



Council of the
European Union

Brussels, 18 February 2020
(OR. en)

6131/20

PECHE 44

COVER NOTE

From:	Secretary-General of the European Commission, signed by Mr Jordi AYET PUIGARNAU, Director
date of receipt:	17 February 2020
To:	Mr Jeppe TRANHOLM-MIKKELSEN, Secretary-General of the Council of the European Union

No. Cion doc.:	SWD(2020) 35 final
Subject:	COMMISSION STAFF WORKING DOCUMENT EVALUATION of Council Regulation (EC) No 1100/2007 of 18 September 2007 establishing measures for the recovery of the stock of European eel

Delegations will find attached document SWD(2020) 35 final.

Encl.: SWD(2020) 35 final



Brussels, 17.2.2020
SWD(2020) 35 final

COMMISSION STAFF WORKING DOCUMENT

EVALUATION

**of Council Regulation (EC) No 1100/2007 of 18 September 2007 establishing measures
for the recovery of the stock of European eel**

{SWD(2020) 36 final}

Table of contents

1.	INTRODUCTION	6
	Purpose and scope	6
2.	BACKGROUND TO THE INTERVENTION	7
	Description of the intervention and its objectives	7
	Baseline and points of comparison	10
3.	IMPLEMENTATION / STATE OF PLAY	11
3.1.	Description of the current situation	11
3.2.	Eel Management Plans and exemptions	11
3.3.	Measures contained in the EMPs	12
3.4.	Reporting by Member States and the Commission	14
	Reporting on EMP implementation	14
	Progress reports - 2012	14
	2014 Commission report	16
	Progress reports - 2015	16
	Progress reports - 2018	16
	Good practices in eel conservation	17
	Reporting on the evolution of market prices for eels < 12 cm	18
3.5.	Overall state-of-play of the implementation of the Eel Regulation	20
4.	METHOD	21
4.1.	Methodology and data collection	21
4.2.	Consultation strategy	22
4.3.	Timing and robustness of the evaluation	23
5.	ANALYSIS AND ANSWERS TO THE EVALUATION QUESTIONS	23
5.1.	Evaluation Questions Matrix	23
5.2.	Analysis and answers	23
5.2.1.	RELEVANCE	23
5.2.2.	EFFECTIVENESS	25
5.2.3.	SUSTAINABILITY	36
5.2.4.	EFFICIENCY	37
5.2.5.	COHERENCE	38
5.2.6.	EU ADDED VALUE	46
6.	CONCLUSIONS	48
	ANNEX 1: PROCEDURAL INFORMATION	51
	ANNEX 2: STAKEHOLDER CONSULTATION	52
	ANNEX 3: METHODS AND ANALYTICAL MODELS	65
	ANNEX 4: COMMISSION DECISIONS UNDER THE EEL REGULATION	81
	ANNEX 5: EMP IMPLEMENTATION	82
	ANNEX 6: EUROPEAN EEL STATUS AND IMPACTS ON THE STOCK	94

ANNEX 7 SUMMARY OF THE EU AND INTERNATIONAL LINKAGES APPLICABLE TO
EUROPEAN EEL 103

Glossary

<i>Term or acronym</i>	<i>Meaning or definition</i>
B ₀ Pristine biomass	The amount of silver eel biomass that would have existed if no anthropogenic influences had impacted the stock
B _{best}	The amount of silver eel biomass that would have existed if no anthropogenic influences had impacted the current stock, hence only natural mortality operating on stock, i.e. excluding restocking practices
B _{current} Current biomass	The amount of silver eel biomass that currently escapes to the sea to spawn
CFP	Common Fisheries Policy
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CMS	The Convention on the Conservation of Migratory Species of Wild Animals
DCF	Data Collection Framework
Diadromous fish	Fish species that migrate between salt water and fresh water as part of their life cycle. Catadromous species like eels spend most of their lives in fresh water and then migrate to the sea to breed. Anadromous fish, including salmon, live in the sea and migrate to fresh water to breed.
DG MARE	European Commission Directorate-General for Maritime Affairs and Fisheries
Commission	European Commission
Eel Regulation	Council Regulation (EC) No 1100/2007 of 18 September 2007 establishing measures for the recovery of the stock of European eel
EFCA	European Fisheries Control Agency
EFF	European Fisheries Fund (for the period 2007-2013)
EIFAAC	European Inland Fisheries and Aquaculture Advisory Commission
Elver	Young eel, in its first year following recruitment from the ocean. The elver stage is sometimes considered to exclude the glass eel stage, but not by everyone. To avoid confusion, pigmented 0+ cohort age eels are included in the glass eel term.
EMFF	European Maritime and Fisheries Fund (for the period 2014-2020)
EMP(s)	Eel Management Plan(s)
EMU Eel Management Unit	“Member States shall identify and define the individual river basins lying within their national territory that constitute natural habitats for the European eel (eel river basins) which may include maritime waters. If appropriate justification is provided, a Member State may designate the whole of its national territory or an existing regional administrative unit as one eel river basin. In defining eel river basins, Member States shall have the maximum possible regard for the administrative arrangements referred to in Article 3 of Directive 2000/60/EC [i.e. River Basin Districts of the Water Framework Directive].” EC No. 1100/2007.
Escapement	The amount of silver eel that leaves (escapes) a water body, after taking account of all natural and anthropogenic losses.

EU	European Union
FAME Support Unit	Fisheries and Aquaculture Monitoring and Evaluation Support Unit under the European Maritime and Fisheries Fund
GES	Good Environmental Status under the Marine Strategy Framework Directive
GFCM	General Fisheries Commission for the Mediterranean
Glass eel	Young, unpigmented eel, recruiting from the sea into continental waters. Joint EIFAAC/ICES/GFCM Working Group on Eels consider the glass eel term to include all recruits of the 0+ cohort age. In some cases, however, also includes the early pigmented stages.
ICES	International Council for the Exploration of the Sea
ICES Stock Annex	Stock-specific documentation of the assessment procedures used by ICES for European Eel (<i>Anguilla anguilla</i>), last updated September 2016
IUCN	International Union for the Conservation of Nature
IUU	Illegal, Unreported and Unregulated
MS(s)	Member State(s)
MSFD	Marine Strategy Framework Directive
MSY	Maximum Sustainable Yield under the CFP
NDF Non-Detriment Finding	The competent scientific authority has advised in writing that the capture or collection of the specimens in the wild or their export will not have a harmful effect on the conservation status of the species or on the extent of the territory occupied by the relevant population of the species.
PC	Public Consultation
RBD	River Basin District under WFD
RBMP	River Basin Management Plan under WFD
SAC	Special Area of Conservation
SCIPs	Specific Control and Inspection Programmes
Sigma ΣA	The sum of anthropogenic mortalities, i.e. $\sigma A = \sigma F + \sigma H$. It refers to mortalities summed over the age groups in the stock.
ΣA_{lim}	Limit anthropogenic mortality ΣA_{lim} is set at $\Sigma A = -\ln(40\%) = 0.92$, corresponding to the 40% biomass limit
Sigma ΣF	The fishing mortality rate, summed over the age groups in the stock
Sigma ΣH	Anthropogenic mortality rate outside the fishery, summed over the age groups in the stock
Silver eel	Migratory phase following the yellow eel phase. Eel in this phase are characterized by darkened back, silvery belly with a clearly contrasting black lateral line, enlarged eyes. Silver eel undertake downstream migration towards the sea, and subsequently westwards. This phase mainly occurs in the second half of calendar years, although some are observed throughout winter and following spring.

SMEFF	Sustainable Management of the External Fishing Fleets
SPA	Special Protection Area
SRG	Scientific Review Group
Stocking/Restocking	Stocking is the practice of adding fish to a waterbody from another source, to supplement existing populations or to create a population where none exists. Since eels cannot be artificially reproduced, stocking material is always wild caught.
TAC	Total Allowable Catch set under the Fishing Opportunities Regulations
Translocation	Removal of eels from one place (e.g. the coast of arrival) to another (e.g. river or lake) to increase local population numbers.
VMS	Vessel Monitoring System defined under the Control Regulation
WFD	Water Framework Directive
WGEEL	Joint EIFAAC/ICES/GFCM Working Group on Eels
Yellow eel	Life-stage resident in continental waters. Often defined as a sedentary phase, but migration within and between rivers, and to and from coastal waters occurs and therefore includes young pigmented eels ('elvers' and bootlace). Sometimes yellow eel is also called 'brown eel'.

COUNTRY CODES				
Country code	Country name		Country code	Country name
AT	Austria		IE	Ireland
BE	Belgium		IT	Italy
BG	Bulgaria		LT	Lithuania
CY	Cyprus		LU	Luxembourg
CZ	Czechia / Czech Republic		LV	Latvia
DE	Germany		MT	Malta
DK	Denmark		NL	Netherlands
EE	Estonia		PL	Poland
EL	Greece		PT	Portugal
ES	Spain		RO	Romania
FI	Finland		SE	Sweden
FR	France		SI	Slovenia
HR	Croatia		SK	Slovakia
HU	Hungary		UK	United Kingdom

1. INTRODUCTION

Purpose and scope

The purpose of this evaluation is to assess the measures established for the protection and sustainable use of the stock of European eel under the Regulation (EC) No 1100/2007¹ (hereinafter referred to as ‘Eel Regulation’), and the contribution of the Eel Management Plans to the achievement of the objectives of this regulation and to the recovery of the stock of European eel.

The European Commission presented a first assessment of the implementation of the Eel Management Plans (EMPs) in 2014². The results of this assessment were however largely inconclusive due to the delays in the preparation and approval of the national EMPs and the delays in the implementation of non-fisheries related measures.

During the December 2017 Council meeting, in the context of the negotiations of the Regulation for 2018 Fishing opportunities³, the Commission and Member States (MSs) agreed to step up their efforts to protect the European eel stock⁴ that according to solid scientific advice remains in critical condition. It was agreed that the Commission would launch an external evaluation of the Eel Regulation to assess its effectiveness and its contribution to the recovery of the stock of European eel, with a view to its possible revision.

This evaluation covers the entire period since the entry into force of the Eel Regulation in September 2007 (while the EMPs are being implemented since 2009) until the second quarter of 2019. It examines the effectiveness, efficiency, relevance, coherence, EU added-value and sustainability of the measures established under the Eel Regulation.

The evaluation assesses biological aspects, the management, implementation and enforcement issues, including trade aspects, as well as the use of the European Maritime and Fisheries Fund (EMFF)⁵ and its predecessor the European Fisheries Fund (EFF)⁶ for the implementation of the Eel Regulation. It considers the EMPs and MSs reporting under the Regulation to assess if they have adequately addressed all mortality factors affecting the eel stock, with a special emphasis on the design and implementation of restocking measures and the management of glass eel fisheries. It also covers the enforcement and monitoring issues, both in marine and in inland waters. The evaluation also looks into the articulation and coherence between the Eel Regulation and other EU

¹ Council Regulation (EC) No 1100/2007 of 18 September 2007 establishing measures for the recovery of the stock of European eel, OJ L 248, 22.9.2007, p. 17–23

² Report from the Commission to the Council and the European Parliament on the outcome of the implementation of the Eel Management Plans, including an evaluation of the measures concerning restocking and of the evolution of market prices for eels less than 12 cm in length – [COM\(2014\)0640 final](#)

³ Proposal for a Council Regulation fixing for 2018 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in Union waters and, for Union fishing vessels, in certain non-Union waters, and amending Council Regulation (EU) 2017/127

⁴ Joint Declaration on strengthening the recovery for European eel (Commission and Member States) <http://data.consilium.europa.eu/doc/document/ST-5382-2018-INIT/en/pdf>

⁵ Regulation (EU) No 508/2014 of the European Parliament and of the Council of 15 May 2014 on the European Maritime and Fisheries Fund, OJ L 149, 20.5.2014, p. 1–66

⁶ Council Regulation (EC) No 1198/2006 of 27 July 2006 on the European Fisheries Fund

rules in place such as the Common Fisheries Policy⁷, the fisheries control regulation⁸ and environmental legislation, in particular the Water Framework and Habitats Directives⁹. It looks as well into the articulation and coherence with international instruments that cover eels, such as the General Fisheries Commission for the Mediterranean (GFCM) recommendations, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Convention on the Conservation of Migratory Species of Wild Animals (CMS).

2. BACKGROUND TO THE INTERVENTION

Description of the intervention and its objectives

Recognising the complex life cycle of the European eel and the variety of the pressures impacting the stock helps to understand the background for setting the intervention.

The European eel (*Anguilla anguilla*) belongs to one single population. It is a long-lived species that has a complex lifecycle and spawns only once in the lifetime. It is a catadromous species, which means it spawns in the sea and grows and matures in inland waters (see **Annex 6**). Scientific data indicate the spawning area is in the Sargasso Sea (a region of the North Atlantic Ocean, outside EU waters), so the distribution of eels on their spawning migration extends all the way from northern Europe across the Atlantic Ocean and down to the Sargasso Sea.

Following multi-decadal decline at an alarming rate of the European eel stock across Europe, in 1999 the International Council for the Exploration of the Sea (ICES) recommended that a recovery plan for European eel was urgently needed.

This decline is attributed to multiple causes. The stock is facing numerous anthropogenic pressures, including fisheries and non-fisheries. Climate change may also have impacts. Fisheries take place in marine, transitional and freshwaters, although fishing pressure varies from area to area, from almost nil to heavy overexploitation. Illegal, unreported, and unregulated (IUU) fishing and illegal trade are known to occur, as recognised by the scientific advice, Member States, civil societies and the EUROPOL among others. Other human activities than fishing affecting eel are (a) hydropower, pumping stations, and other water intakes; (b) habitat loss or degradation; (c) pollution, diseases, and parasites; and (d) other management actions that may affect levels of predation, e.g. conservation vs. control of predators.

Therefore, the conservation and management of eels as a wide-ranging issue needed to take into account both fisheries and environmental considerations.

