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¹ PU: Public, PP: Restricted to other programme participants (including the Commission Services), RE: Restricted to a group specified by the consortium (including the Commission Services), CO: Confidential, only for members of the consortium (including the Commission Services)

² The initials of the revising individual in capital letters.

Executive summary

EcoFishMan has the aim to develop and implement a Responsive Fisheries Management System (RFMS) in case fisheries, but an important component of RFMS is reversing the burden of proof and placing increased responsibility for compliance, documentation and monitoring on resource users. This means that resource users will be required to provide some key documents for assessing the success of the MP. The resource users are in most cases fishermen and it is therefore important to provide a precise and clear description on how documentation shall be done and to make sure that they are accepted by government and resource users.

This document demonstrates how certified documentation systems have been established for the case studies in the EcoFishMan project. The project participants had hoped in the beginning of the project that it would be possible to develop a generic documentation system that could apply to all possible fisheries. It though soon became evident that the certified documentation systems would have to be tailor made for each case study. The documentation systems demonstrated in this document can however be used as reference when developing such systems for other fisheries under RFMS.

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1 Introduction

The aim of this document is to provide detailed instructions on how documentation, related to established outcome targets (OTs), in each of the case studies in EcoFishMan shall be collected. A Management Plan (MP) will be developed for each case study in the project and as a part of the MPs a number of documents/data will be required to monitor success.

EcoFishMan has the aim to develop and implement a Responsive Fisheries Management System (RFMS) in case fisheries, but an important component of RFMS is reversing the burden of proof and placing increased responsibility for compliance, documentation and monitoring on resource users. This means that resource users will be required to provide some key documents for assessing the success of the MP. The resource users are in most cases fishermen and it is therefore important to provide a precise and clear description on how documentation shall be done and to make sure that they are accepted by government and resource users.

A MP is a contract between the “Authority” (usually government/ministry of fisheries) and the “Operator” (resource user). In the MPs a number of OTs have been set, harvest strategy agreed upon, as well as monitoring, compliance and sanctions defined.

According to the EcoFishMan Description of Work (DoW) this D5.1 should have been finalised in month 13 (April 2012). It though became evident that establishing a certified documentation system for the case studies is a work that would progress as the project went along and it would not be possible to develop a generic documentation system that could apply to all possible fisheries. The certified documentation systems would have to be tailor made for each case study and could therefore not possibly be determined for each case study until the MPs had been finalised. This deliverable was therefore updated as the project progressed i.e. for each iteration in the spiral development model (as explained in the DoW), but a new and improved version of the RFMS was developed in each iteration. This is the fourth and final version.

2 The Icelandic lumpfish fishery

The first prototype of the RFMS was tested in just one case study i.e. case study 1 – The Icelandic mixed demersal fishery. It was decided to start with a simple “best scenario” fishery and a subsection of the Icelandic mixed demersal fishery was therefore selected i.e. the Icelandic lumpfish fishery.

The Icelandic lumpfish fishery is a simple case that already possesses elements of co-management. Documentation is therefore already in good order within the fishery, but the RFMS nevertheless needed to add further to the data collection. Following is a certified documentation system for the Icelandic lumpfish fishery.

2.1 Documentation of responsibilities

The following documentation and who are responsible for providing them has been identified in MP1 for the Icelandic lumpfish fishery:

1. Lumpfish licences are issued by The National Association of Small Boat Owners (NASBO) and will be available online at an open web-page,
2. Representatives of NASBO will make unscheduled visits on-board vessels to make sure that all requirements are being met.
3. NASBO will update daily on an open web-page how many days have been used by each vessel
4. NASBO will update weekly on an open web-page data from logbooks
5. NASBO will use data from processors to double check logbooks and to gather data that can possibly later provide information that can be used to assist in stock assessment.
6. NASBO will keep Vessel Monitoring System (VMS) data that includes a track of where nets were laid. This will be considered privileged information which will not be made publically available.
7. NASBO will hire the Marine Research Institute (MRI) to provide the current biomass index and recommend Total Allowable Catches (TAC), as is presently being done. Data for the assessment is collected in MRIs groundfish survey's, which means that the data collection is being done in association with other work of MRI. NASBO does therefore only have to hire MRI to analyse the data.

