Havs och Vatten myndigheten

Follow-up of the Swedish maritime strategy

Report Government assignment N2017/02641/MRT

The Swedish Agency for Marine and Water Management Report 2018: 11

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Summary

This is the presentation of the governmental mandate that the Swedish Agency for Marine and Water Management (SwAM) received on the 6th of April 2017 N2017/02641/MRT, “mission to develop a reduced number of indicators and conduct the in-depth follow-up of the government’s national maritime strategy”.

SwAM has in cooperation with the National Board of Housing, Building and Planning, the Swedish Energy Agency, the Swedish Board of Agriculture, the Swedish Agency for Economic and Regional Growth, the Swedish Transport Agency, and Statistics Sweden compiled a proposal for a follow-up system of the maritime strategy.

The follow-up system will follow-up the maritime strategy’s vision for rendering development intelligible in three perspectives. The follow-up system will encompass a limited number of yearly indicators as well as a supplementary in-depth follow-up every three years.

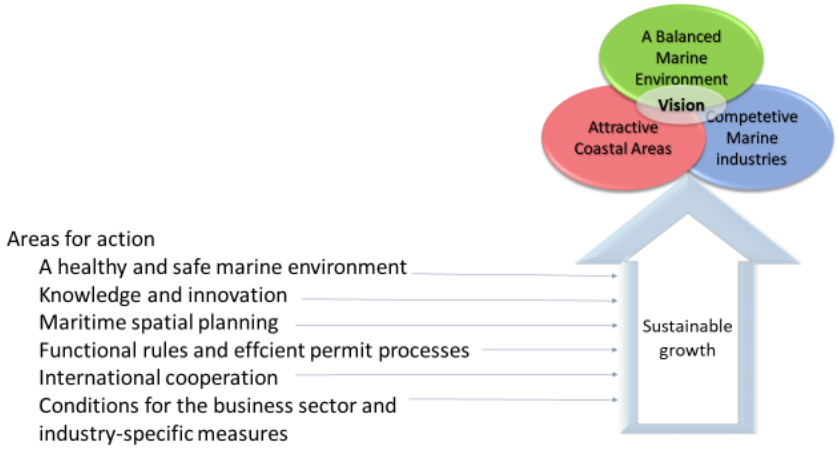

Figure 1. Interpretation of the strategy, from three perspectives and action areas. The policy efforts are presented as measures within six areas for action.

The design of the follow-up system has been based on the formulation of the strategy. Most of the yearly follow-up indicators concerns whether the states of the coastal areas are moving towards the intended state or not. We can call these state indicators. That is, they describe how competitive the business sector is, how attractive the coastal areas are and whether the seas are in balance or not. When we add several years to each other, we can also see the direction in which the change in indicators is moving.

One both practical and pedagogical challenge to take into account is of course that even if the states that are highlighted as important are affected by the strategy and the government’s, and other actors actions, these conditions are also affected by other factors that are beyond the control of the government and other actors. This means that a direct impact might be absent between the strategy, the efforts made by the government, agencies and other actors, and the states highlighted as important in the strategy.

Beyond this there are, of course, general limitations to what is possible to follow up with indicators, and at what cost the follow-up can occur. Work remains to be

done before all indicators can be finally defined and the organisation of data collection is completely clarified.

In this report, there is a proposal for a yearly follow-up based on a selection of 26 indicators that makes it possible to follow the development of the strategy's results, both at the level of action and level of perspective. In addition to this, there is also a proposal to conduct an in-depth follow-up evert three years, where, with the help of information that previously has not been included, the yearly indicators are supplemented and analysed. Approximately 20 supplementary areas have been identified in ongoing work.

The in-depth follow-up for 2017 is here presented as a current state utilising the most recently available data.

Among the indicators, yearly follow-up is currently possible for 12 of them. Another 12 indicators have identified data sources, but indicators need to be developed in relation to the limitations of the follow-up. Finally, two indicators are proposed which require more extensive resources for compilation.

19 of the proposed indicators are contributing to the follow-up of the Agenda 2030 goals. The result of the Initial Assessment of the Marine Environment Directive 2018 is currently under consultation. The consultation basis shows that the impact on our Swedish seas in most cases is so high that good environmental status cannot be achieved. The industries that are most dependent on the sea's ecosystem services are fishing and tourism.

In addition to this, a comprehensive picture is presented in relation to how this follow-up system can be developed further.

Indicator	Description	Comments
P1 A Balanced Marine Environment: Environmental impacts in the seas	The indicator consists of two parts: • The share of (percentage) the total Swedish sea area with high environmental impact • The share with low environmental impact Source: SwAM, The Marine Planning unit.	The indicator consists of an aggregate of the total environmental impact, in regards to several affecting components. Data is collected and shows the total cumulative impact according to tools developed for the marine planning. The indicator is connected to goal 6.3, 14.1 and 14.2 in Agenda 2030.
P2 Attractive Coastal Areas: Access to work places in the coastal areas.	The share of the total amount of workplaces in Sweden that can be found in the coastal areas. Source: Statistics Sweden (SCB) Central Business- and workplace-registry, SCB:s definition of coastal areas	The indicator shows the total access to workplaces in the coastal areas. This reflects the opportunity for the coastal population to work in the local area. The indicator also shows the competitiveness of the coastal areas compared to "the rest of the country" when it comes to attracting jobs. Alternatively, "the rest of Sweden with exceptions for urban areas with over

		10 000 inhabitants" can be used in order to get a more "fair" comparison.
P3 Attractive Coastal Areas: Destination attractiveness	The share of all guest nights in Sweden that is spent in the coastal areas. Source: SCB:s processing of the Swedish Agency for Economic and Regional Growth's Guest nights statistics. SCB:s definition of coastal areas.	The indicator shows the share of all guest nights that is spent in the coastal areas. The indicator shows the coastal areas destination attractiveness in relation to Sweden as a whole. Alternatively, "the rest of Sweden with exceptions for urban areas with over 10 000 inhabitants" can be used in order to get a more "fair" comparison. The indicator is connected to goal 8.9 and 12.b in Agenda 2030.
P4 Attractive Coastal Areas:: Attractive residential environments	The number of Sweden's population living in the coastal areas Source: SCB:s population registry, SCB:s definition of coastal areas.	The indicator shows the development of the population in the coastal areas. The indicator shows the attractiveness of the coastal areas for residence. An increase in numbers shows that the attractiveness of the coastal areas is increasing compared to the rest of Sweden. Alternatively, "the rest of Sweden with exceptions for urban areas with over 10 000 inhabitants" can be used in order to get a more "fair" comparison.
P5 Attractive Coastal Areas:: Connected coastal areas	The share of Sweden's coastal municipalities that have access to broadband (at least 100mb/s) Source: the Swedish Post and Telecom Authority The costal municipalities consists of the National Board of Housing, Building and Planning's definition of coastal municipalities. 82 in total.	The indicator shows a dimension of the coastal areas prerequisites to be attractive for residents, visitors and jobs. The access to broadband is defined as access to broadband at fixed points, such as households and workplaces. The indicator is connected to goal 9.c in Agenda 2030.
P6 Attractive Coastal Areas: Smart coastal areas	The coastal municipalities' combined ranking of all Sweden's municipalities in regards to the number of highly educated and the number of "creative professions". For definitions, see the source.	The higher the aggregated ranking, the "smarter and more creative" the coastal areas of Sweden are in comparison to the municipalities in general. The indicator shows the coastal municipalities'

	Source: Jönköping Business School, Charlotte Mellander	ability to attract people with higher education and with creative professions. The indicator shows the potential of the coastal areas.
P7 Competitive Industries	The indicator consists of three parts that together shows the combined maritime industries according to the SCB:s definition: • The number of people employed within the maritime industries • The value added in the maritime industries (million sek) • Export in the maritime industries (thousand sek) Source: SCB	The three measures taken together gives a good picture of the competitiveness of the maritime industries. The development of the different measures can be compared to other sectors or industries in other parts of the country. The indicator is connected to goal 9.2 and 8.2 in Agenda 2030.
ÅO1 A Healthy and Safe Marine Environment: Eutrophication	The indicator consists of two parts, divided on geographical sea basins. • Phosphorus load on the sea • Nitrogen load on the sea Source: SwAM:s follow-up of the environmental goal No Eutrophication	To decrease the eutrophication is, according to the strategy, an important prerequisite for balance in the marine ecosystems. Decreased eutrophication is also a part of the national environmental goals and the Agenda 2030 goals. The indicator shows the eutrophication status of the Swedish sea environments in relation to the conditions of the sea areas in general. The indicator is connected to goals 6.3, 14.1 and 14.2 in Agenda 2030.
ÅO2 A Healthy and Safe Marine Environment: Environmental toxins in Swedish-caught fish	The indicator is calculated by using the data from eight premises and is a compilation of nine hazardous substances. Source: SwAM:s follow-up of the environmental goal A Balanced Marine Environment.	The indicator shows the development of environmental toxins in the sea. Toxin-free marine food stuffs are fundamental in order to ensure “ecosystem services that are needed for a continued development of the maritime industries” The indicator is connected to goals 6.3, 12.4, 14.1 and 14.2 in Agenda 2030.
ÅO3 A Healthy and Safe Marine Environment: Sustainable use of the fish stocks	The indicator is an aggregated measure of the number of fish and seafood stocks that are sustainably used.	Sustainable fishing is one of the fundamental prerequisites in order to ensure balanced marine ecosystems as well as ”ecosystem services that

	Source: SwAM:s follow-up of the environmental goal A Balanced Marine Environment.	are needed for a continued development of the marine industries". The indicator is connected to goals 12.2, 14.2 and 14.4 in Agenda 2030.
ÅO4 A Healthy and Safe Marine Environment: Accidents and incidents in Swedish waters	The indicator is a measure of the total amount of reported accidents and incidents with Swedish and foreign vessels in the Swedish territorial waters. The data is divided into three categories: severe accidents, less severe accidents and incidents. Source: The Swedish Transport Agency.	To decrease the number of accidents at sea is in many ways important in order to reach the vision of a healthy and safe sea. The indicator shows the development of the number of accidents and incidents divided according to the character of the event. The indicator is connected to goals 8.8 and 14.1 in Agenda 2030.
ÅO5 Knowledge and Innovation: Innovation for Maritime Industries	Total public resources allocated to maritime industries from Innovation programs from Vinnova, the Swedish Energy Agency and the Swedish Agency for Economic and Regional Growth (exact definition of innovation programs remains). The definition of maritime industries is based on SCB:s definition. Source: Respective innovation authority.	The governmental innovation resources constitutes an important prerequisite for the renewability and long-term sustainability of the industries. The indicator shows the maritime industries ability to attract these resources. The indicator has a connection to goals 8.2 and 9 in Agenda 2030.
ÅO6 Planning with a Maritime Perspective: Comprehensive planning of coast, sea and archipelago	The share of Sweden's coastal municipalities that have a comprehensive plan for its coastal- and sea area. Source: the National Board of Housing, Building and Planning, survey to Sweden's municipalities.	The physical planning creates preconditions for the maritime industries. In order to follow the development of the coastal- and sea areas it is therefore relevant to measure the development of the physical planning. The number of municipalities that have a comprehensive plan for the coast, archipelago and sea is therefore an important indicator. The indicator has a connection to goals 11.a and 14 in Agenda 2030.
ÅO7 Functional Rules and Effective Permit processes: Fair traffic regulations	The maritime traffic's internalization of socioeconomic costs (percentage of the socioeconomic costs that are internalized in taxes, fees etc.). Comparisons with for example road and railroad traffic is possible. Source: Transport Analysis	To follow up the functionality of regulations is hard. With this indicator, we get a measure of the functionality of the regulations for maritime traffic. The indicator has a connection to goals 8.4 and 9.2 in Agenda 2030.

ÅO8 International Cooperation: Resources for international cooperation concerning innovation and maritime environment	Public resources allocated to Swedish maritime environments and businesses from a selection of international cooperation programs. Efforts in Horizon 2020, Interreg Baltic Sea Region and Interreg North Sea Region are proposed to be included. Source: Respective authority responsible for the program	The sum of the resources that are invested in international cooperation within the selected programs is an indication of the total resources that are invested in international cooperation regarding maritime industries. The indicator also shows the development of Sweden's ability to be included in this kind of cooperation. The indicator has a connection to goals 7a and 17 in Agenda 2030.
ÅO9 – 13 Conditions for the Business Sector and Industry Specific Measures: The competitiveness of the industries (Transport, Maritime Technology and production, The Sea as a Resource, Leisure and Tourism, and Service – it is desirable to divide the industries into subsectors)	Each of the indicators for the subsectors in turn consists of three partial measures: • Number of employed in the maritime industries • Value added in the maritime industries (million sek) • Export in the maritime industries (thousand sek) Source: SCB:s special follow-up pf the maritime industries – all subsectors	A more detailed picture of the development of the different maritime subsectors is presented here. The indicator is connected to goals 8.2 and 9.2 in Agenda 2030.
ÅO14 Conditions for the Business Sector and Industry Specific Measures: Sea based energy production	The indicator consists of three partial measures: • Installed effect in sea based wind power in Swedish waters and in Swedish economic zone (Megawatt) Source: County Administrative Board Västra Götaland (www.vindlov.se) • Number of marine energy facilities (wave- and currents, energy recovery from differences in temperature and salt content) in Swedish waters and Swedish economic zone. • Installed effect (megawatt) in all facilities Source: the Swedish Energy Agency (IEA OES-report)	The indicator supplements the industries within the area of the Sea as a Natural Resource, through showing the extent and development of the sea based energy production. The indicator is connected to goal 7.2 in Agenda 2030.

ÅO15 Conditions for the Business Sector and Industry Specific Measures: Sweden's fleet	The number of merchant ships and special vessels with a gross tonnage of above 100, in the Swedish registry and in Swedish regime. Source: Transport Analysis	This indicator shows the size of the Swedish merchant's fleet and the fleet that is controlled by Swedish shipping companies. The size of the Swedish fleet affects, among other things, Sweden's influence on international maritime affairs, the possibility to maintain jobs and shipping competence in Sweden.
ÅO16 Conditions for the Business Sector and Industry Specific Measures: Overnight stays/visits in the coastal area	The indicator consists of three partial measures: • The number of guest nights in visit facilities in Swedish coastal areas (SCB:s definition) • The number of visitors/guest nights in the cruise traffic in Swedish harbours • Number of nights in guest harbours Source: The Swedish Agency for Economic and regional Growth, The Swedish Guest Harbour Association, Swedish harbours and SCB.	The indicator supplements SCB:s data on maritime tourism with additional maritime guest nights. The indicator is connected to goal 8.9 in Agenda 2030.
ÅO17 Conditions for the Business Sector and Industry Specific Measures: Season extension	The indicator consists of the change in the share of total number of guest nights in the coastal areas outside the months of June-August Source: The Swedish Agency for Economic and regional Growth's accommodation statistics	The indicator gives a measure of the total season for visit facilities in the coastal areas.
ÅO18 Conditions for the Business Sector and Industry Specific Measures: Fish and seafood catches	The indicator consists of the total catch of fish and seafood from the commercial fishing in the sea, expressed in alive weight. Source: SCB/SwAM yearly official statistics for commercial fishing	The indicator gives a measure of how much fish and seafood the commercial fishing in the sea is fishing each year and hence the productivity of the sector.
ÅO19 Conditions for the Business Sector and Industry Specific Measures: Production of aquaculture	The indicator consists of the total production of aquaculture products. Source: SCB yearly statistics for the aquaculture	The indicator gives a measure of how much fish and seafood that aquaculture is producing on a yearly basis and hence the productivity of the sector.

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1 Follow-up of the Swedish maritime strategy

1.1 Background

On August 28, 2015, the Government presented a Swedish maritime strategy - for people, jobs and the environment. The strategy constitutes an orientation document for the continued work of developing the maritime industries and is based on three equal perspectives: *A Balanced Marine Environment*, *Competitive Industries* and *Attractive Coastal Areas*. The strategy also formulates a vision:

"A competitive, innovative and sustainable maritime sector that can contribute to increased employment, reduced environmental impact and an attractive living environment".

The maritime strategy includes and integrates policies in the following areas: industry, labour market, culture, environment, energy, transport, tourism, fishing, innovation and regional policy.

The government bears overall responsibility for the implementation and financing of the maritime strategy and its plan of action.

1.2 The assignment

This is a summary of the Government assignment that the Swedish Agency for Marine and Water Management (SwAM) received on 6 April 2017 N2017/02641/MRT, "Mission to develop a limited number of indicators and carry out the in-depth follow-up of the Government's national maritime strategy".

The assignment includes developing indicators based on the account submitted on February 15, 2017[1]. The follow-up will follow up on the maritime strategy's vision that captures the development in three perspectives. The follow-up should include a limited number of yearly indicators and a supplementary in-depth follow-up every three years. This in-depth follow-up 2017 is presented here as a current state with the latest available data.

The follow-up shall also be based on the economic statistics[2] which Statistics Sweden produces and be supplemented with information on the development of the state of the sea, marine ecosystem services, attractiveness and accessibility. The model should also relate to global sustainability goals[3] and national environmental goals[4].

[1] https://www.havochvatten.se/download/18.3ac2064315a35c238db718d5/1487149299402/N2016-06049-mrt-hav-rapport- maritima-strategin.pdf
[2] SCB har ett separat uppdrag från Näringsdepartementet inom Maritima strategin, Dnr N2016/08065/MRT
[3] http://www.globalamalen.se
[4] http://www.miljomal.se/

From the previous assignment in 2016, a prerequisite exists requiring that data sources and the absence of data sources are identified and, if necessary, proposals made for the production of supplementary or new data sources.

The report can be downloaded in its entirety at [the Swedish Agency for Marine and Water Management's website](). [5]

1.3 Implementation and organisation

The preparation of this presentation has been carried out according to the cooperation model, as reported to the government on February 15, 2017, N2016-06049-MRT.

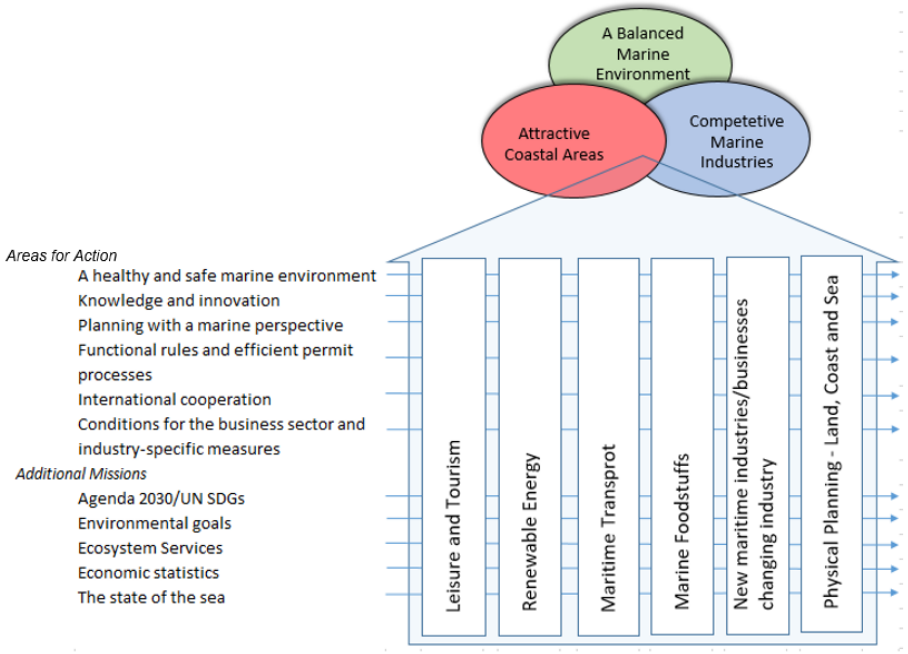


Figure 1. Model reported February 15, 2017

The cooperation model that was presented for the implementation of the assignment was based primarily on the need for defined limitations and expert competence, as was deemed necessary for the assignment. It was also important for the continued development of the follow-up that the relevant authorities have authority over the issues. In the cooperative model, selected boundaries were described as different "indicator areas". The indicator areas, themselves, remain while their content transitions onwards in terms of how the continued work will be organised.

[5] https://www.havochvatten.se/regeringsuppdrag-maritima-strategin

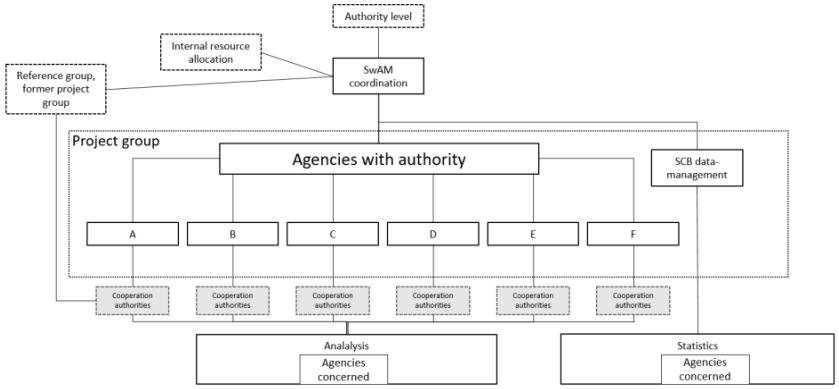


Figure 2. Project organisation 2017 for the development of the follow-up system.

SwAM has marshalled policy efforts while working in concert with concerned government agencies to develop a follow-up based on a reduced number of yearly indicators and to present an in-depth follow-up. Cooperative authorities have been the National Board of Housing, Building and Planning, the Swedish Energy Agency, the Swedish Board of Agriculture, Statistics Sweden, the Swedish Transport Agency and the Swedish Agency for Growth. Other authorities that have participated in a dialogue on the issues are the Swedish Maritime Administration, Transport Analysis, Swedish Transport Administration, Geological Survey of Sweden, the National Heritage Board, and others.

