

ASCOBANS
Conservation Plan
for Harbour Porpoises
(*Phocoena phocoena* L.)
in the North Sea



ASCOBANS

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1 INTRODUCTION

Harbour porpoises (*Phocoena phocoena*, Linnaeus 1758) are widely distributed in shelf waters of the temperate North Atlantic and of the North Pacific Oceans and in some semi-enclosed seas, such as the Black and Baltic Seas. The North Sea is an important habitat for harbour porpoises in the North East Atlantic. Harbour porpoises are exposed to a number of anthropogenic pressures (e.g. Bjørge & Donovan 1995) and are listed as threatened or endangered in several international conservation instruments (e.g. EC Habitats and Species Directive 1992 (92/43/EEC), Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention), Convention on Migratory Species (Bonn Convention), IUCN Red List of Threatened Species).

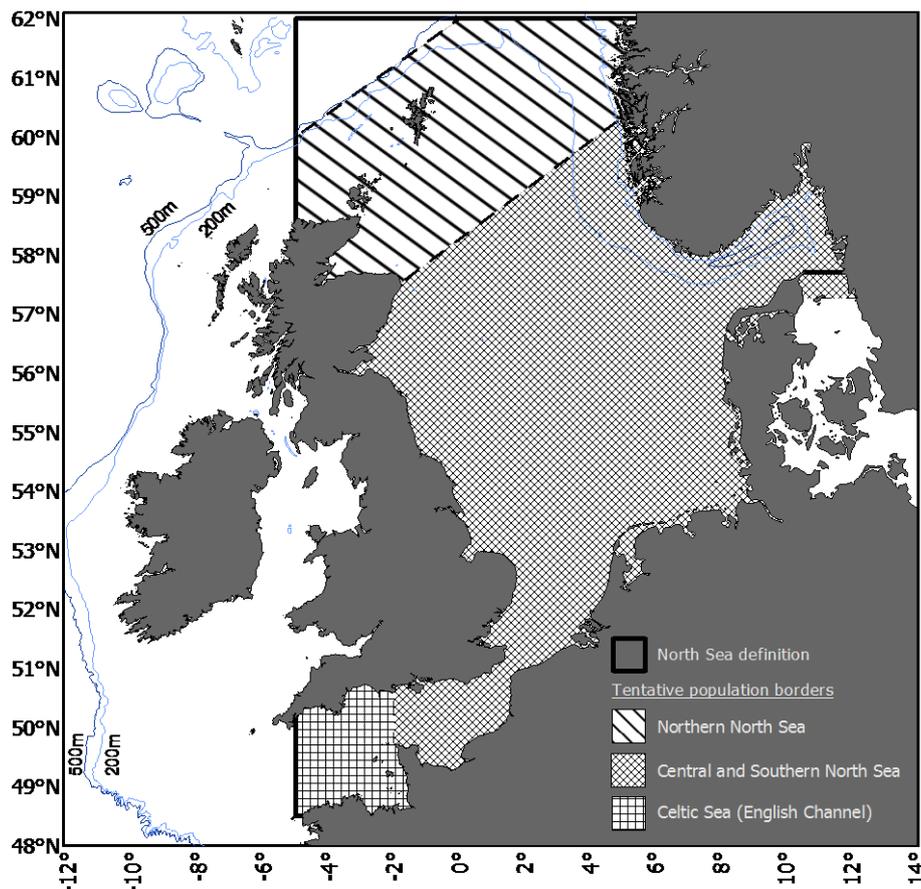


Figure 1: Map of the North Sea as defined at the 5th International Conference on the Protection of the North Sea in Bergen, Norway, 20 – 21 March 2002, showing the tentative harbour porpoise population borders. Note that the ASCOBANS agreement area does not cover all of the North Sea.

The 5th International Conference for the Protection of the North Sea (Bergen, Norway, 20-21 March 2002) called for a recovery plan for harbour porpoises in the North Sea to be developed and adopted (Paragraph 30, Bergen Declaration). Germany volunteered in 2003 to draft a recovery plan¹ within the framework of ASCOBANS and in association with Range State Norway.

¹ Due to data from SCANS-I, SCANS-II and national surveys on harbour porpoise abundance and distribution in the North Sea, ASCOBANS considered it more appropriate to call this document *Conservation Plan* rather than a Recovery Plan.

This document builds upon considerable work by a number of people. It summarises the current state of knowledge about North Sea harbour porpoises and the risk factors affecting them; detailed information is given in Eisfeld & Kock (2006). The Conservation Plan aims at achieving and maintaining a favourable conservation status, specifically by suggesting a series of priority actions.

2 BACKGROUND INFORMATION ON THE SPECIES

2.1 POPULATION STRUCTURE, ABUNDANCE AND DISTRIBUTION

Harbour porpoises occur throughout the North Sea and adjacent waters. They are highly mobile. Various lines of evidence suggest that there is stock structure within the North Sea (for details see Eisfeld & Kock, 2006) but the information is not sufficient to define strict or permanent boundaries between any (sub-) populations. IWC/ASCOBANS (2000) divided harbour porpoises occurring in the North Sea for practical management purposes into a Northern North Sea stock, a Central and southern North Sea stock and an additional one occurring in the western Channel (figure 1, table 1).

There are 'open' borders to the north, northwest, Kattegat and south west shelf seas. The implications of these open borders are that additional management actions may be needed outside the boundaries of the North Sea (as defined in this document) in order to achieve objectives within the North Sea. For instance, it is believed that harbour porpoises in the western Channel and the Celtic Sea are part of the same population.

The distribution of harbour porpoises is not static in space or time. For instance, in records from 1979-1997, sighting rates in the south eastern North Sea, the southern Bight and the northern English Channel were substantially lower than in areas further north (Evans *et al.* 2003; Reid *et al.* 2003). More recent surveys reported higher sighting (Scheidat *et al.*, 2003; 2004; Brasseur *et al.*, 2004) and strandings rates (Haelters *et al.*, 2002; Jauniaux *et al.*, 2002; Kiska *et al.*, 2004; Camphuysen, 2004) in the southern North Sea and southern Bight. This increase in both sighting and stranding rates in these southern parts of the North Sea over a relatively short period of time suggests a redistribution of animals from other areas in recent years rather than a sudden and rapid increase in population growth in the southern North Sea. Results from the SCANS II survey (SCANS-II, 2008) confirm that densities in the southern parts of the North Sea have increased while densities in more northerly regions have declined between 1994 and 2005 (Table 1 and Fig 2). Encouragingly, the results suggest that abundance in the North Sea as a whole has not changed significantly.