2.2 Lumpfish licenses

Vessel owners will apply to NASBO for licences. Only vessels in position of licenses to fish for lumpfish in 2012 are eligible to apply. Vessels applying for lumpfish licenses must be no more than 15 (Gross Tonnage (GT)). Only one license is allowed for each vessel, specifying license number, vessel name & number, GT, area & time frame where license applies to (number of licenses per area subjected to requirements set in MP1, Table 8), number of nets and days allowed. The licenses will be made publically available on-line at a web-page hosted by NASBO. Day of setting the nets for the first time and associated expiration date of the license will be added to the on-line license. The licenses will be purely web-based and presented as follows:

License no	Vessel name & number	GT	Area & time-frame	No. Nets allowed	Days allowed	First day of fishing	Last day of fishing
1	Bót HF 81 (2782)	8,42	Area A valid 04.04.2012 - 23.05.2012	200	50	5.4.2012	25.5.2012
2	Jói Brands GK 517 (6991)	8,72	Area A valid 05.04.2012 - 04.05.2012	200	50	6.4.2012	26.5.2012
3	Guðbjörg Kristín KÓ 6 (1765)	8,28	Area A valid 07.04.2012 - 26.05.2012	200	50	7.4.2012	27.5.2012
4	Leifi AK 2 (6976)	7,23	Area A valid 07.04.2012 - 26.05.2012	200	50	8.4.2012	28.5.2012
5	Óskar AK 130 (7120)	5,19	Area A valid 07.04.2012 - 26.05.2012	200	50	9.4.2012	29.5.2012
6	Jakob Leó RE 174 (6823)	5,06	Area A valid 07.04.2012 - 26.05.2012	200	50	10.4.2012	30.5.2012
7	Ver AK 27 (1764)	14,78	Area A valid 09.04.2012 - 28.05.2012	300	50	11.4.2012	31.5.2012
8	Bjargfugl RE 55 (6474)	7,00	Area A valid 09.04.2012 - 28.05.2012	200	50	12.4.2012	1.6.2012
9	Siggi Afi HU 122 (2716)	5,94	Area A valid 09.04.2012 - 28.05.2012	200	50	13.4.2012	2.6.2012
10	Sigrún AK 71 (2495)	8,33	Area A valid 10.04.2012 - 28.05.2012	200	50	14.4.2012	3.6.2012
11	Vöttur RE 250 (1733)	11,87	Area A valid 11.04.2012 - 28.05.2012	300	50	15.4.2012	4.6.2012
12	Máni AK 73 (6824)	6,95	Area A valid 12.04.2012 - 28.05.2012	200	50	16.4.2012	5.6.2012
13	Sæmi AK 13 (6627)	4,11	Area A valid 13.04.2012 - 28.05.2012	200	50	17.4.2012	6.6.2012
14	Ási RE 52 (5843)	3,88	Area A valid 15.03.2012 - 01.05.2012	200	50	15.3.2012	4.5.2012
15	Reynir Þór SH 140 (7243)	14,30	Area A valid 15.03.2012 - 03.05.2012	300	50	15.3.2012	4.5.2012
16	Bóti HF 84 (2579)	13,90	Area A valid 15.03.2012 - 03.05.2012	300	50	15.3.2012	4.5.2012
17	Jón Pétur RE 411 (2033)	13,42	Area A valid 15.03.2012 - 03.05.2012	300	50	15.3.2012	4.5.2012
18	Kvika SH 23 (2145)	10,76	Area A valid 15.03.2012 - 03.05.2012	300	50	15.3.2012	4.5.2012
19	Vala HF 5 (6982)	9,16	Area A valid 15.03.2012 - 03.05.2012	200	50	15.3.2012	4.5.2012
20	Kiddi RE 89 (2488)	8,70	Area A valid 15.03.2012 - 03.05.2012	200	50	15.3.2012	4.5.2012
21	Már RE 87 (7011)	5,07	Area A valid 15.03.2012 - 03.05.2012	200	50	15.3.2012	4.5.2012
22	Gári AK 5 (5890)	4,12	Area A valid 15.03.2012 - 03.05.2012	200	50	15.3.2012	4.5.2012
23	Lennon AK 18 (6804)	4,96	Area A valid 15.03.2012 - 30.04.2012	200	50	15.3.2012	4.5.2012
24	Úlfur AK 25 (6957)	5,03	Area A valid 16.03.2012 - 04.05.2012	200	50	16.3.2012	5.5.2012
25	Sindri RE 46 (1500)	11,49	Area A valid 21.04.2012 - 28.05.2012	300	50	24.4.2012	13.6.2012

Issuing of a license will cost 22.000 IKR, which will cover NASBOs cost of issuing the license, presenting it on the web-page and updating the information.

2.3 Inspections by NASBOs representatives

Representatives of NASBO will make unscheduled visits on-board vessels to make sure that all requirements are being met. They will fill out the following form.

