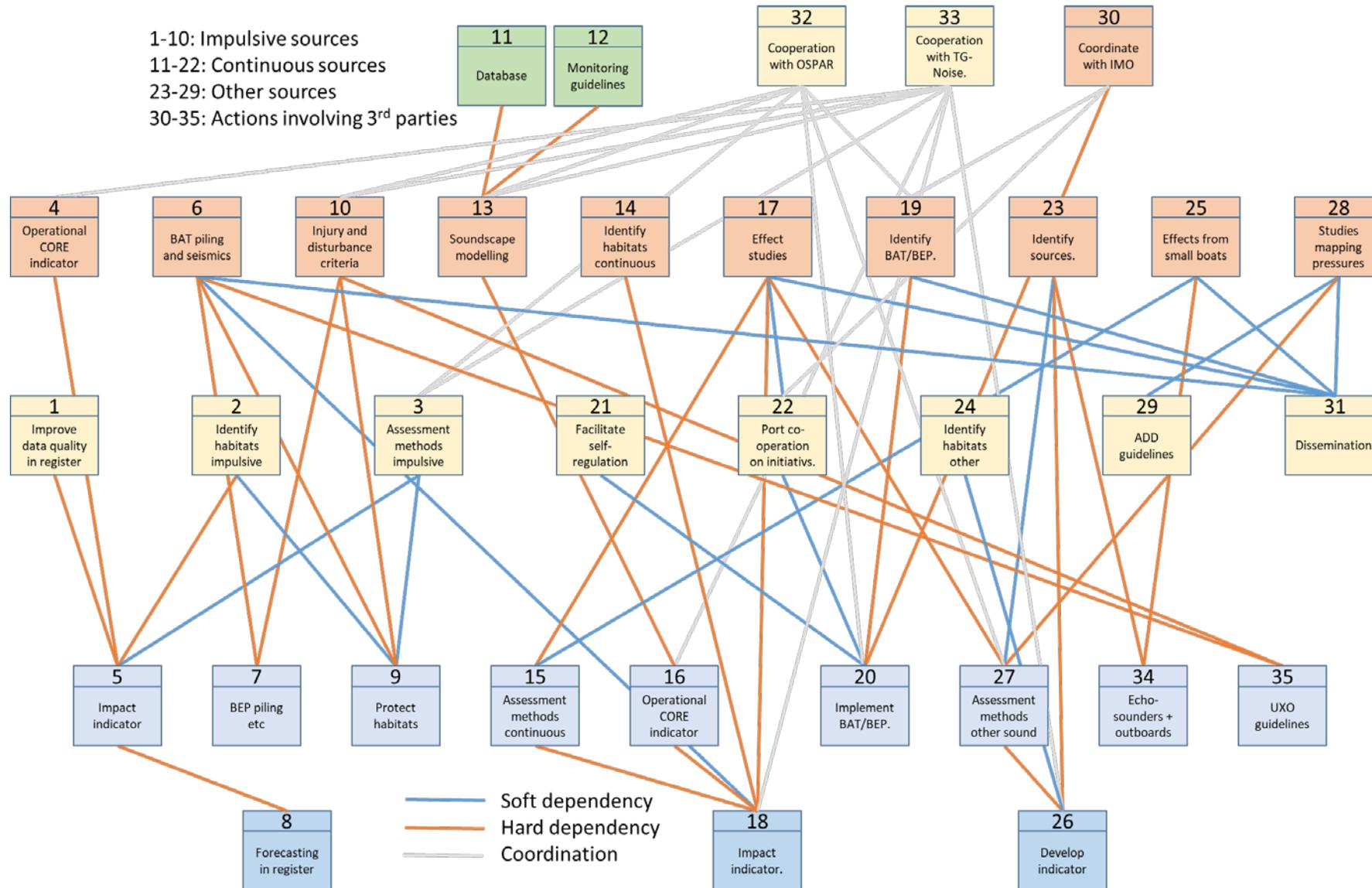
No	Text	Comment	Requires	Required for
	sensitive areas and periods in the Baltic Sea region, vulnerable to elevated levels of continuous noise	projects, linked to actions 2 and 24; link to 15, 16, 17 and 18		
<b>17-C</b>	Increase the knowledge and encourage data sharing on impact of noise by supporting research on sources and effects of continuous noise on marine biota	Can start immediately, but funding is required.		<b>15, 27, 22, 31</b>
<b>19-C</b>	Expand and improve the existing and potential operational and technical measures to reduce the impact of continuous noise to form a basis for common guidelines on management. Suitable technical measures to reduce input of continuous noise should be identified (BAT/BEP), based on a scientific justification, and taking into account socioeconomic impacts	Can start immediately and build upon voluntary IMO Guidelines and reviews already available from other sources. Please note that the revision of the IMO Guidelines is currently ongoing (2022-2023).		<b>20, 31</b>
<b>23-O</b>	Identification of other noise sources with significant impact on the marine ecosystems but not covered by the measures targeting impulsive and continuous noise	Can start immediately. It is a continuous process, depending on new research results and gives feedback to the research		<b>26, 34, 27</b>
<b>25-O</b>	Compile and assess available information about potential impact caused by noise from leisure boats	Can start immediately		<b>34, 15</b>
<b>28-O</b>	Support for research on pressure and impact from echosounders and other low-level, but abundant noise sources	Can start immediately, but requires funding.		<b>27,29,31</b>
<b>30-P</b>	Strengthen coordination with IMO on the development of actions, as appropriate, to reduce underwater noise from commercial shipping and cooperate with other relevant actors as needed in the development of technical and operational solutions to reduce such noise in line with the aforementioned IMO actions	Can start immediately		<b>20,19, 22</b>
<b>Actions that can start (no hard dependencies) and only have soft dependent actions</b>				
<b>1-I</b>	Improve the quality of data submitted to the HELCOM impulsive noise registry by updating and improving the common HELCOM guidelines for monitoring impulsive noise events in the Baltic Sea	Continuous process		<b>3,4,5</b>