Cooperation began with a workshop on the authority's principal site. The workshop has been staffed with different authorities and concentrated on the respective boundaries' challenge, such as physical planning or sea traffic. The project work has been carried out, in part, via Skype meetings. The big challenge has been to be able to navigate in the large amount of diverse information contained in the scope of the strategy. The work has had an agile or iterative approach where the results have been refined as the ongoing work created more information for new choices. Continuous communication has proven necessary and has consistently reached throughout the appropriate parts of the cooperating government agencies.

To be able to proceed with the assignment, the work has been distributed to each expert agency to, in cooperation with the relevant fellow agencies, find indicators for measuring the objectives of the strategy. As an example of the work in the maritime traffic area coordinated by the Swedish Transport Agency, The Swedish Maritime Administration, The Swedish Transport Administration and Transport Analysis have also contributed to the work.

1.4 Yearly and in-depth follow-up

Here is a proposal for a yearly follow-up based on a selection of indicators that makes it possible to follow the development of the strategy's results, at both the level of action and level of perspective. It is also proposed that an in-depth follow-up, where the yearly indicators are supplemented and analysed, is carried out every three years.

Each agency is responsible for monitoring, analysing and reporting the indicators presented in this in-hand presentation. Coordinating authority is

needed for the collection and reporting of both yearly indicators and the in-depth, follow-up. A report is submitted to the Government in April for the yearly follow-up, and in October every third year, for the in-depth follow-up.

Table 2. The differences between Yearly follow-up and In-depth follow-up of the Swedish Maritime Strategy.

	Yearly follow-up	**In-depth follow-up**
Content	Starting from the latest available data on a yearly basis. The development is assessed as a comparison with the original from previous data base.	Based on a qualitative commentary analysis of the development of indicators reported yearly. Supplementary analysis of the strategically important goal, using information that is not included in the yearly follow-up.
Purpose	Follows the development with the help of a limited number of yearly indicators that show the development within the perspectives of *Attractive coast*, *Competitive industries*, *A balanced marine environment* and within the various action areas	Give an in-depth picture and analysis of the strategy, its implementation and results.
Time	The past year	In-depth analysis every three years
Reports	April	October 2021

In the ***yearly follow-up***, developments are monitored using a limited number of indicators that show the development:

- In the perspective, *Attractive coast*, *Competitive industries* and *A Balanced Marine Environment*
- Within the different action areas

The indicators in the yearly follow-up are based on the latest available data. The indicator is related to the previous year's data.

The exact design of the indicators varies depending on what is to be assessed and how the data looks.

The ***in-depth follow-up*** aims to provide an in-depth picture and analysis of the development of the industries and coastal areas, as well as the strategy's implementation and results. The in-depth follow-up is thus built up by:

- A qualitative commentary analysis of the development of the indicators reported yearly
- Supplementary analysis of the important goals of the strategy, using information that is not included in the yearly follow-up

2 Indicators for yearly follow-up

2.1 Challenges and choices

Creating indicators for follow-up is about measuring existing goals. Indicators for evaluation and follow-up are usually designed in relation to what one often calls a theory of change or intervention logic. In such, one describes how the desired effect of a comprehensive goal can be reached.

In accordance with the figure below, we can have the goal for both the desired change at the moment and for all the linkages in the intervention logic: we can have performance goals, activity goals, or budgetary goals. For a strategy, the goals could be about what changes in the authorities' resource allocation we want to see, which new activities define the goals and what results should such provide.

In figure 3 we show how an effort of an actor is meant to result in an impact of the state one perceives as changeable. By setting up a resource, such as budget funds, it enables new activities to generate results. Such results can be assumed to be an opportunity to affect the state one wished to affect in the intended direction.

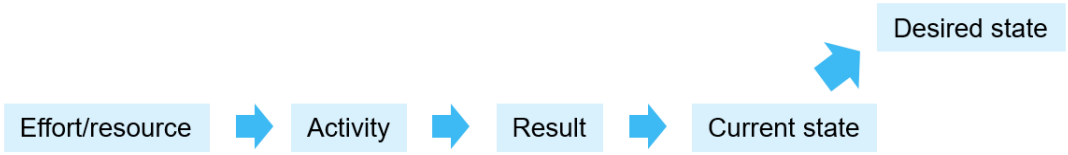


Figure 3. "Normal" intervention logic

A strategy can aim to affect influence by changing efforts are already undertaken. This is illustrated in Figure 4. Through the strategy, actors should allocate more resources than they otherwise would have done, one might provide more or pursue other activities without regard to the strategy, and this shall procure a better result, which means that we get closer to the desired goal (new state) than we otherwise would have done.

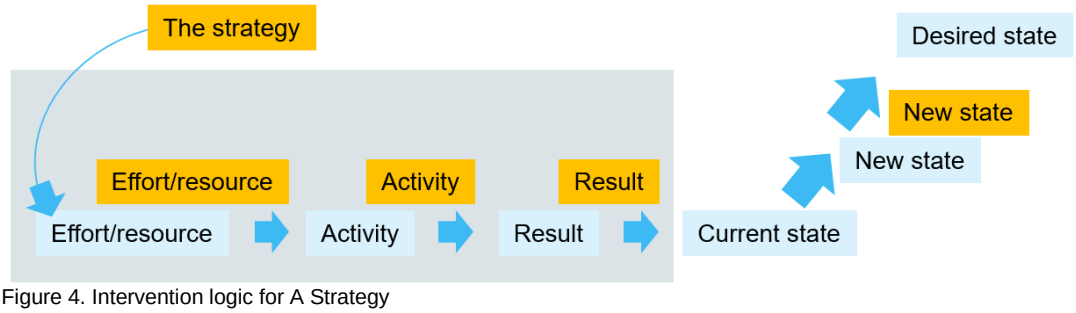


Figure 4. Intervention logic for A Strategy

Some strategies lack clear intervention logics, as is exemplified here. Yet this corresponds to the form the maritime strategy has. Among the various measures and activities mentioned in the strategy, it is not always clear what is already being done in terms of what areas of ordinary operations are affected and what changes the government wants to see brought about through the strategy.

The maritime strategy for the development of maritime industries constitutes the Government's targeting document for the development of maritime industries in Sweden. A strategy is the government's response to challenges entailed by sustainable societal development, in the form of increased complexity and a growing need for solutions and efforts designed to reach across sectors and levels in society.

The strategy, therefore, supplements the policy that the government is already implementing in a large number of policy areas and through a large number of government agencies. The strategy also supplements several other areas, including policy area comprehensive strategies that take other developmental perspectives than the maritime, such as work for increased exports, new industrialisation, or the development of the foodstuff industries.

Through the strategy, the Government wishes to direct the attention of the government agencies and other actors towards efforts with specific significance for the sustainable development of maritime environments and industries.

This vision addresses environmental, economic, and socially sustainable development and rests on three equal perspectives: *A balanced marine environment*, C*ompetitive industries* and *Attractive coastal areas*. Agenda 2030 is one such initiative that aims at balancing the three perspectives of sustainable development. The assignment is requested to consider and utilise synergies with, among other things, Agenda 2030 and other relevant policy efforts.

The assignment partly consists of developing a system of indicators for implementing a yearly follow-up of the strategy. As can be seen below, one can discuss what such a follow-up should include: Is the purpose to follow up the *states,* which one seeks to influence with the strategy, or is it to follow up what *impact* the strategy has on these states? SwAM has interpreted the assignment as being that the government is interested in both questions. At the same time, the strategy is, by its nature, a targeting document and does not generally contain concrete and easily followed-up goals. Given the state of policy development, SwAM chose to let the yearly follow-up and in-depth follow-up have partly different roles. In the yearly follow-up, the focus is mainly on a follow-up through indicators reflecting development of the states that the strategy aims to affect. In the in-depth follow-up, on the other hand, a more detailed follow-up of the development in these states with a follow-up which is also based on assessments of how the actors have worked on influencing the permits, i.e. what policy measures have been taken.

The formulation of the follow-up system has been based upon the formulation of the strategy. Most of the yearly follow-up indicators deal with whether the state of the coastal areas is moving towards the intended state or not. We can call them state indicators. That is, they describe how competitive the business is, how attractive the coastal areas are, or whether the seas are in balance or not. When we add several years together, we can also see in which direction the change in in the indicators are moving.

Indicators can also be designed for a given activity. In some cases, we have

chosen such indicators, for example with regard to the indicator for action area 6 planning, which is based on the proportion of municipalities that have comprehensive planning for their entire coastal and marine area. Here you can discuss whether the indicator measures a state or an activity, depending on the perspective taken.

The in-depth follow-up includes supplementary qualitative and quantitative information, which also measures and indicates which activities government agencies and others carry out. Here the analysis and its accordant rationale are stated in accordance with the intervention logic, illustrated in the figure above.

The starting point for the choice of indicators for the yearly follow-up has therefore been to propose indicators that describe the states in the maritime environments and the industries based on how the government wishes to influence them as expressed in the strategy. The approach has been to make use of existing information and not create new data collection projects.

One both practical and pedagogical challenge to take into consideration is of course that even if the states that are highlighted as important are affected by the strategy and the government's, and other actors, actions, these conditions are also affected by other factors that are beyond the control of the government, and other actors. This means that a direct impact might be absent between the strategy, the efforts made by the government, agencies and other actors and the states highlighted as important in the strategy.

Here is an example: the authorities can do an excellent job, but the development in individual indicators can still move "in the wrong direction". Conversely, the state of some indicators can develop positively, but this need have nothing to do with the policies or efforts undertaken by the authorities.

Before presenting the follow-up system and the indicators for the yearly follow-up in greater detail, we present some general considerations and other challenges regarding the selection and design of indicators.

2.2 The defined limits of "maritime"

An important issue for the development of indicators and follow-up system is the definition of development, which should be followed up upon. There are two types of defining limits that need to be made in this regard. First, the concept of maritime industries needs to be defined. Secondly, there is also a need to define the maritime environment - that is, the geographical areas that should be regarded as maritime in the strategy, both on land and in water.

The strategy contains a definition of the maritime industries that reads:

Maritime industries are, in the strategy, defined as activities that take place on, in, or are dependent on resources from the sea, and activities that contribute goods or services directly to the maritime activities. The maritime industries also include activities in the coastal area that are otherwise dependent on the sea, such as tourism. Similar activities in and adjacent to the larger lakes are also included in the maritime industries.

Several attempts to define the maritime industries in more detail have been made, such as that of Vinnova 2013[6] and by SwAM 2017[7]. However, within the given task's framework of analysing and follow-up of the Swedish maritime strategy, Statistics Sweden (SCB) has had a special task of defining and producing statistics for the development of the maritime industries[8].

Statistics Sweden's definition of the maritime industries is based on a combination of industry and geographical demarcations. First, a number of industries are identified that are considered to be maritime as a whole. Second, companies in industries that can be considered to be maritime in part are identified and are then included in the maritime industries. How these companies are identified can be dependent on what the companies do, but also on the location of the companies. In the tourism industry, for example, visitor establishments that are located in sea and coastal areas are chosen, and these companies are then included in the maritime industries, while companies that are active in the same industries but are not located in sea and coastal areas are not included.

In the proposal for follow-up, the system for defining maritime industries proposed by Statistics Sweden is used to the full extent feasible. The principle for defining the maritime environments in order to identify some of the companies in the maritime industries can also be applied to identify maritime environments in other contexts as well. For example, in some respects the concept of coastal areas needs to be defined. The same definition is used, as far as it is possible, as in Statistics Sweden's geographically defined maritime industries, which basically means choosing an area within 1 km from the sea beach, or the beach to one of the five largest lakes, but excluding urban areas with more than 10,000 inhabitants. As Statistics Sweden makes clear, there are advantages and disadvantages with the definition chosen, but SwAM choose to the full extent feasible, the operational definition as proposed by Statistics Sweden to be the starting point in this proposal.

In cases where there is no more specific data for some defined geographical location, entire municipalities are instead used to define the coastal areas. In those cases, SwAM has not chosen to exclude the big cities, but the term coastal municipalities refers to the municipalities that have coastlines or border the sea, of which there is a total of 82.

[6] http://www.vinnova.se/contentassets/5a05797ba0834c899e1acee3749c0d5d/va_13_09.pdf
[7] https://www.havochvatten.se/hav/uppdrag--kontakt/publikationer/publikationer/2017-10-03-en-ekonomisk-analys-av-sektorer-som-ar-beroende-av-havet.html
[8] https://www.scb.se/hitta-statistik/statistik-efter-amne/naringsverksamhet/naringslivets-struktur/maritima-naringar/

2.3 Suggested follow-up system

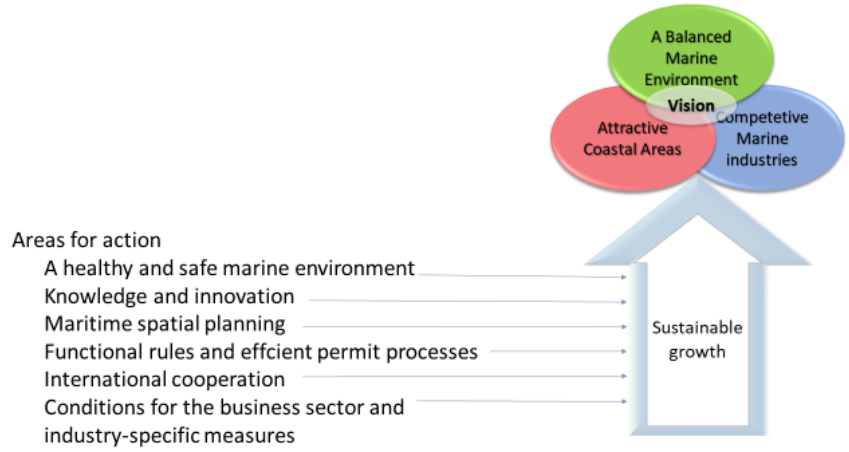


Figure 5. Interpretation of the strategy, from three perspectives and action areas. The policy efforts are presented as measures within six areas for action.

The maritime strategy is divided into one part that describes the vision of desired development for the maritime environment and development of maritime industries in a more general perspective, while the other part that describes the desired development in terms of the efforts required to achieve the vision in more detail. Here we speak of the perspective level and the action area level for three perspectives and six action areas.

In the yearly follow-up, the focus is mainly on a follow-up that is made through indicators reflecting the development of the state as intended by the strategy. In the in-depth follow-up, on the other hand, a more detailed follow-up of these states' development are augmented with assessments of how the actors have worked on affecting states, i.e. what measures have been undertaken.

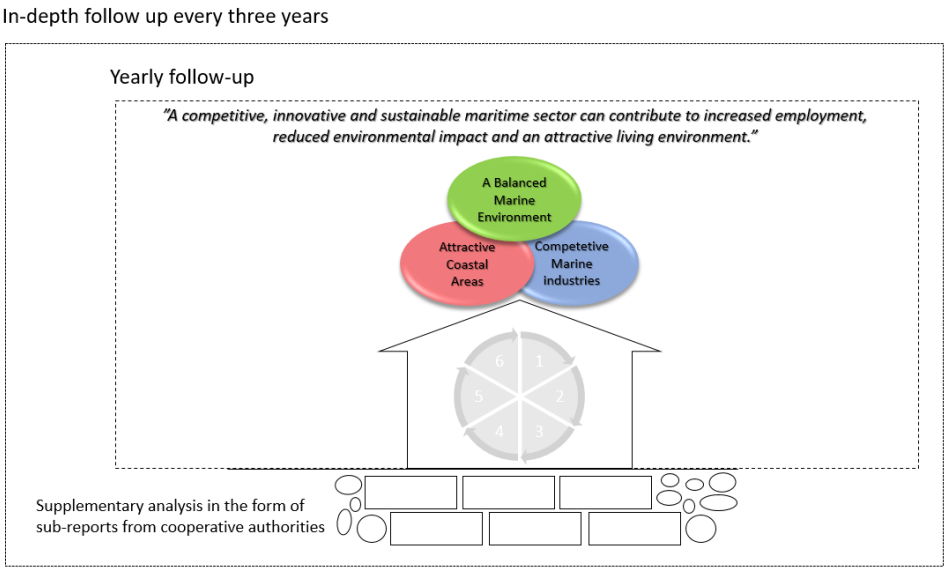


Figure 6. Yearly and In-depth follow-up.

The assignment for SwAM includes developing a limited number of indicators for a yearly follow-up of the perspectives and action areas, and being responsible for the design and implementation of an in-depth follow-up.

Selecting which indicators to include is, as mentioned earlier, a challenging task. Several considerations have been taken into account in the work.

First and foremost, the idea has been that the indicators for the yearly follow-up should be as relevant to what can be perceived as the strategy's goal as possible. Here a challenge is that the strategy does not formulate clear goals, but rather establish important issues to work with in what can be described as goal-like formulations in the strategy.

A further challenge has been to limit the number of indicators to what is described in the assignment as a limited number. In particular, with regard to the level of perspective, we have made an effort to limit the number of indicators.

In addition to this, we shall also relate strategy to national environmental goals and the Agenda 2030 goals. In many cases, the strategy's geographical and sectoral limits made it difficult to use the same indicators as Agenda 2030.

Also in other cases, the strategy's focus and our requirement for indicators relevant to the follow-up of the strategy's implementation, constituted a limitation of indicators one can use. Here too, it is primarily the geographical and sectoral limits of the maritime and the transversal perspective in the strategy that creates challenges for a follow-up that largely follows the classification of authorities and sectors.

Besides, there are, of course, general limitations on what is possible to follow up with indicators, and the costs of a feasible follow-up. Some work remains before all indicators are finally defined and the organising of data collection is completely clear.

2.4 Yearly follow-up: Perspective level

For the Perspective level, the starting point is the vision expressed in *A Balanced Marine Environment, Attractive Coastal Areas* and *Competitive Industries,* which is the basis of the maritime strategy. The vision aims to promote sustainable development in maritime environments and industries.

SwAM proposes a follow-up with a reduced number of indicators for each of the three perspectives. As is clearly the case with *Competitive industries*, indicators of an all too general level are presented here, that is, the indicators refer to the maritime industries collectively. The indicators for action areas of the *conditions for the business sector and industry* follow up the development distributed among particular maritime industries, see section 3.2.6. Connections to Agenda 2030 will also be dealt with in more detail in section 4.1.

2.4.1 *A balanced marine environment*

A prerequisite for a sustainable development of the maritime industries and to

ensure the ecosystem services these industries are based on, is that the ecosystems in sea and coastal areas are in balance. *A balanced marine environment* is about promoting biodiversity, strengthening water quality, and preserving and even restoring various habitats of the sea.

For the perspective of *A balanced marine environment*, we propose an aggregated indicator, which we call the Environmental impact on the seas. The indicator aims to provide an overall picture of the environmental status of our seas. It also offers the opportunity to follow environmental changes in the seas over time. The indicator is shaped by measures of how large a share of the Swedish sea area is either characterized by a low or a high cumulative environmental impact. The indicator thus consists of two sub-dimensions - one for the proportion of the sea area for high environmental impact and one for low.

The indicator has no yearly development today, but is based on a method where several influencing factors are weighted together, which gives an overall picture. The method is based on three main components: maps of environmental impacts, maps of ecosystem components, and a table on how sensitive each ecosystem component is to each environmental impact.

Table 3. Indicator for A balanced marine environment

Indicator	Description	Comments
P1 A Balanced Marine Environment: Environmental impacts in the seas	The indicator consists of two parts: • The share of (percentage) the total Swedish sea area with high environmental impact • The share with low environmental impact Source: SwAM, The Marine Planning unit.	The indicator consists of an aggregate of the total environmental impact, in regards to several affecting components. Data is collected and shows the total cumulative impact according to tools developed for the marine planning. The indicator is connected to goal 6.3, 14.1 and 14.2 in Agenda 2030.

2.4.2 *Attractive coastal areas*

One of the endeavours of the strategy is to promote the development of coastal areas' attractiveness in terms of accommodation, work and tourism. *Attractive coastal areas* is both a function of, and a prerequisite for, both *A balanced marine environment* and C*ompetitive industries*.

For the perspective *Attractive coastal area,* we have chosen 5 indicators that reflect the different dimensions of the coastal area's attractiveness. Three of the indicators intend to measure the attractiveness of coastal areas with regard to accommodation, work and visits. Two indicators are of a more general nature and reflect the conditions for attractiveness.

The definition of coastal areas varies somewhat between the different indicators and is based partly on the on the costal definition (1 km from the beach) and, in part, extending over the entire municipality to constitute the definition.

Table 4. Indicators for Attractive Coastal Areas.