In October 2003, the European Commission proposed the development of a Community Action Plan for the management of European Eel¹⁰. In July 2004 the Council adopted

⁷ REGULATION (EU) No 1380/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2013 on the Common Fisheries Policy, OJ L 354, 28.12.2013, p. 22–61

⁸ Council Regulation (EC) No 1224/2009 of 20 November 2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy, OJ L 343, 22.12.2009, p. 1–50

⁹ Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy, OJ L 327, 22.12.2000, p. 1–73, and Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, OJ L 206, 22.7.1992, p. 7–50

¹⁰ COM/2003/0573 final <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52003DC0573>

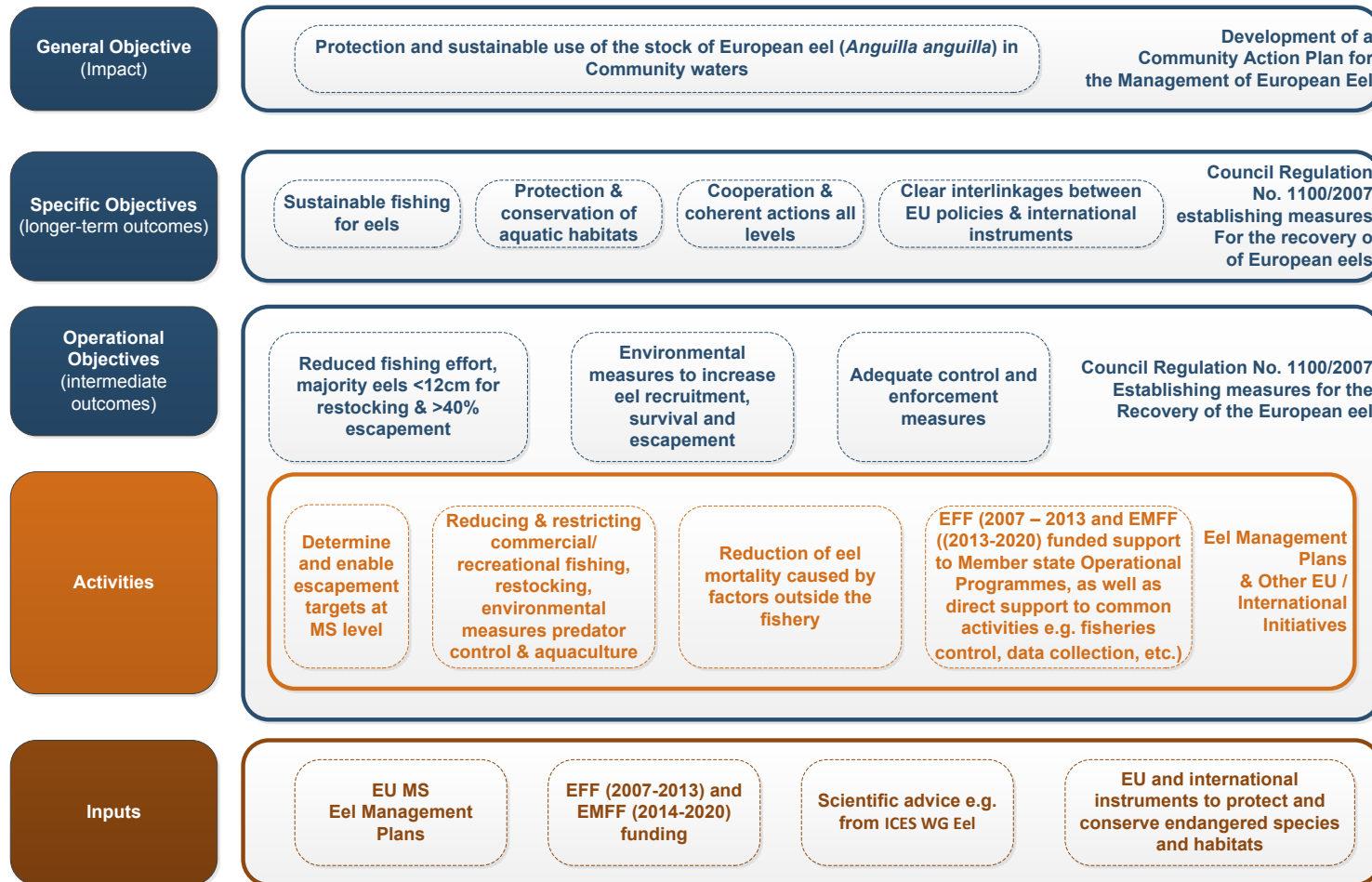
conclusions in this regard and requested the Commission to come forward with proposals for long-term management of eels in Europe. Later in November 2005, the European Parliament adopted a resolution calling on the Commission to submit a proposal for a regulation for the recovery of European eel stock. Based on the identified actions and targets for rebuilding eel stocks under the Community Action Plan for the management of European Eel and the scientific advice, in 2005 the Commission proposed a Regulation to put in place measures for the protection and recovery of the European eel stock, which was adopted by the Council in 2007 (Regulation No 1100/2007).

This so called Eel Regulation entered into force in September 2007 and required MSs to establish EMPs for their river basins that constitute significant eel habitats for implementation in 2009. EMPs had to include (i) measures to ensure the escapement to the sea of at least 40% of adult eels relative to the escapement levels that would have existed in the absence of human influences, such as limiting (professional and recreational) fisheries; and (ii) making it easier for fish to migrate through the rivers; iii) restocking suitable waters with young eel. The Regulation refers to achieving its aim in 'the long term'. The choice of the conservation measures to ensure eel survival remained with MSs as different choices would have different social and economic consequences which could not have been evaluated in a global fashion. In addition, MSs that permit the fishing of eels less than 12 cm in length (glass eels) were obliged to reserve 60% of their glass eel catches for restocking purposes. MSs that have not established EMPs are obliged to reduce their fishing effort/eel catches by at least 50% relative to the average from 2004 to 2006.

Intervention Logic

The **schematic Intervention Logic for the development of the Eel Regulation** is presented in **Figure 1 below**. It illustrates the hierarchy between the objectives, from inputs through activities to the ultimate desired impact of the Eel Regulation and its contribution to achieving the protection and sustainable use of the stock of European Eel in EU waters, reflecting the needs of the 2003 Community Action Plan.

Figure 1. Schematic intervention logic of the Eel Regulation



Baseline and points of comparison

The European eel population has fallen by 90% since the 1960s/70. Scientific advices, before the Eel Regulation entered into force, indicated that the stock was highly depleted and outside safe biological limits¹¹, and in particular pointed out the following:

- the stock was at an historical minimum in most of the distribution area and continued to decline; the fishery was not sustainable; the anthropogenic factors (habitat loss, contamination, and transfer of diseases) have had negative effects on the stock;
- fishing mortality was thought to be high both on juvenile (glass eel) and older eel (yellow and silver eel);
- recruitment to the stock was at a historically low level (1-5% of the pre-1980 level) and most recent observations did not indicate recovery;
- estimated total yield has declined to about half that of the mid-1960s.

Prior the Eel Regulation, many MSs have implemented a wide range of measures concerning eel management such as minimum landing sizes, closed seasons and areas, licensing of eel fishermen, regulations concerning construction of dams and eel passes. Restocking has been practised by some countries for decades, but this has generally been to maintain fisheries rather than improve the stock or recruitment. The EU Habitats Directive was established in 1992 and the Water Framework Directive was established in 2000, *inter alia*, to protect, conserve and enhance the environment where the eel spends the largest part of its life cycle.

The Eel Regulation introduced a common target for all MSs in order that measures to restore eel population are equitable. The Community approach was needed that MSs could each implement a balanced and adequate contribution to the eel management. The Regulation specifically refers to achieving the 40% biomass target in ‘the long term’ but provides no explicit timeline. It also established an obligation for MSs to report to the Commission on the monitoring, effectiveness and outcomes of their EMPs every third year until 2018 and subsequently every six years.

If no action was taken to improve the survival of adult silver eels, a very low abundance of glass eel would result in a decline in the abundance of yellow eel in rivers and at the end the abundance of emigrating silver eel would also decline. Further decline could mean that the European eel stock could no longer exist as a significant exploitable aquatic resource, and the associated jobs and markets could be lost. Failure to act could also accelerate a biodiversity loss and result in a disappearance of the specie.

Other points of comparison relevant for the evaluation of the Eel Regulation

The below described facts underlined the need for policy response.

¹¹ <http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2005/may/wgeel.pdf>
<http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2006/may/eel-eur.pdf>
<http://ices.dk/sites/pub/Publication%20Reports/Advice/2007/oct/eel-eur.pdf>

Considering dire state of the stock, in September 2008 European eel was listed in the International Union for Conservation of Nature (IUCN) Red List as a critically endangered species¹². Next category is extinction of the specie.

European eel was also listed in Appendix II of the Convention on International Trade in Endangered Species (CITES) in 2007 (the listing came into force in 2009), which concerns species that are not necessarily threatened with extinction but that may become so unless trade is closely controlled in order to avoid utilisation that is incompatible with their survival. This is reflected through listing since 13 March 2009 in Annex B to Council Regulation (EC) No 338/97 on the protection of species of wild fauna and flora, which implements the CITES in the EU. The EU Scientific Review Group (SRG) established under the Regulation No 338/97, which gathers all scientific authorities of the EU MSs, at a meeting in December 2010 came to the conclusion that "*it was not possible for the SRG to consider that the capture or collection of European eel specimens in the wild or their export will not have a harmful effect on the conservation status of the species*". On that basis and recurrent annual assessment by the SRG, the EU MSs have not been in a position to allow export from or import to into the EU of the European eel.

In 2014, European eel was also included in the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) List of the Threatened and/or Declining Species and Habitats¹³. The same year, European eel was added to Appendix II of the Convention on Migratory Species (CMS), whereby Parties (covering almost the entire distribution of European eel) to the Convention call for cooperative conservation actions to be developed among Range States.

3. IMPLEMENTATION / STATE OF PLAY

3.1. Description of the current situation

According to the scientific advice, the status of the European eel stock remains critical and the glass eel recruitment remains at low levels at all times. The annual recruitment of glass eel to European waters in 2018 was 2.1% of the 1960–1979 level in the ‘North Sea’ series and 10.1% in the “Elsewhere Europe” series. The annual recruitment of young yellow eel to European waters in 2018 was 29% of the 1960–1979 levels. MSs’ progress in implementing their EMPs and associated measures for the recovery of eel stock is presented below.

3.2. Eel Management Plans and exemptions

Pursuant to Article 2 of the Eel Regulation, MSs are required to establish the EMPs for their river basins that constitute natural habitats for the European eel, for adoption by the Commission on a basis of the technical and scientific assessment. Each EMP constitute a management plan adopted at national level within the framework of the EU conservation measure.

19 MSs have developed and implemented national EMPs: BE, CZ, DK, EE, FI, FR, DE, EL, IE, IT, LV, LT, LU, NL, PL, PT, ES, SE, UK. Some MSs have prepared multiple EMPs to cover individual Eel Management Units (EMU), which typically relate

¹² <https://www.iucnredlist.org/ja/species/60344/45833138>

¹³ <https://www.ospar.org/work-areas/bdc/species-habitats/list-of-threatened-declining-species-habitats>

to River Basin Districts as defined under the Water Framework Directive, resulting in the preparation of over 60 EMPs. One EMP has been developed at cross-border level under Article 6 of the Regulation (the **ES / PT Transboundary Plan** for Minho River). In the majority of MSs, EMPs have remained static documents, rather than being used to encourage adaptive management based on the findings of the latest monitoring and research. Only **one EMP has been amended so far** (by NL). The Commission has approved all EMPs and their amendments based upon an assessment by ICES.

The **EMPs cover almost 90 Eel Management Units and around 1,880 actions**. The management measures vary from one EMU to the other and not all measures are implemented in all EMUs. In many cases, multiple parties have been involved in the development and implementation of EMPs (national authorities and state agencies for fisheries, environment, control, structural funds, as well as academic advisors). This broad involvement reflects the wide geographical coverage, the need to consider both marine and freshwater environments, and the broad scope of proposed management measures.

Five MSs (**CY, MT, AT, RO, SK**) were exempted from preparing EMPs in 2009, pursuant to Article 3 of the Eel Regulation, as their river basins or maritime waters concerned cannot be identified and defined as constituting natural habitats for the European eel.

In accordance with Article 1(2) of the Eel Regulation and based on scientific evidence, the Black Sea and the river systems connected to the Black Sea have been assessed as not constituting a natural habitat for European eel for the purpose of the Regulation. Hence, MSs with river basins flowing only into the Black Sea (**HU, RO**) were exempted from preparing the EMPs.

SI, HR, as well as **BG (for river systems outside the Black Sea)** are not formally exempted but have decided not to submit EMPs as they consider eel catches (outside the Black Sea in the case of BG) to be minimal. Those MSs operating a fishery that catches European eel, who have not submitted EMP to the Commission for approval and have not been exempted, are subject to a 50% reduction of fishing effort or a 50% reduction in eel catch relative to the average from 2004 to 2006, according to Articles 4(2) and 8 of the Regulation.

A list of relevant **Commission decisions** is provided in **Annex 4** to this SWD.

3.3. Measures contained in the EMPs

The implementation of the Eel Regulation has suffered significant delays. EMPs were submitted late by MSs (ranging from several months to almost two years after the deadline), technical evaluations took unexpectedly long, reports had to be re-submitted for approval by the Commission, and the implementation of the majority of plans were correspondingly delayed.

The **main categories of the measures contained in the EMPs** submitted by the MSs include the following:

Commercial fishing: a variety of measures to reduce the impact of commercial fishing on the eel stock typically focused on reducing fishing effort (ranging from prohibition of certain gears in specific areas to total bans on commercial eel fisheries) and introducing

or extending closed seasons. Measures are also aimed at improving fishery monitoring systems (e.g. implementing national catch registers).

Recreational fishing: the measures to reduce the impact of recreational fishing on the eel include bans on targeting or capturing eel, closed seasons, introduction of quota, increase in minimal size limit, and development of systems to report catches.

Hydropower and other connectivity obstacles: within some EMPs, measures aiming to mitigate against the effects of physical obstacles to migration in water courses are focused on removal of barriers, or the installation of eel pass structures. In some cases, they involve trapping of silver eels upstream of obstacles and releasing them downstream of the obstacle.

Habitat improvement: management measures relating to habitat improvement, often described in unspecific and vague terms, include increasing habitat connectivity, improving water quality, and establishing protected areas.

Restocking is a management measure that features in the majority of EMPs.

Other: other management measures listed in EMPs tend to consider enhancement of fisheries management frameworks (e.g. setting up fisheries reporting systems and improvement of fisheries control) or monitoring and research programmes (e.g. expanding catchment fish surveys and progressing research on fish health and development of models to assess stock indicators), rather than strictly looking at addressing anthropogenic impacts. In some cases, measures also target predator control, focused particularly on the control of cormorant populations.

Each MS applies management measures to reach **specific common targets** established under the Eel Regulation in order that measures to restore eel population are equitable. These targets are described below.

The 40% escapement target

In line with the requirements of the Eel Regulation (in particular Article 2 thereof), all EMPs should aim to achieve in the long-term an escapement of silver eel to the spawning population that equals or exceeds a target set at 40% of the potential biomass that would be produced under conditions with no anthropogenic disturbance. There is no timeline for achieving this objective, nor are any interim targets established.