<u>Form for inspections on-board lumpfish vessels</u>	
Date	_____
Harbour	_____
Inspection performed by	_____
Vessel name	_____
Vessel no	_____
license no	_____
Crewmembers No	_____
Crewmembers name and position	_____
When was first day of fishing	_____
Size of nets	_____
How many nets	_____
Is marking on boyes in order	_____
Is logbook correctly filled out	_____
Is VMS system working correctly	_____
Other	_____
Signature of inspector and captain	_____ _____

2.6 VMS data

NASBO will receive VMS data that includes a track of where nets were laid. This will be considered privileged information which will not be made publically available. There is already a VMS system up and running on all Icelandic vessels. The data is currently only being sent to the Maritime Alert Centre, but vessel owners can have the system sending data to NASBO.

2.7 Biomass index

NASBO will hire the MRI to provide the current biomass index and recommend TAC, as presently being done. Data for the assessment is collected in MRIs groundfish survey's, which means that the data collection is being done in association with other work of MRI. NASBO does therefore only have to pay a part of the data collection cost and then hire MRI to analyse the data. Similar to the current practise the MRI will issue a preliminary TAC in July and a final TAC on April 1st.

3 The Icelandic mixed demersal fishery – hook and line vessels

After having used the Icelandic lumpfish fishery to develop, test and validate the first prototype of the RFMS, a second version was created called RFMS prototype 2. This version was then developed, tested and validated using two case studies i.e. the Icelandic mixed demersal fishery and the Portuguese Crustacean Bottom Trawl Fishery.

All operators within the Icelandic mixed demersal fishery were invited to take part in making a MP, but in the end only vessels less than 15 meters in length using hook and line gear committed to the task. The operators included in the MP represent 17% of the total mixed demersal catches in Icelandic waters and approximately 1 500 vessels.

The documentation system for the hook and line part of the Icelandic mixed demersal fishery partied to the project is designed so that it will be possible to measure the performance of the MP on the identified relevant indicators, so that appropriate management responses are triggered. The responsible parties for data collection, processing and assessment are identified; as well as how to respond when OTs are not being met and who will bear the associated costs. The OTs, associated indicators, data sources and responsibility thereof is presented in the following sub-chapters.

3.1 Monitoring, compliance sanctions

Monitoring of the Icelandic fishery is in the hands of the Directorate of Fisheries and the coast guard.

- The Directorate of Fisheries collects landing notes and final weighing notes from harbours and processors. Captains on the vessels are required to submit electronic logbooks to the Directorate of Fisheries. Vessel owners and processors are also required to send the Directorate weighing reports.
- The coast guard and the Directorate of Fisheries monitor compliance to regulation by going on-board and doing inspections of the fishing vessels out at sea or at dock.
- All vessels need to be equipped with automatic positioning system (VS maritime alert control) that is used to track the vessels.
- Compliance sanctions are dealt with by either monetary fines or temporal revoking of permits. In extreme examples, where deliberate fraud is taking place, responsible partners can be sentenced to jail.
- There is currently not taking place any monitoring regarding social or economic objectives of the MP.

3.2 Documentation

It is necessary to identify relevant documentation sources used and to determine how reliable the process of obtaining this information is, so that the authority can be confident that the MP is appropriately constructed and carried out and the outcome targets achieved. For further information, see the following Table 3-1: Documentation matrix.

Documentation regarding biological outcome targets is:

- a) MRIs stock assessment/advice that is issued in June each year
- b) Electronic logbooks
- c) Landing notes supplied electronically to the Directorate of Fisheries, weighing on official harbor scales (GAFL)
- d) Weighing reports from auction markets or processors that have permission to re-weighing.
- e) Allocation reports (ráðstöfunarskýrslur) sent to the Directorate of Fisheries each month from processors
- f) Production report (afurðaskýrsla)

Documentation regarding economic outcome targets is:

- Not used specifically for decisions on the MP at present, but there are some data available that authorities can benefit from when taking decisions; such as:
 - Export figures from the Directorate of Customs and Statistics Iceland
 - Financial accounts of fisheries from Statistics Iceland
 - Annual accounts of fishing companies submitted to the Internal Revenues Office (Ársreikningaskrá)

Documentation regarding social outcome targets:

- Not used specifically for decisions on the MP at present, but there are some data available that authorities can benefit from when taking decisions; such as:
 - Unemployment figures (by areas and sectors)
 - Average age by sectors
 - New entry into sectors by area
 - Average wages in sectors and area

The OTs, associated indicators, data sources and responsibility thereof is portrayed in the following table.