Indicator	Description	Comments
P2 Attractive Coastal Areas: Access to work places in the coastal areas.	The share of the total amount of workplaces in Sweden that can be found in the coastal areas. Source: Statistics Sweden (SCB) Central Business- and workplace-registry, SCB:s definition of coastal areas	The indicator shows the total access to workplaces in the coastal areas. This reflects the opportunity for the coastal population to work in the local area. The indicator also shows the competitiveness of the coastal areas compared to ”the rest of the country” when it comes to attracting jobs. Alternatively, “the rest of Sweden with exceptions for urban areas with over 10 000 inhabitants” can be used in order to get a more “fair” comparison.
P3 Attractive Coastal Areas: Destination attractiveness	The share of all guest nights in Sweden that is spent in the coastal areas. Source: SCB:s processing of the Swedish Agency for Economic and Regional Growth’s Guest nights statistics. SCB:s definition of coastal areas.	The indicator shows the share of all guest nights that is spent in the coastal areas. The indicator shows the coastal areas destination attractiveness in relation to Sweden as a whole. Alternatively, “the rest of Sweden with exceptions for urban areas with over 10 000 inhabitants” can be used in order to get a more “fair” comparison. The indicator is connected to goal 8.9 and 12.b in Agenda 2030.
P4 Attractive Coastal Areas:: Attractive residential environments	The number of Sweden’s population living in the coastal areas Source: SCB:s population registry, SCB:s definition of coastal areas.	The indicator shows the development of the population in the coastal areas. The indicator shows the attractiveness of the coastal areas for residence. An increase in numbers shows that the attractiveness of the coastal areas is increasing compared to the rest of Sweden. Alternatively, “the rest of Sweden with exceptions for urban areas with over 10 000 inhabitants” can be used in order to get a more “fair” comparison.
P5 Attractive Coastal Areas:: Connected coastal areas	The share of Sweden’s coastal municipalities that have access to broadband (at least 100mb/s) Source: the Swedish Post and Telecom Authority The costal municipalities consists of the National Board of Housing, Building	The indicator shows a dimension of the coastal areas prerequisites to be attractive for residents, visitors and jobs. The access to broadband is defined as access to broadband at fixed points,

	and Planning's definition of coastal municipalities. 82 in total.	such as households and workplaces. The indicator is connected to goal 9.c in Agenda 2030.
P6 Attractive Coastal Areas: Smart coastal areas	The coastal municipalities' combined ranking of all Sweden's municipalities in regards to the number of highly educated and the number of "creative professions". For definitions, see the source. Source: Jönköping Business School, Charlotte Mellander	The higher the aggregated ranking, the "smarter and more creative" the coastal areas of Sweden are in comparison to the municipalities in general. The indicator shows the coastal municipalities' ability to attract people with higher education and with creative professions. The indicator shows the potential of the coastal areas.

2.4.3 *Competitive industries*

One aim of the strategy is to increase competitiveness of maritime industries. *A balanced marine environment* should contribute to ecosystem services that strengthen the opportunities for *Competitive industries*. *Attractive coastal areas* are another prerequisite for C*ompetitive industries*. At the same time, *competitive industries are* a prerequisite for attractive coastal environments.

Here, an aggregate indicator is proposed. We call the indicator *Competitive industries*. The indicator comprises all maritime industries[9], (see appendix for detailed definition) and contains three different measures: employment, value added, and goods exports. Overall, the three measures give a general picture of how development of maritime industries looks. The measure also enables comparison with other industries or regions.

Table 5. Indicator for Competitive Industries

Indicator	Description	Comments
P7 Competitive Industries	The indicator consists of three parts that together shows the combined maritime industries according to the SCB:s definition: • The number of people employed within the maritime industries • The value added in the maritime industries (million sek)	The three measures taken together gives a good picture of the competitiveness of the maritime industries. The development of the different measures can be compared to other sectors or industries in other parts of the country. The indicator is connected to goal 9.2 and 8.2 in Agenda 2030.

[9] https://www.scb.se/hitta-statistik/statistik-efter-amne/naringsverksamhet/naringslivets-struktur/maritima-naringar/

	• Export in the maritime industries (thousand sek) Source: SCB	

2.5 Yearly follow-up: Action areas

The next level in the strategy is the so-called action areas. The action areas are primarily aimed at the strategy's implementation - that is, how the vision in the given perspectives should best be realised. The actions in the implementation are, according to the strategy, primarily about using existing resources and tools more efficiently. The action areas intersect between industries as well as policy areas. They are "horizontal" as expressed in the strategy.

Six such action areas have been defined in the strategy. They form one another's preconditions and their order is not an expression of any mutual prioritisation between them.

The indicators proposed here, among the different action areas, are of somewhat varying natures. For some of the action areas, this is also about the conditions in the maritime environments themselves, but at a more detailed level than that of the perspective level. For other action areas, the focus is more on indicators that show authorities' and other actors' efforts to achieve the goals of maritime strategy.

2.5.1 *A healthy and safe marine environment*

Without a good marine environment, the opportunities for growth and development within industries such as tourism and fishing are limited. Lost environmental and cultural values also need to be restored. The work of preventing various types of accidents at sea is also of great importance.

A total of four different indicators are proposed for the yearly follow-up of the action area. The first concerns eutrophication and contains data for both nitrogen and phosphorus. Another indicator is about environmental impact and focuses on toxins in the environment. Here we have chosen an indicator based on the content of hazardous substances in herring from Atlantic as well as Baltic stocks. In addition, an indicator based on the fish stocks' sustainability is proposed.

Other indicators of biodiversity have been considered, for example some measure based on the Swedish Environmental Protection Agency's red-listing of endangered species. However, this is only revised on a five-year basis, which is why it has not been considered relevant for the yearly follow-up.

One of the proposed indicators - the number of accidents and incidents - concerns safety at sea and entails work on increased security.

Table 6. Indicators for Action areas *A Healthy and Safe Marine Environment:*

Indicator	Description	Comments
ÅO1 A Healthy and Safe Marine Environment: Eutrophication	The indicator consists of two parts, divided on geographical sea basins. • Phosphorus load on the sea • Nitrogen load on the sea Source: SwAM:s follow-up of the environmental goal No Eutrophication	To decrease the eutrophication is, according to the strategy, an important prerequisite for balance in the marine ecosystems. Decreased eutrophication is also a part of the national environmental goals and the Agenda 2030 goals. The indicator shows the eutrophication status of the Swedish sea environments in relation to the conditions of the sea areas in general. The indicator is connected to goals 6.3, 14.1 and 14.2 in Agenda 2030.
ÅO2 A Healthy and Safe Marine Environment: Environmental toxins in Swedish-caught fish	The indicator is calculated by using the data from eight premises and is a compilation of nine hazardous substances. Source: SwAM:s follow-up of the environmental goal A Balanced Marine Environment.	The indicator shows the development of environmental toxins in the sea. Toxin-free marine food stuffs are fundamental in order to ensure “ecosystem services that are needed for a continued development of the maritime industries” The indicator is connected to goals 6.3, 12.4, 14.1 and 14.2 in Agenda 2030.
ÅO3 A Healthy and Safe Marine Environment: Sustainable use of the fish stocks	The indicator is an aggregated measure of the number of fish and seafood stocks that are sustainably used. Source: SwAM:s follow-up of the environmental goal A Balanced Marine Environment.	Sustainable fishing is one of the fundamental prerequisites in order to ensure balanced marine ecosystems as well as ”ecosystem services that are needed for a continued development of the marine industries”. The indicator is connected to goals 12.2, 14.2 and 14.4 in Agenda 2030.
ÅO4 A Healthy and Safe Marine Environment: Accidents and incidents in Swedish waters	The indicator is a measure of the total amount of reported accidents and incidents with Swedish and foreign vessels in the Swedish territorial waters. The data is divided into three categories: severe accidents, less severe accidents and incidents. Source: The Swedish Transport Agency.	To decrease the number of accidents at sea is in many ways important in order to reach the vision of a healthy and safe sea. The indicator shows the development of the number of accidents and incidents divided according to the character of the event. The indicator is connected to goals 8.8 and 14.1 in Agenda 2030.

2.5.2 Knowledge and innovation

Knowledge of the sea and its resources is a prerequisite both for Sweden’s present custody of the sea but also for promoting long-term innovation. At the same time, the development of indicators regarding knowledge is difficult, and a

meaningful yearly follow-up is a significant challenge. Thus, we have concentrated in the proposal on an indicator that aims to show the collective innovation resources that are made available to the maritime industries.

Innovation in the maritime strategy is primarily aimed at strengthening companies' competitiveness. The innovation will meet societal challenges of the maritime area, such as sustainable energy production, sustainable transport, and sustainable resource utilisation. Efforts should be focused on strategic innovation portfolios based on society's challenges, the companies' market needs, relevant goals, and Swedish areas of strength.

Table 7. Indicator for action area *Knowledge and innovation*

Indicator	Description	Comments
ÅO5 Knowledge and Innovation: Innovation for Maritime Industries	Total public resources allocated to maritime industries from Innovation programs from Vinnova, the Swedish Energy Agency and the Swedish Agency for Economic and Regional Growth (exact definition of innovation programs remains). The definition of maritime industries is based on SCB:s definition. Source: Respective innovation authority.	The governmental innovation resources constitutes an important prerequisite for the renewability and long-term sustainability of the industries. The indicator shows the maritime industries ability to attract these resources. The indicator has a connection to goals 8.2 and 9 in Agenda 2030.

2.5.3 Planning with a maritime perspective, maritime spatial planning

An important part of the maritime strategy is supporting work being done to integrate a maritime perspective into municipal planning. It is therefore proposed that the action area shall be followed up with an indicator highlighting work in planning coastal and marine areas being developed in Swedish municipalities.

This is a step that may contribute to finding a more fitting integration between municipal and state levels in the future.

Table 8. Indicator for Action area Planning with maritime perspective.

Indicator	Description	Comments
ÅO6 Planning with a Maritime Perspective: Comprehensive planning of coast, sea and archipelago	The share of Sweden's coastal municipalities that have a comprehensive plan for its coastal- and sea area. Source: the National Board of Housing, Building and Planning, survey to Sweden's municipalities.	The physical planning creates preconditions for the maritime industries. In order to follow the development of the coastal- and sea areas it is therefore relevant to measure the development of the physical planning. The number of municipalities that have a comprehensive plan for the coast, archipelago and sea is therefore an important indicator.

		The indicator has a connection to goals 11.a and 14 in Agenda 2030.

2.5.4 Functional rules and efficient permit processes

Functional, fair, and straightforward rules and accordant permit processes are important both for protection of the natural environment and for the competitiveness of maritime industries, especially in an international perspective.

Transport regulation is an area where development allows for follow-up. Given the current state of policy, an indicator is proposed that shows how well taxes and fees for maritime traffic have been able to internalise the socioeconomic costs of traffic (e.g. environment and accident costs). By setting the degree of internalisation of maritime traffic in relation to other types of traffic, the functionality of sea traffic regulations can be followed. Many of the measures the strategy mentioned are challenging for follow-up with distinct indicators therefore it is proposed that the main follow-up be carried out within the framework of the in-depth follow-up.

Table 9. Indicator for Action area Functional rules and efficient permit processes.

Indicator	Description	Comments
ÅO7 Functional Rules and Effective Permit processes: Fair traffic regulations	The maritime traffic's internalization of socioeconomic costs (percentage of the socioeconomic costs that are internalized in taxes, fees etc.). Comparisons with for example road and railroad traffic is possible. Source: Transport Analysis	To follow up the functionality of regulations is hard. With this indicator, we get a measure of the functionality of the regulations for maritime traffic. The indicator has a connection to goals 8.4 and 9.2 in Agenda 2030.

2.5.5 International cooperation

International cooperation is needed to meet challenges facing both marine environment and maritime industries. There are many important international cooperative processes under way as well as some proposed for development in the maritime strategy. Measuring these cooperative processes' development is a challenge. Within the EU Structural Funds, however, there are a number of programmes and efforts aimed at promoting cross-border cooperation around Swedish seas - both the Baltic Sea and the North Sea. An indicator is proposed measuring the public resources devoted to the development of maritime environments and competitiveness of maritime industries.

Table 10. Indicator for International cooperation action area.

Indicator	Description	Comments
ÅO8 International Cooperation: Resources for international cooperation concerning innovation and maritime environment	Public resources allocated to Swedish maritime environments and businesses from a selection of international cooperation programs. Efforts in Horizon 2020, Interreg Baltic Sea Region and Interreg North Sea Region are proposed to be included. Source: Respective authority responsible for the program	The sum of the resources that are invested in international cooperation within the selected programs is an indication of the total resources that are invested in international cooperation regarding maritime industries. The indicator also shows the development of Sweden's ability to be included in this kind of cooperation. The indicator has a connection to goals 7a and 17 in Agenda 2030.

2.5.6 Conditions for the business sector and industry-specific measures

The area is developed in close interaction with other areas, such as knowledge and innovation and functional rules and fair permit processes. The purpose is to strengthen the development of maritime industries.

In the yearly follow-up, the proposal is based, in part, on the development statistics for maritime industries as defined by Statistics Sweden. However, by design this yearly follow-up shall also, in part, report data gathered from various maritime industries and partly supplement parts of this with selections of additional indicators reflecting the conditions for each business sector in turn, as related to various sub-sectors in the business sphere.

Table 11. Indicators for action area Prerequisites for the business sector and industry-specific measures.

Indicator	Description	Comments
ÅO9 – 13 Conditions for the Business Sector and Industry Specific Measures: The competitiveness of the industries (Transport, Maritime Technology and production, The Sea as a Resource, Leisure and Tourism, and Service – it is desirable to divide the industries into subsectors)	Each of the indicators for the subsectors in turn consists of three partial measures: • Number of employed in the maritime industries • Value added in the maritime industries (million sek) • Export in the maritime industries (thousand sek) Source: SCB:s special follow-up pf the maritime industries – all subsectors	A more detailed picture of the development of the different maritime subsectors is presented here. The indicator is connected to goals 8.2 and 9.2 in Agenda 2030.
ÅO14 Conditions for the Business Sector and Industry Specific Measures: Sea based energy production	The indicator consists of three partial measures: • Installed effect in sea based wind power in	The indicator supplements the industries within the area of the Sea as a Natural Resource, through showing the extent and development

	Swedish waters and in Swedish economic zone (Megawatt) Source: County Administrative Board Västra Götaland (www.vindlov.se) • Number of marine energy facilities (wave- and currents, energy recovery from differences in temperature and salt content) in Swedish waters and Swedish economic zone. • Installed effect (megawatt) in all facilities Source: the Swedish Energy Agency (IEA OES-report)	of the sea based energy production. The indicator is connected to goal 7.2 in Agenda 2030.
ÅO15 Conditions for the Business Sector and Industry Specific Measures: Sweden's fleet	The number of merchant ships and special vessels with a gross tonnage of above 100, in the Swedish registry and in Swedish regime. Source: Transport Analysis	This indicator shows the size of the Swedish merchant's fleet and the fleet that is controlled by Swedish shipping companies. The size of the Swedish fleet affects, among other things, Sweden's influence on international maritime affairs, the possibility to maintain jobs and shipping competence in Sweden.
ÅO16 Conditions for the Business Sector and Industry Specific Measures: Overnight stays/visits in the coastal area	The indicator consists of three partial measures: • The number of guest nights in visit facilities in Swedish coastal areas (SCB:s definition) • The number of visitors/guest nights in the cruise traffic in Swedish harbours • Number of nights in guest harbours Source: The Swedish Agency for Economic and regional Growth, The Swedish Guest Harbour Association, Swedish harbours and SCB.	The indicator supplements SCB:s data on maritime tourism with additional maritime guest nights. The indicator is connected to goal 8.9 in Agenda 2030.
ÅO17 Conditions for the Business Sector and Industry Specific Measures: Season extension	The indicator consists of the change in the share of total number of guest nights in the coastal areas outside the months of June-August Source: The Swedish Agency for Economic and regional Growth's accommodation statistics	The indicator gives a measure of the total season for visit facilities in the coastal areas.
ÅO18 Conditions for the Business Sector and Industry Specific Measures:	The indicator consists of the total catch of fish and seafood from the	The indicator gives a measure of how much fish and seafood the commercial fishing in the sea is fishing

Fish and seafood catches	commercial fishing in the sea, expressed in alive weight. Source: SCB/SwAM yearly official statistics for commercial fishing	each year and hence the productivity of the sector.
ÅO19 Conditions for the Business Sector and Industry Specific Measures: Production of aquaculture	The indicator consists of the total production of aquaculture products. Source: SCB yearly statistics for the aquaculture	The indicator gives a measure of how much fish and seafood that aquaculture is producing on a yearly basis and hence the productivity of the sector.

3 In-depth follow-up - current situation 2017

In the in-depth follow-up, the indicators of the yearly follow-up are supplemented. The purpose is to be able to analyse and deepen the picture of the strategy's implementation and results in various ways compared to the indicator report in the yearly follow-up. This means that in-depth follow-up should include:

- An analytical commentary on indicator development (locations and development over time) that we have reported in the yearly follow-up.
- A supplementary analysis (where indicators are supplemented with quantitative and qualitative analyses based on other data) of the development of strategy goals.

The main source for the supplementary analyses at the action area level is the background reports the concerned government agencies have compiled in this assignment. Such background reports documentation can be found in their entirety at source, which is the given government agency concerned.

- National Board of Housing, Building and Planning sub-report Physical Planning – Land, coast and sea[10]
- The Swedish Energy Agency interim sub-report (a publication that deals with renewable energy) [11]
- The Swedish Board of Agriculture's interim sub-report Marine food [12]
- Swedish Agency for Economic and Regional Growth Interim sub-report Maritime tourism[13]
- Swedish Transport Agency Sjötrafik inom Maritima strategin - Fördjupad uppföljning av indikatorer och åtgärdsområden[14]
- Statistics Sweden Develop the statistics about de maritima näringarna[15]

At the next in-depth follow-up, the background reports are updated to facilitate an analytical review. The in-depth, follow-up thus follows the same structure as the yearly follow-up, which, in turn, follows the strategic division. This means that the analysis starts with the perspective level, and then moves to analysing the six separate action areas in greater detail.

[10] Diarienummer saknas för närvarande rapport publiceras digitalt via HaV.
[11] Uppföljning av den maritima strategin - delrapport förnybar energi. Dnr 2016-009391.
[12] Uppföljning av Maritima Strategin - Delrapport Marina livsmedel Dnr 4.1.17-01924/2018
[13] Tillväxtverket Dnr Ä 2017-757
[14] Transportstyrelsen (2018). Sjötrafik inom Maritima Strategin. Fördjupad uppföljning av indikatorer och åtgärdsområden. Dnr TSS 2016-2343.
[15] https://www.scb.se/hitta-statistik/statistik-efter-amne/naringsverksamhet/naringslivets-struktur/maritima-naringar/

3.1 In-depth follow-up: Perspective level

3.1.1 A balanced marine environment, Competitive industries and Attractive coastal areas

The in-depth follow-up of the vision goal from the perspective of *A balanced marine environment, Competitive industries* and *Attractive coastal areas* begins with summarising the current state of the proposed indicators. Development, the state (goal), and development over time are analysed in three years, by the indicators reported in each yearly follow-up.

Table 12. In-depth follow-up: Yearly Indicators and supplementary areas.

Indicator	Current state	Comment
In-depth follow-up: Yearly indicators		
P1 Environmental impacts in the seas	See section 3.1.1	Weighted method not yearly.
P2 Access to work places in the coastal areas.	New	New indicator, source Statistics Sweden.
P3 Destination attractiveness	New	New indicator, source Statistics Sweden.
P4 Attractive residential environments	New	New indicator, source Statistics Sweden.
P5 Connected coastal areas	New	May not be down to 1 km from the coast.
P6 Smart coastal areas	Median coastal municipalities: 0.69 Median all municipalities: 0,47 (2015)	Existing source Vertical/International Business School in Jönköping[16]
P7 Competitive industries	Number of employees in the maritime industries: 33 035 (2014) Value added in the maritime industries (SEK million): 22 093 (2014) Exports of goods in the maritime industries: SEK 7.2 billion (2014)[17]	Yearly follow-up Statistics Sweden

P1 A balanced marine environment: Environmental impact on the seas

We do not presently have a clear current status derived from indicator results for the indicator Environmental impact on the seas. The indicator is compiled by the marine planning tool under development and the material is not yet fully adapted to the follow-up system proposed here.

[16] Charlotta Mellander, Vertikals/Internationella Handelshögskolan i Jönköping/ http://vertikals.se/charlotta/2017/02/26/smarta-kommuner/

[17] https://www.scb.se/hitta-statistik/statistik-efter-amne/naringsverksamhet/naringslivets-struktur/maritima-naringar/

The figures below present a preliminary assessment of the cumulative impact on the Gulf of Bothnia presented in terms of the average impact value for the entire Gulf of Bothnia. In the right-hand figure, the cumulative impact on Skagerrak and Kattegat is presented in terms of the average impact value for entire Skagerrak and Kattegat. The imagery in the present tables are not comparable with one another since the reference value is not the same. Towards a more national context, we shall discern the need to identify some reference areas for a basis of comparison.

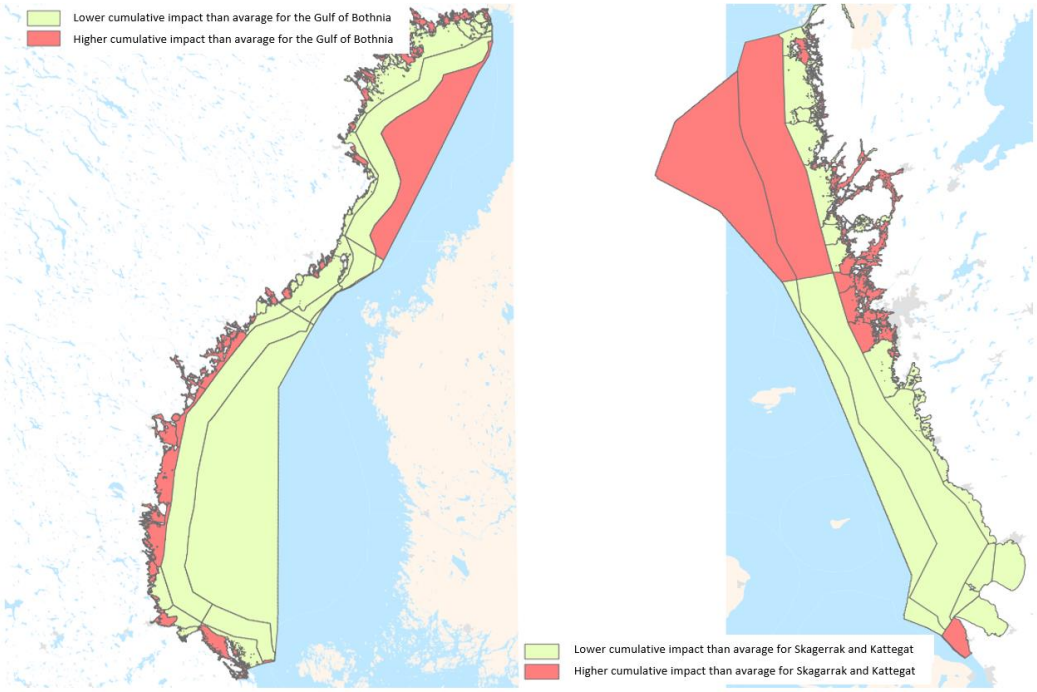


Figure 7. Example of presentation of cumulative effects for each sea area in terms of the average impact value for the entire sea area.