Whilst all EMPs share this common target, the approach to the achievement of that target varies across MSs.

The 60 % restocking target

In accordance with Article 7 of the Regulation, MSs who permit fishing for eels less than 12 cm in length (glass eels), either as part of an EMP or as part of a reduction in fishing effort/catches, are obliged to reserve at least 60 % of those eels caught by the fisheries in that MS during each year to be marketed for use in restocking in eel river basins for the purpose of increasing the escapement levels of silver eels.

This target was to be achieved by 31 July 2013 gradually by setting at least 35 % in the first year of EMP application and then increased by steps of at least 5 % per year.

The 50% fishing reduction

Pursuant to Articles 4(2) in conjunction with Article 8(1) of the Regulation, a MS, who has not submitted an EMP to the Commission and who has not been exempted from this, is obliged either to reduce fishing effort by at least 50 % or eel catches by at least 50 %, both relative to the average from 2004 to 2006.

This reduction was to be achieved gradually from 1 July 2009, initially by steps of 15 % per year in the first two years over a 5-year period.

3.4. Reporting by Member States and the Commission

Reporting on EMP implementation

Under Article 9 of the Eel Regulation, MSs are required to **report on the monitoring, effectiveness and outcomes of EMPs** initially every three years and then after a third progress report every six years. Under the Joint Declaration on the recovery of European eels (December 2017), MSs agreed to continue providing progress reports on the implementation of their EMPs every three years, until there is a strong scientific evidence of recovery signs for the eel population across Europe.

The required information includes:

- the proportion of silver eel biomass (relative to the target level of escapement) that escapes to the sea to spawn or leaves the national territory;
- the level of fishing effort that catches eel each year;
- the level(s) of anthropogenic mortality outside the fishery;
- the amount of eel less than 12 cm in length caught; and
- the proportions utilized for different purposes.

The Commission has facilitated this reporting and the assessment by providing further guidance to MSs through explaining various definitions and preparing specific templates in Excel format, developed with ICES, to be used on a voluntary basis.

Moreover, MSs are obliged to establish the appropriate reporting systems:

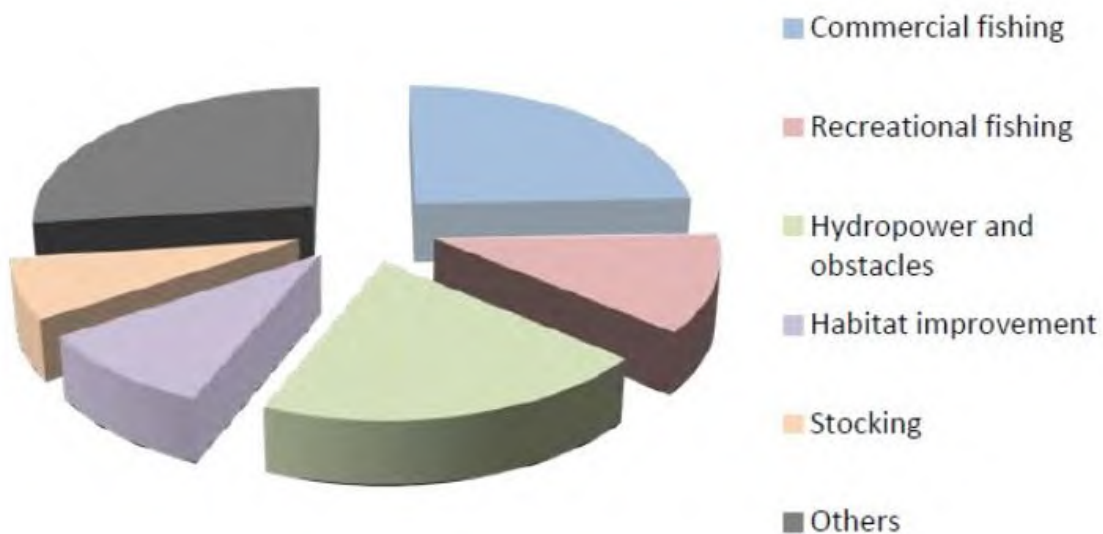
- to ensure that the respective percentages of eels less than 12 cm in length caught are used in a restocking programme (Article 7(3) of the Regulation);
- to monitor market prices for eels of less than 12 cm in length to be reported annually to the Commission (Article 7(5) of the Regulation).

Progress reports - 2012

In 2012, MSs first reported on the actions taken under the EMPs, the reduction in anthropogenic mortalities achieved, and the state of their stock relative to their targets. ICES evaluated these progress reports in terms of the technical implementation of actions.

The **2012 Progress Reports** inform about a total of 1,362 individual management actions from the 81 Eel Management Units (EMU) established by MSs. The most commonly adopted categories of measures were those aimed at the control of commercial and/or recreational fisheries with slightly fewer measures addressing hydropower and obstacles to eel movements, and fewer still implementing habitat improvement or stocking measures (see **Figure 2**).

Figure 2: Proportion of management measures by category [source: ICES (2014a)]



About two-thirds of the planned measures under the EMPs relate to fisheries (commercial and recreational), improved passage at hydropower installations and other obstacles and habitat improvement in general.

Many MS did not completely report stock indicators (22 of 81 EMPs did not report all biomass indicators, and 38 did not report all mortality indicators), and there were differences in the approaches used to calculate reported stock indicators.

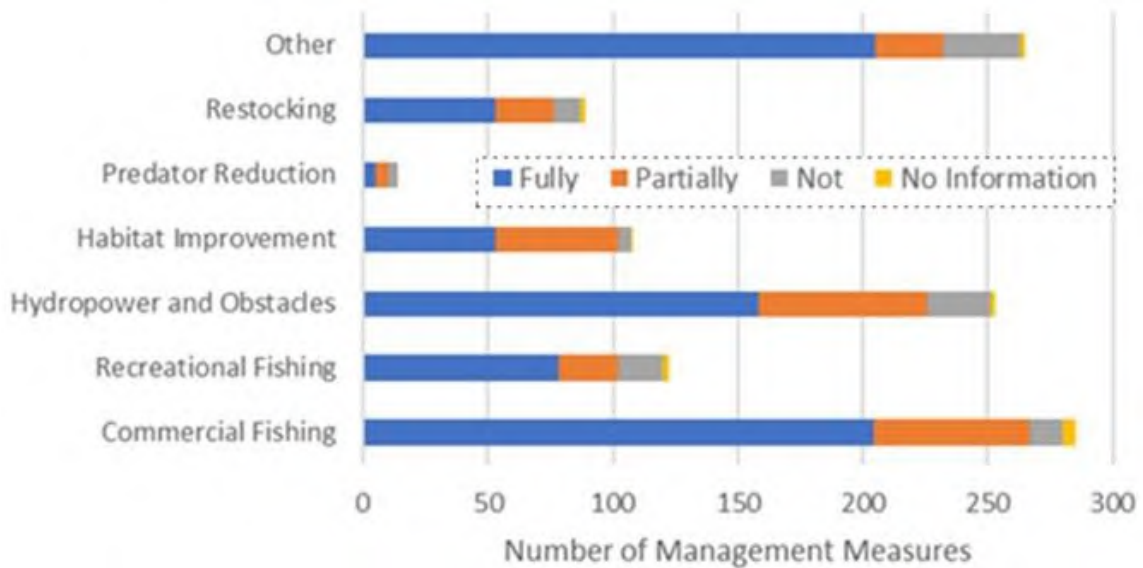
Analysis of 2012 Progress Reports showed mixed results. Out of 1,188 management actions documented, 1,140 had been planned in the original EMPs and the remaining 48 were new, additional measures. A total of 756 management actions (e.g. easement of barriers, restocking, restrictions on fishing) proposed in the EMPs had been implemented fully, 259 partially and 107 declared as not implemented at all. Information for the remaining 18 measures was missing.

In terms of progress towards EMP targets, out of 81 EMUs, 17 EMUs were achieving their biomass targets, in 42 EMUs this was not the case, and there is no report for 22 EMUs. 24 EMUs reported on achieving their anthropogenic mortality targets, 19 reported not to have achieved these targets. Of 59 EMUs analysed, 29 reported a rise in silver eel escapement and 30 reported a decline.

In most EMUs established by countries for the implementation of their EMPs, progress was made in implementing management measures related to fisheries, but other management measures, such as improving habitats, combatting parasites or predator control, have often been postponed or only partially implemented.

The extent to which management measures as detailed in EMPs have been implemented is presented in **Figure 3** below.

Figure 3: Implementation of management measures in EMPs, as reported in 2012 progress reports, summarised by category [Source: Reproduced from ICES, 2018d]



2014 Commission report

In October 2014, the Commission reported to the European Parliament and the Council on the outcome of the EMP implementation, as well as on the measures concerning restocking and evolution of the market prices on glass eels¹⁴. The results of this first assessment were largely inconclusive due to the delays in the preparation and approval of the national EMPs and the delays in the implementation of non-fisheries related measures. In general, it remained difficult to assess the outcome of EMPs against the 40% escapement target set by the Regulation. It was not yet possible to determine on an individual basis the contribution of EMUs to the recovery of the whole stock.

Progress reports - 2015

MSs again reported on progress with implementing their EMPs in 2015. 14 out of 19 countries submitted national reports¹⁵. However, the required information was not always complete, and the quality of the national data and assessment were difficult to evaluate.

Progress reports - 2018

It needs to be noted that the **2018 reporting** by MSs was again not complete. Of those countries with EMPs: LU and PT did not report at all; CZ, FI and IE provided a description but no data tables, and FR and PL did not provide all seven data tables. CZ, FI, EL, IE, LV, PL and ES reported after the deadline.

The 2018 progress reports have been evaluated by ICES (for the biological part) and by the external study consultants (for other parts). Significant complexities were involved, for example as a result of the continued lack of standardisation in approaches taken by countries to modelling and calculation of stock indicators.

¹⁴ COM/2014/0640 final, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2014:640:FIN>

¹⁵ CZ, EE, ES, LU and LV did not submit their progress reports.

An overview of the targets and management measures set out in EMPs and the extent to which they are known to have been implemented in each MS is presented in **Annex 5**. It includes a scope and availability of EMPs and Progress Reports (**Annex 5.1**), and MS progress in implementing their EMPs and achieving the escapement target (**Annex 5.2**).

The analysis based on 2018 Progress Reports has found that:

- **5 MSs report full or partial** (i.e. within some but not all EMUs) **achievement of the 40% escapement target**, though in some cases there is significant uncertainty associated with escapement calculations.
- the remaining **14 MSs mostly report that the escapement target has not been achieved**, and in some cases, there is insufficient data to judge whether the target has been achieved.

Table 1. Achievement of the 40% escapement target by MSs

Achievement of 40% escapement target	Member State
YES	EE, IE (in all EMU but one)
Partial/variable	DE, ES, UK
NO	BE, DK, IT, LT, LU, LV, NL, PL, SE
Not clear	CZ, FI, FR, EL, PT

Only in some cases, Progress Reports analyse the causes of failure to achieve the Eel Regulation main target (i.e. escapement). Causes mentioned are:

- need for higher levels of inter-agency cooperation at MS level to implement management measures,
- lack of/poor data on which to base management measures and monitor progress,
- concerns about the uncertainty around management measures influencing spawning and ultimately stock status (i.e. more fish does not necessarily equate to increased spawning), and
- lack of funding to implement management measures.

The EMP Progress Reports and Country Reports provided to the WGEEL in 2018 indicate that management measures set out in original EMPs have not changed significantly over time. Broadly, it appears that the focus has moved even further towards fishing restrictions and away from non-fisheries measures.

The assessment of EMPs and Progress Reports shows that both comparative analyses of progress across the MSs, as well as a cumulative analysis for the entire EU, is currently not achievable. This is due to incomplete national datasets, uncertainty about the quality of national data and assessments and the differing approaches taken by MSs for measuring stock indicators.

Good practices in eel conservation

This evaluation finds that there have been a number of successes and examples of good practice as a direct result of the Eel Regulation. These practices may be a source of inspiration for other MSs for strengthening the implementation of their EMP and various activities. These good practices are described in more detail in **Annex 5.3**. In summary,

most of these successes have been fisheries-focused. Many are bringing short-term gains e.g. reduction in fishing effort and output, but others maybe longer-term, e.g. bringing fundamental changes in MS and individual EMU management. However the main challenge is now to consolidate these successes and to address the longer-term, often non-fisheries related anthropogenic impacts on spawner escapement.

Reporting on the evolution of market prices for eels < 12 cm

Reporting requirements

Pursuant to Articles 7(5) of the Eel Regulation, the Commission shall report annually to the Council on the evolution of market prices for eels of less than 12 cm in length¹⁶. For this purpose, MSs are obliged to establish an appropriate system to monitor these prices and report on them annually. By 1 July 2011, the Commission was to report for the first time to the Council on the evaluation of the measures concerning restocking, including the evolution of market prices.

The level and quality of glass eel price reporting is highly variable between MS and as a result, the Commission has been unable to fulfil this annual reporting requirement. According to the 2014 Commission assessment report¹⁷, only 9 complete glass eel reports were received by July 2012. Since then, no national reports on glass eel prices have been submitted, although BE, DK, EE and the UK have provided some price data in their recent 2018 Annual Progress Reports. **This represents a major failure in the Regulation's monitoring requirement.** As mentioned above, these prices are linked to the glass eel harvest strategy in terms of managing the proportion of eels <12 cm reserved for stocking.

According to Article 7(6) of the Eel Regulation, when market prices of glass eel used for restocking suffer a significant decline compared to the price of glass eels used for other purposes, based on price information submitted by MSs, the Commission is required to take appropriate measures to address the situation. These measures may include a reduction in the percentage of glass eels to be reserved for restocking as set out in Article 7(2) of the Regulation. No such measures have been adopted.