Table 3-1: Documentation matrix

OT no.	Outcome Targets	Indicators	Sources data collection	Processing of data	Assessment	Action / responsibility	Cost recovery
1	Cod (<i>G. morhua</i>) 220.000 ton	SSB > SSB according to annual and intermediate stock size assessments by MRI and ICES	MRI	MRI	MRI/ICES	HCR adjusted, spawners protected etc. / Ministry of Industry & Innovation	Stock size assessments are a part of the MRIs core objectives, which are funded by the Ministry of Industries and Innovation through the resource rent
2	Haddock (<i>M. aeglefinus</i>) SSB > 45.000 ton	SSB according to annual and intermediate stock size assessments by MRI and ICES	MRI	MRI	MRI/ICES	HCR adjusted, spawners protected etc. / Ministry of Industry & Innovation	Stock size assessments are a part of the MRIs core objectives, which are funded by the Ministry of Industries and Innovation through the resource rent
3	Saithe (<i>P. virens</i>) 65.000 ton	SSB > SSB according to annual and intermediate stock size assessments by MRI and ICES	MRI	MRI	MRI/ICES	HCR adjusted, spawners protected etc. / Ministry of Industry & Innovation	Stock size assessments are a part of the MRIs core objectives, which are funded by the Ministry of Industries and Innovation through the resource rent
4	Golden redfish (<i>S. marinus</i>) $F_{MSY} = 0.15$	F according to annual and intermediate stock size assessments by MRI and ICES	MRI	MRI	MRI/ICES	TAC adjusted, spawners protected etc. / Ministry of Industry & Innovation	Stock size assessments are a part of the MRIs core objectives, which are funded by the Ministry of Industries and Innovation through the resource rent

OT no.	Outcome Targets	Indicators	Sources / data collection	Processing of data	Assessment	Action / responsibility	Cost recovery
5	Atlantic catfish (<i>A. lupus</i>) FMSY = 0.29	F according to annual and intermediate stock size assessments by MRI and ICES	MRI	MRI	MRI/ICES	TAC adjusted, spawners protected etc. / Ministry of Industry & Innovation	Stock size assessments are a part of the MRIs core objectives, which are funded by the Ministry of Industries and Innovation through the resource rent
6	Tusk (<i>B. brosme</i>) FMSY = 0.29	F according to annual and intermediate stock size assessments by MRI and ICES	MRI	MRI	MRI/ICES	TAC adjusted, spawners protected etc. / Ministry of Industry & Innovation	Stock size assessments are a part of the MRIs core objectives, which are funded by the Ministry of Industries and Innovation through the resource rent
7	Common ling (<i>M. molva</i>) FMSY = 0.10	F according to annual and intermediate stock size assessments by MRI and ICES	MRI	MRI	MRI/ICES	TAC adjusted, spawners protected etc. / Ministry of Industry & Innovation	Stock size assessments are a part of the MRIs core objectives, which are funded by the Ministry of Industries and Innovation through the resource rent

OT no.	Outcome Targets	Indicators	Sources data collection /	Processing of data	Assessment	Action / responsibility	Cost recovery
8	By-catch rates > 10% reduction over planning period	By-catch rates according to landing statistics from the Directorate of Fisheries	Directorate of Fisheries	NASBO	NASBO (annual assessment)	Publicise by-catch rates through web-page, instructions and warnings to non-complying operators, access to the NASBO quota bank restricted as last resource / NASBO	Gathering landing statistics into a data-bank is a core objective of the Directorate of Fisheries, which is funded by the Ministry of Industries and Innovation through the resource rent. Processing and analysing the data, as well as taking appropriate actions in case of non-compliance, is the responsibility of NASBO and associated costs are to be covered by them
9	Discards rates = Zero	Discard rates from the annual MRI survey	MRI	MRI	MRI (annual assessment)	CCTV monitoring where discarding will be reported to the Directorate of Fisheries and police / NASBO	Operators partied to the MP are required to install CCTV and upload the recordings to NASBOs secure web-page. Individual operators bear the cost of setting up the equipment and NASBO covers the cost of monitoring the recordings.

OT no.	Outcome Targets	Indicators	Sources data collection /	Processing of data	Assessment	Action / responsibility	Cost recovery
10	> 17% of demersal catches are to be caught by vessels under 15 meters in length using longline or hand-line as fishing gear.	Landing statistics from the Directorate of Fisheries.	Directorate of Fisheries	Directorate of Fisheries	Directorate of Fisheries (annual assessment)	Allocation of quota adjusted if necessary / Directorate of Fisheries	Gathering landing statistics into a data-bank and monitoring that landings are in accordance with allocated quotas is a core objective of the Directorate of Fisheries, which is funded by the Ministry of Industries and Innovation through the resource rent.
11	> 80% of catches from vessels under 15 meters in length using longline or hand-line as fishing gear is to be landed in municipalities with under 5.000 inhabitants.	Landing statistics from the Directorate of Fisheries.	Directorate of Fisheries	NASBO	NASBO (updated in real-time)	In case of non-compliance individual operators will be denied access to the NASBO quota bank / NASBO	Gathering landing statistics into a data-bank is a core objective of the Directorate of Fisheries, which is funded by the Ministry of Industries and Innovation through the resource rent. Processing and analysing the data, as well as taking appropriate actions in case of non-compliance, is the responsibility of NASBO and associated costs are to be covered by them.