In the in-depth follow-up, the result of the Symphony[18] results will illustrate the change of the yearly indicators presented under the *Healthy and safe marine environment*. It is also of interest to make an assessment of how good environmental status is being achieved in Swedish seas. The result of the status assessment of Swedish seas from 2017 shows that impact in most cases is so high that good environmental status is not achieved. A summary of the status assessment can be found in section 4.2.

P2-P4 Attractive coastal areas

Proposals for new indicators with Statistics Sweden's definition for P2 Access to workplaces in coastal areas, P3 Destination attractiveness and P4 Attractive residential environments. Data sets are available from Statistics Sweden but require development to apply to the restrictions imposed in this assignment.

P5 Connected coastal areas

The indicator shows a dimension of the coastal areas' prerequisites for being attractive for housing, as well as visits, and work. Broadband access thus

[18] https://www.havochvatten.se/hav/samordning--fakta/havsplanering/om-havsplanering/vad-ar-havsplanering/symphony---ett-planeringsverktyg-for-havsplanering.html

measures accessibility to new services and it is also a tool for bridging the geographical gap that may exist between coastal areas and certain services. Broadband access is defined as access to broadband at fixed points - such as households and workplaces.

Data sets are available from the National Post and Telecom Agency (PTS) but require further development to be rendered consistent with Statistics Sweden's definitions[19]. The level of detail in PTS's broadband map is counties, municipalities or boxes of 250 x 250 meters.

P6 Smart coastal areas

The compilation of the index for Smart municipalities shows that the median value for the 82 coastal municipalities is 0.69, compared with 0.47 for all Swedish municipalities.

The index "Smart municipalities" is a combination of the percentage of highly-educated persons and the percentage of creative professionals in each municipality and which shows the relative position of the municipalities. Municipalities are then ranked in descending order from greatest to least, where the highest value is 1 and the lowest value is 0.003. That is, higher numerical value indicates higher rankings to the smart municipalities list.

Appropriate skills are one of many attraction forces for a residential area. Highly-educated persons and knowledge-based professionals is one of the groups of great importance for today's local community. Groups like highly-educated persons and creative professionals contribute to the enhanced attractiveness of a given residential area: they are an attractive workforce that can contribute to business start-ups, they provide an opportunity for creative meetings between people who can promote innovation and entrepreneurship.

P7 Competitive industries

Statistics Sweden was tasked by the Government to produce combined business statistics for the maritime industries. The information will form the basis for the Government's follow-up of the Swedish maritime strategy that was adopted in August 2015. The development of the statistics on the maritime industries has meant a re-definition of maritime business activity based on existing data. The starting point has been the classification fields used for the industries in the maritime strategy: transport, maritime technology and production, the sea as a natural resource, marine foodstuffs, energy production, leisure and tourism and industrial services.

The initial work on producing statistics for the maritime industries identified 7,157 companies in the business sector were identified as maritime in 2014. This corresponds to 0.7 per cent of all companies in the business sector. Most companies were found in the field ofSea as a natural resource, or about 2,500 companies or 35 percent of all companies.

[19] http://bredbandskartan.pts.se/

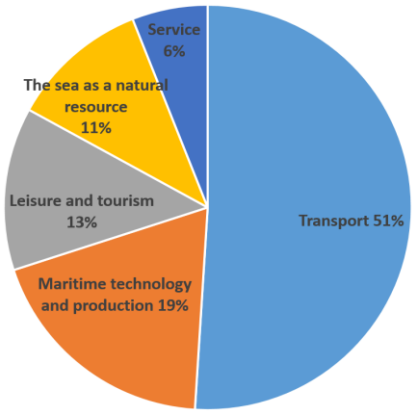


Figure 8. Distribution of net sales in the maritime industries by area, in 2014.

Net sales in the maritime industries accounted for 1.1 per cent of total net sales in business and industry in 2014. The greatest was in Transport at 51 per cent of the total maritime industries' turnover, followed by Maritime technology and production by 19 per cent.

The maritime industries employed about 33,000 people, of whom a majority were men, 22,800 compared with 10 200 women in 2014. Employment was largest in Transport, 14,400 of which 4,000 were women and over 10 000 were men. Leisure and tourism showed the most equal gender balance where of the 6,800 gainfully employed, half were men and half were women.

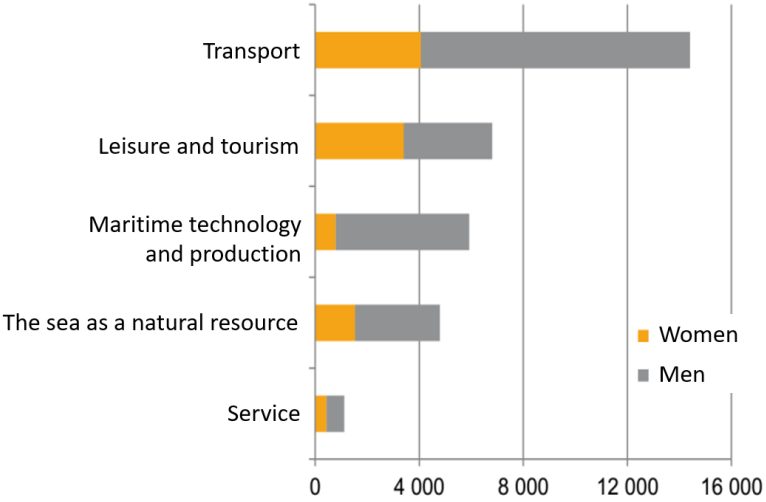


Figure 9. Number of gainfully employed in the maritime industries by area and sex, in 2014.

Exports of goods amounted to SEK 7.2 billion for the maritime industries in 2014 and the imports of goods to SEK 6.5 billion. It was 0.6 per cent of the total Swedish export of goods and also 0.6 per cent of imports of goods. The largest imports was in the area “Sea as a natural resource”, with 33 per cent of the maritime industries total imports while exports was highest in maritime technology and production, 82 per cent. More than half of the maritime industries' imports of goods came from countries within the EU. Of the exports of goods, most went to countries within the EU, amounting to 46 per cent in 2014.

Table 13 shows the number of employees, the value added and the export value for all maritime industries in 2014.

Table 13. The number of employees, value added, export value maritime industries 2014

Measure	Value 2014	Women/men
Number of employed	33,000	10,200/ 22,800
Value added	22,093 MSEK	
Exports of goods	7.2 billion SEK	

The maritime industries generated approximately one per cent of the total sales of the business sector, and even value added was one per cent, while the value of the production and gross capital formation were slightly higher. Between 2013 and 2014, there was also an increase in gross capital formation. The total costs and revenue were just over one per cent of the business sector.

In the next in-depth follow-up, the change in the indicator's three sub-measurements for the last three-year period is commented on.

To get an idea of the size of the maritime industries, they can also be compared with the Swedish food industry, where the maritime industries are partly included. The food industry[20] employs approximately 55,000 and has an added value of about SEK 38 billion and an export value of SEK 83 billion in 2016.

3.2 In-depth, follow-up: Action areas

In the in-depth follow-ups, outcomes and analysis of change of the yearly indicators are reported under the action areas. In this section, a supplementary analysis takes place of the development of the strategy's goal, in which the indicators are supplemented by quantitative and qualitative analyses based on other data. The bases for these analyses will come from supporting reports from cooperating government agencies in most cases.

3.2.1 *Healthy and safe sea*

For *Healthy and safe sea* a yearly follow up on nitrogen-based eutrophication and phosphorus-based eutrophication, levels of environmental toxins from Swedish commercial fishing catches, sustainable use of fish stocks, and safety work at sea, is proposed. The change of these indicators is analysed and related to the comprehensive indicators *Low and high environmental impact areas* proposed in the follow-up for the *A balanced marine environment* perspective. The indicators for the action area *Healthy and safe sea* are supplemented by analysis of biodiversity and with information on the freight transfer from road to sea lane.

Table 14. In-depth follow-up: Yearly Indicators and Supplementary Areas.

Indicator	Current state	Comment
In-depth follow-up:: Yearly indicators		
ÄO1 Eutrophication	Nitrogen: 5 out of 7 sea basins. Phosphorus: 3 out of 5 sea basins. (2014)	New environmental target indicator under development, available March 31, 2018.[21]

[20] https://www.livsmedelsforetagen.se/branschfakta/

[21]https://www.havochvatten.se/download/18.2565bdd715c36129f3d1b14b/1495616581261/Kv%C3%A4ve%20och%20fosforbelastning%20p%C3%A5%20havet.pdf

ÅO2 Environmental toxins in Swedish-caught fish	New	New environmental target indicator during development, available from March 31, 2018.[22]
ÅO3 Sustainable use of fish stocks	New	New environmental target indicator under development, available from March 31, 2018.[23]
ÅO4 Accidents and incidents in Swedish waters	A total of 189 accidents and incident (2016)	Existing indicator, source The Swedish Transport Agency
Supplementary areas		
Biodiversity	319 red-listed species of a total of 5202. [24](2015)	Quantitative evaluation.
Transfer of freight transports from road to shipping	-	Qualitative evaluation.

3.2.1.1 In-depth, follow-up: Yearly indicators

ÅO1 Eutrophication

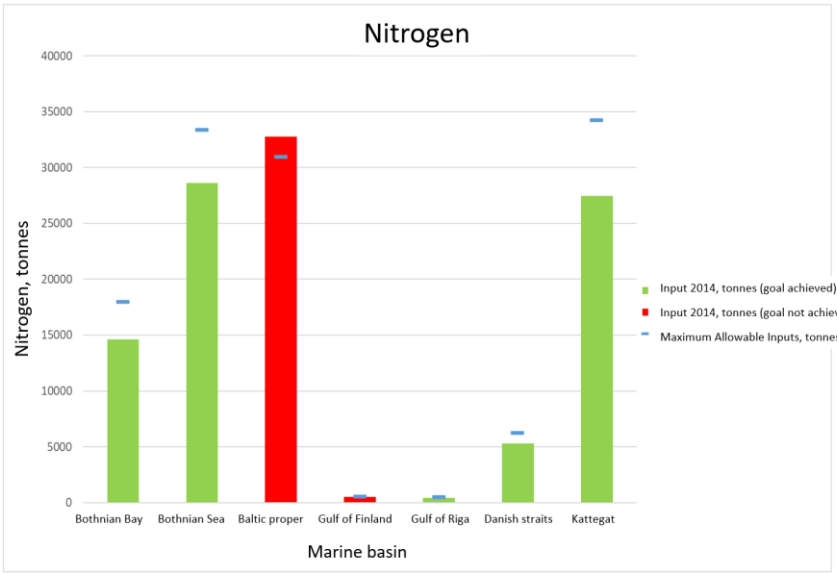
This is a new environmental objective indicator that will follow up *A Balanced marine environment* and *Flourishing Coastal Areas and Archipelagos*. The indicator is under development and is expected to be completed by March 31, 2018. The indicator shall show water and airborne nitrogen and phosphorus input to the sea.

With regard to nitrogen-based and phosphorus-based eutrophication, we see in the figure that according to 2014 figures, Sweden achieves its input targets for five out of seven sea basins regarding nitrogen. There are still challenges regarding emissions to the Baltic Proper. Sweden achieves the input targets for three out of five sea basins regarding phosphorus. The targets are exceeded for the Baltic Proper and the Bothnian Bay. Hence, two out of five sea basins are affected by phosphorus.

[22]https://www.havochvatten.se/download/18.2565bdd715c36129f3d1b018/1495616340172/Exponering%20farliga%20%C3%A4mnen.pdf

[23]https://www.havochvatten.se/download/18.2565bdd715c36129f3d1b01a/1495616358843/H%C3%A5llbara%20fiskbest%C3%A5nd.pdf

[24] https://artfakta.artdatabanken.se/



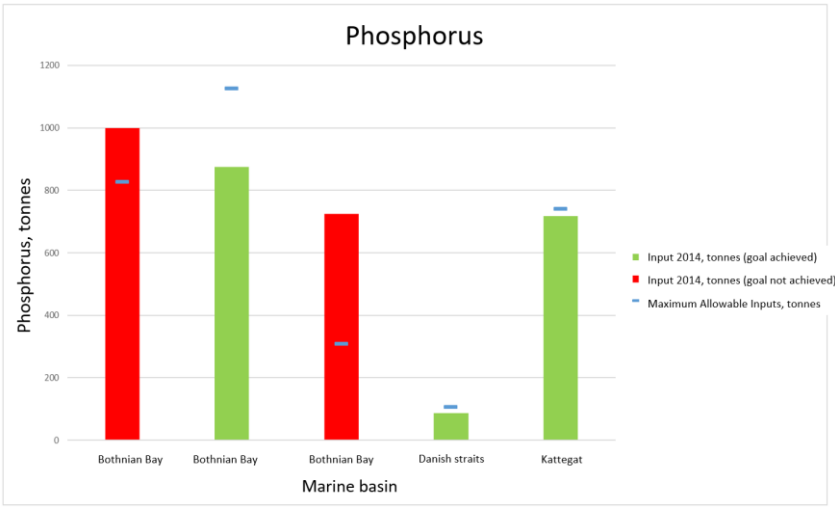


Figure 10**.** The nitrogen and phosphorus nutrient inputs in sea basins surrounding Sweden in 2014, compared to the national Swedish maximum nutrient inputs, as determined in the Action Plan for the Baltic Sea. Green bars show sea basins where the infusion of nitrogen or phosphorus is lower than the maximum nutrient input. Red bars show sea basins where the infusion exceeds the maximum nutrient input.

ÅO2 Environmental toxins in Swedish fishing catches

This is a new environmental target indicator that will follow up *A balanced marine environment and flourishing coastal regions and archipelagos*. The indicator under development is expected to be completed by March 31, 2018. [25]

ÅO3 Sustainable use of the fish stocks

This is a new environmental goal indicator that will follow *up A balanced marine environment and flourishing coastal areas and archipelagos*. It is under development and is expected to be completed by March 31, 2018. The indicator will show the percentage of assessed sustainably used fish stocks.[26] This consists

[25]https://www.havochvatten.se/download/18.2565bdd715c36129f3d1b018/1495616340172/Exponering%20farliga%20%C3%A4mnen.pdf

[26]https://www.havochvatten.se/download/18.2565bdd715c36129f3d1b01a/1495616358843/H%C3%A5llbara%20fiskbest%C3%A5nd.pdf

of a table of all assessed fish stocks, and partly as an integrated measure of sustainable use of fish and shellfish stocks.

ÅO4 Accidents and incidents in Swedish waters

In the maritime strategy, it is established that a vital safety culture and a high degree of industry competence are required to minimize the risk of accidents. Safety work must therefore continue to be actively reducing the risk of major accidents at sea with negative consequences for people and the environment. This indicator shows the number of reported accidents and incidents, distributed by type of event.

With statistics from 2016 onwards, the Swedish Transport Agency will report the accidents and incidents reported by Swedish registered vessels and foreign vessels in Swedish territorial waters. The indicator isdefined to include merchant marine, commercial fishing, and state vessels as well as other shipping conducted for commercial purposes. The events are reported in the categories: serious accidents, minor accidents and incidents. The events are also divided into types of accidents.

There has been discussion of assigning goals whereby the number of serious accidents should decrease over time. While incidents and less severe accidents are underreported, any increased reporting of incidents and less serious accidents would indicate that the maritime industry has a vital safety culture and will provide documentation for working preventively. With an increased reporting propensity for incidents and less serious accidents, the Swedish Transport Agency will have a better chance to carry out risk assessments and work with a risk-based supervision, where supervisory efforts aim for where they have the greatest effect.

From the accidents reported in recent years, two types are overrepresented: barges that are loaded to insufficient stability and are used incorrectly, and accidents with semi-rigid hulled boats where passengers and crew are injured when boats are driven at excessive speeds.

The figure below shows that a total of 189 accidents and incident were reported to the Swedish Transport Agency in 2016. Most reports to the Swedish Transport Agency come from national shipping companies and archipelago shipping companies. The reporting propensity to the Swedish Transport Agency among the foreign vessels is lower than among Swedish vessels. This could be because foreign shipping companies are often unaware that they also shall report less serious accidents and incidents to Swedish authorities.

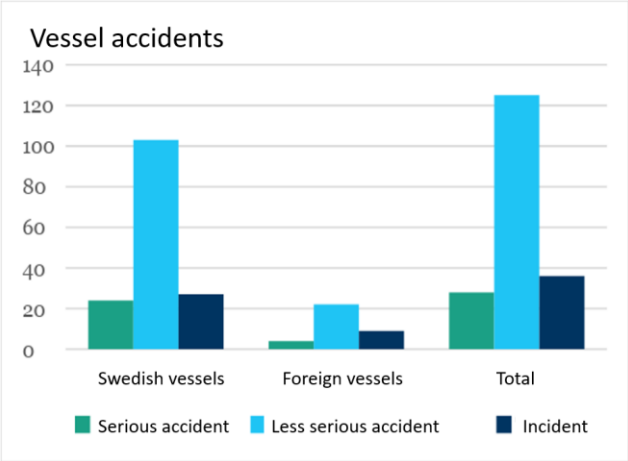


Figure 11. Number of reported accidents and incidents in 2016 distributed among Swedish and foreign vessels

3.2.1.2 In-depth follow-up: Supplementary areas

Biodiversity

Supplementary follow-up on biodiversity is made using red-listed species in the ArtData database. Biodiversity is one of the fundamental preconditions for marine ecosystems in balance and also ensures "ecosystem services needed for the continued development of the maritime industries". The species included are selected based on their inclusion in the ArtDatabank's red list index for marine environment and brackish water, which is based on the International Union for the Conservation of Nature's (IUCN) criterion and categories.[27] However, it should be noted that species included in the categories "Not Assessed" and "Not Applicable" are not included under red-listed species, and are therefore not included in the indicator. Currently there are 319 red-listed species in Swedish waters, according to the latest available data from 2015. The indicator is updated every five years.

The follow-up will show the trend for the red-listed species in relation to change. If the number of red-listed species increases in the table, this indicates that the biodiversity is decreasing.

Table 15. Number of Red Listed Species in Swedish waters (2015)

Number of Red Listed Species in Swedish Water (2015)	
Status	**Quantity**
Extinct	0
Nationally extinct	7
Critically endangered	14
Highly endangered	29
Vulnerable	64

[27] https://www.artdatabanken.se/var-verksamhet/rodlistning/Bedomningsprocessen/

Nearly threatened	38
Lack of knowledge	167
Totally	**319**

Source: ArtDatabanken

Transfer of freight transports from road to shipping

The maritime strategy highlights the transfer of freight transports from road to shipping as an opportunity to reduce overall environmental impact from the transport sector and reduce the burden on the road network. This is also the intent at EU level within the framework of the EU transeuropean transport network (TEN-T). In order to investigate the possibilities of carrying out such a transfer, a number of studies have been carried out[28].

All reports conclude that the transfer potential is limited, at least with respect to domestic transport. Swedish Maritime Administration's report[29] concludes that there are preconditions for the transfer of freight transport from land to sea lanes, there is spare capacity in ports and waterways, suitable tonnage and conceivable goods flows. However, current market conditions do not create incentives for developing new multimodal transport lines. Transhipment in ports as well as pilot and waterway fees are cost-drivers for shipping and make most transport arrangements over shorter distances disadvantageous.

3.2.2 Knowledge and innovation

For Knowledge and Innovation, yearly follow-up of innovation for maritime industries is proposed by looking at total public resources allocated to maritime industries via innovation programmes from Vinnova, Swedish Energy Agency, and the Swedish Agency for Economic and Regional Growth. The indicator aims to show the maritime industries' ability to attract state innovation resources. These resources are an important precondition for the business community's renewal and long-term sustainability, which strengthens the maritime industries' competitiveness.

Table 16. In-depth follow-up: Yearly Indicators and Supplementary Areas.

Indicator	Current state	Comment
In-depth follow-up: Yearly indicators		
ÅO5 Innovation for maritime industries	New	New indicator, source innovation programme
Supplementary areas		
Research environments within the maritime area	-	Qualitative and quantitative evaluation
Innovation results within various industries	-	Qualitative and quantitative evaluation

[28] T.ex. VTI (2014) Konkurrensyta land – sjö för svenska godstransporter. VTI rapport 822, Trafikverket (2015), Underlagsrapport till inriktningsunderlag 2018–2029. Publikationsnummer 2015:228. Trafikanalys (2016) Godstransporter i Sverige – en nulägesanalys. Rapport 2016:7.

[29] Analys av utvecklingspotentialen för inlands- och kustsjöfart i Sverige. Sjöfartsverket, 2016. Dnr 16-00767

3.2.2.1 In-depth follow-up: Yearly indicators

ÅO5 Innovation for maritime industries

The indicator ÅO5 is based on data on how much resources in different innovations and cooperation programmes are allocated for maritime environments and innovations in maritime industries. Much development work remains for exact definitions of these two indicators.