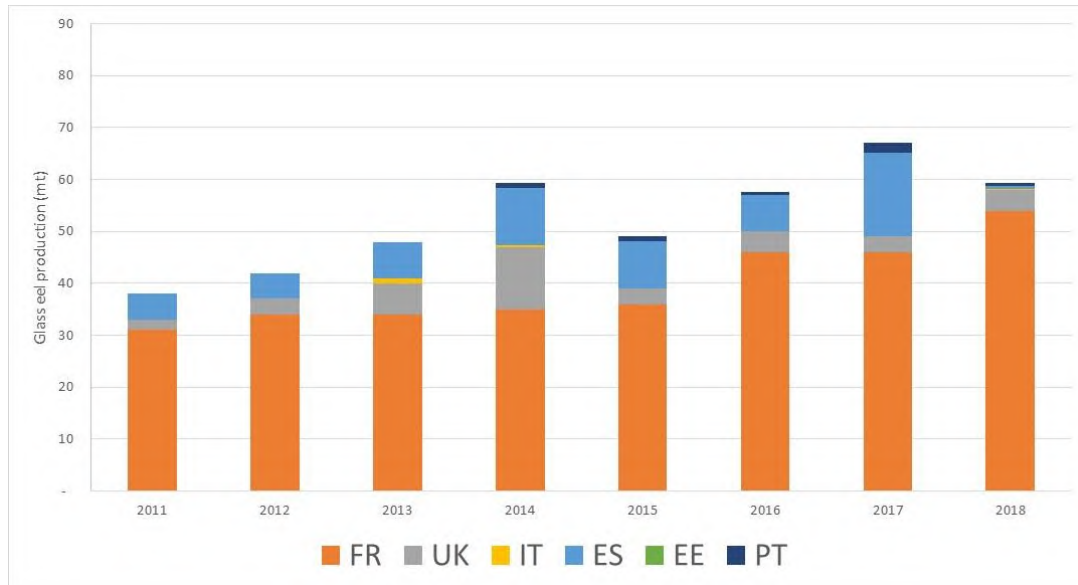
Glass eel production

Reported **glass eel production** has increased from just under 40 tonnes per annum in 2011 to around 60 tonnes in 2018. FR remains the predominant glass eel producer and is the only country to set quotas (currently 64.75 tonnes, of which 38.75 tonnes are reserved for restocking). ES glass eel production over this period (minimum 1 ton in 2018 and maximum 16 tonnes in 2017) is mainly for local use in a small area of the Basque region, a traditional practice that is now being replaced with an artificial substitute.

¹⁶ Eels less than (<) 12 cm in length are mainly composed of glass eels (min. 5.4, max 9.2 cm) and smaller yellow eels (e.g. from 6.9 cm upwards (to 133 cm))

¹⁷ COM/2014/0640 final

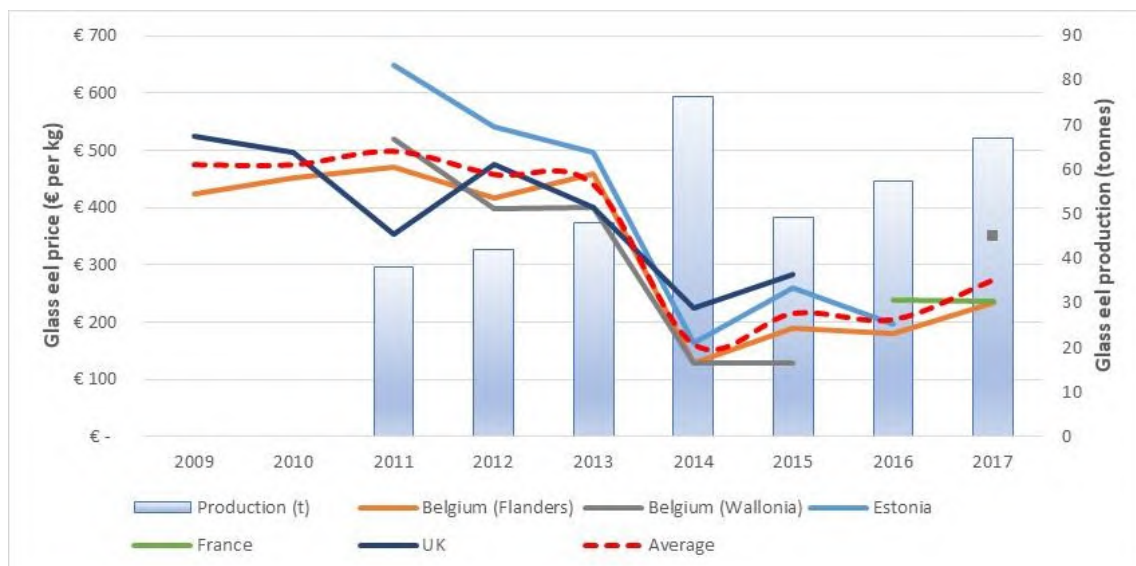
Figure 4: EU glass eel production (2011 - 2018), Source: Compiled from ICES (2018c)



Evolution of market prices of eels less than 12 cm in length

Based on the limited data available, **the EU market prices of eels <12 cm** that are predominantly used for restocking (besides some limited traditional direct consumption) remained fairly constant at around €470 / kg over the five year period 2009 – 2013 before collapsing to €128 in 2014 (presumably in response to the abovementioned spike in production that year) and recovering slowly to the 2018 average of €274 (see **Figure 5**). These figures conform with confidential tender prices provided to the consultant of the external study by glass eel traders over 2016 – 2018.

Figure 5: Average prices for glass eels <12 cm (2009-2017) used for restocking, showing production (tonnes, 2011-2017)



Source: Prices 2018 Country Progress Reports (BE, EE, FR & UK); production ICES 2018a

19 EU countries sold live eels over the last decades. This trade includes re-selling of glass eels from one country to another e.g. if eel is sold from ES to DE and afterwards is

transported to PL for stocking, the eel sales would be double counted as sales from ES and sales from DE. A comparison between sales and buyer statistics reveals that potentially 50% of the total sales could be double counted in this way and that for several countries the percentage of re-sales could be as large as 100%. As most of the countries in the above graph do not produce any glass eel, presumably these prices are re-exports. Therefore the total sales values should be regarded with caution (Motova, 2014).

Intra-EU trade in glass eel

Focusing on the intra-EU trade in glass eels, the reported EU catch of glass eels is around 60 tonnes per annum (see **Figure 5 above**). In fishing season 2016/2017, 64 tonnes of glass eel catches were declared to national authorities in FR, ES, PT and UK and 59 tonnes in the season 2017/2018. The market for glass eels within the EU for aquaculture is around 15 – 20 tonnes and restocking is about 36 tonnes (60% of reported catches must be used for restocking). There may be an additional 10 tonnes for direct consumption in ES, so the total EU market is around 50 to 55 tonnes. Questions have been raised about the fate of the other 5-10 tonnes of glass eels.

It needs to be noted that at the lucrative Asian market the prices for glass eel can reach €1,500 – 2,500 per kg in Hong Kong. Much of this is on-grown in China, but some may be exported to Japan, also for aquaculture (MRAG, 2017; Sanada, 2018).

3.5. Overall state-of-play of the implementation of the Eel Regulation

Substantial efforts have been made by MSs to develop and implement management measures for the recovery of the eel stock. About two-thirds of the planned measures under the EMPs relate to fisheries (commercial and recreational), improved passage at hydropower installations and other obstacles and habitat improvement in general.

The implementation of measures varies in terms of progress and in terms of approach. The management measures vary by the EMU, i.e. not all measures are implemented in all EMUs. There are no major changes in management practices for eel throughout Europe in the recent years. Some countries have implemented measures according to their stated schedule whilst others have lagged behind.

Despite a significant proportion of measures fully implemented, there is no evidence to suggest that these measures have enabled significant progress towards the escapement target. The silver eel escapement is still well below the 40% target.

Some progress has been made in reducing fishing effort, but it has also risen in some MS. Catches of yellow and silver eels have declined. Glass eel catches are steadily increasing. There is also likely to be considerable un-observed and un-estimated eel mortality through IUU fishing in EU waters. Whilst restocking works in some countries, not all have achieved their 60% restocking targets.

The reporting on the evolution of the market prices for eels < 12cm has been largely incomplete and on irregular basis. Reported glass eel production has increased from just under 40 tonnes per annum in 2011 to around 60 tonnes in 2018. FR remains the predominant glass eel producer and is the only country to set quotas.

4. METHOD

4.1. Methodology and data collection

The evaluation is based on three pillars:

- 1) an evaluation study, carried out by an external consultancy¹⁸, and which primarily looked into management, implementation and enforcement issues, including trade aspects;
- 2) the International Council for the Exploration of the Sea (ICES) recurrent advices on eels and the ad hoc assessment of the 2018 Member States' progress reports for the biological part; and
- 3) Commission's analysis of the use of the EMFF and the EFF for the implementation of the Eel Regulation, tasked to the FAME¹⁹ Support Unit.

The procedural information can be found in **Annex 1**.

The external study was conducted between 21 September 2018 and 3 July 2019 over four main stages: inception phase, desk-based data collection, stakeholders consultations, and analysis and presentation. The study was supported by three country case studies to provide more detailed insight into the implementation of the Eel Regulation at national, regional and local levels. Three MSs included FR (top producer of wild caught glass eel, main EU MS restocking glass eels), DK (major producer of commercially and recreationally caught eels in the EU; a major aquaculture producer) and IT (eel exploitation still important despite a progressive and increased loss of interest, the intensive aquaculture strongly reduced today). The FAME reports and ICES advices were taken into account for the analysis under the external study.

For this evaluation, data were collected using different methods:

- analysis of MSs EMPs and relevant progress reports;
- analysis of MSs reports on the use of the EMFF and the EFF;
- results of the questionnaires from the Commission on control of eel fisheries (2017-2018);
- feedback from MSs;
- targeted stakeholder consultations and public consultations;
- literature review, reports, scientific advice on eels (in particular annual ICES advice on the state of the eel stock and ad hoc advices requested);
- analysis of the River Basin Management Plans (RBMPs) submitted under the Water Framework Directive (WFD) and relevant evaluation reports of the second cycle RBMPs;
- findings of 2007-2012 Habitats Directive Article 17 reports on the conservation status of the most important Annex I habitat types for the European Eel²⁰;
- previous Commission assessment report: 2014 Report from the Commission to the Council and the European Parliament on the outcome of the implementation

¹⁸ "Evaluation of the Eel Regulation. Final Report", Coffey.

¹⁹ Fisheries and Aquaculture Monitoring and Evaluation under the European Maritime and Fisheries Fund

²⁰ <http://art17.eionet.europa.eu/article17/reports2012/habitat/summary/>

of the Eel Management Plans, including an evaluation of the measures concerning restocking and of the evolution of market prices for eels less than 12 cm in length.

The methods and tools for data collection and analysis were designed and refined such as the Evaluation Questions Matrix (see **Annex 3.1**).

List of main literature consulted is included in **Annex 3.3**.

4.2. Consultation strategy

The consultation was carried out to gather input from all relevant sources to evaluate the measures taken for the recovery of European eel stock under the Eel Regulation and their contribution to the achievement of the objectives of this regulation.

The main objectives of the consultations were to:

- 1) obtain, analyse and integrate the views and experiences of those that are directly affected by the implementation of the Eel Regulation;
- 2) gather the views of citizens and a wider stakeholder community on the issues related to the implementation of the Eel Regulation;
- 3) identify the benefits and burdens generated by the implementation of this Regulation;
- 4) detect issues in the applicability and enforcement of these rules.

The main **consultation tools** used were a public consultation (Commission-led) and targeted consultations with the assistance of an external consultancy within a supporting evaluation study.

The consultation featured the following components:

- The online feedback to the Evaluation Roadmap²¹ open for 4 weeks from 13 April to 11 May 2018.
- A public consultation via the Commission's central public consultations page²² with a structured questionnaire (developed with support of the external study consultants) published online in all EU languages on 14 December 2018 for a period of 12 weeks and publicised on the Commission websites, networks and with national authorities. Separate written contributions were also received.
- Targeted consultations, both written (based on questionnaires) and oral in a limited number of EU languages of the MS public authorities, conducted by the external consultants.
- Targeted consultations of key stakeholders affected by the implementation of the Eel Regulation through bilateral interviews, complemented by additional phone interviews in some MSs, carried out by the external consultants.
- Targeted consultation of the relevant Advisory Councils, the main stakeholder bodies bringing together sectorial organisations and other interest groups affected by policy initiatives in the area of the eels management, carried out by the external consultants.

The list of main stakeholders consulted is provided in **Annex 3.2**.

²¹ https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2018-1986447_en

²² https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2018-1986447/public-consultation_en

Synopsis Report of the consultation is enclosed in **Annex 2**.

4.3. Timing and robustness of the evaluation

The evaluation started in the first quarter (Q1) of 2018 and was planned to be completed in Q1 2019 to present the results of the evaluation and its conclusions to the Council in Q1 2019, as agreed under the Joint Declaration on strengthening the recovery for European eel (December 2017). The external study in support of this evaluation was finalised in July 2019.

The data gathered from the analysis of the EMP progress reports, other reports and literature, the targeted and open consultations, all together, provide a solid body of evidence. The evaluation is considered to be robust and well informed.

Key limitations

The complex biology of the European eel and its long life cycle (from 10-20, up to 50 years) makes it difficult to observe significant signs of recovery of the eel when focusing on the past ten years of the EMPs being implemented. This factor impacted at this stage the analysis of the effectiveness of the Eel Regulation and the associated measures.

The lack of data on costs in MSs made it impossible to provide a monetarised analysis of the cost-benefits of the Eel Regulation. Thus, the efficiency of the measures established under the Regulation could not be evaluated in depth.

The lack of progress reports from some MSs, incomplete reports and national datasets, uncertainties on the quality of national data and assessments, and the differing approaches taken by MSs to measuring stock indicators, impeded both comparative analyses of progress across MSs, as well as a cumulative analysis for the entire EU.

5. ANALYSIS AND ANSWERS TO THE EVALUATION QUESTIONS

5.1. Evaluation Questions Matrix

The evaluation questions were drafted to provide answers to the six evaluation criteria (relevance, effectiveness, sustainability, efficiency, coherence and EU added value) and structured around the judgement criteria (JC) used to interpret each evaluation question (EQ). The analysis of the evaluation questions are based upon the **Evaluation Questions Matrix** that is provided in **Annex 3.1**.

5.2. Analysis and answers

5.2.1. RELEVANCE

EQ1. To what extent are the existing measures for the recovery of European eel stock under the Eel Regulation still relevant?

Escapement levels

The analysis of the 2018 Progress Reports suggests that only two MSs achieved their escapement targets (EE, IE), three countries met them partially (DE, ES, UK), while other MSs who reported did not achieve this target or it is not clear.

The results of the scientific assessment by ICES show that in 2017 the spawner (silver eel) escapement from the majority of EMUs was below the 40% target (ICES, 2018c).

This confirms that the escapement levels are still well below the general objective of the Eel Regulation of at least 40% of the silver eel biomass that would have existed if no anthropogenic influence had impacted the stock.

Eel landings, aquaculture production and eel recruitment

Fisheries impact local eel populations and spawner escapement in 15 out of 20 countries reporting to the WGEEL. In total, fisheries make up for more than 50% of anthropogenic mortality in 29 of 62 EMUs, where data for fishing and hydropower mortality was reported.