3 DEVELOPMENT OF THE CONSERVATION PLAN

This plan follows the general process used in the development of the Conservation Plan proposal for the bottlenose dolphin in the Spanish Mediterranean (Donovan *et al.* 2008).

3.1 OBJECTIVES

The development of this Conservation Plan was the result of a call by the 5th International Conference for the Protection of the North Sea. Similarly, the geographical boundaries of the Plan were set following those indicated at that Conference (Fig.1), rather than as a result of an evaluation of harbour porpoise stock structure. Consideration of the effect of the boundaries is a key component of the Conservation Plan. Similarly, the objectives of the Conservation Plan were defined by the 5th North Sea Conference and reflect Article 1 of the EU Habitats Directive.

These are:

“This Plan aims to restore and/or maintain North Sea harbour porpoises at a favourable conservation status, whereby

- population dynamics data suggest that harbour porpoises are maintaining themselves at a level enabling their long-term survival as a viable component of the marine ecosystem;
- the range of harbour porpoises is neither reduced, nor is it likely to be reduced in the foreseeable future;
- habitat of favourable quality is and will be available to maintain harbour porpoises on a long term basis; and
- the distribution and abundance of harbour porpoises in the North Sea are returned to historic coverage and levels wherever biologically feasible.”

These objectives incorporate the ASCOBANS goal of restoring and/or maintaining populations at 80% or more of the carrying capacity (ASCOBANS, 1997).

Currently it will be difficult to demonstrate the full achievement of these (long-term) goals as insufficient knowledge exists on past harbour porpoise distribution and abundance. The ability to predict the future is also difficult and will need to be based on modelling with assumptions for which we have limited data. However, in the shorter-term a pragmatic minimum objective is to at least maintain the present situation and, if possible, improve it. In any event, it is essential that an appropriate modelling framework is developed that will enable an evaluation of management goals. Progress has been made within the SCANSII project (SCANS-II 2008) building upon the work undertaken by the joint IWC/ASCOBANS working group (IWC, 2000).

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Table 1: Abundance and densities of harbour porpoises in the North Sea and adjacent waters during SCANS I as estimated by Hammond et al., 1995 and SCANS II as estimated by SCANS-II, 2008. Figures in round brackets are coefficients of variation; figures in square brackets are 95% confidence intervals.

Greater Region	SCANS I			SCANS II		
	SCANS block	Abundance [no. of animals]	Densities [animals/km ²]	SCANS block	Abundance [no. of animals]	Densities [animals/km ²]
Northern North Sea	E	31,419 (0.49)	0.29	T	23,766 (0.33)	0.18
	D	37,144 (0.25)	0.36	Q*	10,002 (1.24)	0.07
	M	5,666 (0.27)	0.45	M	3,948 (0.38)	0.31
	J	24,335 (0.34)	0.78	J	10,254 (0.36)	0.27
Subtotal (northern North Sea)		98,564 [66,679-145,697]			47,970	n.a.
Central & southern North Sea	C	16,939 (0.18)	0.39	/*	/	/
	F	92,340 (0.25)	0.78	V	47,131 (0.37)	
	G	38,616 (0.34)	0.34	U	88,143 (0.23)	0.56
	H	4,211 (0.29)	0.10	H*	3,891 (0.45)	0.36
	L	11,870 (0.47)	0.64	L	11,575 (0.43)	0.56
	Y	5,912 (0.27)	0.81	Y	1,473 (0.47)	0.13
Subtotal (central & southern North Sea)		169,888 [124,121 - 232,530]			152,213	n.a.
English Channel (mostly)	B	0,000	0.000	B	40,927 (0.38)	0.33
Celtic Shelf	A	36,280 (0.57)	0.18	P*	80,613 (0.50)	0.41
TOTAL		341,000 (0.14)			321,723 (0.15)	