Our proposal for ÅO5 is to collect information about support that has gone to one or a few of the companies that have been defined as maritime through Statistics Sweden. Their organisation numbers are linked to the registers of the support efforts for selected programmes for business development and innovation at the Swedish Agency for Economic and Regional Growth, Vinnova, and Swedish Energy Agency. The indicator consists of the total amount of innovation support afforded these companies for the year studied. There is no current status reported as this is a proposal for a completely new indicator.

In the area of action titled knowledge, in a future development of the in-depth follow-up one can focus on finding a measurement on how available existing knowledge is with regard to, for example, APIs (Application Programming Interface). API is a standardised way of making information available, such as traffic information or other information sought in management programming.

3.2.2.2 In-depth, follow-up: Supplementary areas

Research environments within the maritime area

In the in-depth follow-up, the analysis of the above mentioned indicators are supplemented with a review of current research states of affairs in the maritime area.

Innovation results within various industries

Innovation results will be compiled from each industry. In the fields of energy production and commercial fishing, background reports have noted how innovation results have been followed up. Fisheries should follow the development of new fishery products and the development of so called gentle fishing gear.

In order to follow developments in the field of energy production, it would be interesting to follow up the development of the number of persons employed in marine energy. As several development companies operate exclusively within marine energy, this information can be produced from a credit report on such companies. Given that employment statistics are not subdivided such that maritime industries are reported individually, appropriate methods for follow-up must be developed before an indicator with a more complete action area coverage can be selected.

3.2.3 Planning with a maritime perspective, Maritime spatial planning

For *Planning with a maritime perspective*, a yearly indicator is proposed to measure comprehensive planning of the coastal areas, seas, and archipelagos. This is done by looking at the percentage of Sweden's coastal municipalities that have comprehensive planning for their entire coastal and marine areas. This indicator thus measures the development of sea and coastal areas and shows the preconditions for the maritime industry.

Table 17. In-depth follow-up: Yearly Indicators and Supplementary Areas.

Indicator	Current state	Comment
In-depth follow-up: Yearly indicators		
ÅO6 Comprehensive planning of coast, sea and archipelago	26 of 82 coastal municipalities.	Existing indicator, source National Board of Housing, Building and Planning.
Supplementary areas		
In-depth study of comprehensive planning	-	Qualitative evaluation.

The in-depth follow-up requires an in-depth work effort in the form of a more thorough analysis of the comprehensive planning done in the coastal and marine areas. The in-depth follow-up should be based on:

- Focus on current issues
- How the public interest in *a good economic growth* has been satisfied by the comprehensive planning for the maritime area
- The effect of planning's implementation in relation to the maritime industries

3.2.3.1 In-depth follow-up: Yearly indicators

ÅO6 Comprehensive planning of coast, sea and archipelago

Physical planning creates the conditions for the maritime industries as defined in the maritime strategy. In order to monitor development of seas and coastal areas, it is therefore relevant to measure development within physical planning. Thus the number of coastal municipalities with comprehensive planning for the coastal areas, the archipelagos, and the seas, is the proposed indicator for the yearly follow-up of the strategy.

In autumn 2017, the National Board of Housing, Building and Planning contracted a consultant to make an inventory of coastal municipalities having comprehensive planning for coastal areas, archipelagos, and sea. The inventory of comprehensive planning shows that 26 out of 82 coastal municipalities included the coastal areas and marine areas in their comprehensive planning. Of these, only a few are made with any degree of inter-municipal cooperation. Nonetheless, there are some 30 municipalities in the process of developing comprehensive planning for their coastal areas and marine areas. About 25 of these municipalities work in inter-municipal cooperation.

In future development of indicator follow-up, municipalities with some of Sweden's largest lakes included in the municipal area will also be included in the

follow-up. The water surface area included in the municipal area must be large enough to be relevant to the physical planning action area.

3.2.3.2 In-depth follow-up: Supplementary areas

In-depth study of comprehensive planning

In autumn 2017, the National Board of Housing, Building and Planning commissioned consultants to conduct an in-depth study of comprehensive planning to determine the current situation in Sweden. The in-depth study focused on the three coastal municipalities: Landskrona, Bromölla and Karlshamn. These were chosen by the consultant as good examples of how to deal with comprehensive planning for coastal areas and marine areas. All plans selected have clear strategies and highlight both synergies and conflicts between identified values and interests. The strategies are also linked to illustrative maps, which further clarify the municipalities' positions. Regarding the concept of sustainability, there is generally a greater focus on economic and ecological sustainability, while social sustainability does not distinguish itself too starkly. The study has identified important points for consideration in comprehensive planning for the coastal areas and marine areas and has been a basis for development of the proposed indicator.

Infrastructure as preconditions for maritime industries

In addition to the Swedish Marine spatial plan's there is an increasing need for considering maritime industries in terms of physical planning at local and regional level. There is a collective need to develop the planning around the coastal areas and better link the sea and land in the planning. In a future follow-up development, a question of interest could be to study the development of infrastructure preconditions for maritime industries on land, such as network connections, landing ports, cold rooms, and connections to other relevant infrastructure.

The Swedish Marine spatial plan's (MSP's) contribution to maritime industries' development

For this whole action area, a follow-up needs to be developed in relation to the Swedish MSP. Evaluating how the MSP contributes to the development of the maritime industries or other corresponding administration might prove an interesting analysis. Integration between municipal and government plans is very important for effective and clear communication of planning effects, which is why follow-up also requires continued development.

3.2.4 Functional rules and efficient permit processes

For *Functional rules and efficient permit processes*, an indicator is proposed that measures diverse freight traffic regulations. This is measured by examining the maritime traffic's internalisation of socio-economic costs in comparison with, for example, vehicle transport by road and rail. This indicator thus provides a measure of the regulatory functionality for maritime traffic given external costs.

Table 18. In-depth follow-up: Yearly Indicators and Supplementary Areas.

Indicator	Current state	Comment
In-depth follow-up:: Yearly indicators		
ÅO7 Fair traffic regulations	Degree of internalization of maritime freight transport: 69 % (2017)[30]	Existing indicator, source TRAFA.
Supplementary areas		
Simplified rules and more efficient administration within maritime traffic	-	Qualitative evaluation.
Fees within maritime traffic	-	Qualitative and possible. quantitative evaluation.
New regulations for national shipping	-	Qualitative evaluation.
Rules simplification for fishing	-	Qualitative evaluation.
Adaptive management of the fish resources	-	Qualitative evaluation.

3.2.4.1 In-depth follow-up: Yearly indicators

ÅO7 Fair traffic regulations

The internalisation of external socio-economic costs as internal markets costs has been a goal for the Swedish transport policy, i.e. the market pays for all costs, both internal and external. The total cost of operating a ship one kilometer further can be divided into two parts, the internal cost and the external cost. The internal part is the part that the decision maker takes into consideration when deciding to proceed another kilometer, for example the fuel cost. The external cost does not take the decision maker into account, for example, the emissions cost. The external part is called external marginal cost.

The degree of internalisation is calculated by taking the quotient between variable taxes and fees by external marginal costs. The quotient informs about the percentage of the external marginal costs covered by taxes and fees. If the quotient is equal to 1, or 100 per cent, the market pays for the external marginal costs. If the quotient is less than one, then variable taxes and fees do not cover the external marginal costs. For background on the degree of internalisation, see Traffic Analysis's yearly assignment "The transport sector's socio-economic costs" [31].

The shipping's internalising fees include waterway fees and the pilots' fees, both charged by the Swedish Maritime Administration. Maritime cargo transport has an internalisation rate of 69 per cent. Shipping's external costs largely consist of air pollution and carbon dioxide emissions.

Table 19. Degree of internalisation for diverse freight traffic regulations.

SEK per tonkm	Shipping	Heavy truck without trailer	Heavy truck with trailer	Freight train
Total external marginal costs	0,047	0,35	0,17	0,082
Internalised taxes/fees	0,033	0,24	0,10	0,023

[30] Transportsektorns samhällsekonomiska kostnader, PM 2017:2. Trafikanal

[31] Transportsektorns samhällsekonomiska kostnader, PM 2017:2. Trafikanalys.

Non-internalised cost	0,014	0,11	0,06	0,06
Degree of internalisation	69%	69%	62%	28%

3.2.4.2 In-depth follow-up: Supplementary areas

Simplified rules and more efficient administration within maritime traffic

The Swedish Transport Agency has an internal system for proposals for improvement measures, the proposal box. Both internal improvements and customer views can be registered for further follow-up. As a regulatory and licensing authority, some of the cases that come in to the proposal box deal with proposals for regulatory simplification and efficiency improvements in administrative processes. Only such regulatory simplifications and efficiency improvements that entail an innovative improvement are included.

Four of the 14 proposals that were submitted to the proposal box entail simplification of rules, and furthermore it's decided that two will be implemented and the other two will be investigated.

Fees within maritime traffic

On January 1, 2018, a new fee system for the Swedish Maritime Administration will come into effect. The change applies to both the pilot and waterway fees.

Several reasons for the change have been highlighted, such as the Swedish Maritime Administration needing to increase revenues against costs, to make revenues less affected by business cycles, and to clarify the reciprocal financing of pilot and waterway fees.

Some examples of changes to the system include a passenger charge, CSI[32] for environmental differentiation, and a readiness fee (that is, the part of the waterway fee financing pilot readiness) each being introduced. Other changes include cargo ships are also charged for an increased number of calls at port (affecting the vessel-based part of port fees), most rebates will be discontinued (eg in the Gothenburg-Vänern area) and fee levels are generally to increase.

The new system has been met with great criticism, especially by the industry, and also resulted in a government mandate for Traffic Analysis in 2017 to investigate the environmental management in the new fee system. Traffic Analysis found that a broader environmental index and smaller fee reductions reduce incentives for environmental improvement measures. Nor can Traffic Analysis rule out that the new system can induce freight transfers of goods from sea lanes to road. Freight transport on inland waterways and coastal traffic are especially affected, as the waterway fee is already a significant part of their total costs and that traffic faces hard competition against road traffic. The Swedish Maritime Administration will in 2018 study environmental management to develop an alternative model.

[32] Clean shipping index. Indexet poängsätter fartygs miljöstandard och utifrån poängen kan fartygen placeras i en av fyra kategorier som ger olika stor reduktion av den del av farledsavgiften som baseras på antal anlöp.

New regulations for national shipping

The Swedish Transport Agency's previous regulations where Swedish vessels engaged in domestic shipping were not subject to international safety certificates has been archaic, complex and partly incomplete. The rules have been burdened by detail and only functional for certain types of shipping. The new rules presented will maintain a high level of safety, but be more coherent, transparent and be able to be understood and followed by all types of vessels and businesses. There will also be a new supervisory system, with the opportunity for more extensive supervisory delegation, and new recruitment rules.

The rules are function-based, that is, the rules do not directly say anything about how something should be done, but what should be achieved. This is something that imposes demands on the ship owner and gives greater flexibility. Function instead of burdensome detail should also facilitate the cross-registry, or reflagging, of ships since they do not have to be adapted to Swedish specifications in detail, as long as they meet the safety requirements. The new regulations are based on self-inspection, which means that the ship owner himself is responsible for inspections and maintenance of the ship. The intended aim here is to increase safety awareness in the industry.

The new supervisory system will be risk-based. This means that the Swedish Transport Agency will prioritise inspections of the vessels associated with the highest risk, for example it can be based on business operations, field of traffic, or previous infractions. The number of vessels under supervision will be expanded and also include smaller vessels than before, but they will not have regular inspections. During these inspections, the vessel owner must be able to demonstrate how the safety work is carried out in order to achieve the prescribed safety level. The regulations also allow for spot checks for vessels and their equipment to ensure that the vessel is kept seaworthy.

The aim of the regulations is to maintain a high level of safety at sea by creating more modern, understandable and effective regulations and in this way also facilitating the vessel owner's business. Regulations that are easy-to-understand and accessible lead to a better informed industry, which facilitates regulatory compliance. The rules have the potential to facilitate new forms of shipping and promote innovations, but as it is a completely new system being introduced, it is unclear how results will take form.

Rules simplification for commercial fishing

Regulations on commercial fishing operations are available at EU, national, regional, and local levels, and as in many other industries, the regulatory burden is perceived as great and the rules are sometimes complicated and difficult to understand. It is not only the commercial fisheries regulations that one should abide by, but also the Transport Agency's provisions for vessels, the Foodstuffs legislation and the EU market organisation.

The administrative burden confers great costs for both fishermen and government agencies. Regulatory simplification is to be pursued at all levels where it makes it easier for the individual fisherman to do right. There are good examples of systems that simplify matters concerning commercial fishing, one being SwAM's electronic platform *Fiskerätt*, which has become greatly

appreciated by commercial fishermen in a short time by being user-friendly and simple.

In the strategy for Swedish commercial fishing, "Swedish commercial fishing 2020 - Sustainable fishing and healthy food", it has been identified that the regulations need simplification in order to reduce the companies' administrative burden. In 2013, SwAM received a government assignment to conduct rule simplification in the fisheries field. SwAM then chose not to make any changes to existing regulations as a direct sequence of the assignment, but pointed out that the regulations would have to be adapted to the common fisheries policy and that rule simplification would be implemented in connection with this. In autumn 2017, SwAM received a new government assignment to review and modernize the regulations for coastal fishing, which should be reported no later than May 30, 2018.

Rule simplification is a simple concept to use, but very difficult to quantify. The number of simplifications implemented in the fisheries field over the past three years would be interesting to follow up with an analysis of how much time fishermen need to spend on administration in order to comply with the regulations, which can be converted into a cost for the fishermen.

Adaptive management of the fish resources

For commercial fishing, which in the strategy is addressed under marine food, it is important to have a smooth, efficient and transparent administration, which is characterized by cooperation and national co-management with the fishery organisations' producer organisations.

The adaptive management requires a holistic view of the management of the fish resource, so that the ecosystem is managed as a whole.

The strategy concludes that "Strong, sustainable and fishable stocks are a basic precondition for commercial fishing and this creates conditions for increased profitability in commercial fishing". There are many factors that affect the availability of fish, catches of commercial fisheries, catches of recreational fishing, ecological and environmental factors, such as environmental toxins and eutrophication, predators such as hostile fish species, seals and sea birds.
In a three-year perspective, it would be interesting to analyse the efforts made for managing the entire fishery resource.

A research report written by several Swedish researchers, among others, was published in the ICES journal of Marine Science in November 2017[33] and states the following:

- Human catches in the Baltic Sea: 700,000 tonnes/year, of which 650,000 tonnes of herring, sprat and cod
- The seals in the Baltic Sea eat 100,000 tonnes of fish/year, of which 60,000 tonnes of herring, sprat and cod. The grey seal eats 75,000 tonnes, the harbour seal 20,000 tonnes and the common seal 5,000 tonnes.

[33] Hansson et al, 2017. Competition for the fish – fish extraction from the Baltic Sea by humans, aquatic mammals, and birds. *ICES Journal of Marine Science*, Published:13 November 2017, https://doi.org/10.1093/icesjms/fsx207

- The birds in the Baltic Sea eat 100,000 tonnes of fish per year, of which 30,000 tonnes of herring, sprat and cod. The cormorants ats 40,000 tonnes a year, while guillemots, razorbills, and goosanders and red-breasted mergansers at about 10,000 tons each and the rest is eaten by other species.

3.2.5 International cooperation

A follow-up of total resources for international cooperation concerning innovations and maritime environments is proposed for *International cooperation*. This is measured by considering total public resources distributed among Swedish maritime environments and companies, from a sampling of international cooperation programmes. The change in this indicator, in part, reflects the total resources spent on international cooperation in maritime environments and innovations in the maritime industries as well as the development of Sweden's ability to take part in this cooperation.

Table 20. In-depth follow-up: Yearly Indicators and Supplementary Areas.

Indicator	Current state	Comment
In-depth follow-up:: Yearly indicators		
ÅO8 Resources for international cooperation concerning innovation and maritime environment	Public resources allocated to Swedish maritime environments and businesses from a selection of international cooperation programs. Efforts in Horizon 2020, Interreg Baltic Sea Region and Interreg North Sea Region are proposed to be included. Source: Respective authority responsible for the program	The sum of the resources that are invested in international cooperation within the selected programs is an indication of the total resources that are invested in international cooperation regarding maritime industries. The indicator also shows the development of Sweden's ability to be included in this kind of cooperation. The indicator has a connection to goals 7a and 17 in Agenda 2030.
Supplementary areas		
Air emissions from shipping	300,000 tonnes of carbon dioxide equivalents (2016)[34]	Quantitative evaluation.

3.2.5.1 In-depth follow-up: Yearly indicators

ÅO8 Resources for international cooperation concerning innovation and maritime environment

The ÅO 8 indicators are comprised of data on how much resources certain innovation- and cooperation programmes are allocating to maritime environments and innovations in maritime industries. Much development work remains pursuant to an exact definition of these two indicators.

For ÅO8 indicators, it is proposed that, in a manner analogous to the innovation indicator ÅO5, one compile the total resources disbursed for maritime innovation only within three different international cooperation programmes:

- Horizont 2020
- Baltic program

[34] http://www.naturvardsverket.se/Documents/publikationer6400/978-91-620-6782-3.pdf?pid=21185

- North Sea program

3.2.5.2 In-depth follow-up: Supplementary areas

Air emissions from shipping

In recent years, limit values for sulphur oxide have been reduced in accordance with MARPOL Annex VI, EU directives (Directives 1999/32/EC, 2005/33/EC and 2012/33/EU) and the Sulphur Regulation (2014: 509) and decisions were made regarding nitrogen oxides in accordance with international agreements applicable to vessels operating in northern Europe, and thus the Swedish waters. The reduced sulphur limits were introduced on January 1, 2015, within specific emission areas. Transport Analysis carried out an evaluation of the stricter requirements for sulphur in marine fuel and emissions from 1 January 2015. The evaluation shows that the intended positive effects on air quality have been met. [35] However, some problems remain. Approximately every tenth vessel does not comply with the emission requirements, coordinated supervision for compliance has been insufficient and sanctions are weak[36]. If fuel prices rise, it is possible that regulatory compliance will deteriorate.

For emissions of nitrogen oxides, a limit reduction will apply effective January 1, 2021. Likewise, there is also the question raised about international agreements, which will come to be enforced in Swedish waters.

Shipping has generally low emissions of greenhouse gases in relation to the weight and distance of the goods transported, but because of the large amount of transports, emissions remain a significant contributor to global warming. International maritime organization (IMO)[37] has in its third report on greenhouse gases calculated that international shipping today accounts for about 2.2 per cent of global greenhouse gas emissions.

In the future, companies whose vessels operate in European ports will need to monitor, report, and verify their carbon dioxide emission according to EU Regulation 2015/757 on the monitoring, reporting and verification of CO2 emissions from maritime transport (the so-called MRV Regulation). The regulation was adopted in April 2015 and will be applied on January 1, 2018. IMO has also decided to introduce provisions based on MRV. For both systems, it is a question of creating a better overview of how much carbon dioxide emissions shipping actually accounts for, and of being able to set a common goal of reducing carbon dioxide emissions from shipping.

Shipping was exempted from the UN climate agreement that was decided in Paris in 2015 and becomes enforced in 2020. The issue of achieving a reduction in greenhouse gas emissions has been discussed within the IMO since the mid-1990s, but has intensified in the early 2000s. Negotiations have been known to be difficult, protracted and occasionally locked. IMO has so far not been able to

[35] Trafikanalys (2017). Effekter av SECA och skärpta krav på 0,1 % svavelhalt i fartygsbränslen – slutrapport. Rapport 2017:18.
[36] Trafikanalys (2017c). Effekter av SECA på sjöfartens bränsleanvändning, efterlevnad och kustnära luftkvalitet. Rapport 2017:14.
[37] International Maritime Organisation. FNs sjöfartsorgan.

agree to a reduction goal for greenhouse gas emissions for international shipping, but instead has pursued instruments for enhanced energy efficiency.

The work plan ("Roadmap for developing a comprehensive IMO strategy on reduction of GHG emission from ships" adopted by IMO 2015) comprises a number of discussion points, including ambition levels and principles for the strategy, as well as emission scenarios and forecasts for the development of shipping. Furthermore, it includes obstacles and opportunities for reducing emissions, costs, while enhancing capacity development and R&D. The final strategy is set for enactment in 2023.

It is too early to say how the EU and IMO strategies will affect the greenhouse gas emissions from shipping, but the measurability can be expected to increase. There are of course reasons to return to this in later follow-ups as provided for in the maritime strategy.

3.2.6 Conditions for the business sector and industry-specific measures

For the Preconditions for the business sector and industry-specific measures, it is proposed to follow up on the industries' competitiveness broken down in terms of the sub-industries described and defined in accordance with the strategy.

This analysis is then supplemented with the following yearly indicators, ocean-based energy production, size of Sweden's fleet of ships, overnight stays/visits to the coastal areas, catches of fish and shellfish and production from aquaculture. The changes among these indicators determine the development of maritime industries and will develop in close interaction with other areas, such as knowledge and innovations as well as functional regulatory policies.

Table 21. In-depth follow-up: Yearly Indicators and Supplementary Areas.