Wild fisheries landings have declined to the current levels of around 2,500 tonnes since 2010 onwards where they are now broadly stable. According to ICES estimates, in 2017 the EU harvested around 2,300 tonnes of eels with FR, UK, DK and SE taking around two-thirds of the EU wild catch between them. In particular, recreational landings, mainly of yellow and silver eels are now around 161 tonnes, mostly from DK, but reporting is now limited. ES is the only country to have glass eel recreational landings.

Aquaculture production of eels declined to approximately 5,000–6,000 tonnes now, mainly reflecting a reduced demand. It should be noted that eel aquaculture is based on wild recruits, and some of them are subsequently released as on-grown eel for stocking.

Eel recruitment indices show a similar pattern, having strongly declined from 1980 to about 2010, and have remained at a low level since. The annual recruitment of glass eel to European waters in 2018 was 2.1% of the 1960–1979 level in the ‘North Sea’ series and 10.1% in the “Elsewhere Europe” series. The annual recruitment of young yellow eel to European waters in 2018 was 29% of the 1960–1979 level (ICES, 2018a).

Annex 6 provides for more detailed information on the European eel status, landings, recruitment and aquaculture.

This suggests that, in terms of landings and stock recruitment, whilst the situation is no longer declining, it is still critical. Concern has also been expressed around the effects on species status of illegal, unreported and unregulated (IUU) fishing and the illegal trade in glass eels (SEG, 2018, Crook, 2010).

Mortality outside the fishery and river basin conditions

A key source of eel mortality outside the fishery is the impact of hydroelectric turbines and dams on migration and escapement. As reported by ICES, the estimations of MS suggest that hydropower mortality accounts for more than 50% of anthropogenic mortality in 33 of 62 EMUs, where data for fishing and hydropower mortality was reported (ICES 2017b).

The scientific data suggest that the **anthropogenic mortality outside the fishery**, whilst variable (can depend upon environmental conditions (flooding vs. drought) at the time of the down-stream migration), **has not declined significantly over the past decade.**

See **Annex 6** for more detailed information on the eel mortality outside the fishery,

Overall

The Eel Regulation provides an avenue for addressing both the fisheries and non-fisheries-related mortality in marine and fresh waters.

As the recovery of the European eel is a long-term process that will take decades rather than years to progress, in terms of stock recovery – both from direct fishing as well as from other anthropogenic source of mortality, **the objectives of the Eel Regulation are still highly relevant**. This was confirmed in the Public Consultation, where more than nine in ten respondents agreed that there remains a need to ensure that anthropogenic mortalities are reduced, for a European recovery plan for the European eel and for MSs to implement EMPs.

5.2.2. EFFECTIVENESS

EQ2. To what extent have the current measures for the recovery of European eel stock under the Eel Regulation met its objectives?

This section is structured around the objectives as set out in the intervention logic (see **Figure 1 in Chapter 2**).

[The protection and sustainable use of the European eel stock in EU waters](#)

The ICES Stock Annex and the most recent ICES assessments show that the European eel stock is outside safe biological limits, the current fishery is not sustainable and that the stock has not recovered to any significant degree since 2010. The previous decline in recruitment and landings seem to have levelled out, although recruitment remains at historically low levels, which is an indication that the reproduction is seriously impaired. The stock stabilisation is likely to have been supported by the reduction in fishing effort in many MSs but stock recovery is a long-term goal that can be achieved through addressing spawner escapement through habitat rehabilitation and improved connectivity. Only a combination of several measures can be expected to bring the stock out of its current critical state.

According to science, an analysis of the stock dynamics under different management regimes indicates that the recovery time for eel could be at least 20 years or much more, or three eel generations (although eel generations differ with location across Europe, an average of 18 years per generation)²³. Some MSs consulted argue that it can even take up to 50 years or more for the eel to recover.

Concerns about the conservation and the unsustainable exploitation of the eel stock have been growing and the need for conservation and management measures is clearly identified by scientists, managers, various stakeholders and by the public. The protective measures to recover the eel population in Europe were widely supported by the respondents to the Public Consultation. Moreover, many stakeholders consider that the ‘black’ market and trade of eels has implications for both European eel management and recovery.

²³<http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2007/Special%20Requests/EC%20guidelines%20for%20eel%20MP.pdf>

It is clear that the recovery of the European eel is a long-term process that will take decades rather than years to progress given the long life-span of the species (e.g. 20 years). Overall, the Eel Regulation has not yet proven its effectiveness in reaching its objective of achieving the appropriate protection and sustainable use of the European eel stock in EU waters that would reflect the recovery of the stock. This is further evidenced below.

Sustainable fishing of eels

➤ On EMP and escapement target

The key objective of the Eel Regulation and consequently of the EMPs is to achieve a target of 40% escapement of spawners (e.g. silver eels). This is a long-term objective, although no definite time period is specified. The management biomass reference limit of 40% for eels is considered as a common proxy for maximum sustainable yield (MSY) under the Common Fisheries Policy, however there are difficulties in applying the MSY approach to catadromous species such as the European eel, which spends a part of its life in marine waters and mostly in fresh waters.

The evaluation finds as confirmed by the scientific advice that the spawner (silver eel) escapement from the majority of EMU is below the 40% target. Currently, the achievement of this target by MSs has been analysed as:

- fully implemented in EE and IE (in all EMU but one);
- partially in DE, ES, UK;
- not implemented in BE, DK, IT, LT, LU, LV, NL, PL, SE;
- not clear in CZ, FI, FR, EL, PT.

This indicates that it will take considerable more time to achieve EMP targets by MSs.

The Public Consultation respondents were much less convinced that the overall aim of achieving the 40% eel escapement target was achievable.

Some scientists suggested that focusing on mortality and setting mortality targets in line with the long-term objective of 40% silver eel biomass may be a more appropriate harvest strategy. This is echoed by the recent report to the European Parliament (Hanel, 2019), providing that a number of authorities argue that a move from current 40% regional level escapement targets to a mortality-based target would also be in better agreement with ICES advice on eels (“*all anthropogenic mortalities should be reduced to as close to zero as possible*”).

➤ On fishing effort reduction

The information on fishing effort reduction in those MSs who have not established their EMP and were not exempted by the Commission, and who operate a fishery in EU waters that catches eels, is not available. The Eel Regulation does not provide for a reporting mechanism in this regard.

Limiting eel fisheries and fishing effort reduction is a measure that features in many EMPs. This information is necessary to correctly interpret the changes to the landings data over the years.

The most recent results for the six top eel fishing MSs in the EU (note that FR did not submit effort data in 2018) suggest that effort has declined in SE (by over 90%), IT (just over 50%), DK (by almost 50%) and DE (by 25%). However, effort appears to have risen to 135% of 2008 levels in the UK²⁴ and 180% of the 2012 level in PL. See also **Annex 6**. The wild eel fisheries landings varied between 8,000 and 10,000 t until the early 1990's when they declined to the current levels of around 2,500 t since 2010 onwards, where they are now broadly stable.

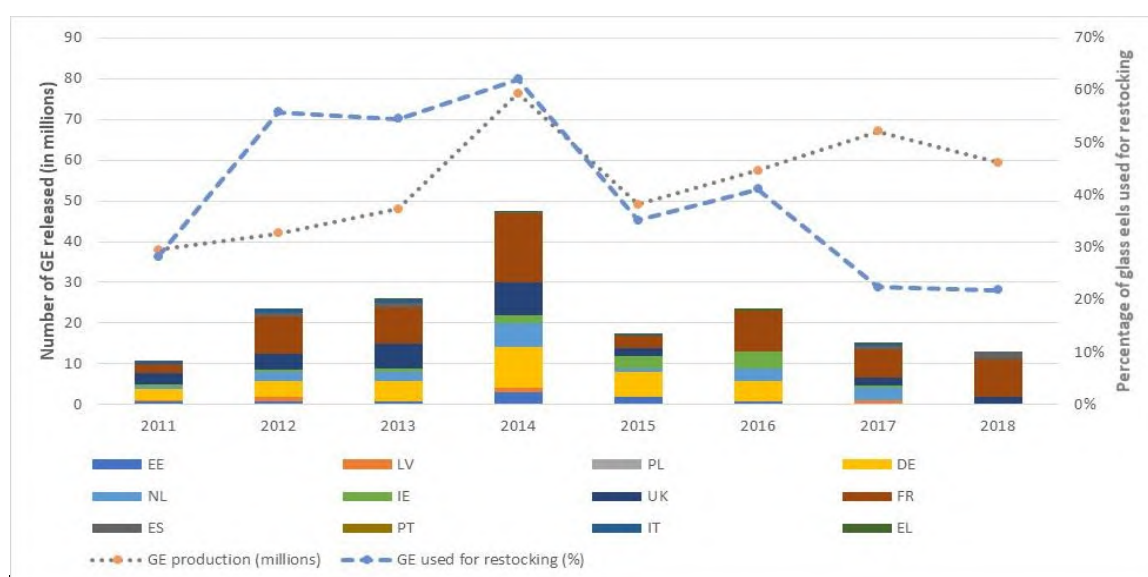
It needs to be also highlighted that the impact of recreational fisheries on the eel stock remains largely unquantified although landings can be thought to be at a similar order of magnitude to those of commercial fisheries. A number of stakeholders contacted as part of this evaluation called for recreational fisheries for eel to be phased out or substantially reduced, often citing the example of FR, IE and SE in banning recreational eel fishing. According to ICES (2013c), almost all countries planned management measures for recreational fisheries. However there has been little or no monitoring of the effects.

➤ On restocking

The Eel Regulation requires that at least 60% of glass eels caught in each MS, who permits fishing for eels less than 12 in length, should be reserved and used for conservation-oriented restocking (or translocation) within the EU.

Stocking is a measure that features in many EMPs. By 2013, stocking of glass eel was undertaken in 16 MSs. The amount of glass eels restocked increased in 2014 when the lower market prices guaranteed a larger number of glass eels could be purchased for fixed restocking budgets but has decreased since then (see **Figure 6** below).

Figure 6: Reported production and restocking of glass eel not including those in quarantine by country (in millions) and as a proportion of production (%) (ICES, 2018b)



²⁴ In the UK, it is understood that good glass eel catches rapidly stimulate further effort as the mainly part-time fishers communicate with others via smart phones.

Whilst stocking is a measure that features in many EMPs, only six countries achieved their EMP stocking target (ICES, 2016c). The figure above shows that the overall target of 60% use of reported catch in restocking was only achieved in 2014 when there was a plentiful supply of glass eels, but it has dropped to around 22% in 2018. Most EMUs had undertaken a limited quantity of their stocking targets while a few had yet to implement any of their stocking actions. The most common reason given in 2013 for a country being unable to achieve its stocking target was a lack of funding to buy glass eel, which was different from that given in the recent past when the cost of glass eel was given as the cause.

More recently the limited availability of glass eel for stocking was highlighted, a situation exacerbated by the high cost and considerable administrative process required to tender for glass eel supplies under the EMFF. One major stakeholder involved in glass eel restocking noted (i) as the lowest of three tendered has to be taken, the quality of such supply is often poorer than more expensive tenders and (ii) it is difficult to forecast the actual price of glass eels in advance, which discourages glass eels stakeholders from tendering for MS restocking programmes in advance.

The benefit of stocking can be considered at three geo-political scales:

- local interests (the production gained locally by stocking);
- the national/EMU scale of EMPs (applying stocking to achieve EMP biomass targets);
- the continent-wide scale (stocking contributing to the general recovery of the stock).

Concerns about the effects of eel stocking practices (e.g. spread of disease, illegal trade, stocking above dams and hydro barriers) and its effectiveness in contributing to increased silver eel production have been raised. Scientific reviews of restocking as a management measure (ICES, 2010b; Pawson, 2012; ICES, 2013c; ICES, 2016c) concluded that there is evidence that translocated and stocked eel can contribute to yellow and silver eel production in recipient waters²⁵. However, the scientific evidence of further contribution to actual spawning and the overall biomass increase of the stock is limited. Whilst a local benefit may be apparent, an assessment of net benefit to the wider eel stock is unquantifiable and limited by the lack of knowledge on the spawning of any eel.

ICES also suggest that stocking should take place only when survival to silver eel escapement is high and should not be used as an alternative to reduce anthropogenic mortality.

Moreover, the translocation of eels, although effective in maintaining or supporting eel populations in compromised river systems, is considered an expensive and often administratively burdensome process. It is noted that restocking/translocation of glass eel should be considered a short to medium term measure that could be phased out if natural recruitment and spawner escapement were improved.

➤ Eel aquaculture

²⁵ These included several Danish, German, Swedish and Estonian Lakes, Lough Neagh in Northern Ireland as well as Danish streams and marine areas.

It should be noted that eel aquaculture is based on wild recruits, and part of them is subsequently released as on-grown eel for restocking. The farmed production of European eel increased until the end of the 1990s. It clearly starts to decline since the mid-2000s from 8,000–9,000 tonnes to approximately 5,000–6,000 tonnes now (see also **Annex 6**). In 2017, the reported quantities of eels produced in aquaculture is 4,546 tonnes. NL and DE are the main EU aquaculture producers.

Reproduction of the European eel has not yet been achieved in captivity and glass eels are normally purchased from the UK, French and less frequently Spanish and Portuguese wild fisheries. Progress is being made in terms of spawning, nursing and weaning onto first diets (Butts *et al*, 2016) but the large-scale, closed cycle farming of eels is not yet achievable. Until this is achieved, aquaculture is still dependent upon glass eels and therefore has not reduced the pressure on wild stocks as yet. It is also noted that there are associated risks attached to stocking glass eel, young yellow eel and on-grown eel from aquaculture. As identified by scientists, those risks include spread of parasite, diseases, altering sex ratios, genetic and biological fitness.

➤ On control and enforcement measures, including traceability

MSs are required to establish a control and catch monitoring system adapted to the circumstances and to the legal framework already applicable to their inland fisheries, which must be consistent with the relevant provisions on the fisheries control system.

The eel control measures fall under the responsibility of different Ministries (e.g. agriculture and fisheries, environment, finances) and in case of surveillance activities also under the mandate of police and military forces. All countries reported having implemented cooperation mechanisms between the different entities in charge of control through dedicated steering platforms.

Analysis based on the targeted consultations on control issues, suggests that control and enforcement activities in support of the EMP have taken place in EU waters and in their territories, and at all stages of the eel supply chain. The eel fisheries control have been subject to a risk-assessment analysis to identify priorities. A number of MSs identified as main risks the illegal fishing in freshwater bodies of eels at all life stages, illegal trade in the aquaculture sector, misreporting of catches.