OT no.	Outcome Targets	Indicators	Sources data collection /	Processing of data	Assessment	Action / responsibility	Cost recovery
12	Individual companies and related companies are not allowed to catch more than 12% of the fleet segment's total catch, measured in cod equivalent.	Quota allocations from the Directorate of Fisheries and quota transfers (permanent and temporary leases)	Directorate of Fisheries	NASBO	NASBO (quarterly assessments)	Operators reaching the 12% limit will not be allowed to lease quotas at the NASBO quota bank / NASBO	Quota allocations and monitoring quota transfers is a core objective of the Directorate of Fisheries, which is funded by the Ministry of Industries and Innovation through the resource rent. Processing and analysing the data, as well as taking appropriate actions in case of non-compliance, is the responsibility of NASBO and associated costs are to be covered by them.

OT no.	Outcome Targets	Indicators	Sources / data collection	Processing of data	Assessment	Action / responsibility	Cost recovery
13	Average wages in the sector are to be above national average.	Average wages by occupational group from the Directorate of Labour.	Directorate of Labour / individual operators & NASBO	NASBO	NASBO (monthly assessments)	Employees are to be paid a surcharge for the months that they do not meet the OT* / NASBO	The Directorate of labour collects data on wages in all profession sectors and have been funded to do so by the government. Operators partied to the MP are required to provide the Directorate and NASBO with data-sets on wages. Processing and analysing the data, as well as taking appropriate actions in case of non-compliance, is the responsibility of NASBO and associated costs are to be covered by them.

* The MP can only contain corrective actions imposed on operators that are partied to the MP. The OT applies therefore solely to employees working directly for the operator, for example baiters/fish processors where the baiting/processing is done by the operator's company. The MP does not apply to processors working for companies that are not partied to the MP, such as independent fish processors processing fish bought from the operators. Fishermen are paid according to a share-allotment system and are therefore not subjected to this OT.

OT no.	Outcome Targets	Indicators	Sources data collection /	Processing of data	Assessment	Action responsibility /	Cost recovery
14	Newcomers are to be provided with an opportunity to enter the fishery, so that on average > 1% of vessels and reported catches are to be landed by newcomers each year.	Landing statistics from the Directorate of Fisheries i.e. number of new companies reporting catches and associated landing volumes.	Directorate of Fisheries	NASBO	NASBO (quarterly assessments)	NASBO is to call for bids on quotas at the NASBO quota bank solely available for newcomers if OT is not reached / NASBO	Gathering landing statistics into a data-bank is a core objective of the Directorate of Fisheries, which is funded by the Ministry of Industries and Innovation through the resource rent. Processing and analysing the data, as well as taking appropriate actions in case of non-compliance, is the responsibility of NASBO and associated costs are to be covered by them.
15	All catch is to be processed (primary processing) in Iceland	Export figures from the Directorate of Fisheries	Directorate of Fisheries	Directorate of Fisheries	Directorate of Fisheries	Export permits for unprocessed fish not extended to operators partied to the MP / Directorate of Fisheries	The directorate of fisheries collects data on exports of unprocessed fish and issues permits for such exports today. This is a part of the Directorates responsibilities already and the Ministry of Industries and Innovation through the resource rent

OT no.	Outcome Targets	Indicators	Sources / data collection	Processing of data	Assessment	Action / responsibility	Cost recovery
16	Appropriate resource rent is to be paid to the nation (20% of EBIDTA within the fleet segment)	EBIDTA information from the Internal revenue service	Operators and the Internal revenue service	NASBO	NASBO (annual assessment)	NASBO is to calculate the resource rent and invoice operators partied to the MP / NASBO	Operators partied to the MP are to provide the Internal revenue service (Ársreikningaskrá) with EBIDTA information. This is already a requirement placed on all companies in Iceland. Processing, analysing and invoicing for the resource rent will be done by NASBO and associated costs covered by the association. NASBO will receive 10% of revenues of the quota bank, which are partly going to be used for this task.
17	Zero subsidies	Subsidies information from Statistics Iceland	Statistics Iceland	NASBO	NASBO (annual assessment)	Operators receiving subsidies will not be eligible to be partied to the MP / NASBO	Statistics Iceland collects data on subsidies. NASBO will analyse the data and authenticate that all MP participants are subsidy free. Associated costs are to be covered by NASBO.