Indicator	Current state	Comment
In-depth follow-up:: Yearly indicators		
ÅO9-13 The competitiveness of the industries (Transport, maritime technology and production, the sea as a resource, leisure time and tourism and service - requests for breakdown to sub-industries)	Employment, value added and merchandise exports (see P7), broken down by sub-sectors: Transport, maritime technology and production, the sea as a resource, leisure time and tourism and service. (N.B, for Maritime and Sea as a resource, is from Statistics Sweden, see breakdown)	Developed via yearly follow-up SCB
ÅO14 Sea based energy production	Installed power offshore wind power: 201.7 MW (2017)[38] Installed power offshore installations: 3.26 MW (2017) Number of offshore installations: 2 (Lysekil's wave force test site and Sotenäs project)	Existing indicator, source from the county administrative board Västra Götaland, Uppsala University and Sea-based Industry AB.
ÅO15 Sweden's fleet	Merchant: 310 Special vessels: 128 (2016)	Existing indicator, source TRAFA
ÅO16 Overnight stay/visit to the coastal areas	Number of boat nights in guest harbours: 233 309 Number of people guest harbour nights: 606 643 (2016)[39]	Existing indicators, various sources, can be developed.

[38] Havsbaserad vindkraft, ER 2017:3 (Vindbrukskollen, produktionen 2015 från www.vindstat.nu feb 2017)

[39] Riksföreningen Gästhamnar Sverige 2016.

ÅO17 Seasonal extension	New	New indicator, source Statistics Sweden.
ÅO18 Fish and seafood catches	198,000 tonnes (2016)[40]	Existing indicator, source Statistics Sweden.
ÅO19 Production of aquaculture	The indicator consists of the total production of aquaculture products. Source: Statistic Sweden's yearly statistics for the aquaculture	The indicator gives a measure of how much fish and seafood that aquaculture is producing on a yearly basis and hence the productivity of the sector
Supplementary areas		
Employment effects from recreational fishing	788-1 603 man-years, with an estimate of 1,193 man-years.	Quantitative evaluation.
Maritime cultural environment	-	Qualitative evaluation
Turnover and the number of employees in Sweden for development companies with the main focus on maritime energy production	-	Probably resolved during ÅO9-13
Electricity produced from offshore wind power in Sweden	-	
Number of environmental permits and installed capacity in granted environmental permits	-	Quantitative evaluation.
Marine based aquaculture for energy production	-	
Rejuvenation within the fisheries	-	
Profitability of professional fishing	-	Probably resolved during ÅO9-13
Degree of self-sufficiency sea food	28,340 tonnes of a total of 109,000 tonnes (2015)[41]	
International competitiveness – Maritime energy production	-	

3.2.6.1 In-depth follow-up: Yearly indicators

ÅO9-13 The competitiveness of the industries

The indicator The competitiveness of maritime industries is also presented in indicator P7 *Competitive industries*. In this indicator, the aim is to highlight development of the specific industries separated from the aggregated form. Therefore, there is a need, to develop statistics regarding maritime sub-industries based on Statistics Sweden's reported assignments. Statistics Sweden's documentation needs to be analysed to another level from the current five subdivisions in accordance with the maritime strategy, so that they can be distributed in accordance with SNI code.

Data desired for assessing the competitiveness of the industries are employment, value added and exports of goods (see P7), reduced into industrial sub-sectors: Transport, Maritime Technology and Production, the Sea as a Resource, Leisure Time and Tourism, and Service. For Shipping and the Sea as a Resource, more processed data is needed through the continued participation of Statistic Sweden.

[40] SCB & Havs- och vattenmyndigheten 2017. Sveriges officiella statistik Statistiska meddelanden JO 55 SM 1701. Det yrkesmässiga fisket i havet 2016.

[41] Ziegler & Bergman, 2017. Svensk konsumtion av sjömat- en växande mångfald. RISE Agrifood & bioscience SP Rapport 2017:07. ISSN 0284-5172

ÅO14 Sea based energy production

Industrial development can be readily seen in the installed effect of offshore wind power in Swedish water and the Swedish economic zone. Today, the installed capacity in offshore wind power is small compared to, for example, onshore wind power. This is because offshore wind power has so far not been competitive compared to onshore wind power in Sweden. In some other Northern European countries, such as Denmark, Germany, the Netherlands and the UK, recent years have seen the expansion of offshore wind power, having gained momentum primarily due to these countries having significantly more generous support systems than Sweden. The increased expansion rate has led to rapid technology and cost development in offshore wind power. Just a few years ago (2015) offshore wind power belonged to one of the more costly forms of electricity production and production costs were twice as high as for onshore wind. Today, cost levels have approached those for onshore wind power. Therefore, it is of great interest to continue this industrial development of which installed capacity offers a good measure.

Installed effect of offshore energy production technologies and the number of units in Sweden can give an indication of how the industry is developing and prioritising installation in Sweden. Regarding offshore energy production, it is mainly wave power that is relevant. However, the resource in Sweden is limited and the large market is presently abroad. There are several recognised Swedish innovative companies in the field of offshore energy production, and the majority are focusing on commercialisation abroad. However, there is a wave power demonstration facility on the west coast of Sweden (Sotenäs). As these technologies become cheaper and depending on the development of the Swedish electricity price, there may be potential in Sweden in the future. At present, wave power is in a prototype phase with some demonstration. It is also considerably more expensive than other renewable energy resources such as wind and sun.

In the prototype stage, it varies if the wave power units are connected to the electricity grid or not. This should also be followed up to know if the offshore energy production (wave power) contributes to the energy system.

ÅO15 Sweden's fleet

This indicator is a registry showing the size of the Swedish merchant marine fleet , which consists of the Swedish-registered fleet of vessels and vessels of foreign registry that are controlled by Swedish shipping companies. Ships in the Swedish registry are limited to merchant vessels and special vessels[42] with a gross tonnage[43] exceeding 100 metric tonnes. The registry is sampled for measurement purposes on December 31 each year. No special vessels are included for foreign registered vessels controlled by Swedish shipping companies.

On December 31, 2016, the registry held the Swedish merchant marine fleet to consist of 310 merchant vessels and 128 special vessels, with the exception of vessels with capacity under 100 tonnes gross. In terms of size, the merchant marine fleet decreased by 12 per cent measured in gross tonnage.

[42] Fartyg som utför olika stödtjänster inom sjöfarten. Exempelvis isbrytare, bogserfartyg, arbetsfartyg, etc.
[43] Enhetslöst storleksmått som baseras på fartygets totala inneslutna volym

The reduction of the fleet of ships over the past decade is primarily due to Swedish-registered vessels being registered under flags on convenience. In recent years, however, such reregistration has slowed down and the reduction is primarily due to the fact that ships have been deregistered. A number of changes have been made to reduce the reregistration, including the introduction of the tonnage tax system, increased supervisory delegation to established organisations, measures to facilitate administration in the event of cross registration and reduced number of special regulations for Swedish shipping. It remains to be seen what these initiatives will result in and whether they can contribute to the growth of the shipping industry. In 2017, the launch of a number of tankers has been announced and that a shipping company will start applying the tonnage tax system, which could be the start of a positive trend for the Swedish registry.

ÅO16 Overnight stays/visits to the coastal area

The indicator for *Overnight stays in the coastal areas* consists of three partial measures, and it measures the number of guest nights in visitor facilities, the number of visitor/guest nights in cruise traffic in Swedish ports and number of guest harbour nights. Today, data can be said to be spread across various organisations, such as the Swedish Agency for Economic and Regional Growth's accommodations statistics, the National Association of Harbours for Visitors, and the major harbours.

There is a need to improve the quality of the statistics on overnight guests in Swedish harbours for visitors. This can be done either through present cooperation with the National Association of Harbours for Visitors, or by transferring the statistics to Statistics Sweden in a similar way as for camping sites in 2008. The statistics could possibly also be supplemented with overnight guestss from cruise traffic, both national and international.

Another development area could be to use the new tourism survey from 2017,produced by Statistics Sweden on behalf of the Swedish Agency for Economic and Regional Growth. There is possibility to provide statistics on coastal tourism based on data on the Swedish population's tourism trips in Sweden (and abroad). The first results of the survey will be published at the end of April 2018.

ÅO17 Seasonal extension

This indicator measures the total tourist season for coastal visitor facilities. The change in seasonal extension shows how the year-round tourism is developing. That is, the change in the share of the total number of guest nights outside June - August in the coastal areas.

ÅO18 Fish and seafood catches

The indicator consists of the total catch of fish and shellfish by Swedish commercial fishing at sea and expressed in live weight. The total catch for 2016 was just over 198,000 tonnes and was distributed among catch areas and species.[44]

[44] SCB & Havs- och vattenmyndigheten 2017. Sveriges officiella statistik Statistiska meddelanden JO 55 SM 1701. Det yrkesmässiga fisket i havet 2016.

ÅO19 Production of aquaculture

The indicator consists of the total production of aquaculture products divided into the different kinds of animals and plants farmed by aquaculture in Sweden.

In 2016, Swedish aquaculture produced 13,451 tonnes of fish, 2,137 tonnes of mussels and 1 tonne of crayfish. [45]

3.2.6.2 In-depth follow-up: Supplementary areas

Employment effects of recreational fishing

According to the strategy, recreational fishing and recreational boat life also have great development potential and can generate significant sources of revenue locally, which in turn can contribute to improving the possibilities of living and working in sparsely populated areas or in coastal areas and archipelago areas.

The employment effect caused by recreational fishing is proposed as an area for supplementary analysis.

The employment effect is presented as a yearly work unit[46]. The turnover of these industries divided by the number of employees gives an average of the turnover per employee. This is then set in relation to the turnover/outlay for each accounting group in the table. Which results in an employment effect measured in number of man-years.

Recreational fishing in the sea thus contributes with 788-1,603 yearly work units, with an estimate of 1,193 yearly work units. Tourism accounts for about 18 per cent of this, which means between 125-304 yearly work units with an estimate of 214 yearly work units.

Maritime cultural environment

In June 2017, SwAM was commissioned, together with other concerned government agencies, to develop guiding strategies for cultural environment issues (Ku2107/01563/KL). The assignment includes designing strategies that will show how the government agencies affect the cultural environment and how government agencies can contribute to the national cultural environment goals, and thereby create conditions for utilising the cultural environment's potential as it regards a sustainable society. In the in-depth follow-up, the strategies addressing cultural environment issues should be examined in relation to the direction of the maritime strategy.

In February 2018, on the initiative of the county administrative boards in Västra Götaland, Halland, Gotland and Östergötland, a joint workshop is planned for Sweden's coastal county administrative boards. This is to determine the needs and the direction for upcoming years and with inspiration from England, develop a Swedish variety of the English "Historic Seascape Characterisation". This concept takes a holistic approach to the coastal areas and the marine environments from a cultural-historical perspective. The National Heritage

[45]https://www.scb.se/contentassets/6601e5cad8fa42b39eeee9db13dd1bdf/jo1201_2016a01_sm_jo60sm1701.pdf

[46] Så mycket omsättning som en heltidsanställd står för i samtliga branscher exklusive (SNI 2007, K+O+T+U).

Board and Lund University are invited to participate in the workshop and the future work. This should also be followed up in relation to the in-depth follow-up. The characterisation will primarily serve as the basis for future physical planning.

Electricity produced from offshore wind power in Sweden

By following up on how much electricity is produced by offshore wind power, one can see its contribution to the total domestic electricity production compared to electricity usage in Sweden. At present, offshore wind power accounts for approximately 5 per cent of the total wind power in Sweden[56].

Number of environmental permits and installed capacity in granted environmental permits

Information on the number of environmental permits and installed capacity in granted permits is collected on an ongoing basis by map service Vindbrukskollen, available at www.vindlov.se, and through alignment with the land and environmental courts for the parks located in the economic zone. (The wind farm's map service covers only Swedish water and not the Swedish part of the economic zone, where there are also permitted parks today and where it may be relevant to establish new wind farms). By obtaining information on the number of permits granted and the installed capacity in these, an understanding of expected development in the industry can be had for the short term, and how much wind power that probably will expand in coming years.

Marine based aquaculture for energy production

From a renewable energy point of view, it is of interest to follow the development of production systems for new species. Macroalgae and filtering organisms, such as ascidians have great growth potential and can be used both for feed, biofuels for industry and as raw material for biofuels (biogas, ethanol, etc.). Furthermore, energy can be recovered from residual products that result from the preparation of fish, etc. to foodstuff or stock feed. Aquaculture is expected to increase and diversify in the future, but development will probably take place at a relatively slow pace. Therefore, an in-depth follow-up every three years should be sufficient.

In offshore aquaculture, statistics should be differentiated on freshwater and salt water. This is because much of the fish-farming takes place in freshwater. The dry matter biomass vary widely between species. Ascidians can contain 95% water while fish contain about 70-80% water. Reliable measurements of the dry matter for the various biomasses are necessary to compare different organisms. The amount of dry matter is directly related to, for example, the amount of energy in the biomass.

Turnover and the number of employees in Sweden for development companies with the main focus on maritime energy production

Information on how total *Turnover and the number of employees in Sweden for development companies with the main focus on maritime energy production* change over time can serve as an indicator of how the Swedish maritime energy production industry fares in general. Since there are several development companies that only operate within maritime energy production, this

information can be derived from a credit report for these companies. But since employment statistics are not subdivided into individual reporting as are maritime industries, appropriate monitoring methods must first be developed before a more action area comprehensive indicator can be selected.

However, it does not account for the strength of the value-chain among, for example, energy production companies and subcontractors, but can be a preliminary indicator, which then can be further developed.

An additional way of following developments in the industries involved in energy production from maritime environments may be to conduct follow-up on the number of companies in this field. Then one could state whether the industries are growing with new actors or whether only the existing ones are growing.

International competitiveness – Maritime energy production

The proposed yearly indicators for maritime energy production do not reflect the full development of companies in foreign markets, which are their main focus for commercial development. To seize international competitiveness, installed effect abroad of Swedish maritime energy production concepts could also be followed up. However, statistics and methods for this are not currently available.

Rejuvenation within the fisheries

The average age of a fisherman is high, over 55 years, and the regeneration rate is low. In 2016, SwAM issued fewer than 10 new commercial fishing licences. At present, the age of those who receive this licence is not routinely recorded, but the information can be obtained case of an issued license.

Important issues in this context include the profession's attractiveness for young people, in the form of, for example, health and safety on the job, solitary work, the possibility of flexibility in the work, financial security and the opportunity to get loans for new investments, the feeling of political will, vocational pride, etc.

Within this supplementary area of analysis, in part there are completely new fishing licenses being issued as well as license takeovers in continuity of ownership, as well as in the pelagic fishing direct purchasing of fishing rights.

Very few completely new licences are issued within most fisheries, since many fish stocks are considered to be fully utilised and thus no room for new licences.

Profitability of professional fishing

As in all industries, the profitability of commercial fishing is crucial for them to continue their business. There are many measures of profitability, and in this context it is important that the measure does not depend on the size of the fishing vessel and/or the company.

One suggestion is, in connection with the evaluation of the industries' competitiveness according to ÅO9-13, to also illuminate profitability of commercial fishing in relation to its resource interest, that is, to state how much profit or benefit society receives from its fishery resources.

Degree of self-sufficiency sea food

The Swedish fish consumption statistics, published by the Swedish Board of Agriculture, lack data on the consumption of fresh fish and do not distinguish

different fish species. Statistics Sweden's statistics on Swedish food sales only include the value of sales, not the volume.

According to a study from 2017[47] the total Swedish seafood consumption for 2015 was estimated to amount to 109,000 tonnes of fish fillet and shellfish (shelled), which in turn corresponded to approximately 11 kg of fillet or around 25 kg of whole fish and shellfish each year per person. The study is based on statistics on imports of goods, exports of goods, Swedish fishing and Swedish aquaculture production between the years 2011-2015, and aims to calculate the total consumption of fish in Sweden according to the principle of consumption equals production plus imports minus exports.

According to this study, 23 per cent of the fish consumed in Sweden from Swedish commercial fishing, 6% from Swedish aquaculture, and 73% are imported. However, due to uncertainties in reporting imports and exports, these figures are somewhat uncertain. The analysis is a systematised method in combination with several different data sources. The method can be developed and can in that case, be used as a yearly follow-up. In that case, this follow-up would have a direct connection with the national food strategy.

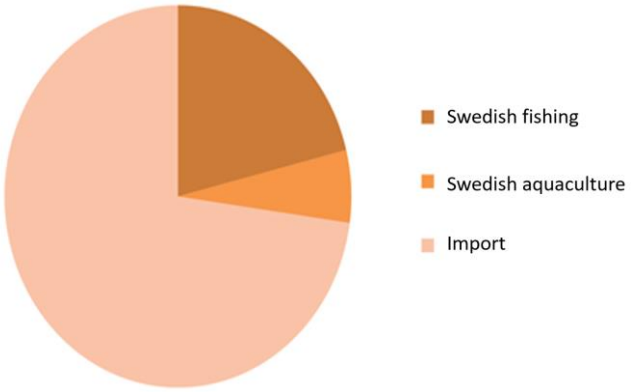


Figure 12. Swedish seafood consumption in 2015 divided by the share of domestic production in the form of fisheries, aquaculture, and imports.

[47] Ziegler & Bergman, 2017. Svensk konsumtion av sjömat- en växande mångfald. RISE Agrifood & bioscience SP Rapport 2017:07. ISSN 0284-5172.

4 Sustainable development and marine ecosystem services

4.1 Agenda 2030, new welfare indicators and BRP+

This section summarizes how the proposed indicators for strategy monitoring relate to the objectives of Agenda 2030 and the initiatives such as *New measures of prosperity*[48] and *BRP+*[49], both of which relate to Agenda 2030 in general and goal 17.19 in particular.

We have considereed and utilised synergies with ongoing work for Agenda 2030 by:

- using Agenda 2030 as one of several guidelines on how the maritime strategy can be followed up in regard to sustainable development.
- describing how our proposed indicators contribute to the Agenda 2030 goal.

In most cases, the strategy's geographical and sectoral limitation has made it difficult to use the same indicators found in Agenda 2030. Several of the proposed indicators contribute to parts of different interim goals. The table below shows how the indicators contribute to the follow-up of Agenda 2030.

Table 22. Important goal and interim goals in Agenda 2030 related to the proposal for indicators for the follow-up of the Swedish maritime strategy, according to section 2.

Agenda 2030 goal	Suggested indicators	Comment
Goal 6. Ensure availability and sustainable management of water and sanitation for all		
6.3 "improved water quality"	*P1 Environmental impact in the seas* *ÅO1 Eutrophication* *ÅO2 Environmental toxins in Swedish-caught fish*	Indicators show over time whether water quality improves.
Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all		
7.2 "Increase the share of renewable energy"	*ÅO14 Sea based energy production*	Ocean-based energy production is currently only renewable. The indicator shows over time whether the proportion of renewable energy from the sea is increasing.
7.a "access to research and technology in clean energy"	*ÅO5 Innovation for maritime industries* *ÅO8 Resources for international cooperation*	Both indicators contribute to increased access to research and innovation.
Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all		
8.2 "economic productivity"	*P7 Competitive industries* *ÅO9 - 13 The competitiveness of the industries*	Indicators P7 and ÅO 9-13 show economic productivity. The indicator ÅO5 shows the need for economic productivity.

[48] http://www.regeringen.se/artiklar/2017/06/nya-matt-pa-valstand/ http://www.regeringen.se/pressmeddelanden/2017/04/regeringen-kompletterar-bnp-med-nya-matt-pa-valstand/ http://www.regeringen.se/rattsdokument/proposition/2017/04/prop.-201617100/

[49] http://www.brpplus.se http://www.brpplus.se/#ombrpplus https://tillvaxtverket.se/statistik/regional-utveckling/brp--breddat-matt-pa-utveckling.html

	ÅO5 Innovation for maritime industries	
8.4 "strive to break the connection between economic aggradation and environmental degradation"	*ÅO7 Fair traffic regulations*	The indicator shows the maritime traffic's internalisation of social costs, including environmental costs.
8.8 "promoting a safe and secure work environment "	*ÅO4 Accidents and incidents in Swedish waters*	The indicator indicates security and security for the shipping's work environment.
8.9 "sustainable tourism" and "creating jobs and promoting local culture"	*ÅO16 Overnight stay/visit to the coastal areas* *P3 Destination attractiveness*	The indicators show partly the conditions for sustainable tourism in the form of overnight stays.
Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation		
9.2 "Increase the industry's share of employment and GDP" as well as "inclusive and sustainable industrialization"	*P7 Competitive industries* *ÅO 9 - 13 The competitiveness of the industries* *ÅO7 Fair traffic regulations*	P7 and ÅO 9-13 includes value added and export of goods and indicates how the maritime industries contribute to GDP. ÅO 7's internalisation of socio-economic costs shows the importance of sustainable industrialization.
9.4 "sustainable industry with more efficient use of resources"	*ÅO5 Innovation for maritime industries*	The indicator shows the ability of the maritime industries to attract state innovation resources.
9.c "increase access to information and communication technologies"	*P5 Connected coastal areas*	The indicator shows the access of the coastal municipalities to broadband
Goal 11. Make cities and settlements inclusive, safe, resilient and sustainable		
11.to "strengthen national and regional development planning"	*ÅO6 Comprehensive planning of coast, sea and archipelago*	The indicator shows the proportion of Sweden's coastal municipalities that have planned their entire coastal and marine areas.
Goal 12. Ensure sustainable consumption and production patterns		
12.2 "sustainable management and efficient use of natural resources"	*ÅO3 Sustainable use of the fish stocks*	The indicator shows the proportion of fish and shellfish stocks that are used sustainably
12.4 "achieving environmentally friendly handling of chemicals" "significantly reduce their emissions in air, water and soil"	*ÅO2 Environmental toxins in Swedish-caught fish*	The indicator shows over time whether the water quality improves.
Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development		
14.1 "reduce all kinds of pollution in the sea"	*P1 Environmental impact in the seas* *ÅO1* Eutrophication *ÅO2 Environmental toxins in Swedish-caught fish* *ÅO 4 Accidents and incident in Swedish waters*	Indicators show over time whether water quality improves and frequency accidents/incident.
14.2 "manage and protect marine and coastal ecosystems in a sustainable way" ... "achieve healthy and productive seas"	*P1 Environmental impact in the seas* *ÅO1* Eutrophication *ÅO2 Environmental toxins in Swedish-caught fish*	Indicators show over time whether water quality improves and if the sea is healthy.
14.4 "purpose to restore fish-stocks"	*ÅO3 Sustainable use of the fish stocks*	The indicator shows the proportion of fish and shellfish stocks that are used sustainably, which is dependent on ecosystem services that are needed for maritime industry fishing.
Goal 17. Strengthen Means of Implementation and revitalize the global partnership for sustainable development		

17.19 "build on existing initiatives to develop measures for progress made towards sustainable development that supplements GDP"	Most of the proposed indicators and proposals for continued work - see chapter 5.4.	In this report, we have sought to utilize synergies with several initiatives on measures of progress made towards sustainable development that supplements GDP.