All MSs consulted have a registration of professional fishermen and eel buyers for catches in marine waters or freshwater as considered by Article 10 of the Eel Regulation. Catch registration systems have been established.

However, **control of the eel fisheries is hindered by some shortcomings** in the EU control system in relation to control of activities of vessels of less than 10 m that form the bulk of the fleet targeting eels and in relation to post-landing documentation (sales notes, transport documents). As a result, traceability of eels is difficult to establish, in particular when eels are transported from a MS to another to fulfil MS obligations for restocking or to provide livestock for aquaculture farms. Also, the monitoring and control of recreational eel fisheries appear largely insufficient.

According to MSs consulted, **full traceability of eels is not readily available**. As recognised by the Commission own evaluation of the EU Control System²⁶, most MSs

²⁶ REFIT evaluation, COM/2017/0192 final, SWD/2017/0134 final, COM(2017) 192 final

have not yet fully implemented traceability system enforced by the Control Regulation (Article 58) that is the paper-based and concern eel caught in marine waters. However, eels caught or farmed in freshwater are not excluded from the scope of the Control Regulation. To note, DK has implemented a “net to plate” electronic traceability system but limited to marine species. SE reported having a national electronic traceability system from 2019, with reflexions to extend it to freshwater products in a near future.

Traceability is particularly an issue for live glass eels traded between MSs to supply aquaculture farms, for direct consumption or for restocking operations. MS authorities inspecting lorries with eels may encounter difficulties to ascertain the validity of the document presented in case of control. Some MSs indicated relying (or having relied) on CITES rules for controlling the legality of eels transported to another MS.

Nonetheless, certain countries have implemented practices that go beyond the minimum EU requirements. These include more stringent conditions for monitoring glass eel catches (FR, UK), use of modern technologies to detect illegal fishing (DK, EE, LT, LV, PL, SE), coordination of police forces at national level to fight illegal trafficking of glass eels (ES, FR) or support of citizens for reporting suspected infringements (DK, SE, UK, and PL). Some countries (e.g. EL, IT and SE) have used the opportunity provided by Article 8(5) of Council Regulation (EC) N°338/97²⁷ to involve their CITES management authorities in the national control system through national instruments (permit scheme in EL, CITES registries in IT and SE). Supply chain traceability has increased as a result of actions taken at MS level to ensure that legally caught eels are accounted for via statutory reporting as well as through voluntary mechanism such as the Marine Stewardship Council (MSC) or the Sustainable Eel Group (SEG)’s Standard.

As regards the control of restocking practices, feedback from MSs tends to indicate that the obligations set out in Article 7 of the Eel Regulation are applied differently. In particular, Article 7(3) of the Eel Regulation requires MSs to establish an appropriate reporting system to ensure that the 60% glass eels reserved for restocking (in accordance with Article 7(1)) are used for this purpose. Arguably, MSs implement such reporting systems only for activities under their competence (i.e. for glass eels caught in their territory and by their vessels used for restocking operations in their territories). For glass eels caught in its territory but used for restocking in another country, the monitoring system implemented by the country at the origin of the glass eel catch covers only the lots up to the borders but not beyond.

Finally, the Commission Implementing Decision (EU) 2018/1986²⁸ includes for the first time ever eel fisheries in the scope of Specific Control and Inspection Programmes (SCIPs) to be implemented by MSs under the operational coordination of the European Fisheries Control Agency (EFCA). This will further encourage the cooperation between MSs and harmonisation of approaches to control.

²⁷ Article 8.5 provides that detaining eels or offering eels for sale is prohibited except when it can be proved that the specimens were acquired in accordance with legislation in force for the conservation of wild fauna and flora

²⁸ Commission Implementing Decision (EU) 2018/1986 of 13 December 2018 establishing specific control and inspection programmes for certain fisheries and repealing Implementing Decisions 2012/807/EU, 2013/328/EU, 2013/305/EU and 2014/156/EU. C/2018/8461 OJ L 317, 14.12.2018, p. 29–46

As regards the traceability of exported and imported eels, MSs are required under Article 12 of the Eel Regulation to take all measures necessary to identify the origin and ensure the traceability of all live eels imported or exported from their territory - whether glass eels for restocking or yellow and silver eels for human consumption. However, a zero-import/export policy was set for the EU in 2010, meaning that it was irrelevant for MS to establish a traceability system for eels imported and exported from their territory. MS had to ensure that the external trade prohibition was complied with, which for some countries (e.g. ES, FR) required substantial efforts supported by the involvement of EUROPOL initiatives against environmental crime.

One glass eel trader noted that “Traceability is an extra burden for legitimate traders whilst the illegal trade is inadequately controlled”. Some in the glass eel trade consider that the EU external trade prohibition has actually contributed to illegal exports of glass eels from the EU in that it has increased prices and reduced overall traceability and understanding of eel flows out of the EU.

One particular issue raised by stakeholders is that the distribution range of European eel exceeds the borders of the EU and consequently eels of different geographical origin cannot be distinguished by genetics.

In general, there is a need to better harmonise traceability systems, both within and especially between different MSs, to properly account for eel supply chain origin, volumes and final fate. The EU Control Regulation, combined with the IUU Regulation, requires traceability for all species (including eel), but this is still far from an effective system. Its implementation needs considerable improvement, including digitisation and other methods of automated mass balance analyses. This therefore requires concerted efforts both at MS levels as well as at EU level to implement. It should be noted that the proposal for the revision of the fisheries control system²⁹ addresses some shortcomings by extending monitoring and reporting requirements to small-scale vessels and reporting requirements to recreational fisheries, and modernising the system to record and report fishing activities that would become fully electronic, irrespective of the vessels' size.

In summary, the weak traceability system from “net to plate” undermines the effectiveness of the Eel Regulation as regards measures concerning control and traceability. The main weakness of the system is not just the varying ability and willingness of MS authorities to trace and track post-harvest eel movements but is also the lack of an EU-wide traceability system.

Protection and conservation of aquatic habitats

- On environmental measures to increase eel recruitment, survival and escapement

Apart from fishing, other major anthropogenic influences on the eel stock include: hydropower turbines/pumps and other physical obstacles to eel migration; pollution, diseases and parasites; and, habitat modification, all of which are thought to have contributed to the decline in eel escapement rates and associated recruitment.

Non-fisheries mortality can be reduced through various different approaches, e.g. improving upstream and downstream migration through removal of barriers and reducing

²⁹ (COM)2018/368

mortality within hydroelectric installations. The structural measures to make rivers passable and improve river habitats, together with other environmental measures have the potential to make the most profound, long-term impacts on eel stocks. However there is little quantifiable evidence in the EMP Progress Reports to assess what actions have been taken as a result of the Eel Regulation to make rivers passable and improve river habitats or the impact this might have had on spawner escapement rates.

Actions on habitat improvements were addressed in EMPs and 2012 progress reports of many EMUs. The descriptions of the actions taken, as well as the expected impact on escapement or mortality were often unspecific, vague and lacking specific reference to eel-specific habitats (ICES, 2013c). Most measures on habitat improvement were related to the implementation of the Water Framework Directive and therefore not specifically related to the EMP. Progress in implementation is often unclear. When actions concerning habitat are considered (e.g. by water level fluctuation to flood meadows), the effect on silver eel production and escapement would be expected only in the long term, while actions focused on improvement of habitat quality (e.g. reduction of pollution) could have an immediate effect, not only on escapement and mortality but also on migration and reproductive success. To assess the effect of actions taken, monitoring data and knowledge are required.

Nonetheless, there have been some **local successes in terms of habitat restoration and improved spawner connectivity**. Best practices for making in-river structures ‘eel-friendly’ and protecting them from hydro-power intakes have been developed and published in FR and the UK. There have also been attempts to start opening up migration routes and developing hydrological regimes that favour eel movement, particularly in FR and IT. Moreover, as noted by Hanel 2019, in ES a decree was established in 2015 obliging electricity companies to transport eels upstream of their facilities (Decree 35/2013). Many dams have been removed and passes have been installed. However available information does not allow estimating the available habitat increase.

More details on best practices in eel conservation are presented in **Annex 5.3**.

Overall, the evaluation finds that the non-fisheries related anthropogenic mortality, whilst variable (can depend upon environmental conditions (flooding vs. drought) at the time of the down-stream migration), has not been reduced significantly over the last decade.

EQ3. If the measures for the recovery of European eel stock under the Eel Regulation have only partially met the objectives in EQ 2, what factors have hindered their achievement and how?

A number of barriers to eel stock recovery exist:

1. **Hundreds of years of modifications to water courses** e.g. dams, water abstraction structures and other barriers are a major cause of reduced spawner escapement. This is not easily reversed, as either removing obstructions or putting in mitigation structures e.g. eel passes are costly, often required complex permitting and are not always necessarily effective. This will be a long-term process, and will require continued pressure on both environmental regulators, as well as private sector users of water courses to include eel connectivity in forward planning and investment.

2. **Continued loss of eel habitat** through land reclamation and drainage of eel holding waters – although now usually subject to more scrutiny from environmental regulators, there is pressure in a number of MSs to develop and alter floodplains and water courses for urban, industrial and agriculture development.
3. **IUU fishing for eels**, especially juveniles, continues to hold back improvements in recruitment. **Illegal glass eel trafficking** could account for the mortality of between 20 – 100 tonnes (e.g. up to 300 million individuals³⁰) per annum, mainly driven by demand from Asian eel aquaculture. Stakeholders suggest that this trade is facilitated by austere conditions in rural coastal and estuarine areas and the potential high financial rewards involved. In many cases glass eels are caught in one MS, moved to another and then exported to Asia either directly or possibly via a neighbouring non-EU country, such as in North Africa.
4. **Differing levels of eel management through the EU**. In ES, for instance, eel management is conducted by the different autonomous regions, where regulations and approaches can differ, even within the same EMU. At a wider level, the large number of organisations involved in fisheries, water and environmental management, both within and between MSs, means that coordination is a major challenge.
5. **Lack of comprehensive data**: despite the focus of the Joint EIFAAC/ICES/GFCM Working Group on Eel (WGEEL), as well as annual and periodic reporting requirements from MSs via the Eel Regulation, data provision and knowledge is highly variable across the EU. Total landings and effort data is incomplete and inconsistent. Only 75 EMUs (from a total of 116) submitted data to WGEEL in 2018 on both total fisheries mortality rates and total non-fishing mortalities rates. This has consequences for the ability for establishing harvest control rules and other eel conservation measures.
6. **Increased mortality from the recovery of predator populations** – the recovery of, or increase in, predators such as the cormorant (Hansson *et al*, 2017) or the silurid catfish has increased the rate of natural mortality in eel populations. Whilst a natural function of a healthy ecosystem, this may hinder recovery of depleted species such as the European eel.
7. **Limited uptake of funding available to implement the Eel Regulation**. The Eel Regulation promotes a number of measures which generate costs for public authorities – such as restocking, monitoring, and enforcement – and private stakeholders – such as the reduction of the fishing effort. These measures have been eligible for support under the European Maritime and Fisheries Fund (2014-2020) but uptake has been limited. However it is recognised that overall funding for eel conservation has increased as a result of the Eel Regulation.

The Public Consultation results suggest that factors hindering effectiveness of the Eel Regulation are mainly beyond the regulation itself. Most respondents highlighted external factors, such as inability to reduce hydropower mortality or poaching, and insufficient implementation of the policy at the national level. In feedback to the evaluation roadmap, hydropower mortality and illegal fishing were also mentioned, as

³⁰ Assuming 3,000 individuals per kg

well as the lack of traceability system, insufficient implementation of EMPs and oceanic factors.

EQ4. To what extent has the Eel Regulation contributed to achieving the objectives of the Common Fisheries Policy, in particular to ensure that fisheries and aquaculture activities are environmentally sustainable in the long-term and are managed in a way that is consistent with the objectives of achieving economic, social and employment benefits, and of contributing to the availability of food supplies?

Safeguard stock reproduction for high long-term yield

The eel recruitment, whilst now stable, is at a historic low level and does not show any particular signs of improving. Stock stabilisation is likely to have been supported by the reduction in fishing effort in many MSs but stock recovery is a long-term goal that can only be achieved through addressing spawner escapement through habitat rehabilitation and improved connectivity.

Lay the foundations for a profitable industry

A glass eel 'black' supply chain has implications for both European eel management and recovery. This also impacts legitimate suppliers through price and other market distortions. They argue that controlling a limited external market would reduce the pressure for IUU fisheries and stabilise the market. In EL intensive aquaculture operators must give 10%, and extensive aquaculture operators 30% of their purchased glass eels for restocking without financial compensation, which has had repercussions on their business models.

Share out fishing opportunities fairly

The key issue is over legitimate versus IUU fishing. Legal, licensed fisheries are mainly based on traditional, local and gear specific enterprises. Volumes are relatively small and transactions mainly made through the formal banking system with a high level of transparency. Glass eel suppliers blame the unquantified but apparently significant black trade as unfair competition, e.g. not having the costs of accountable businesses, often deal in cash and supply the high value Asian aquaculture market.

Cooperation and coherent actions at all levels

The Eel Regulation sets common targets across the EU, however MSs take different approaches in achieving those targets, as well as in measuring stock indicators and in reporting.

An example of cooperation between various stakeholders is the process of the development of multi-stakeholder platforms in the preparation of regional EMPs in IT that involved all relevant operators, including fishers, vallicoltura farmers (traditional rearing, usually of wild stocked juveniles, in lagoons) and aquaculture operators.

To date, only one transboundary EMP between ES and PT for Minho River has been delivered and approved by the Commission. However, the eel management issues are also discussed within the framework of international organisations managing transboundary rivers like the International Commission for the Protection of the Rhine or similar international organisations managing the Meuse and Scheldt rivers. Nevertheless, there are no transboundary EMPs developed between EU MSs and third countries.

In the field of control of eel fisheries, all MSs reported having implemented cooperation mechanisms between the different entities in charge of control through dedicated steering platforms, but no further details have been made available except in the case of FR and SE. In FR, a dedicated inter-ministerial task force has been created with the Gendarmerie coordinating investigations on environmental crimes (including eel poaching) and acting as focal point of international police networks (Interpol, Europol). In SE, coordination and cooperation between concerned authorities have been improved through exchange of information, common risk assessment and clarification of responsibilities of the different agencies involved.

The cooperation between MSs and the harmonisation of approaches to control has been further encouraged through the Commission Implementing Decision (EU) 2018/1986. It includes for the first time ever eel fisheries in the scope of Specific Control and Inspection Programmes (SCIPs) to be implemented by MSs under the operational coordination of the European Fisheries Control Agency (EFCA). SCIPs trigger cooperation and pooling of inspection resources between countries with the EFCA through joint inspection activities and ensure that target benchmarks for inspection established on the basis of risk-assessments are met.