*these areas differed slightly in shape and size between SCANS and SCANS-II

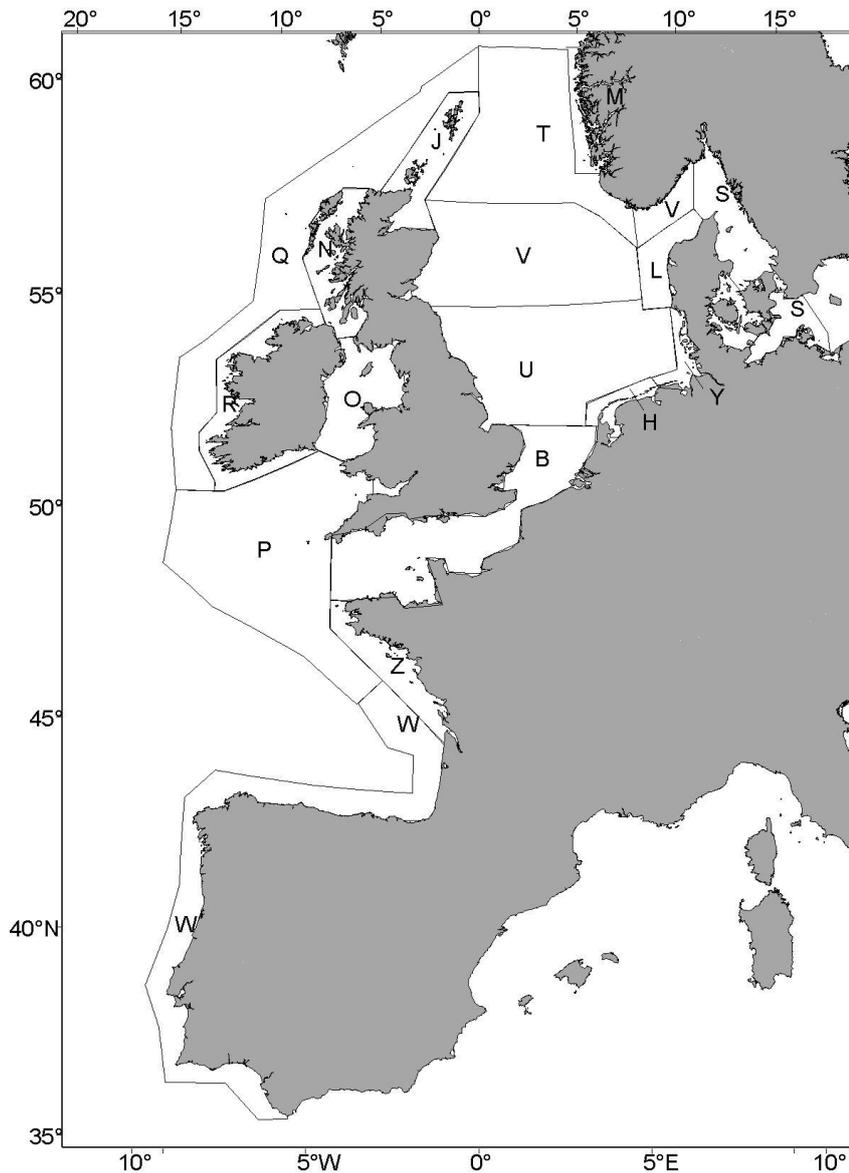


Figure 2: Survey blocks defined for the SCANS-II surveys. Those surveyed by ship were S, T, V, U, Q, P and W. The remaining blocks were surveyed from aircraft.

3.2 ACTUAL AND POTENTIAL ANTHROPOGENIC THREATS

In developing the Conservation Plan, it is important to evaluate the main threats that affect or could potentially affect harbour porpoises in the North Sea area (Fig.1, table 2). These were reviewed in for this Conservation Plan.

The primary focus of the Plan is on those threats that affect the status of the population, noting legitimate concerns that there may also be threats on the welfare of the individual animals.

It should be noted that some human activities (Table 2) may act cumulatively, and some threats may be caused by several human activities (alone or in combination).

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Table 2: Approximate distribution and scale of human uses in the North Sea in relation to the notional harbour porpoise sub-populations

+++ = major use, ++ = medium use, + = minor use.

	Northern North Sea	Central & southern North Sea	Western English Channel
Fishing	+++	+++	+++
Contaminant discharge	+	++	+
Shipping	+	+++	+++
Hydrocarbon exploration	+++	+++	
Sewage discharge	+	+++	+
Construction	+	+++	
Aquaculture	++	+	
Mineral extraction		++	
Recreation	+	+++	++
Military	+	+	+

Table 3 is a summary of the various threats to harbour porpoises in the North Sea, the evidence for them and a qualitative categorisation of the threat, along with some comments on mitigation measures. This information was then used to determine a series of actions (and their priority/time-frame) under the Conservation Plan.

While there is inevitably some overlap, the actions can be categorised as follows:

- (1) Research related to determining whether conservation objectives are being met (e.g. stock structure and distribution, abundance and trends, population modelling);
- (2) Research related to the scale of potential threats (this will include research on the biology/ecology of the animals as well as collection of information on the nature and extent of relevant anthropogenic activities, including underwater noise);
- (3) Assessing and monitoring levels of known threats (primarily bycatch in fishing gear)
- (4) Implementation of mitigation measures for known threats, including monitoring the implementation and collecting data to assess efficacy;
- (5) Evaluation of existing and development of new mitigation measures for identified threats.

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Table 3: Summary of information of actual and potential threats to harbour porpoises in the North Sea area

Actual/ Potential Threat	Anthropogenic activity/ies	Evidence	Possible impact (in many cases an educated guess)	Prioritisation for action	Actual/potential mitigation measures
Bycatch	Commercial and recreational gillnets, wreck nets, tangle nets, bottom trawls	Strong. Based on observer programmes, stranded animals. See estimates in Table 4	Potentially high especially in some areas, depends on scale of fishing activity	High (implementation of mitigation measures, collection of data, incorporation into modelling framework, improved knowledge of stock structure and movements)	In short-term at least, pingers are effective for certain fisheries but adequate monitoring of implementation and effectiveness essential. Further research is needed into their medium-long-term efficacy and ways to improve them, and provide time to develop better methods
Serious injury/death (not bycatch)	Ship strikes from commercial and recreational vessels	Weak. Indications could be obtained from strandings programmes, photographs	Not believed to be high but possibly localised e.g. in areas with a relative high calve percentage	Low (effort should be directed at research to determine extent in targeted areas)	Shipping lanes, speed restrictions and/or protected areas may be effective if need established and good information on geographical and temporal distribution known
Mechanical destruction of habitat	Bottom trawls, infrastructure construction, oil and gas development, gravel extraction	Known that damage is caused.	Direct effect on harbour porpoises probably v. low but see 'prey depletion'	Low	Restrict activities and/or change methods based on EIAs
Prey depletion	Overfishing, habitat degradation due to pollution, climate change	Many fish stocks depleted due to factors such as overfishing, habitat damage, and possibly climate change(but unknown)	Potentially a problem but insufficient knowledge of harbour porpoise feeding ecology or fish dynamics	Medium (effort directed at research on feeding ecology; co-operation with fishery biologists)	Effective fishery regulations based on good science

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Actual/ Potential Threat	Anthropogenic activity/ies	Evidence	Possible impact (in many cases an educated guess)	Prioritisation for action	Actual/potential mitigation measures
Acoustic pollution/harassment	Fishing vessels, general maritime traffic, acoustic harassment devices at fish farms, pingers, military activities, infrastructure construction, oil and gas development (including seismic surveys, explosions) recreational activities	Clear evidence that noise pollution is high and has increased in recent times due to a wide variety of human activity	Potentially a problem (could impede communication, affect distribution and hence feeding/reproduction) but lack of direct evidence of long-term impact on harbour porpoises	Medium (effort should be directed at better assessment of impact of various noise sources on harbour porpoises)	A number of mitigation measures have been proposed (e.g. for mitigating noise from pile driving for windfarms, seismic survey guidelines) but efficacy, especially for harbour porpoises unknown and needs evaluation. Cover in EIAs.
Chemical pollution	Terrestrial industrial development, terrestrial run-off harbours, ships, aquaculture, sewer discharges, aerial transport.	Clear evidence of chemical pollution within the North Sea	Some evidence certain pollutants may affect health status of harbour porpoises (increased susceptibility to infectious diseases). Quantitative evaluation not available	Medium (further effort at examining cause-effect relationships in a population dynamics framework)	A number of conventions deal with aspects of chemical pollution. Irrespective of scientific knowledge on effects on harbour porpoises, these must be implemented and efficacy monitored
Climate change	The global climate change is likely to increase the temperature of the North sea	Time series document increasing trend in North Sea temperature. Monitoring programs show increase of southern cetacean species	Increase d occurrence of new cetacean species can be unfavourable to porpoise due to competition for food or aggressive behaviour	Low (further effort to monitor northward shifts in distribution of cetaceans from warm temperate Atlantic)	A number of international and intergovernmental organisations and conventions are dealing with climate change and efforts to reduce increase in global temperature.