OT no.	Outcome Targets	Indicators	Sources / data collection	Processing of data	Assessment	Action / responsibility	Cost recovery
18	Fishing companies are to be required to return EBIDTA above zero on average	EBIDTA details from the Internal revenue service	Operators and the Internal revenue service	NASBO	NASBO (annual assessment)	NASBO is to monitor EBIDTA of companies partied to the MP. Companies returning negative EBIDTA for three consecutive years are to have their quota rights confiscated and redistributed to other quota holders* / Directorate of Fisheries and NASBO	Operators partied to the MP are to provide the Internal revenue service (Ársreikningaskrá) with EBIDTA information. This is already a requirement placed on all companies in Iceland. NASBO will monitor and take actions if necessary in cooperation with the Directorate of Fisheries (in case of reworking of quotas). Associated costs are to be covered by NASBO.

In addition the operators are to fill out and upload to secure web-pages of the Directorate of Fisheries and NASBO electronic logbooks. The operators are also required to have a VMS system on-board that sends NASBO the vessels location every hour. Both of these requirements are set to make monitoring more effective. All costs associated with this are to be covered by the operators.

* Operators are allowed to resign from the MP and can do so if they are in danger of having their quotas confiscated because of this.

4 The Portuguese Crustacean Bottom Trawl Fishery

The documentation system agreed on by the Portuguese operators and the Authority is presented in this chapter. This section identifies which data needs to be collected in order to evaluate whether the Management Plan is meeting its objectives (OT), or if it needs to be amended. The institutions and the basis for the operational system in the on-going collection of the required information to evaluate the performance of the MP have been identified in the MP.

4.1 Documentation

The institution responsible for the monitoring program and auditing the MP (e.g. DOP) will be assisted by representatives of the operators to ensure an operational system for the ongoing collection of the required information to evaluate the performance indicators and achievement of the OTs. This institution will be responsible for auditing the related documentation, which includes:

- i) Logbook data.
- ii) Vessel activity information (VMS data, days at sea, landings, revenue).
- iii) Number of vessels/trips with scientific observers on-board.
- iv) Economic and financial reports.
- v) Number of trainees' certificates
- vi) Existing protocols between the operators and research institutions.

The auditor will also compile the most updated information from stock assessment reports produced by IPMA and ICES.

The Table on the following page summarizes the data requirements and sources for the estimation and monitoring the performance of the plan by indicator.

Management objectives, data requirements and data sources for the estimation and monitoring of each performance indicator

Management objective	Performance Indicator	Data requirements	Data sources
1) rose shrimp (obligatory)	CPUE index	Catch, effort, landings and survey data	IPMA, Logbooks, VMS data and landings
2) Norway lobster (obligatory)	i) Fishing Mortality ii) CPUE index	Catch, effort, landings, biological and survey data	ICES, IPMA, Logbooks, VMS data and landings
3) blue and red shrimp and purple shrimp (obligatory)	Specific logbook information (yes/no)	Location of hauls, number of hours and size composition of related catch	Paper/Electronic logbooks
4) reduce discards (obligatory)	% discard	Catch and discard data	Logbooks, IPMA
5) Profitable industry (recommended)	EBITDA	Operators annual accounts	Audit reports
6) Social stability (recommended)	Number of trainees	Trainees' certificates	Operators
7) Research framework (recommended)	Operator compliance (yes/no)	Agreement contract	Operators; IPMA

The institution responsible for the monitoring program and auditing of the management plan and the operators have responsibility for key components by which the actual performance of the fishery can be evaluated towards the proposed set of outcome targets. The table below explains where, when and how the data should be collected. This documentation system could be updated if additional information is available that suggests specific changes in the proposed outcome targets and associated indicators.

Documentation and data requirements for the evaluation and monitoring of each outcome target

Data	Obtained from	Obtained when	Outcome target
Rose shrimp CPUE (obligatory)	Electronic logbooks and VMS data	Every month, considering depth stratum 100 – 400 m	Average annual CPUE $\geq I_{trigger}$ (3.12 kg/h) with average <u>quarter daily target CPUE above:</u> Quarter 1: 45 kg/day Quarter 2: 27 kg/day Quarter 3: 16 kg/day Quarter 4: 20 kg/day
Norway lobster standardized CPUE (obligatory)	Electronic logbooks and VMS data	Every month	Average annual standardized CPUE $\geq I_{trigger}$ (3.21 kg/h or 45 kg/day)
Discards volume and discard rate³ (obligatory)	Observers sampling program and logbooks data	Every year	Average discard rate < 50% and < 25% in the first 5 and 10-year period
Geo-referenced catch and size composition of red, purple and scarlet shrimps (obligatory)	Electronic and paper logbooks	Every month	Improved knowledge on red, purple and scarlet shrimps
EBITDA (recommended)	Annual financial statements from fishing companies	Annually	EBITDA > 0
Number of people with on board training program certification (recommended)	Fishing associations or operators	Annually	25 new trained people at the end of the 10-yr plan
Number of operators with agreement with IPMA (recommended)	Fishing operators; IPMA	Annually	Operators cooperate with IPMA in the scientific monitoring program