The strategic enforcement priorities and increased actions are also implemented by MSs both nationally and through cross-border joint actions against trafficking of eels under the EU Action Plan against Wildlife Trafficking³¹.

Cooperation for the fight against illegal eel trafficking is supported by EUROPOL under the EMPACT ENVICRIME initiative (2017-2021). Joint operations, such as Europol-supported Spanish/Portuguese ‘Operations Elvers’ that saw the seizure of 350 kg of glass eels destined for China, demonstrate how multi-national, cross-jurisdictional control operations can work.

Furthermore, the Eel Regulation has stimulated the Interreg Sudoe Programme of the European Regional Development Fund supporting a regional (FR, PT and ES) project (SUDOANG, 2018 – 2021) to provide tools and concerted methods in order to carry out an effective evaluation, management and monitoring of the European eel and its habitats. To achieve this, an interactive internet application has been created that houses tools to enable *Anguilla*-related managers to study indicators of population monitoring and different possible management scenarios. This is intended to assist decision-making based on better scientific evidence and in a more coordinated fashion, as all the indicators will be obtained using consensus models and methodologies among these participating partners.

The evaluation finds there is a scope for improvement in terms of the transboundary cooperation in developing EMPs including with third countries.

Clear interlinkages between EU policies and international instruments

This will be further addressed below under the ‘coherence’ criterion.

³¹ https://ec.europa.eu/environment/cites/trafficking_en.htm
https://ec.europa.eu/environment/cites/pdf/progress_report_EU_action_plan_wildlife_trafficking_en.pdf

Opinions of the respondents to the Public Consultation on the effectiveness of the current measures for the recovery of European eel stock were mixed.

Overall, the above analysis of the effectiveness criterion shows that the eel stock has not recovered to any degree, recruitment is at an all-time low, non-fisheries related anthropogenic mortality has not declined significantly over the last decade and that the 40% escapement target has not been achieved. It can therefore be concluded that the Eel Regulation has not yet proven its effectiveness in reaching its objective of achieving the protection and sustainable use of the European eel stock in EU waters that would reflect the recovery of the stock.

5.2.3. SUSTAINABILITY

EQ5. Are the effects likely to last after the intervention ends?

There is no ‘end date’ for the Eel Regulation. Both the management organisations and other stakeholders consider that the Regulation is a sustainable approach that needs to be maintained over a long-term. This is because the recovery of the European eel population is a long-term process, with some MSs considering 2050 as a reasonable date by which the Regulation’s target of 40% escapement across the EU might be reached. Once the European eel stock has fully recovered, at that point the Eel Regulation could be reconsidered and a management plan put in place. In the meantime the regular progress reports as required in the Regulation should be continued.

Reducing commercial fishing activity may have a long-term impact on fishing mortality. Licenced fishing activity, especially for yellow and silver eels is likely to continue to fall as the elderly fishers drop out of the fishery and many of the traditional markets for eels are in decline. However, the risk is that IUU fishing and illegal trade – driven by the high price paid in Asia for European glass eels, may have implications for stock recovery and thus sustainability of the intervention. One key measure under the Regulation, restocking, is questioned and considered as a short to medium term measure that should be phased out as natural recruitment and water course connectivity improves. Structural measures to make rivers passable and improve river habitats with other environmental measures have the potential to make the most profound, long-term impacts on eel stocks.

Opinions about the sustainability of the effects of the Eel Regulation presented in the Public Consultation were diverse. A slight majority of respondents indicated that effects of the intervention would not last after it ended. A significant proportion of respondents, about one third, selected the “don’t know” option to this question. This does not necessarily suggest a weakness in the sustainability of the intervention, but rather recognition that it is a long-term process.

It needs to be also noted here that respondents to the Public Consultation were asked in the part relating to the EU Added Value to indicate which consequences they foresaw if the intervention would be withdrawn. Most (almost two thirds) referred to negative consequences, mainly the eel population being more endangered and a risk that MSs will no longer implement protective measures.

The evaluation does not conclude comprehensively on whether the effects of the Eel Regulation are likely to endure since the recovery of the eel is a long process.

5.2.4. EFFICIENCY

EQ6. To what extent have the costs associated with implementing the Eel Regulation been proportionate to the environmental and socio-economic benefits that this has generated? Could the same results have been achieved with less funding?

A monetarised analysis of the cost-benefits of the Eel Regulation is impossible to provide at this stage, as **MSs do not quantify the direct costs of implementing the Regulation**, the responsibility for which is often spread across a number of different government departments.

The direct environmental benefits of the EMP actions (e.g. eel stock recovery through reduced fishing mortality and increased spawner escapement) and the indirect environmental benefits (reconnected coastal, estuarine and riverine ecosystems) are long-term in nature, still nascent and yet to be fully quantified in terms of their environmental benefits. Likewise it is difficult to quantify the socio-economic benefits of the EMP measures to date, especially given landings have stabilised and fishing effort has (mainly, but not in all Member States) reduced. Only when stock recovery becomes more evident and fishing opportunities consolidated will the socio-economic benefits become more apparent. In addition there is some evidence that the growth of a parallel IUU fishery and unregulated supply chain to serve the Asian aquaculture market since the European eel was included in the CITES Appendix II and banned by EU MS authorities for extra-EU export has impacted on the sustainability of traditional, licensed eel fisheries.

The synergies with the WFD, MSFD and the Habitats Directive are also important factors in improving the efficiency of the Eel Regulation.

Feedback from the MSs on this subject has been limited. Calculating the administrative burden and associated costs is complex, especially where EMUs are managed at local levels. Administration loads are also spread across fisheries management, fisheries control and environmental management bodies, which in many cases operate under separate budgets and planning systems. In some MSs functions such as restocking may be outsourced to the private sector.

Moreover, it is considered that restocking and translocation of eels, although effective in maintaining or supporting eel populations in compromised river systems, is considered an expensive and often administratively burdensome process that has to be paid mainly through the EMFF.

The difficulty to measure cost-effectiveness of the Eel Regulation and its implementation at the national level has also been confirmed in the Public consultation. Most respondents were not able to assess whether the administration and implementation of the regulation had been carried out at the lowest possible cost.

EQ7. Could the use of other policy instruments or mechanisms have provided better cost-effectiveness?

The main finding of this evaluation is that the Regulation is essentially sound e.g. it has enabled the EU MSs to develop and monitor EMPs, and thus most MS respondents

indicated that alternative approaches have not been considered. However, it is recognised that the implementation of many of the measures is a long-term process, and that many aspects are still yet to be fully realised.

EQ8. How timely and efficient is the process for reporting and monitoring?

In 2012, 18 of 19 countries with EMPs produced progress reports. Only six countries provided all the stock indicators required by the Eel Regulation, nine reported incomplete data and three did not provide any of the required stock indicators. Furthermore, since the national reports did not follow a standard format, the level of detail of the reporting differed significantly, and reports were written in a range of languages. This made the assessment of the reports a challenging exercise.

In 2015, 14 of the 19 MS submitted progress reports³².

In April 2018, the Commission facilitated MS reporting and assessment to make those more efficient by providing seven Excel templates developed with ICES, as regards the overview of stock indicators by EMU, biomass indicators, mortality quantities, mortality rates, stocking, management measures and fishing effort. The completion of these templates was highly recommended but not compulsory. Overall, reporting by MSs was not complete. Of those MSs with EMPs; LU and PT did not report at all, the CZ, FI and IE provided a description but no data tables, and FR and PL did not provide all seven data tables; the CZ, FI, EL, IE, LV, PL and ES reported after the deadline.

Moreover, since the first reporting round in 2012, no MS reports on glass eel prices have been submitted to the Commission, although BE, DK, EE and the UK have provided some price data in their 2018 progress reports. This represents a major failure in the Regulation's monitoring requirement.

Based on partial analysis of the 2018 progress reports, ICES made several recommendations (ICES 2018d) on the reporting format and content suggesting to make them obligatory and highlighted that it would reduce the burden on MSs if reporting requests from the Commission, ICES and other could be coordinated and combined.

Overall, the evaluation finds it difficult to provide for the monetarised analysis of the cost-benefits of the Eel Regulation at this stage. It also finds that progress reporting on the implementation of the EMP by MS needs improvement to be more harmonised and robust.

5.2.5. COHERENCE

EQ9. To what extent are the measures for recovery of the European eel stock under the Eel Regulation coherent with wider policy and interventions which have similar objectives (e.g. Common Fisheries Policy, fisheries control regulation, environmental legislation and in particular Water Framework Directive)?

The assessment of the coherence criterion presented below is based on the desk research/study and some stakeholder consultations, unless otherwise stated.

³² HR, CZ, EE, LU and ES failed to report.

FISHERIES LEGISLATION

The **Common Fisheries Policy**³³ (CFP) aims to ensure that fishing and aquaculture are environmentally, economically and socially sustainable and that they provide a source of healthy food for EU citizens. Its goal is to foster a dynamic fishing industry and ensure a fair standard of living for fishing communities. The scope of the CFP includes the conservation of marine biological resources and the management of fisheries targeting them. In addition, it includes, in relation to market measures and financial measures in support of its objectives, fresh water biological resources and aquaculture activities, as well as the processing and marketing of fishery and aquaculture products, where such activities take place on the territory of MS or in Union waters. A key objective of the CFP reform in 2013 is to restore or maintain fish stocks at levels that support maximum sustainable yield (MSY) by 2020 at the latest. Therefore, the CFP and its MSY objective is applicable to the European eel at certain stages in its life cycle.

The Eel Regulation (2007), which precedes the reformed CFP (2013), includes the management of the European eels in marine, transitional and fresh waters, and considers both the impact of fisheries and the impact of environmental modifications. The Regulation sets an escapement biomass target of 40% of the spawning biomass, which is considered a proxy for MSY. There are however considerable difficulties in applying the MSY approach to catadromous species such as the European eel.

The Eel Regulation has its primary focus on managing the fisheries-related anthropogenic mortality, mainly through increasing escapement rates and reducing fishing mortality. It however fully recognises the role of MS in implementing measures “as soon as possible to reduce the eel mortality caused by factors outside the fishery, including hydroelectric turbines, pumps or predators” (Article 2 (10)). This immediately introduced the need for coherence with other EU policies and regulations.

Fishing Opportunities

Council Regulation (EU) 2018/120 fixed for 2018 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in Union waters and, for Union fishing vessels, in certain non-Union waters, mainly in form of species-specific Total Allowable Catches (TACs) and quotas. Article 10 of this Regulation prohibits EU fishing vessels to fish European eel in marine waters of an overall length of 12cm or longer in EU waters of the ICES area for a consecutive three-month period to protect spawners during their migrations. The three-month time period was determined by each MS between 1 September 2018 and 31 January 2019. The fishing closure is relevant to spawning biomass of eels, so works cohesively with the 40% escapement target set in the Eel Regulation.

Council Regulation (EU) 2019/124 fixing the fishing opportunities for 2019 extended this approach by creating a consecutive three-month closure period for all fisheries of European eel at all life stages in relevant Union waters (including brackish waters such as estuaries, coastal lagoons and transitional waters). It was designed to be consistent with the conservation objectives set out in the Eel Regulation and with the temporal migration patterns of European eel (to be applied over the period between 1 August 2019 and 29 February 2020 for ICES waters, and at a period to be determined by each MS in the

³³ Regulation (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy

Mediterranean). For the Mediterranean, it transposes into the EU law the GFCM Recommendation GFCM/42/2018/1 establishing management measures for European eel in the Mediterranean Sea.

Data collection framework

Regulation (EU) 2017/1004 of the European Parliament and of the Council establishes an EU framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the CFP. This EU data collection framework (DCF) is applicable to eels and covers inland waters, specifically establishing a programme for the collection of biological data on all stocks caught or by-caught in EU commercial and, where appropriate, recreational fisheries in and outside EU waters, including eels.

Data on eels from the EU DCF may be useful for stock assessment purposes but does not cover fishery independent sampling or non-fisheries related eel mortality. ICES (2018) noted that eel data sourced from landing statistics has improved in 2017 and 2018 but remains incomplete and the level of reporting between MSs is inconsistent.

Fisheries control system

For fishing and aquaculture activities, control and enforcement of eel conservation measures are part of the measures considered under the EU fisheries control system, which is based on four regulations: the Control Regulation, the IUU Regulation, the EFCA Founding Regulation³⁴ and the SMEFF Regulation for activities of the EU external fleet³⁵. The Control Regulation (Regulation (EC) No 1224/2009) is the main piece of EU legislation applicable in the case of the eel fisheries. This Regulation applies primarily to activities covered by the CFP carried out on the territory of MSs or in Union waters or by Union fishing vessels, the latter being defined by the CFP Regulation as any vessel equipped for commercial exploitation of marine biological resources. The Control Regulation defines a number of rules that apply to monitoring, control and surveillance of fisheries targeting diadromous species during their marine phase, and to fresh water fisheries, aquaculture, processing and marketing of diadromous species in relation to market and financial measures supported by the CFP.

For access to the resource, the Control Regulation requires fishing vessels to hold valid licences delivered by their MSs to engage in commercial fishing (in marine waters). The partial coverage of the Control Regulation in terms of fishing authorisations (potentially applicable only to vessels of more than 10 m fishing in marine waters in the case of eel fisheries) is compensated by Article 11 of the Eel Regulation which requires MSs to establish lists of vessels authorised to fish eels in marine waters irrespective of their length, lists of fishing vessels, commercial entities or fishermen authorised to fish eels in designated EMUs, and list of entities authorised to undertake the marketing of eels.

The obligations set out by the Control Regulation for control of fisheries (Title IV, Art. 14 to Art. 55) apply basically to fishing activities conducted from a vessel in marine waters. However, the Eel Regulation provides that MSs shall establish a control system adapted to circumstances and to the legal framework already applicable to their inland fisheries, which shall be consistent with relevant provisions set out in the Control

³⁴ Regulation (EU) 2019/473

³⁵ Regulation (EU) 2017/2403

Regulation. For small scale vessels of less than 10 m that form the bulk of the fishing fleet targeting eels (often glass eels), the Control Regulation includes numerous exemptions in relation to monitoring (logbooks, prior notifications, VMS), and leave to the MS to monitor the fisheries on the basis of sampling plans or alternative measures as appropriate. Concerning recreational fisheries, the Control Regulation requires MSs to monitor eel catches by vessels (excluding fishing from shore) on the basis of sampling plans under an overarching objective of ensuring that recreational fisheries are conducted in a manner compatible with the CFP. However, Article 11 of the Eel Regulation includes requirements for MSs to establish on a regular basis an estimate of the number of recreational fishermen and their catches of eels, which is rather vague (“regular basis”, “estimate”).