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Table 4: Summary of bycatch information for harbour porpoises. Figures in square brackets are 95% confidence intervals.

* Extrapolated from bycatch rates determined from observers 1987 – 2001. First estimate is based on fleet effort, second is based on landings as used by Vinther (1999). Bycatch is probably overestimated due to use of pingers in cod wreck fishery not being accounted for.

Greater Region	ICES area	Country	Main gear type	Target species	Size of fisheries	Estimation method	Year	Total reported bycatch	Estimated annual bycatch	Seasonal peaks	Source
Norwegian coastal North Sea waters	Vla	Norway	Bottom-set gillnets	Angler fish, cod, mixed fisheries		observed	2006	4	Not yet available		Bjørge 2007
Norwegian Skagerrak	IIIa	Norway	Bottom-set gillnets	Angler fish, cod, mixed fisheries		observed	2006	10	Not yet available		Bjørge 2007
Kat./IDW/ German Baltic	IIIa	Sweden	bottom trawls			fishermen interviews	2001	-	80	-	ASCOBANS 2004 Lunneryd <i>et al.</i> , 2004
			pelagic trawls	herring	1			11			
			trammel nets	lumpfish	1			8			
			gillnets	sole, cod, crab	6			70			
Skagerrak	IIIa	Sweden	gillnets, trammel nets, pelagic trawls	cod		fishermen interviews	2001	-	20	-	ASCOBANS, 2004 Lunneryd <i>et al.</i> , 2004
			bottom trawls					2	25	-	
North Sea	IV	UK	set nets	cod, skate, turbot, sole, monkfish, dogfish			1995 - 2002	-	439 [371-640]	-	ASCOBANS, 2004

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Greater Region	ICES area	Country	Main gear type	Target species	Size of fisheries	Estimation method	Year	Total reported bycatch	Estimated annual bycatch	Seasonal peaks	Source
Central & Southern North Sea	IV	Denmark	wreck nets, gillnets	cod, hake, turbot, plaice, sole	very large	observer program	1987 - 2002	-	5,817/ 5,591*	-	Vinther & Larsen, 2002
	IV b	Germany	gillnets	cod, turbot, sole, other demersal fish	small	observer program	2002 - 2003	-	25-30	-	Flores & Kock, 2003
	IVc	Belgium	gillnets gill + trammel nets	sole, plaice, cod		strandings	2003-2007	90		32 (2006)	ASCOBANS, 2004; Haelters & Kerckhof 2005, Haelters & Camphuysen 2009
	IVc	Netherlands	gillnets	unknown	unknown	strandings	2003 & 2004	-	100	-	Reijnders, 2005; García Hartman, <i>et al.</i> , 2004
Celtic Shelf (incl. Channel)	VII e, f	UK	gillnets	hake	medium	Observer program	August 1992 – March 1994	28	740 [383-1097]	March - May	Tregenza <i>et al.</i> , 1997
			tangle nets wreck nets gill + tangle nets	hake and other white fish			2005 / 2006	1	453 / 728		
	VII g, h, j, k	Ireland	gillnets, wreck and tangle nets gill + tangle nets		Big		2005-2007	14	1497 [566-2428]		ICES, 2008
			Gillnets, tangle nets, trammel nets	Monkfish			1992 – 1993	-	350		
VII e, h	France						0		-	Morizur <i>et al.</i> , 1996	

4 SUMMARY OF ACTIONS

In addition to some specific actions, there are some important general considerations that require elucidation.

4.1.1 DEALING WITH INADEQUATE DATA

Ideally, all conservation plans and associated management actions should be based on full and adequate scientific data. However, there are occasions when the potential conservation consequences of waiting for confirmatory scientific evidence may mean that it is better to take action immediately whilst collecting the necessary information. This has become known as following the “Precautionary Principle”. However, application of the precautionary principle must be carefully considered and adequately justified.

One of the main challenges encountered in the process of developing this initial version of the Conservation Plan has been that a lack of data, both with respect to:

- (1) the target species (e.g. stock structure, movements and feeding ecology); and
- (2) human activities and their actual/potential impact at different levels (e.g. adequate data on “effort / scale” of certain human activities; adequate data on the effect(s) on the species).

An important part of the development of this Conservation Plan has been to identify the major information gaps that need to be filled in order to improve recommended conservation measures. Consequently, the actions include a number of research and monitoring actions aimed at obtaining the necessary baseline information for the establishment of adequate scientifically-based management actions.

4.1.2 MONITORING

Establishing the necessary baseline information as a scientific reference for conservation actions is only the first step towards effective conservation. Once this is achieved, monitoring (of the species concerned, threats due to human activities, implementation of mitigation measures and effectiveness of those measures) **must** be seen as an integral and essential part of management, not an optional extra (as stressed by e.g. Donovan, 2005). Monitoring is required in order to obtain information on trends in the conservation status of harbour porpoises and to examine the effectiveness of the management actions and if necessary adjust them to achieve our established conservation aims. As stated by the European Union’s Habitats Directive (Article 12(4): “Member States shall establish a system to monitor the incidental capture and killing of the animal species listed in Annex IV (a). In the light of the information gathered, Member States shall take further research or conservation measures as required to ensure that incidental capture and killing does not have a significant negative impact on the species concerned”.

4.1.3 LIFE OF THE CONSERVATION PLAN

No conservation plan should be regarded as a definitive and unalterable document. It is rather a document that covers a temporal phase within the framework of the efforts for the conservation of a species, and therefore needs to be reviewed periodically to adjust the actions to the diverse changes that can occur, either in response to the results of the monitoring of the conservation plan actions themselves or to changing external factors.