³ Discard Rate is estimated by species and for the total catch by area and for the whole crustacean fleet. The outcome target refers to the total discards rate

4.2 Abundance indices and stock assessment

IPMA, as the national research institute responsible for resources stock assessment, will compute the required abundance indices (CPUE) and perform stock assessment for rose shrimp and Norway lobster. The necessary data for the assessment is already collected within IPMA working programme (scientific surveys, biological sampling, landings data, etc...)

4.3 Logbooks

Logbooks are required to be onboard all crustacean vessels.

All vessels must fill out an electronic logbook that shall be transmitted to the authority according to the rules established by this body, e. g. daily fishing activities reported before 24:00 every day and trip retained catches reported before arrival to the port.

Paper logbooks will be filled in by the operators that agree to take part in the RFMS with the requested information and delivered to IPMA. This logbook will contain more detailed information on retained catches (by species and commercial size categories) and discards. IPMA will analyse the data provided and assist the operators in improving the reports.

IPMA will also use data from electronic logbooks and VMS data as already provided by the authority as privileged information. This information and onboard sampling data will be used to gather data that can possibly provide enhanced information to assist in the implementation of the MP.

The paper logbook for the crustacean vessels is shown on the following page. All the fishing operations of one day shall be recorded in the same sheet and continued in a second sheet if needed. Activities from different fishing days shall be reported in different sheets.

DIÁRIO DE PESCA - DECLARAÇÃO DE CAPTURAS

Embarcação							
Identificador da embarcação (PRT)	<input style="width: 100%;" type="text"/>						
Nome da embarcação	<input style="width: 100%;" type="text"/>						
Largada das Artes de Pesca							
	1	2	3	4	5	6	7
Arte/Malha Utilizadas	OTB/55mm	<input style="width: 100%;" type="text"/>					
Data/hora (UTC)	<input style="width: 100%;" type="text"/>						
Latitude (em Graus decimais)	39.1044	<input style="width: 100%;" type="text"/>					
Longitude (em Graus decimais)	-10.1788	<input style="width: 100%;" type="text"/>					
Alagem das Artes de Pesca							
Data/hora (UTC)	<input style="width: 100%;" type="text"/>						
Latitude (em Graus decimais)	39.1044	<input style="width: 100%;" type="text"/>					
Longitude (em Graus decimais)	-10.1788	<input style="width: 100%;" type="text"/>					
Profundidade máxima atingida (m)	<input style="width: 100%;" type="text"/>						
Perda de Artes							
Data/hora (UTC)	<input style="width: 100%;" type="text"/>						
Latitude (em Graus decimais)	39.1044	<input style="width: 100%;" type="text"/>					
Longitude (em Graus decimais)	-10.1788	<input style="width: 100%;" type="text"/>					
Profundidade máxima atingida (m)	<input style="width: 100%;" type="text"/>						
N.º de unidades perdidas	<input style="width: 100%;" type="text"/>						
Área de Pesca							
Área	<input style="width: 100%;" type="text"/>						
Sub Área	<input style="width: 100%;" type="text"/>						
Divisão	<input style="width: 100%;" type="text"/>						
Sub Divisão	<input style="width: 100%;" type="text"/>						
Zona de Esforço	<input style="width: 100%;" type="text"/>						
Rectângulo Estatístico	<input style="width: 100%;" type="text"/>						
Zona Económica	<input style="width: 100%;" type="text"/>						
Capturas (Espécie/Tamanho)							
	Peso do pescado [Kg]						
Carabineiro - SSH / Tx	<input style="width: 100%;" type="text"/>						
Camarão Vermelho - ARA / Tx	<input style="width: 100%;" type="text"/>						
...	<input style="width: 100%;" type="text"/>						
Verdinho - WHB / Tx	<input style="width: 100%;" type="text"/>						
Pescada - HKE / Tx	<input style="width: 100%;" type="text"/>						
	<input style="width: 100%;" type="text"/>						
Carapau branco - HOM / Tx	<input style="width: 100%;" type="text"/>						
	<input style="width: 100%;" type="text"/>						

Paper logbook for the crustacean trawlers

4.4 Documentation for promoting profitable and social stability and research framework

The following documentation related to economic, social and research OTs will be provided by the operators:

- Annual financial report – one for each operator (or fishing company) – to allow monitoring the EBITDA.
- The number of new trainees under the on-board training program certification.
- The agreement protocol between each operator and IPMA to promote a feasible research framework for the development of the MP. These agreements will be promoted by IPMA representatives.