No	Text	Comment	Requires	Required for
3-I	Establish common methodology for the assessment of negative impact from impulsive noise	Can start and build upon existing methodology and national guidelines as well as EU processes	10	5, 9
21-C	Inciting national and voluntary actions with respect to raising awareness of ship and boat operators and cooperation with shipping companies and boat owners on speed management for their vessels including different aspects of adjusting and planning for vessel speed and engine load optimised for the reduction of underwater noise	Can start immediately.		20
22-C	Enhance Baltic Sea wide cooperation of port authorities to introduce novel initiatives, such as harbour fee systems, in order to set incentives for voluntary quiet vessel operation	Can start and build upon experience from other regions, in particular Canada	17	20
24-O	Identification of important habitats and biologically sensitive areas and periods in the Baltic Sea region, vulnerable to elevated levels of noise from other sources than those covered by existing pressure indicators	Can start, requires input from EG-MAMA, other experts, and research projects, linked to actions 2 and 14		26
29-O	Reduce the impact from acoustic deterrent devices by developing and agreeing on common guidelines and regulation of the design and use of deterrent devices	Can start and build upon experience from CPs and other countries, linked to BSAP action S61 with target year 2024	28	
31-P	Establish platforms to share best practices on policy options within member states and between authorities, the private sector and NGO's. Improve public awareness, so that political decision makers, local administrations and civil society are adequately informed about the underwater noise challenges	Can start and benefit from coordination with similar initiatives in other regions	6, 17, 19, 25, 28	
32-P	Strengthen the cooperation with OSPAR on development of common and/or compatible indicators, databases and assessment methodologies	Ongoing process. Primary goals to exchange experience and assure consistent regulation and assessment		3, 10, 13, 14, 19, 20, 27

No	Text	Comment	Requires	Required for
<b>33-P</b>	Maintain and strengthen cooperation with the European Union expert group TG-Noise on issues of mutual interest	Ongoing process. Assure compliance with EU regulation for CPs part of EU		3, 4, 10, 13, 16, 18, 26
<b>Actions with hard dependencies on other actions</b>				
<b>5-I</b>	Develop and implement one or more HELCOM impact indicators for impulsive noise	Builds on the pressure indicator	<b>1, 2, 4, 3</b>	<b>8</b>
<b>7-I</b>	Increase the use of Best Environmental Practice (BEP) and Best Available Technology (BAT) in mitigation of impact from impulsive noise by establishing common HELCOM best practice guidelines in methods for mitigation of impact from impulsive noise	Requires identification of BAT/BEP before guidelines can be developed. These actions can be implemented by activities (e.g. pile driving).	<b>6, 10</b>	
<b>9-I</b>	Improve protection of areas, which have already been defined as important or critical habitat for noise sensitive species, by obligating the adoption of adequate operational and technical noise mitigation measures	Requires identification of BAT/BEP before measures can be jointly implemented. Some CPs may already have a list of BAT/BEP. These actions can be implemented by activities (e.g. pile driving).	<b>6, 10, 2, 3</b>	
<b>15-C</b>	Establishment of a common methodology for assessment of impact of activities generating continuous noise	Critically relies on empirical evidence on impact of continuous noise on mammals, fish and invertebrates, link to 14, 16, 17 and 18	<b>17, 25</b>	<b>18</b>
<b>16-C</b>	Further develop the HELCOM continuous low-frequency noise pre-core indicator towards an operational core indicator	Dependent on operational soundscape mapping tool, link to 14, 15, 17 and 18	<b>13</b>	<b>18</b>
<b>20-C</b>	Reduction of elevated continuous noise levels in noise sensitive and biologically important areas in the Baltic Sea by adoption of guidelines on management, based on the "HELCOM input to the establishment of environmental targets for underwater noise" (2018). The environmental targets for underwater noise should take into account the target values set by TG Noise at EU level	Relies on identification of BAT and BEP. Requires actions taken by IMO for commercial shipping	<b>19, 30, 21, 22,</b>	