4.1.4 IMPLEMENTATION OF THE CONSERVATION PLAN; CO-ORDINATION, INVOLVEMENT OF STAKEHOLDERS

Experience has shown that in order to be effective, Conservation Plans must have a recognised, full-time co-ordinator. This is particularly true where effective conservation requires action (including legislative action) by a number of stakeholders including: intergovernmental and national authorities, scientist from several disciplines, representatives from industry, local communities, and interested NGOs. The scale of work required by this Plan exceeds the resources available within the (part-time) ASCOBANS Secretariat. Ideally, the co-ordinator should have a scientific and management background and be an effective communicator to the various stakeholders. The importance of actively involving stakeholders, especially those whose livelihoods may be affected (e.g. fishermen), cannot be overemphasised. The co-ordinator should report to a Steering Committee appointed with close collaboration between ASCOBANS, the North Sea RAC (Regional Advisory Council), the EU, Norway and other appropriate authorities.

While measures to control and reduce pressures and impacts on the marine environment do exist on a national and European level, they have been developed in a sector by sector approach resulting in a patchwork of policies, legislation, programmes and actions plans at national, regional, EU and international level. It is necessary to encourage North Sea Member States to harmonise their national efforts to ensure that the Conservation Plan is implemented.

Amongst other things, the Co-ordinator/Steering Committee would be asked to:

- promote and coordinate the implementation of the Conservation Plan (including investigating funding) with particular attention paid to affected stakeholders;
- gather information on its implementation, the results obtained, the objectives reached, and the difficulties encountered;
- communicate this information to the general public through regular reporting in an accessible format;
- appoint a group of experts to evaluate the effectiveness of the Conservation Plan every three years and to update it. The conclusions of this group should be made public.

Finally, it has to be stressed that a Conservation Plan will be useless if sufficient funding is not found. At the very least, sufficient funds must be made available for the appointment of a co-ordinator and the functioning of the Steering Group at the earliest opportunity.

4.1.5 EXECUTIVE SUMMARY OF THE ACTIONS

As noted above, the Conservation Plan will be useless without appropriate co-ordination and support. This is the focus of

Action 1 implementation of the Conservation Plan: co-ordinator and Steering Committee.

Table 3 summarises the present state of knowledge of actual and potential threats to harbour porpoises in the North Sea. It is clear from that table that the highest priority must be given to the question of **bycatch**. For that reason the majority of Actions focus on aspects of that problem ranging from:

Management (and related monitoring) actions

Action 2: implementation of existing regulations on bycatch of cetaceans;

Action 3: establishment of bycatch observation programmes on small vessel (<15m) and recreational fisheries;

Action 4: regular evaluation of all relevant fisheries with respect to extent of porpoise bycatch;

Action 9: collection of incidental catch data through stranding networks in the region;

Mitigation measure research Action

Action 5: review of current pingers, development of alternative pingers and gear modifications;

Scientific actions essential for providing adequate management advice

Action 6: finalise a management procedure approach for determining maximum allowable anthropogenic removals in the region;

Action 7: monitoring trends in distribution and abundance of harbour porpoises in the region;

Action 8: review of the stock structure of harbour porpoises in the region;

Of course, Actions 6-8 are relevant to all anthropogenic activities.

As shown in Table 3, our level of knowledge on the effects of **other anthropogenic activities** on harbour porpoises is limited. Before discussing specific actions aimed at improving our knowledge of these, it is worth emphasising that for certain potential threats, it is clear that at best the activities will be neutral and more likely negative; in such cases there is no reason for management action not to be taken before our knowledge of effects on harbour porpoises improves. It is therefore **strongly recommended** that existing legislation and agreements with respect to e.g. chemical pollution and climate change are implemented effectively. It is also clear that effective fisheries management based on sound science is essential.

That being said, there are a number of research actions aimed at improving our understanding of potential threats to harbour porpoises within the region:

Action 10: investigation of the health, nutritional status and diet of harbour porpoises in the region;

Action 11: investigation of the effects of anthropogenic sounds on harbour porpoises

Action 12: collection and archiving of data on anthropogenic activities and development of a North Sea-wide GIS based database

5 ACTIONS

The Actions are provided below, with each action beginning on a new page. At present no costs are associated with these actions but they will undoubtedly be expensive. One of the first tasks for the Co-ordinator/Steering Committee will be to develop detailed specifications for each action and where appropriate, assign costings and likely sources of funding

ACTION 1: IMPLEMENTATION OF THE CONSERVATION PLAN: CO-ORDINATOR AND STEERING COMMITTEE

Management Action

Priority: HIGH

SPECIFIC OBJECTIVES

To ensure that timely progress is made with respect to the overall implementation of the Conservation Plan and the specific actions included therein, and to provide progress reports for appropriate bodies including ASCOBANS, the North Sea RAC (Regional Advisory Council) and the EU.

RATIONALE

This Conservation Plan is complex and for it to be effective it will require considerable co-ordination and the development of detailed workplans for the individual Actions. In particular, its success is dependent on a large number of stakeholders and a broad range of areas of expertise. Without a full-time co-ordinator to support a larger Steering Committee it is highly unlikely that the Conservation Plan will be successfully implemented.

TARGET

Appointment of a Steering Committee for the Conservation Plan and the appointment of a suitably qualified full-time co-ordinator (needs a conservation science background) for the Conservation Plan (with an appropriate budget)

TASKS

- Document and collate existing international and national regulations and guidelines that are relevant to the conservation and management of harbour porpoises in the North Sea and to provide this collation to all stakeholders.
- To promote and explain the Conservation Plan to relevant stakeholders, including:
 - International and supranational bodies
 - Range states
 - Appropriate industry representatives incl. fisheries, hydrocarbon exploration, shipping etc
 - Appropriate local authorities
 - NGOs
- To develop mechanisms to ensure that the Actions given in the Conservation Plan are implemented including the organisation of scientific workshops
- To make a recommendation for the evolution of some EU fishery regulations: data collection regulation, electronic logbooks, etc. in order to get the most appropriate data from effective fishing effort
- To co-ordinate the collection of and collation of appropriate data on anthropogenic activities in a format that will facilitate its use in a GIS context
- To manage the Conservation Plan Fund
- To develop progress reports on the implementation
- To arrange for periodic reviews of the Conservation Plan