5 The North Sea mixed demersal fishery – TR1 Scottish vessels

The documentation system agreed on by the Scottish TR1 fleet operators as part of the MP requirements is an intrinsic part of the MP. Following is a list of data required to be collected in order to evaluate whether the Management Plan is meeting its objectives (OTs), or if it needs to be amended. The institutions and the basis for the operational system in the ongoing collection of the required information to evaluate the performance of the MP is also identified.

The data required to be collected by the operator (SWFPA and NESFO) to monitor compliance regarding the OTs includes:

- Landings from logbooks and sales records
- Discards from logbooks, CCTV footage and trawl weight data
- Catches from logbooks, and by summing up landings and discards data (the total catch amount should be identical either way)
- By-catches from logbooks and CCTV footage
- Vessel position from VMS
- Profit from sales records
- Location of sales from sales records

The operator is responsible for collecting these data at the operator's expense. The data must be made available to the auditor immediately after collection.

The operator monitors compliance throughout the year by comparing monthly catches to monthly quotas. This ensures that the annual TAC allocated to a given species is not exceeded during the year, and that the biomass is not depleted (and consequently that the biological OTs are reached). TACs are decided annually following the ICES assessment of stocks status. While the operator can monitor compliance to TAC throughout the year, the status of the stock (i.e. biological OTs) is only known once a year when the stock assessment takes place. Therefore, whether or not the biological OT's have been reached can only be assessed on a yearly basis.

The following table sums up the documentation system required to assess the compliance to the MP in place:

Documentation system required to assess the compliance to the MP

Outcome target	Indicator	Data required	Frequency	Data source	Responsibility	Cost recovery
Cod Partial F < 0.25	Stock status (exploitation rate)	ICES stock assessment estimates	Annually	ICES	ICES	Europe
Haddock Partial F < 0.19	Stock status (exploitation rate)	ICES stock assessment estimates	Annually	ICES	ICES	Europe
Whiting Partial F < 0.19	Stock status (exploitation rate)	ICES stock assessment estimates	Annually	ICES	ICES	Europe
Saithe Partial F < 0.19	Stock status (exploitation rate)	ICES stock assessment estimates	Annually	ICES	ICES	Europe
Hake Partial F < 0.15	Stock status (exploitation rate)	ICES stock assessment estimates	Annually	ICES	ICES	Europe

Outcome target	Indicator	Data required	Frequency	Data source	Responsibility	Cost recovery
Reduce discards by 50% each year until 2017	Discard estimates	Logbooks on-board observers CCTV footage	Monthly	Fully documented fishery	Operator	Operator
Eliminate all discards of commercial species by 2017	Discard estimates	Logbooks on-board observers CCTV footage	Monthly	Fully documented fishery	Operator	Operator
Reduce discards by 50% each year until 2017	Discard estimates	Logbooks on-board observers CCTV footage	Monthly	Fully documented fishery	Operator	Operator
Zero by-catch of total fin fish catch for any fin fish species	Discard estimates	Logbooks on-board observers CCTV footage	Monthly	Fully documented fishery	Operator	Operator
LFI >= 0.3	LFI calculation	Landings and survey catches	Annually	ICES	ICES	Europe
EBITDA > 15%	EBITDA	Fisheries statistics Sales records	Annually	Annual Fisheries statistics reports	Scottish government	Scottish government
Year to year change in landings <15%	Catch and landings statistics	Fisheries statistics	Annually	Annual Fisheries statistics reports	Scottish government	Scottish government
Aggreg. quota share of a single company < 12%	Quota share allocated	Fisheries statistics	Annually	Annual Fisheries statistics reports	Scottish government	Scottish government
Number of jobs in sector > 95% of number in of jobs 2013	Employment statistics within fishing	Fisheries statistics	Annually	Annual Fisheries statistics reports	Scottish government	Scottish government
> 15% of vessels catch must be sold to local fish processors	Sales records	Fisheries statistics	Annually	Annual Fisheries statistics reports	Scottish government	Scottish government

This table identified all the OTs, associated indicators, what data is needed, how is responsible for supplying the data, analysing and interoperating the data and finally who is to pay for the whole thing. This table is therefore a key to understand the process and how the monitoring of MP's success will be carried out.