No	Text	Comment	Requires	Required for
<b>27-O</b>	Development of common guidelines for assessing impact from echosounders, sonars and other sources not covered by 2.1 and 2.2	Critically relies on empirical evidence on impact of echosounders, ADDs and other sources on mammals, fish and invertebrates.	<b>17, 28, 23</b>	26
<b>34-P</b>	Reduce the impact from leisure boats by establishing a discussion with producers of echosounders and fishfinders with the goal of introducing standards for noise emission from echosounders, fishfinders and engines of leisure boats	Can start. Will benefit from coordination with other regions and countries	<b>23, 25</b>	
<b>35-P</b>	Reduce the impact from underwater explosions in connection to munition clearance, by developing international guidelines for the safe removal and detonation of ammunition. The guidelines should be established through consultation with the Ministry of Defence of the Russian Federation and NATO and lead actions for use of noise mitigation technologies and operating practices in the Baltic Sea.	Relies on identification of BAT/BEP for technical abatement methods. Adaptation of operating practices may start in the short term.	<b>6, 10</b>	
<b>Actions with 2<sup>nd</sup> order hard dependencies on other actions</b>				
<b>8-I</b>	Improve regional and cross-border coordination of the spatio-temporal planning and permitting by establishing a common reporting system for planned activities likely to produce impulsive noise.	Requires operational impact indicator	<b>5</b>	
<b>18-C</b>	Develop and implement one or more HELCOM impact indicators for continuous low-frequency noise.	Relies on operational pressure indicator and assessment methodologies	<b>14, 15, 16, 17, 10,</b>	
<b>26-O</b>	Development of HELCOM indicators suitable for monitoring noise sources identified under measure 23.	Relies on identification of relevant sources and determination of impact	<b>23, 27, 24,</b>	

The figure shows the interdependence between actions in the regional action plan.



## Short list of actions

The table below contains a short list of actions to be addressed in the first place. Colouring means close coordination of actions when it comes to implementation of actions.

No	Text
6-I	Identify Best Available Technologies (BAT) related to the abatement of impulsive noise. Among these collect existing national regulations and guidelines aimed to reduce the impact of underwater impulsive noise on the ecosystems of the Baltic Sea and related observations in order to form relevant HELCOM guidelines
3-I	Establish common methodology for the assessment of negative impact from impulsive noise
7-I	Increase the use of Best Environmental Practice (BEP) and Best Available Technology (BAT) in mitigation of impact from impulsive noise by establishing common HELCOM best practice guidelines in methods for mitigation of impact from impulsive noise
10-I	Reduce injury and behavioural disturbance from impulsive noise by establishing common HELCOM criteria for injury and disturbance, as well as common exposure limits
13-C	Increase regional coordination and management of continuous noise sources by establishing a common framework for modelling past, present and future noise levels in the Baltic
19-C	Expand and improve the existing and potential operational and technical measures to reduce the impact of continuous noise to form a basis for common guidelines on management. Suitable technical measures to reduce input of continuous noise should be identified (BAT/BEP), based on a scientific justification, and taking into account socioeconomic impacts
20-C	Reduction of elevated continuous noise levels in noise sensitive and biologically important areas in the Baltic Sea by adoption of guidelines on management, based on the "HELCOM input to the establishment of environmental targets for underwater noise" (2018). The environmental targets for underwater noise should take into account the target values set by TG Noise at EU level
29-O	Reduce the impact from acoustic deterrent devices by developing and agreeing on common guidelines and regulation of the design and use of deterrent devices
9-I	Improve protection of areas, which have already been defined as important or critical habitat for noise sensitive species, by obligating the adoption of adequate operational and technical noise mitigation measures