ACTORS

- **responsible for co-ordination of the Action:** ASCOBANS, with the North Sea RAC (Regional Advisory Council) and the EU, to appoint the Steering Committee for the Conservation Plan; the Steering Committee to appoint the co-ordinator
- **stakeholders:** as listed above under 'Tasks'

ACTION EVALUATION

- ASCOBANS, with the North Sea RAC (Regional Advisory Council) and the EU
- Regular (e.g. biennial or triennial) meetings open to stakeholders

PRIORITY

- Importance: essential
- Feasibility: high if political will is there

ACTION 2: IMPLEMENTATION OF EXISTING REGULATIONS ON BYCATCH OF CETACEANS

Management Action

Priority: HIGH

SHORT DESCRIPTION OF ACTION

- **specific objective:** implementing existing regulations appropriately (e.g. Habitats Directive, EU Regulation 812/2004)
- **specific threats to be mitigated:** bycatch
- **rationale:** while legislation exists (EU Fisheries Regulations) the overall level of implementation and effectiveness is unclear
- **target:** to ensure that existing regulations with respect to bycatch reduction measures are being effectively implemented and to collect data on their efficacy in reducing bycatch
- **method:**
 - through a scientifically designed and flexible observer scheme and review of existing schemes, and development and testing of reliable mitigation devices/methods.

It is apparent that Regulation 812/2004 is not fully serving its purpose in certain areas/fisheries. A flexible implementation with the objective of minimising small cetacean bycatch would better serve harbour porpoise conservation.
 - consider how certification schemes could enhance the commercial value of fish caught with techniques that avoid harbour porpoise bycatch.
- **implementation-timeline:** immediate

ACTORS

- **responsible for co-ordination of action:** Parties to ASCOBANS/ Range States; EU
- **stakeholders:** Affected fishing fleets; co-ordinator/steering committee of CP

ACTION EVALUATION

- Co-ordinator/Steering Committee of Conservation Plan
- analyses by the ASCOBANS Advisory Committee (AC) of Parties' reporting to EU

PRIORITY

- importance: high
- feasibility: high

ACTION 3: ESTABLISHMENT OF BYCATCH OBSERVATION PROGRAMMES ON SMALL VESSEL (<15M) AND RECREATIONAL FISHERIES

Management Action

Priority: HIGH

DESCRIPTION OF ACTION

- **specific objective:** address bycatch in fisheries in small vessel fisheries
- **specific threats to be mitigated:** bycatch
- **rationale:** while some aspects of EU Regulation 812/2004 applies to small vessel fisheries in the North Sea, there are particular difficulties in observing operations and applying any necessary mitigation in these fisheries. Similar difficulties are associated with “recreational fisheries”.
- **target:** to further develop methods to observe and mitigate bycatch (including implementation monitoring) in small vessel fisheries.
- **method:**
 - further develop and implement a scientifically robust system for remote monitoring on vessels where placing onboard of observers is not feasible
 - develop a system involving small vessel fishermen to maximise the reporting/delivery of bycaught porpoises
 - collect effort data on recreational fisheries (e.g. number, length, soak time of nets), seek information on bycatch, and determine and apply appropriate mitigation techniques
- **implementation-timeline:** 2008-2010

ACTORS

- **responsible for co-ordination of action:** Range States/Parties to ASCOBANS (will need scientific and legal advice; consultation with fishermen)
- **stakeholders:** affected Fishing Fleets; co-ordinator/steering committee of CP

ACTION EVALUATION

- Co-ordinator/Steering Committee of Conservation Plan
- analyses by the ASCOBANS Advisory Committee (AC) of Parties’ reporting to EU

PRIORITY

- importance: high
- feasibility: high

ACTION 4: REGULAR EVALUATION OF ALL FISHERIES WITH RESPECT TO EXTENT OF HARBOUR PORPOISE BYCATCH

Management Action

Priority: HIGH

DESCRIPTION OF ACTION

- **specific objective:** evaluate bycatch levels in all relevant fisheries
- **specific threats to be mitigated:** bycatch
- **rationale:** although mitigation measures are in place for some fisheries, it is essential to assess, at regular intervals, whether those measures are achieving the desired goals or require adjustment
- **target:** to estimate levels of bycatch of harbour porpoises in the North Sea at regular intervals to enable mitigation measures to be reviewed and if necessary modified
- **method:** analyse data provided by Range States/Parties from observer schemes and elsewhere (e.g. from strandings, see Action 9) on bycatch and fishery data and incorporate this into a population dynamics modelling framework
- **implementation-timeline:** immediate, and at intervals of 3-5 years

ACTORS

- **responsible for co-ordination of action:** Range States/Parties to ASCOBANS (will need scientific advice)
- **stakeholders:** affected fishing fleets; fishery bodies; co-ordinator/steering committee of CP

ACTION EVALUATION

- Co-ordinator/Steering Committee of Conservation Plan
- analyses by the ASCOBANS Advisory Committee (AC) of Parties' reporting to EU

PRIORITY

- importance: high
- feasibility: high/medium

ACTION 5: REVIEW OF CURRENT PINGERS, DEVELOPMENT OF ALTERNATIVE PINGERS AND GEAR MODIFICATIONS

Research Action

Priority: HIGH

DESCRIPTION OF ACTION

- **specific objective:**
 - review and as appropriate address uncertainties on (long term) efficacy and potential impact of conventional pingers on porpoises
 - develop new fishing gear and/or practices less likely to resulting in porpoise bycatch
- **specific threats to be mitigated:**

potential adverse effects of conventional pingers on porpoises (including exclusion from habitat, habituation)
- **rationale:**
 - concerns have been expressed about the long-term effectiveness of existing pingers to reduce bycatch and their potential effects on the animals themselves and their habitat
 - concerns have also been expressed by the industry as to costs
 - it is timely to review the available data on pingers which are now widely used and to consider modifications as appropriate (including economic considerations)
 - other mitigation measures such as changes in fishing gear and practices should be investigated
- **target:** more universal acceptance by all stakeholders (and hence better implementation) of mitigation measures to reduce harbour porpoise bycatch
- **method:**
 - a full review of the use of existing information (from the viewpoint of reducing bycatch, effects on animals and practicality and cost to fishermen) initially via a specialist workshop including biologists, gear technologists and appropriate stakeholders
 - development and research evaluation of new pinger-related technology and deployment (e.g. interactive pingers, less pingers per length of net) and alternative porpoise alerting passive and active devices
 - further development and research evaluation of changes in fishing practices and/or fishing gear to reduce harbour porpoise bycatch
 - development and undertaking of appropriate field trials
 - recommendations for implementation where appropriate
- **implementation-timeline:** workshop in early 2010, research programmes ongoing