Furthermore, goal 17.19 deals with: "By 2030, build on existing initiatives to develop measures for progress made towards sustainable development that supplements GDP and supports the build-up of statistical capacity in developing countries". Pursuant to this goal, Sweden has developed *New measures on prosperity*[50] at the national level.

The yearly indicators proposed in this account relate to *New measures of prosperity* according to the following summary:

Table 23. Link to the proposal for indicators for monitoring the maritime strategy and the Government's New Measures on Prosperity

New measures of prosperity	**Follow-up of the Swedish maritime strategy**	**Comment**
economic		
GDP per capita	*P7 Competitive industries* *ÅO9 - 13 The competitiveness of the industries*	Indicators P7 and OO 9-13 includes value added and export of goods and indicates how the maritime industries contribute to GDP.
The employment	*P2 Access to workplaces in coastal areas*	The indicator shows the proportion of Sweden's all workplaces that can be found along the coastal areas, which gives the conditions for employment
Unemployment	*P2 Access to workplaces in coastal areas*	The indicator shows the proportion of Sweden's all workplaces that can be found along the coastal areas, which provides the conditions for reduced unemployment.
Household indebtedness		
Public sector consolidated gross debt		
environmental		
Air Quality		
Water quality	*P1 Environmental impact in the seas* *ÅO1 Eutrophication* *ÅO4 Accidents and incident in Swedish waters*	Indicators show over time whether water quality improves as well as accident frequency.
Protected nature		
Chemical stress	*ÅO2 Environmental toxins in Swedish-caught fish*	The indicator shows over time how the chemical content in fish changes.
Greenhouse gas discharge	Air emissions from shipping,	carbon dioxide equivalents are measured within in-depth follow-up.
social		
Low disposable income		
Education	P6 Smart coastal areas	The indicator shows the proportion of highly educated and the proportion in "creative professions" per municipality.
Interpersonal trust		

[50] http://www.regeringen.se/artiklar/2017/06/nya-matt-pa-valstand/

Self-rated general health		Included in proposals for continued development, see chapter 5.4
Happy with life		Included in proposals for continued development, see chapter 5.4

The proposed follow-up system we provide can be improved by adding more indicators that measure social sustainability in coastal areas. One challenge with the social sustainability indicators available today is that they are difficult to apply to coastal regions, they concern the whole country or, at best, entire municipalities. One starting point can be the development work that the Swedish Agency for Economic and Regional Growth has initiated together with a number of regionally concerned government agencies.[51] The development work is called the BRP+ and aims to supplement the regional wealth indicator, the Gross Region Product (BRP) with a broader spectrum of indicators also taking social and ecological sustainability into account. In the continued development work regarding maritime strategy follow-up, there is reason to test whether parts of the work with BRP+ can be used.

Table 24. Link to the proposal for indicators for monitoring the maritime strategy and BRP+.

Affected "Theme" in BRP +	**Follow-up of the Swedish maritime strategy**	**comments**
Security and security	*ÅO4 Accidents and incidents in Swedish waters*	The indicator shows the frequency of accidents.
Quality of the Environment	*P1 Environmental impacts on the seas* *ÅO1 Eutrophication* *ÅO2 Environmental toxins in Swedish-caught fish*	Indicators show water quality over time.
Accessibility to services	*P5 Connected coastal areas*	The indicator shows access to broadband in coastal areas
Education and competence	*P6 Smart coastal areas*	The indicator shows the proportion of highly educated and the proportion in "creative professions" per municipality.
Subjective well-being		It is proposed to develop the follow-up on *attractive coastal areas* from the individual's perspective
Health		It is proposed to develop the follow-up on *attractive coastal areas* from the individual's perspective
Natural capital - Environmental impact	*P1 Environmental impacts on the seas* *ÅO1 Eutrophication* *ÅO2 Environmental toxins in Swedish-caught fish*	Indicators show, over time, the water quality and the chemical content of fish
Financial capital - investment in knowledge assets	*ÅO5 Innovation for maritime industries*	Total public resources allocated to maritime industries from innovation programs from Vinnova, the Swedish Energy Agency and the Swedish Agency for Economic and Regional Growth.

[51] http://www.brpplus.se/#ombrpplus

Agenda 2030 focuses on the individual's social sustainability with several goals, including through measurement of goal 17.19. Swedish initiatives within 17.19 have been mentioned earlier [52] , internationally, through the OECD's Better Life Initiative[53], the EU also makes measurement at, for example, the EU regional level[54]. Good health is an important condition for individual social sustainability. A motivation for sustainable development can also be to start with sustainable people, this appears to be the case according to research on health and health-promoting processes as the motivator for sustainable development[55]. How socially sustainable an individual is can be measured with the measure *Self-rated general health* a measure that is included both in the Swedish national *New measures of prosperity* and in the OECD's Better Life Initiative. Within the BRP+, the metrics *Satisfied with Life*, *Feeling of happiness*, *goal and purpose of life are developed* in a weighted index *Subjective well-being*.

Table 25. Summary of proposed follow-up contributes directly or Can be amenable with Agenda 2030, prosperity metrics and BRP+.

	Main objectives	**interim target/goal/theme areas**	**Indicators**
Agenda 2030	8/17	16/169	n/a
New measures of prosperity	Quality of life and long-term economic sustainability	3/3	7/15
BRP +	1/1 (main goal of quality of life)	7/12	1/52

The Government believes that sustainable entrepreneurship is important for Swedish companies' long-term competitiveness and it has, among other things, been highlighted in the policy paper *Policy for sustainable enterprise, 2015*.

Sustainable maritime industries and sustainability in the business sector is strongly bound to innovation and competitiveness. The Swedish Agency for Economic *and* Regional Growth has, through the regular study *Corporate conditions and reality*, found that small and medium-sized companies that have an active sustainability work culture in place; on average a higher willingness to grow, and are more innovative and more internationally engaged than other companies. This applies to both work on environmental issues and social and ethical issues. Research also shows that it creates value and is profitable for companies to integrate sustainability into their core business operations. Studies published by researchers from Harvard and Oxford in 2013 and 2015 show that companies working voluntarily on systematic sustainability and have integrated it into the core business operations are more highly valued, more profitable, reduce their risks, and manage crises better than their competitors who do not work with sustainability.

[52] ”Nya mått på välstånd” http://www.regeringen.se/artiklar/2017/06/nya-matt-pa-valstand/ , Regionernas arbete med BRP+, http://www.brpplus.se

[53] http://www.oecd.org/statistics/better-life-initiative.htm

[54] se t.ex. http://ec.europa.eu/eurostat/statistics-explained/index.php/Archive:Sustainable_development_indicators_introduced

[55] Ställ om för framgång, RUS (Länsstyrelserna i samverkan) och Landstinget Dalarna http://www.lansstyrelsen.se/Dalarna/SiteCollectionDocuments/Sv/Publikationer/Rapporter-2017/Rapport%202017-04_Ställ%20om%20för%20framgång%20-%20del%201,%202%20och%20kortversion.pdf

Corporate conditions and reality also contain another relevant magnitude for measurement. This is resource management as an initiator for development and innovation in maritime industries, with inspiration found in Agenda 2030- goal 12.2, *Sustainable production and consumption*. The Swedish Agency for Economic and Regional Growth measures whether companies conduct "active sustainability work"[56] . If companies conduct "active sustainability work", they are measured in 3-year intervals by Statistics Sweden on behalf of the Swedish Agency for Growth. In order to illuminate conditions in the maritime industries, data from the survey *Companies' conditions and reality* most probably can not be used, as the sampling in the survey is too small to shed light on the company aggregate of which the maritime industries consist. This would require survey expansion - either in its entirety or by making a separate sampling for the constituent maritime industries.

A relevant sustainability indicator is carbon dioxide emission equivalents per value added. Carbon dioxide equivalents are relevant both to the impact of climate change on the seas and to the maritime industries acting in a global market. This is already measured within Agenda 2030, 9.4.1, and is also measured within Statistics Sweden's environmental accounts.

To further promote the conditions for sustainable development, Agenda 2030 goal 12.8 on knowledge building might permeate further development efforts. We aim, by no later than 2030, to ensure that people everywhere have the information and awareness needed for sustainable development and lifestyles in harmony with nature.

The proposed yearly indicators on the follow-up of the Swedish maritime strategy would seem well-suited to serving as a measure for the *value of sustainable development* in accordance with the maritime strategy's vision. The parts that would further develop the measurement are the following:

The system is insufficient regarding the individual's social sustainability, but the maritime strategy highlights the social perspective of the *Attractive coastal areas*, where the social is measured within the societal context. Here one may question the merits of the maritime strategy addressing this measurement. In principle, it should be possible to get a sample of the responses from people living in coastal areas (1 km from the beach).

As a continued development of the follow-up, it would be interesting to report how the current situation is for the maritime industries' sustainability and resource management. Given that the ongoing study "*Companies' conditions and reality*" cannot be used without expanding the sample to include the constituent maritime industries.

The most concrete development proposal for expanding the follow-up is to develop a documentational foundation from existent business statistics where the companies' carbon dioxide equivalents are measured. Carbon dioxide equivalents are relevant both to the impact of climate change on the seas and because the maritime industries act in a global market.

[56] https://tillvaxtverket.se/vara-tjanster/publikationer/publikationer-2017/2017-09-27-foretagens-villkor-och-verklighet-2017.html

4.2 The condition of the sea

“The ecosystems in sea and coastal areas need to be in balance to ensure the ecosystem services on which the maritime industries, people's welfare and possibilities to recreation are based. Hence, it is vital to protect and, to the extent possible, restore ecosystems and a rich biodiversity and to ensure the ecosystem services that the sea supplies. Water quality, clean seas and coasts, protection of species and conserved and restored habitats are essential action areas for achieving *A balanced marine environment*”[57].

The Marine Environment Directive is the environmental pillar of the EU's integrated maritime policy. It is the EU's common framework for the marine environment and comprises marine waters from the coast to the external border of the economic zone. The objective of the Marine Environment Directive is to achieve or maintain good environmental status in Europe's seas by 2020. In Sweden, SwAM is responsible for the work on the directive under the Marine Environment Regulation.

The objective of the initial assessment is to describe the environmental state and to identify the significant impact on different parts of the ecosystem, as well as which factors that account for this effect.

The initial assessment in the Marine Environment Directive should also include economic analysis, consisting of both values that the current use of the sea entails and the consequences that society can expect if the environmental degradation continues or if the environment is improved. This is further described in the section on ecosystem services.

The assessment is made every six years, and the initial assessment in 2018 is an update of the assessment that was made in 2012. The consultation for the next initial assessment has begun and continues until April 2018.

The result of the assessment of the status shows that the impact in most cases is so high that a favourable environmental status is not achieved.

Concerning eutrophication, we have a positive trend which shows that the total nutrient supply from Sweden to our oceans decreases. Due to earlier periods with high nutrient input, nutrients have been collected in the sediments, especially in the Baltic Sea. When the accumulated amounts of nutrients leak, they contribute to an internal pressure, which means that it will take a long time before we see the effects of the reduced supply of nutrients.

The levels of hazardous substances in the sea are essentially unchanged or declining over the last ten years. In many cases, historical sources are probably responsible for today's environmental status. For example, substances such as dioxins and PCBs are stable and do not break down and are a problem even today. The exception is polyaromatic hydrocarbons, PAHs, which are still supplied by incomplete combustion and vehicle traffic, and metals such as mercury that are mainly supplied by airborne dispersal pathways but also occur in low concentrations in wastewater and waste from a few industrial processes.

[57] https://www.regeringen.se/4a4f3c/contentassets/86a578f7a521469e9b6b8c62ac5aa128/maritim-strategi.pdf

In general terms, the assessment cannot affirm that good environmental status is achieved.

Measurements of marine debris are made on beaches and the seabed. Only the Gulf of Bothnia shows a downward trend and therefore achieves good status. Other sea areas have opposite upward trends. Assessment of micro-scrap is missing.

Invasive alien species in the Swedish maritime areas are for example brought here, through shipping. So far, about 130 alien species have been introduced into the Baltic Sea because of human activities. These species originate primarily from the east coast of North America, Black and Caspian seas, and East Asia. These areas are in contact with the Baltic Sea via ship traffic, as fouling or in ballast water tanks. Good environmental status is reached neither in the North Sea nor in the Baltic Sea.

Fish and shellfish are important both in the marine ecosystems and as foodstuffs. The impact of commercial fishing activities on commercially fished stocks is assessed on the basis of whether it is sustainable in the long term. For most stocks in the North Sea and the Baltic Sea, good environmental status is not achieved. There are positive trends for some stocks.

The situation in both the Baltic Sea and the North Sea is still strained in terms of the importance of fish communities for biodiversity. There are signs of some recovery. Good environmental status is achieved for, among others, herring, sprat and plaice in the Baltic Sea, and for herring, plaice, hake and saithe in the North Sea and also for coastal fish in some coastal areas. However, the size distribution for most species is still shifted to small individuals.

It is difficult to point out individual activities as causes of the condition for species, habitats and ecosystems in the North Sea or the Baltic Sea. The supply of nutrients, hazardous substances, loss or disturbance of seabeds as well as fishing and introduction of alien species all have negative impacts. There are signs of recovery, especially in the North Sea and for certain species and species groups in the Baltic Sea. However, most of the species in the groups of marine mammals, birds, and fish are not expected to achieve good environmental status until 2020 in either the Baltic Sea or the North Sea.

For seals, the condition is partly positive. Common harbour seals in the North Sea and grey seals in the Baltic Sea are increasing in number. The prevalence of these populations is stable. The situation for other populations, such as ringed seals and common harbour seals in Kalmar Sound, does not correspond to the set goals. Regarding the health of grey seals, good environmental status is not assessed to be achieved.

The development of most species of birds is positive, but the group foraging, diving species does not achieve good environmental status in either the North Sea or the Baltic Sea. There are signs of recovery for fish-eating and grazing birds.

4.3 Ecosystem services of importance for development of maritime industries

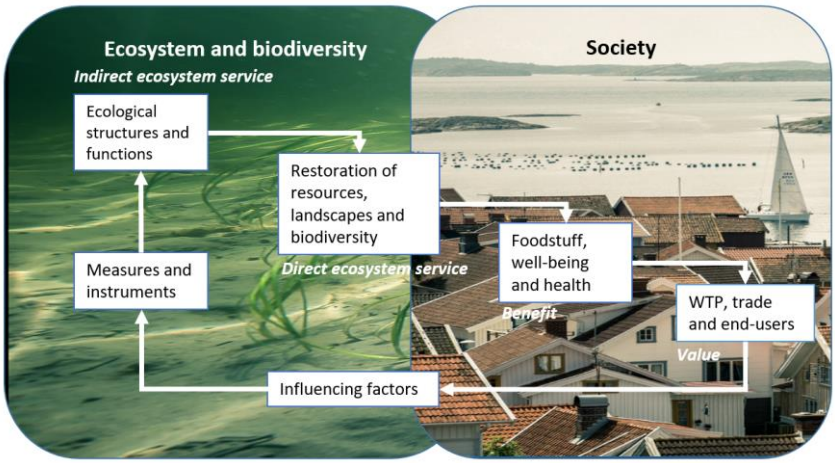


Figure 13. The ecosystem services link to the sea.[58]

The concept of ecosystem services is used to show the benefits people get from nature's work. For example when plants purify the air, shrubs dampen noise, bees pollinate crops or that our health increases in nature. This also concerns how the city's lawns cleanse rain and snow water from heavy metals and harmful particles or that bacteria and worms make the soil fertile. The ecosystems in the ocean produce oxygen, atmospheric water and food, and they provide inspiration, recreational opportunities and much more, often at no cost. To speak about the ecosystems benefits for people as ecosystem services is a way of highlighting these benefits.

Ecosystem services are usually divided into the following four groups [59]

Supporting services (S) are the ecosystem services that maintain the structure and function of ecosystems and which we thereby indirectly benefit from.

Regulatory services (R) regulate and reduce various environmental problems.

Providing services (P) are the ecosystem services that directly supply goods that can be sold in a market.

Cultural services (C) are non-material benefits that people receive from ecosystems, for example, experiences in nature.

The maritime industries affect and utilize ecosystem services in different ways. The diagram below shows the dependence of the maritime industries on ecosystem services on the x-axis and its impact on the y-axis. The size of the bubbles is the industry's value added. It should be noted that the classification definitions of maritime industries in the basis of the diagram do not fully comply

[58] Foto: Till vänster: Jorma Valkonen / IBL Bildbyrå. Till höger: Eduardo Infantes Oanes
[59]https://www.havochvatten.se/download/18.3ca5456314ffdc22b9a70a15/1444140450533/rapport-2015-12-ekosystemtj%C3%A4nster-i-svenska-hav.pdf

with the definition that has been carried out in the documentation of this summary.

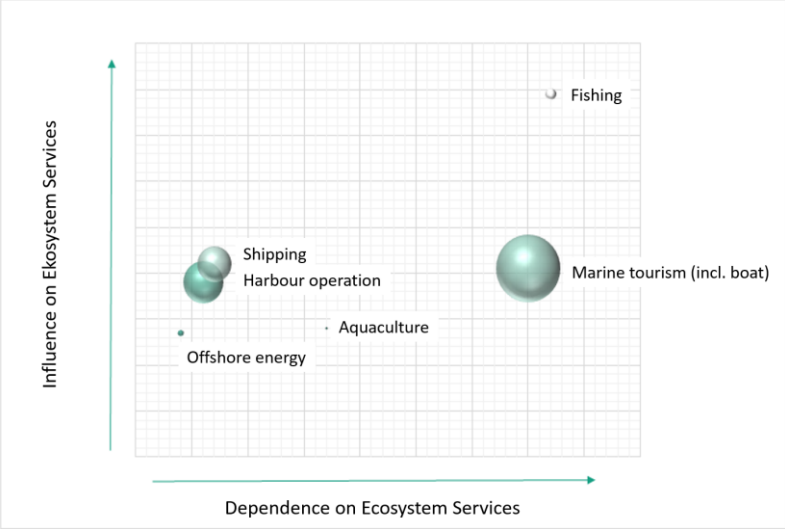


Figure 14. The figure shows the dependence of maritime areas on ecosystem services (x-axis) and its impact on ecosystem services (y-axis). The size of the bubbles in the diagram is relative to their added value - note that the classification limitations and nomenclature of the maritime industries in the diagram do not fully correspond to this assignment.

SLU-Aqua has on behalf of SwAM, carried out an ecosystem service analysis of activities that affect and depend on the marine environment's ecosystem services[63]. A structured expert assessment is made to assess the different activities' dependence on the ocean's ecosystem services, in which the dependence of activities on each individual ecosystem service is assessed with a scale from 0-4, where 0 indicates little or no dependence and 4 indicates great dependence. A technical report on the assignment will be published in February 2018.

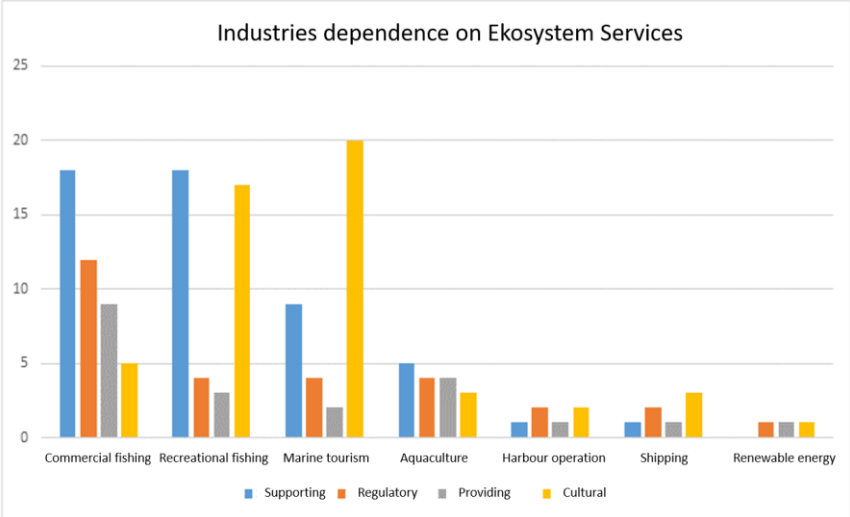


Figure 15. The dependence of maritime industries on ecosystem services divided between supportive, regulatory, providing and cultural ecosystem services. The documentation is based on expert assessment of the different activities depending on each separate service on a scale from 0-4 where 0 =

small or no dependence and 4 = high dependence. The total sum of dependence is presented as bars in the chart.

The two industries that are most dependent on ecosystem services are commercial fishing and maritime tourism. Both commercial fishing and recreational fishing, here defined as a sub-activity for maritime tourism, have a high dependence on well-functioning supporting ecosystem services for the sea to be able to produce food such as fish and shellfish while increasing the value of recreational fishing on the coast.