ACTORS

- **responsible for co-ordination of action:** co-ordinator/steering committee of CP, Parties to ASCOBANS/other Range States, EU-member States (will need input from biologists, gear technologists and other specialists)
- **stakeholders:** fishing industry, fisheries authorities, research institutes, legislators

ACTION EVALUATION

- Co-ordinator/Steering Committee of Conservation Plan
- analyses by the ASCOBANS Advisory Committee (AC)

PRIORITY

- importance: high
- feasibility: medium

ACTION 6: FINALISE A MANAGEMENT PROCEDURE APPROACH FOR DETERMINING MAXIMUM ALLOWABLE BYCATCH LIMITS IN THE REGION

Research and Management Action

Priority: HIGH

SHORT DESCRIPTION OF ACTION

- **specific objective:** to meet the agreed objectives of ASCOBANS in relation to bycatch (Resolution 5, MoP5)
- **specific threats to be mitigated:** bycatch
- **rationale:** it is important that the conservation goals for the harbour porpoise are examined in the context of a management procedure context that takes uncertainty into account
- **target:** to finalise a population dynamics modelling framework for evaluating the effect of bycatches (and other anthropogenic activities) on harbour porpoises in the North Sea that anthropogenic activities do not prevent agreed conservation goals being met
- **method:** building upon the advances made by the IWC/ASCOBANS working group, the ICES/SGBYC and the SCANS II project and the recommendations therein and other Actions (2, 3, 4, 7) of this plan including: agreement of operational management objectives by policymakers; finalisation and scientific implementation of a management procedure by scientists; agreement by policymakers to develop and implement management advice based on the results of the management procedure
- **implementation-timeline:** begin immediately with aim for completion by 2010

ACTORS

- **responsible for co-ordination of action:** Range States/Parties to ASCOBANS/EU
- **stakeholders:** policymakers; co-ordinator/steering committee of CP; scientists incl. joint ASCOBANS/IWC Scientific working group

ACTION EVALUATION

- Co-ordinator/Steering Committee of Conservation Plan
- joint ASCOBANS/IWC Scientific working group

PRIORITY

- importance: high
- feasibility: high

ACTION 7: MONITORING TRENDS IN DISTRIBUTION AND ABUNDANCE OF HARBOUR PORPOISES IN THE REGION

Research Action

Priority: HIGH

SHORT DESCRIPTION OF ACTION

- **specific objective:** to monitor whether the management actions of the Conservation Plan are meeting the management objectives with respect to abundance and distribution
- **specific threats to be mitigated:** the combined effects of anthropogenic activities
- **rationale:** without monitoring it is impossible to evaluate the success or otherwise of the Conservation Plan and to determine whether modifications are needed
- **target:** to provide regular information on the abundance and distribution of harbour porpoises in the region as input into the management procedure approach discussed under Action 6 , to provide information relevant to evaluating mitigation measures including a comparison of the relative distribution of animals with anthropogenic activity (see Action 7)
- **method:** build upon the advances made by the SCANS II project and the recommendations therein to develop an agreed monitoring programme (involving one or more scientific workshops) and to implement it
- **implementation-timeline:** begin immediately with aim for completion of the design of the programme by 2010 after which it is implemented

ACTORS

- **responsible for co-ordination of action:** Range States/Parties to ASCOBANS
- **stakeholders:** scientists especially those involved in the monitoring component of SCANS II, policymakers; co-ordinator/steering committee of CP

ACTION EVALUATION

- Co-ordinator/Steering Committee of Conservation Plan
- ASCOBANS scientific working group

PRIORITY

- importance: high
- feasibility: high

ACTION 8: REVIEW OF THE STOCK STRUCTURE OF HARBOUR PORPOISES IN THE REGION

Research Action

Priority: HIGH

SHORT DESCRIPTION OF ACTION

- **specific objective:** to review stock structure and movements of harbour porpoises in the region
- **specific threats to be mitigated:** essential information to be able to evaluate threats caused by anthropogenic activities
- **rationale:** such information is fundamental to the management procedure approach outlined in Action 6
- **target:** to provide information on the stock structure and movements of harbour porpoises in the region that can be used in the management procedure
- **method:** to fully review the available data (from a suite of techniques including, genetics, telemetry, distribution, bycatches) and to provide appropriate information on plausible hypotheses for use in the management procedure and, if needed, to suggest research to reduce uncertainty (via a scientific workshop)
- **implementation-timeline:** to be completed in time for use by scientists in the management procedure

ACTORS

- **responsible for co-ordination of action:** Range States/Parties to ASCOBANS; Co-ordinator/Steering Committee of Conservation Plan
- **stakeholders:** scientists

ACTION EVALUATION

- Co-ordinator/Steering Committee of Conservation Plan
- ASCOBANS scientific working group

PRIORITY

- importance: high
- feasibility: high

ACTION 9: COLLECTION OF INCIDENTAL PORPOISE CATCH DATA THROUGH STRANDING NETWORKS

Research Action

Priority: MEDIUM

DESCRIPTION OF ACTION

- **specific objective:** evaluate bycatch levels in all fisheries
- **specific threats to be mitigated:** bycatch
- **rationale:** stranded animals can provide, *inter alia*, an important additional source of information (to observer schemes) to investigate whether porpoise bycatch occurs as well as other forms of anthropogenic mortality (see Action 11)
- **target:** provide qualitative information on bycatch occurrence and an assessment of minimum number of annually bycaught porpoises
- **method:** regularly carry out full necropsies on all stranded porpoises for evidence of bycatch, ideally using an agreed protocol; in addition: data gathered along North Sea shores should be put together (n^o of strandings/month/area, n^o of bycatches/month/area)
- **implementation-timeline:** immediate and ongoing, with input into the regular reviews of the incidence of bycatch given under Action 4

ACTORS

- **responsible for co-ordination of action:** co-ordinator/steering committee of CP, Range States/Parties to ASCOBANS (will need scientific , especially veterinary, advice)
- **stakeholders:** fisheries authorities, experienced pathologists

ACTION EVALUATION

- Co-ordinator/Steering Committee of Conservation Plan
- analyses by the ASCOBANS Advisory Committee (AC)

PRIORITY

- importance: medium
- feasibility: high

ACTION 10: INVESTIGATION OF THE HEALTH, NUTRITIONAL STATUS AND DIET OF HARBOUR PORPOISES IN THE REGION

Research Action

Priority: MEDIUM

DESCRIPTION OF ACTION

- **specific objectives:** to collect fundamental information the question of of human activities (other than bycatch) including contaminants, sewage and debris discharge, noise, presence, fishing (via competition for resources) for input into population dynamics modelling
- **specific threats to be mitigated:** this addresses one aspect of to contribute to our ability to avoid cumulative and synergistic adverse effects of human activities on the health and nutritional status of porpoises and thus the viability of harbour porpoises in the region
- **rationale:** Our knowledge of the qualitative and quantitative effects on porpoises of a range of human activities is incomplete. This action is designed to improve this situation by collecting information on health status (by toxicological and pathological investigations) and nutritional status (by examining their diet)
- **target:** to obtain good quality data on health parameters and the diet of porpoise populations in the area of application of the CP
- **method:** retrieving stranded and bycaught porpoises and:
 - performing full necropsies and general pathology to assess general health (incl. condition) of a representative sample (sex, age) of the retrieved animals
 - collecting inner ears and assessing acoustic trauma in connection with tissue examination for acoustic impact (see Jepson *et al.* 2002, for methodology)
note: this matter proves to be very complex and results are not promising; however, it is still worthwhile to be pursued
 - collecting, archiving and analysing representative samples of porpoise tissues for relevant contaminants (including concentrations and biomarkers for exposure and effect); for methods see IWC-POLLUTION2000+ Programme (Reijnders *et al.* 1999).
 - collecting stomach and intestine contents, and tissue samples for fatty acid and stable isotope analyses, to investigate diet
 - collecting tissue samples for further analyses on immune- and bacteriological parameters
 - assessing parasitic infestation
- **implementation-timeline:** ongoing with a regular (every 3-5 years) review of results

ACTORS

- **responsible for co-ordination of action:** co-ordinator/steering committee of CP, Range States/Parties to ASCOBANS (will need scientific input)

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- **stakeholders:** scientists from research institutes with experience in tissue and data collection from stranded and bycaught porpoises, scientists with experience in marine mammal toxicological, pathological (incl. acoustical), immunological, parasitological, bacteriological examinations and diet analyses on marine mammals.

ACTION EVALUATION

- Co-ordinator/Steering Committee of Conservation Plan
- analyses by the ASCOBANS Advisory Committee (AC)
- regular reporting by the relevant research institutes/strandings schemes

PRIORITY

- importance: medium
- feasibility: medium

ACTION 11: INVESTIGATION OF THE EFFECTS OF ANTHROPOGENIC SOUNDS ON HARBOUR PORPOISES

Research Action

Priority: MEDIUM

DESCRIPTION OF ACTION

- **specific objectives:** to collect fundamental information on the effects of anthropogenic sounds on harbour porpoises
- **specific threats to be mitigated:** acoustic pollution
- **rationale:** a wide variety of anthropogenic activities introduce sound into the marine environment (e.g. vessels of all kinds, construction and operation of windfarms, general construction works, hydrocarbon exploration, military activities, pingers, acoustic harassment devices) yet we are still unsure of the actual or potential effects of such sounds on harbour porpoises in the short-term or long-term; it is essential to obtain a
- **target:** to obtain good quality data on the acoustic capabilities of harbour porpoises and relate this to 1) the acoustic properties of anthropogenic sounds (also see Action 12), and 2) the most relevant information on the effects of noise on porpoises
- **method:**
 - review/collect data on the acoustic properties of the variety of anthropogenic sound sources in the North Sea
 - review and if necessary obtain further data on the acoustic capabilities of harbour porpoises (incl. playback experiments where appropriate)
 - review work on the 'dose-based approach' to examining the effects of sound on cetaceans (including how to compute and how to interpret)
 - review effectiveness or otherwise of potential mitigation measures for various anthropogenic sound sources
- **implementation-timeline:** ongoing with a regular (every 3-5 years) review of results

ACTORS

- **responsible for co-ordination of action:** co-ordinator/steering committee of CP,
- **stakeholders:** harbour porpoise scientists; acoustics experts from industry

ACTION EVALUATION

- Co-ordinator/Steering Committee of Conservation Plan
- analyses by the ASCOBANS Advisory Committee (AC)

PRIORITY

- importance: medium
- feasibility: medium

ACTION 12: COLLECTION AND ARCHIVING OF DATA ON ANTHROPOGENIC ACTIVITIES AND DEVELOPMENT OF A GIS

Research action

Priority: MEDIUM

DESCRIPTION OF ACTION

- **specific objectives:** to collect fundamental information on anthropogenic activities that may affect harbour porpoises in the region
- **specific threats to be mitigated:** will provide information relevant to all actual and potential threats
- **rationale:** a wide variety of anthropogenic activities occur in the North Sea region that may potentially affect harbour porpoises; it is necessary to be able to determine the occurrence and temporal/geographical distribution of these and any changes over time to be able to (a) compare these with the distribution of the animals to determine potential problem areas; (b) to have baseline information to compare if changes in harbour porpoise abundance and distribution are observed via Action 7
- **target:** to obtain data on relevant anthropogenic activities in the North Sea over time in a format suitable for incorporating into a GIS (along with data from Action 7)
- **method:**
 - review available sources of data on anthropogenic activities and determine their suitability for incorporation into a database or meta-database and GIS
 - identify information important gaps and possible ways to fill them
- **implementation-timeline:** ongoing

ACTORS

- **responsible for co-ordination of action:** co-ordinator/steering committee of CP,
- **stakeholders:** relevant stakeholders with information on anthropogenic activities

ACTION EVALUATION

- Co-ordinator/Steering Committee of Conservation Plan
- analyses by the ASCOBANS Advisory Committee (AC)

PRIORITY

- importance: medium
- feasibility: medium

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