For commercial fishing, in addition to the supporting ecosystem services, regulating ecosystem services, such as *Regulation of Overfertilisation* - the sea's own ability to reduce eutrophication and *Biological Regulation* - an organism regulates the abundance of another and maintains the balance between different species, which are of great importance. The most important supplying ecosystem service for commercial fishing is the *Provision of Food*.
For maritime tourism it is the cultural ecosystem services that are of the highest importance for creating an *Attractive coastal areas*.

The cultural ecosystem services include, for example, *Aesthetic Values* that mean the experience of the sea as clean and clear and without too much impact from human activity, as well as cultural values such as *Cultural Heritage* from vital coastal communities, fishing villages and health resorts. In addition to these values, *Recreation is* the cultural ecosystem service that includes all activity at sea and coast, such as, beach life, boating, recreational fishing, etc., which in turn make up much of the maritime tourism.

5 Result and Continuation

5.1 Reported proposal for follow-up system

In cooperation with the National Board of Housing, Building and Planning, the Swedish Energy Agency, the Swedish Board of Agriculture, the Swedish Agency for Economic and Regional Growth and the Swedish Transport Agency, SwAM has put together a proposal follow-up of the Swedish maritime strategy as commissioned on 6 April 2017.

The proposal consists of a yearly follow-up of a total of 26 yearly indicators that are analysed with an in-depth follow-up that takes place evert three years. The in-depth follow-up aims to provide an in-depth picture and analysis of the strategy, its implementation, and its results. This is supplemented with an analysis of important goals for the strategy, with the help of information not included in the yearly follow-up. About 20 supplementary areas, listed in Table 27, have been identified thus far in the work.

There is already a yearly follow-up for 12 of the indicators. 12 indicators have existing data sources, but some indicators need to be developed in relation to the follow-up limits. Finally, two indicators are proposed that require more work before they can be compiled. 19 of the proposed indicators contribute to Agenda 2030 goals in some way.

The result of the Marine Environment Directive's initial assessment 2018 is under consideration. The considered documentation shows that good environmental status is not achieved because the impact on our Swedish oceans in most cases is so high. The industries that are most dependent on the ocean's ecosystem services are fishing and tourism.

Table 26. Yearly indicators, with descriptions and comments.

Indicator	Description	Comments
P1 A Balanced Marine Environment: Environmental impacts in the seas	The indicator consists of two parts: • The share of (percentage) the total Swedish sea area with high environmental impact • The share with low environmental impact Source: SwAM, The Marine Planning unit.	The indicator consists of an aggregate of the total environmental impact, in regards to several affecting components. Data is collected and shows the total cumulative impact according to tools developed for the marine planning. The indicator is connected to goal 6.3, 14.1 and 14.2 in Agenda 2030.

P2 Attractive Coastal Areas: Access to work places in the coastal areas.	The share of the total amount of workplaces in Sweden that can be found in the coastal areas. Source: Statistics Sweden (SCB) Central Business- and workplace-registry, SCB:s definition of coastal areas	The indicator shows the total access to workplaces in the coastal areas. This reflects the opportunity for the coastal population to work in the local area. The indicator also shows the competitiveness of the coastal areas compared to ”the rest of the country” when it comes to attracting jobs. Alternatively, “the rest of Sweden with exceptions for urban areas with over 10 000 inhabitants” can be used in order to get a more “fair” comparison.
P3 Attractive Coastal Areas: Destination attractiveness	The share of all guest nights in Sweden that is spent in the coastal areas. Source: SCB:s processing of the Swedish Agency for Economic and Regional Growth’s Guest nights statistics. SCB:s definition of coastal areas.	The indicator shows the share of all guest nights that is spent in the coastal areas. The indicator shows the coastal areas destination attractiveness in relation to Sweden as a whole. Alternatively, “the rest of Sweden with exceptions for urban areas with over 10 000 inhabitants” can be used in order to get a more “fair” comparison. The indicator is connected to goal 8.9 and 12.b in Agenda 2030.
P4 Attractive Coastal Areas:: Attractive residential environments	The number of Sweden’s population living in the coastal areas Source: SCB:s population registry, SCB:s definition of coastal areas.	The indicator shows the development of the population in the coastal areas. The indicator shows the attractiveness of the coastal areas for residence. An increase in numbers shows that the attractiveness of the coastal areas is increasing compared to the rest of Sweden. Alternatively, “the rest of Sweden with exceptions for urban areas with over 10 000 inhabitants” can be used in order to get a more “fair” comparison.
P5 Attractive Coastal Areas:: Connected coastal areas	The share of Sweden’s coastal municipalities that have access to broadband (at least 100mb/s) Source: the Swedish Post and Telecom Authority The costal municipalities consists of the National Board of Housing, Building and Planning’s	The indicator shows a dimension of the coastal areas prerequisites to be attractive for residents, visitors and jobs. The access to broadband is defined as access to broadband at fixed points,

	definition of coastal municipalities. 82 in total.	such as households and workplaces. The indicator is connected to goal 9.c in Agenda 2030.
P6 Attractive Coastal Areas: Smart coastal areas	The coastal municipalities' combined ranking of all Sweden's municipalities in regards to the number of highly educated and the number of "creative professions". For definitions, see the source. Source: Jönköping Business School, Charlotte Mellander	The higher the aggregated ranking, the "smarter and more creative" the coastal areas of Sweden are in comparison to the municipalities in general. The indicator shows the coastal municipalities' ability to attract people with higher education and with creative professions. The indicator shows the potential of the coastal areas.
P7 Competitive Industries	The indicator consists of three parts that together shows the combined maritime industries according to the SCB:s definition: • The number of people employed within the maritime industries • The value added in the maritime industries (million sek) • Export in the maritime industries (thousand sek) Source: SCB	The three measures taken together gives a good picture of the competitiveness of the maritime industries. The development of the different measures can be compared to other sectors or industries in other parts of the country. The indicator is connected to goal 9.2 and 8.2 in Agenda 2030.
ÅO1 A Healthy and Safe Marine Environment: Eutrophication	The indicator consists of two parts, divided on geographical sea basins. • Phosphorus input on the sea • Nitrogen input on the sea Source: SwAM:s follow-up of the environmental goal No Eutrophication	To decrease the eutrophication is, according to the strategy, an important prerequisite for balance in the marine ecosystems. Decreased eutrophication is also a part of the national environmental goals and the Agenda 2030 goals. The indicator shows the eutrophication status of the Swedish sea environments in relation to the conditions of the sea areas in general. The indicator is connected to goals 6.3, 14.1 and 14.2 in Agenda 2030.
ÅO2 A Healthy and Safe Marine Environment: Environmental toxins in Swedish-caught fish	The indicator is calculated by using the data from eight premises and is a compilation of nine hazardous substances.	The indicator shows the development of environmental toxins in the sea. Toxin-free marine food stuffs are fundamental in order to ensure "ecosystem services that

	Source: SwAM:s follow-up of the environmental goal A Balanced Marine Environment.	are needed for a continued development of the maritime industries” The indicator is connected to goals 6.3, 12.4, 14.1 and 14.2 in Agenda 2030.
ÅO3 A Healthy and Safe Marine Environment: Sustainable use of the fish stocks	The indicator is an aggregated measure of the number of fish and seafood stocks that are sustainably used. Source: SwAM:s follow-up of the environmental goal A Balanced Marine Environment.	Sustainable fishing is one of the fundamental prerequisites in order to ensure balanced marine ecosystems as well as ”ecosystem services that are needed for a continued development of the marine industries”. The indicator is connected to goals 12.2, 14.2 and 14.4 in Agenda 2030.
ÅO4 A Healthy and Safe Marine Environment: Accidents and incidents in Swedish waters	The indicator is a measure of the total amount of reported accidents and incidents with Swedish and foreign vessels in the Swedish territorial waters. The data is divided into three categories: severe accidents, less severe accidents and incidents. Source: The Swedish Transport Agency.	To decrease the number of accidents at sea is in many ways important in order to reach the vision of a healthy and safe sea. The indicator shows the development of the number of accidents and incidents divided according to the character of the event. The indicator is connected to goals 8.8 and 14.1 in Agenda 2030.
ÅO5 Knowledge and Innovation: Innovation for Maritime Industries	Total public resources allocated to maritime industries from Innovation programs from Vinnova, the Swedish Energy Agency and the Swedish Agency for Economic and Regional Growth (exact definition of innovation programs remains). The definition of maritime industries is based on SCB:s definition. Source: Respective innovation authority.	The governmental innovation resources constitutes an important prerequisite for the renewability and long-term sustainability of the industries. The indicator shows the maritime industries ability to attract these resources. The indicator has a connection to goals 8.2 and 9 in Agenda 2030.
ÅO6 Planning with a Maritime Perspective: Comprehensive planning of coast, sea and archipelago	The share of Sweden’s coastal municipalities that have a comprehensive plan for its coastal- and sea area. Source: the National Board of Housing, Building and Planning, survey to Sweden’s municipalities.	The physical planning creates preconditions for the maritime industries. In order to follow the development of the coastal- and sea areas it is therefore relevant to measure the development of the physical planning. The number of municipalities that have a comprehensive plan for the coast, archipelago and sea is therefore an important indicator.

		The indicator has a connection to goals 11.a and 14 in Agenda 2030.
ÅO7 Functional Rules and Effective Permit processes: Fair traffic regulations	The maritime traffic's internalization of socioeconomic costs (percentage of the socioeconomic costs that are internalized in taxes, fees etc.). Comparisons with for example road and railroad traffic is possible. Source: Transport Analysis	To follow up the functionality of regulations is hard. With this indicator, we get a measure of the functionality of the regulations for maritime traffic. The indicator has a connection to goals 8.4 and 9.2 in Agenda 2030.
ÅO8 International Cooperation: Resources for international cooperation concerning innovation and maritime environment	Public resources allocated to Swedish maritime environments and businesses from a selection of international cooperation programs. Efforts in Horizon 2020, Interreg Baltic Sea Region and Interreg North Sea Region are proposed to be included. Source: Respective authority responsible for the program	The sum of the resources that are invested in international cooperation within the selected programs is an indication of the total resources that are invested in international cooperation regarding maritime industries. The indicator also shows the development of Sweden's ability to be included in this kind of cooperation. The indicator has a connection to goals 7a and 17 in Agenda 2030.
ÅO9 – 13 Conditions for the Business Sector and Industry Specific Measures: The competitiveness of the industries (Transport, Maritime Technology and production, The Sea as a Resource, Leisure and Tourism, and Service – it is desirable to divide the industries into subsectors)	Each of the indicators for the subsectors in turn consists of three partial measures: • Number of employed in the maritime industries • Value added in the maritime industries (million sek) • Export in the maritime industries (thousand sek) Source: SCB:s special follow-up pf the maritime industries – all subsectors	A more detailed picture of the development of the different maritime subsectors is presented here. The indicator is connected to goals 8.2 and 9.2 in Agenda 2030.
ÅO14 Conditions for the Business Sector and Industry Specific Measures: Sea based energy production	The indicator consists of three partial measures: • Installed effect in sea based wind power in Swedish waters and in Swedish economic zone (Megawatt) Source: County Administrative Board Västra Götaland (www.vindlov.se) • Number of marine energy facilities (wave- and currents, energy	The indicator supplements the industries within the area of the Sea as a Natural Resource, through showing the extent and development of the sea based energy production. The indicator is connected to goal 7.2 in Agenda 2030.

	recovery from differences in temperature and salt content) in Swedish waters and Swedish economic zone. • Installed effect (megawatt) in all facilities Source: the Swedish Energy Agency (IEA OES-report)	
ÅO15 Conditions for the Business Sector and Industry Specific Measures: Sweden's fleet	The number of merchant ships and special vessels with a gross tonnage of above 100, in the Swedish registry and in Swedish regime. Source: Transport Analysis	This indicator shows the size of the Swedish merchant's fleet and the fleet that is controlled by Swedish shipping companies. The size of the Swedish fleet affects, among other things, Sweden's influence on international maritime affairs, the possibility to maintain jobs and shipping competence in Sweden.
ÅO16 Conditions for the Business Sector and Industry Specific Measures: Overnight stays/visits in the coastal area	The indicator consists of three partial measures: • The number of guest nights in visit facilities in Swedish coastal areas (SCB:s definition) • The number of visitors/guest nights in the cruise traffic in Swedish harbours • Number of nights in guest harbours Source: The Swedish Agency for Economic and regional Growth, The Swedish Guest Harbour Association, Swedish harbours and SCB.	The indicator supplements SCB:s data on maritime tourism with additional maritime guest nights. The indicator is connected to goal 8.9 in Agenda 2030.
ÅO17 Conditions for the Business Sector and Industry Specific Measures: Season extension	The indicator consists of the change in the share of total number of guest nights in the coastal areas outside the months of June-August Source: The Swedish Agency for Economic and regional Growth's accommodation statistics	The indicator gives a measure of the total season for visit facilities in the coastal areas.
ÅO18 Conditions for the Business Sector and Industry Specific Measures: Fish and seafood catches	The indicator consists of the total catch of fish and seafood from the commercial fishing in the sea, expressed in alive weight. Source: SCB/SwAM yearly official statistics for commercial fishing	The indicator gives a measure of how much fish and seafood the commercial fishing in the sea is fishing each year and hence the productivity of the sector.

ÅO19 Conditions for the Business Sector and Industry Specific Measures: Production of aquaculture	The indicator consists of the total production of aquaculture products. Source: SCB yearly statistics for the aquaculture	The indicator gives a measure of how much fish and seafood that aquaculture is producing on a yearly basis and hence the productivity of the sector.

Table 27. Supplementary areas

Indicator	Current state	Comment
Supplementary areas		
Biodiversity	319 red-listed species of a total of 5202. (2015)	Quantitative evaluation
Research environments within the maritime area	-	Qualitative evaluation.
Innovation results within various industries	-	Qualitative and quantitative evaluation
In-depth study of comprehensive planning	-	Qualitative evaluation.
Simplified rules and more efficient administration within maritime traffic	-	Qualitative evaluation.
Fees within maritime traffic	-	Qualitative and possible. quantitative evaluation.
Transfer of freight transports from road to shipping	-	Qualitative evaluation.
New regulations for national shipping	-	Qualitative evaluation.
Air emissions from shipping	300,000 tonnes of carbon dioxide equivalents (2016)	Quantitative evaluation.
Employment effects of recreational fishing	788-1 603 man-years, with an estimate of 1,193 man-years.	Quantitative evaluation.
Maritime cultural environment	-	Qualitative evaluation
Turnover and the number of employees in Sweden for development companies with the main focus on maritime energy production	-	Probably resolved during ÅO9-13
Electricity produced from offshore wind power in Sweden	-	Quantitative evaluation.
Number of environmental permits and installed capacity in granted environmental permits	-	Quantitative evaluation.

Marine based aquaculture for energy production	-	Quantitative evaluation.
International competitiveness – Maritime energy production	-	Quantitative evaluation.
Rejuvenation within the fisheries	-	Qualitative evaluation.
Profitability of professional fishing	-	Probably resolved during ÅO9-13
Rules simplification for commercial fishing	-	Qualitative evaluation.
Adaptive management of the fish resources adaptive	-	Qualitative evaluation.
Degree of self-sufficiency sea food	28 340 tonnes of a total of 109,000 tonnes (2015)	Quantitative evaluation.

5.2 Next step

For the 12 indicators that have identified data sources, efforts are needed by the relevant government agencies regarding the collection and development of data:

- P1 Environmental impact in the seas, source SwAM
- P2 Access to workplaces in the coastal areas, source Statistics Sweden
- P3 Destination attractiveness, source Statistics Sweden
- P4 Attractive residential environments, source Statistics Sweden
- P5 Connected coastal areas, source The Swedish Post and Telecom Authority (PTS)
- ÅO9-13 The competitiveness of the industries, source Statistics Sweden
- ÅO16 Overnight stays/visits in the coastal area, source Swedish Agency for Economic and Regional Growth, et al
- ÅO17 Season extension, source Statistics Sweden and Swedish Agency for Economic and Regional Growth

For the indicators proposed under *Knowledge and innovation*, *ÅO5 Innovation for maritime industries* and *international cooperation ÅO8 Resources for international cooperation concerning innovation and maritime environments*, a more substantial investigative effort is required. This should be done in consultation with the relevant government agencies, primarily Vinnova, the Agency for Growth and the Swedish Energy Agency. The proposals here are not firmly established in the routines of these government agencies.

- ÅO5 Innovation for maritime industries, source Vinnova, Swedish Agency for Economic and Regional Growth, the Swedish Energy Agency
- ÅO8 Resources for international cooperation concerning innovation and maritime environments, source Vinnova, Swedish Agency for Economic and Regional Growth, the Swedish Energy Agency et al

5.3 Working model for further follow-up work

According to the concerned government agencies, if future in-depth follow-up work is to be successful, it is important that each agency has a clear set of expectations regarding their investigative effort. There is a great challenge in maintaining follow-up continuity as there are so few indicators that are followed up yearly, and because a more abundant effort is needed in the task every three years.

The focus of the work has been to find indicators where there is already an administration for ongoing operation and production of data today. It has also been important that the additional resources that the follow-up will use should be included in existing activities.

The continued follow-up can as a suggestion be performed in the same way as the project was implemented. A cohesive cooperating authority needs to be assigned who should be responsible for organising the yearly follow-ups and who then takes the role of compiling the in-depth follow-ups.

Here it is of great importance for the participation, of government agencies with responsibility for official statistics and other government agencies with responsibility for the concerned sectors to provide for the work by implementing the follow-up. This especially applies to the implementation of the in-depth follow-up, when analyses of indicators should be carried out.

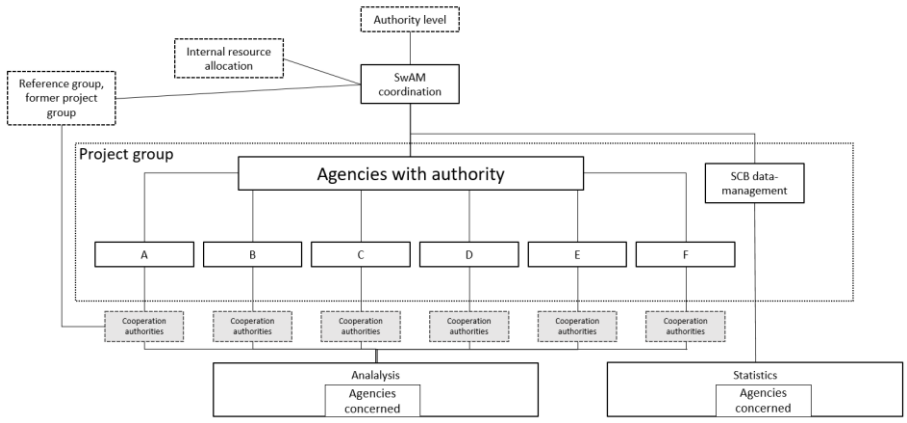


Figure 16. Working model for further follow-up work.

5.4 Continued development of upcoming follow-ups

For the perspective level of the *Attractive coastal areas*, it is difficult to propose how the follow-up can be developed more specifically before the outcome of proposed indicators can be assessed.

Within *A balanced marine environment*, the marine spatial planning tool Symphony will be used. The tool will be developed continuously and it would be worthwhile to follow this development, as the tool can have further uses for the follow-up of the Swedish maritime strategy.

For *Competitive industries*, the statistics require development in accordance with the preceding description in this summary. Further one might consider expanding the follow-up to include global climate challenges such as sea acidification, also supplementing business statistics with information on the impact of the industries on the climate.

At the action area level under *Knowledge and innovation*, in future development of the follow-up, one can focus on finding a measurement on the availability of existing knowledge regarding, for example, APIs. API is a standardized way of making information available, such as traffic information or other information sought in management programming. This could serve to facilitate innovation and application development in our modern society where value is created from data collation.

Within the field of energy production technology, it is possible to develop the follow-up so that it also captures the development and export of marine-based energy technology that is sold or installed offshore outside of Sweden. It is also in the interests of the energy field to among aquaculture statistics pursuant towards development of potential for bio-energy cultivation.

For the indicator ÅO6 Comprehensive Planning, the indicator can be expanded to include municipalities at the large lakes, which also are included in the maritime strategy's definition of maritime areas.

For the area of action *Planning in a Maritime Perspective*, there is altogether a need to develop the planning around the coastal areas and better interconnect sea and land in the planning. An issue of interest is to see the development of maritime industries' conditions for infrastructure on land such as network connections, landing ports, and access to other relevant infrastructure.

On the whole, the relationship of the follow-up to the Marine spatial planning needs elaboration, perhaps in the area of interest for enhancing integration between municipal and federal planning.

There is a need to improve the quality of the statistics on overnight guest in Swedish harbours for visitors. This can be done either within the current cooperation with the Riksföreningen Gästhamnarna or by moving the statistics to Statistics Sweden in a similar way as was done with camping sites in 2008. The statistics could also be supplemented with guest nights in cruise traffic, both nationally and internationally.

Another development area could be to use the new tourism survey from 2017 that Statistics Sweden compiles on behalf of the Swedish Agency for Economic and Regional Growth. There is an opportunity to collect statistics on coastal tourism based on data on the Swedish population's tourism trips in Sweden (and abroad). The first results of the survey will be published at the end of April 2018.

There is also a need to develop the follow-up when it comes to the individual perspective, and in particular regarding the coastal areas' social sustainability. One possible development is to add indicators that are built up by self-reported data from different types of questionnaires, for example when it comes to *self-reported health* or *satisfaction with life*, as such are currently being developed in other contexts. Here, however, adjustments are needed on how these surveys are carried out if they are to be both meaningful and able to be of use for the

follow-up of the Swedish maritime strategy. In order to further promote conditions for sustainable development, Agenda 2030's goal 12.8 on knowledge building should permeate further development efforts.

Follow-up of the Swedish Maritime Strategy

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