Concerning control of marketing (Title V), the Control Regulation applies to marketing of fisheries and aquaculture products, from first sale to retail, including transport. The Control Regulation imposes traceability from net to plate (art. 58) that do not apply to products (incl. eels) caught or farmed in freshwater. However, the Regulation on the common organisation of the markets in fishery and aquaculture products (Regulation (EU) No 1379/2013) applies to those products.

Eels caught by professional fishermen are subject to submission of sales notes by registered buyers, mandatory weighing and take-over declarations if the products are intended for sale at later stages, which may be the case of eels stocked alive. In the event eels are transported before first sale more than 20 km away from the landing site, a transport document is required. However, all post-landing documentation required by the Control Regulation (i.e. sales notes, take-over declaration and transport documents) do not specify the use of the products which in the case of eels may include consumption, possibly after ranching, or restocking, also possibly after ranching.

The traceability systems set up by MSs under the Control Regulation concern eel caught in marine waters. However eels caught or farmed in freshwater are not excluded from the scope of the Control Regulation.

Until 2018, eel fisheries were not included in the scope of the Specific Control and Inspection Programmes (SCIPs) adopted by the Commission as foreseen by Art. 95 of the Control Regulation. The situation changed recently with the adoption of Commission Implementing Decision (EU) 2018/1986 applying as from 2019 which included fisheries exploiting eels in Union waters of the Mediterranean, of the Baltic Sea, of the North Sea and ICES division IIa, and of Western Waters (ICES areas VI, VII, VIII and IX). SCIPs trigger cooperation and pooling of inspection resources between MSs with the EFCA assuring operational coordination of joint inspection activities in this frame.

European Maritime and Fisheries Fund

Regulation (EU) 508/2014 of the European Parliament and of the Council of 15 May 2014 establishes the European Maritime and Fisheries Fund (EMFF). The EMFF does not refer specifically to eel recovery or the Eel Regulation but initiatives for implementing the Eel Regulation can be supported (e.g. via Article 37(2) on direct restocking and Article 54 on aquaculture providing environmental services).

The Fisheries and Aquaculture Monitoring and Evaluation (FAME) Support Unit (SU) reported that by the end of 2017, 87 operations³⁶ were funded through the EMFF with

³⁶ Operation funded under Articles 37 and 54 and reviewed as to whether the title mentions ‘eel’

total eligible costs of EUR 18.6 million and the EMFF allocation of EUR 11.1 million (EC, 2018a). DE alone approved 71 operations with the EMFF budget of EUR 5.2 million, with the CZ approving nine operations. Overall, eight MSs implemented related operations, dedicating 1.8 % of their EMFF to this area. Six MSs indicated that eel recovery is a priority of the EMFF programme (CZ, DE, DK, NL, PL, SE). The Managing Authorities (MAs) support different types of operations: restocking, habitat recovery, data collection, studies and temporary cessation of fishing activities. Some MSs indicated that they also intend to support eel-related operations in the future; they also stressed that this depends on the interest of beneficiaries, the EMFF being a demand-driven programme. FAME noted that (i) the EMPs and the tri-annual reports give little attention to the budgetary implications of the proposed plans, with only a few countries referring specifically to the use of EU structural funds and (ii) whilst some EMFF Operational Programmes (OPs) mention eel, either in relation to EMP or to data collection, many OPs do not mention eel at all.

In the previous European Fisheries Fund (EFF) for 2007-2013 period, the funding related to eel management represented well below 1% of the total EFF OP allocation, with most commonly applied eel-specific measures contributing to the implementation of the Eel Regulation being permanent and temporary cessation as well as restocking (EC, 2019a). A review of the EFF Annual Implementation Reports (AIR) showed that only FR, IT, ES and DE provided financial information on eel-related measures.

ENVIRONMENTAL LEGISLATION

Imports and export of eels

Import and export refer to movements of eels of any stage between the EU and third countries.

European eel is listed in Annex B of Council Regulation (EC) N°338/97 **Wildlife Trade Regulation**, transposing CITES decisions to the EU law. In 2010, and every year since then, the relevant Scientific Authorities of the EU MSs agreed that eels cannot be taken from the wild in a sustainable way. The EU Scientific Review Group was not able to issue a “non-detriment finding”. Hence it has not been allowed to issue import and export permits for European eel to and from the EU, meaning that import and export of eels is prohibited. Therefore, up until now, prescriptions of Article 12 of the Eel Regulation for control and enforcement concerning import and export of eel could not apply. MSs had to ensure that the import / export prohibition was effectively enforced. Import and export considered by the Eel Regulation do not refer to movements of eels between the EU MSs which are based on the principle of free circulation of goods, one of the pillars of the EU single market. Therefore, intra-EU trade of eels is fully legal.

Furthermore, the Eel Regulation specifically mentions the Habitats Directive³⁷ and the Water Framework Directive³⁸ as key precursors and supporting legislation.

³⁷ Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora

³⁸ Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy

Habitats Directive

The **Habitats Directive** was adopted to ensure the protection of endangered and/or vulnerable animals, plants and characteristic habitats. It provides for two eel-related habitat types - estuaries and coastal lagoons - to be protected and designated as Special Areas of Conservation (SAC). This designation requires MS to establish conservation measures which correspond to the ecological requirements of these Annex I habitats and to take appropriate steps to avoid their deterioration. However, European eel (*Anguilla anguilla*), which is assessed by IUCN as critically endangered, is not listed under the Habitats Directive's species Annexes.

Water Framework Directive

As regards the **Water Framework Directive** (WFD), the Eel Management Units (EMUs) as defined by EU MSs, often follow the spatial management model of River Basin Districts (RBD), as introduced by the WFD. This alignment of spatial EMUs and RBDs provides opportunity for clear interlinkages between the management measures required to improve eel stocks and ecological status within water bodies.

The WFD serves to ensure the 'good status' of eel aquatic habitat in coastal, transitional and inland surface waters across a range of ecological and chemical quality indicators. Interestingly, the concentrations of some pollutants measured in European eel have in some MSs been taken into account in the assessment of the chemical status of water bodies under the WFD. However, it should be noted that since 2010 MSs have been advised that because of their endangered status, eels should only be used for existing trend-monitoring programmes³⁹. WFD is also important in improving river continuity, which should benefit eel migration. However, significant effort is required to meet good ecological and chemical status across European surface waters as only 40% of surface water bodies are in good ecological status, and 38% of surface waters are in good chemical status. Moreover, 40% of surface water bodies are affected by hydro-morphological pressure (EEA, 2018).

Furthermore, only a few MS EMPs/Progress Reports make reference to the importance of the WFD in improving water quality and connectivity (e.g. BE, ES, IE), and where this occurs, targets for improvement and expected benefits to eels are not defined.

While interlinkages between EMPs and WFD in the objectives (improve river continuity and restore eel population) are clear, this is not a case in the delivery and implementation of measures or monitoring of outcomes. Moreover, the authorities responsible for the EMP are not necessarily involved in the implementation for the River Basin Management Plans (RBMPs) under the WFD. Thus, there is scope to improve connectivity between RBMP and EMPs, and the authorities tasked with their delivery, including harmonisation and prioritisation of measures, specifically around hydro-morphological pressures.

Marine Strategy Framework Directive

Then, other environmental management instrument of importance for eels is the **Marine Strategy Framework Directive**⁴⁰ (MSFD) that came into force in 2008, a year after the

³⁹ Guidance No 25 - Chemical Monitoring of Sediment and Biota, Technical Report - 2010 – 041: <https://circabc.europa.eu/ui/group/9ab5926d-bed4-4322-9aa7-9964bbe8312d/library/7f47ccd9-ce47-4f4a-b4f0-cc61db518b1c/details>

⁴⁰ Directive 2008/56/EC of 17 June 2008

Eel Regulation. The MSFD aims to achieve or maintain the good environmental status⁴¹ of marine waters by 2020 by adopting an ecosystem-based approach to management that is implemented through common regional approaches.

Based on the good environmental status descriptors, MSs have developed GES definitions and targets that are of relevance to their marine environment. In relation to eels, the MSFD is important to reaching and maintaining good environmental status of the marine environment, which (as with the WFD), may have a positive effect on the reproductive potential of silver eel (ICES, 2018).

EQ10. To what extent are the measures under the Eel Regulation coherent with international obligations (e.g. under CITES and CMS)?

United Nations Convention on the Law of the Sea

The United Nations Convention on the Law of the Sea (UNCLOS, 1982), Article 67 relates to catadromous species (including European eel) with the following rules applicable to UN member states, including EU:

- Coastal states/countries are responsible for management, but also states through the territory of which the species migrate are responsible for binding agreements concerning management measures.
- Fishing at sea is allowed within the Exclusive Economic Zones (EEZ) but prohibited in the high seas.
- Management must include provisions for secured immigration and emigration of the species.

General Fisheries Commission for the Mediterranean

The General Fisheries Commission for the Mediterranean (GFCM) has adopted the Recommendation GFCM/42/2018/1 establishing a multi-annual management plan for European eels in the Mediterranean Sea (GFCM, 2018). This included targeted, incidental and recreational catches, as well as taking into account in their management measures “other anthropogenic mortalities factors in order to reduce their impact on eels and increase their probability of the escapement to the sea, as well as including restocking or translocation practices” through both short-term transitional precautionary management measures as well as long-term measures. This is in line with the Eel Regulation.

Furthermore, the GFCM adopted a research programme in 2019 aiming at providing a comprehensive state of play of the status of the stock in the Mediterranean, reviewing the national management measures adopted by the riparian countries and propose long-term management measures. A working group was established to examine the results of the

⁴¹ The Good Environmental Status (GES) descriptors (Annex I of MSFD): 1.Biodiversity is maintained; 2.Non-indigenous species do not adversely alter the ecosystem; 3.The populations of commercial fish species are healthy; 4.Elements of food webs ensure long-term abundance and reproduction; 5.Eutrophication is minimised, 6.Sea floor integrity ensures the functioning of the ecosystem; 7.Permanent alteration of hydrographical conditions does not adversely affect the ecosystem; 8.Concentrations of contaminants have no effects; 9.Contaminants in seafood are within safe levels; 10.Marine litter does not cause harm; 11.Introduction of energy (including underwater noise) does not adversely affect the ecosystem.

research programme and propose additional long-term management measures for eel in the Mediterranean.

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

CITES⁴² is an international agreement between governments, which ensures that international trade in specimens of wild animals and plants does not threaten their survival. European eel was CITES-listed at the 14th Conference of the Parties to CITES in June 2007, with an 18-month delay before implementation so that the listing came into effect on 13 March 2009. The listing was implemented in the EU by the inclusion of European eel in Annex B of Council Regulation (EC) No 338/97, which generally corresponds to the CITES Appendix II.

Appendix II of CITES is for “species which although not necessarily now threatened with extinction may become so unless trade in specimens of such species is subject to strict regulation in order to avoid utilization incompatible with their survival”. Trade is defined in CITES as “export, re-export, import and introduction from the sea”. In other words, CITES only controls trade across international borders and does not have implications for trade within countries or, in this instance, the EU. This is a critical point, as full traceability across EU borders is essential. CITES regulates trade through a system of permits, requiring export permits for trade in CITES Appendix II specimens.

Convention on the Conservation of Migratory Species of Wild Animals (CMS)

In 2014, the European eel was added to Appendix II of the Convention on Migratory Species (CMS), also known as the Bonn Convention⁴³. According to Article IV of CMS, Parties are encouraged to take action with a view to concluding agreements concerning these species. Such international cooperation would be beneficial for the conservation status of those species. Not all species listed in Appendix II are necessarily covered by agreements. There are also other possibilities such as non-legally binding memoranda of understanding, species action plans, and cooperative actions. It is to be noted that for the European eel the CMS Parties cover almost the entire distribution of European eel Range States (with the exception of Iceland, Turkey and Russia).

International Union for the Conservation of Nature (IUCN)

The IUCN was created in 1948 as a ‘membership Union’ composed of both government and civil society organisations and provides information and policy advice on conservation issues. The IUCN ‘Red List of Threatened Species’⁴⁴ (known widely as the ‘Red List’), established in 1964, is a widely respected database that provides information on species populations and their trends, their habitats and ecology and the main threats to their survival. In 2008, and again in 2014, the European eel was listed in IUCN Red List as critically endangered. This listing will be reviewed in at the next IUCN assessment of the European eel.

⁴² <https://www.cites.org/>

⁴³ <https://www.cms.int/>

⁴⁴ <https://www.iucnredlist.org/>

Convention on Wetlands

In addition, the evaluation finds a linkage with the **Ramsar Convention on Wetlands of International Importance**⁴⁵ (also known as the Convention on Wetlands), the international treaty for the conservation and sustainable use of wetlands. The overarching objectives of the Convention are to stem the loss and progressive encroachment on wetlands - a key European eel habitat - now and in the future. Most EU MSs are Contracting Parties. Hence, the wetlands protected under this Convention will benefit eel population.

The **summary of the linkages** is presented in **Annex 7**.

No issues of incoherence were identified during the targeted stakeholder consultation.

In contrast, the Public Consultation results may suggest that there is an issue with coherence of the Eel Regulation, in particular with international instruments to regulate fisheries. In contributions to an open-ended question, some respondents referred to inconsistencies within Common Fisheries Policy (MSY principle), Water Framework Directive not applicable to eels, Habitats Directive, or other issues (e.g. ban of export leading to illegal trade, protecting predators within environmental policy etc.). However, many respondents indicated that they “neither agreed or disagreed” or “did not know”. This shows it was difficult for them to assess the coherence of the Regulation.

Based on the above analysis, it can be concluded that the Eel Regulation is essentially coherent with a number of fisheries and environmental legislation, and with wider international agreements and initiatives. However, it is noted that significant efforts are required to fully restore river continuity and there is scope to improve synergies between RBMP under the WFD and EMPs under the Eel Regulation.

5.2.6. EU ADDED VALUE

EQ 11. What is the additional value resulting from the EU measures for the recovery of European eel stock under the Eel Regulation, compared to what could reasonably have been expected from Member States acting at national and / or regional levels?

The Eel Regulation requires MSs to address common objectives and uniform reference points. The design and implementation of protective actions and monitoring were delegated to MSs.

The key additional inputs / support provided by the Eel Regulation include:

- The preparation of **EMP** for 19 MSs.
- **Establishment of common targets** e.g. 40% escapement of silver eel biomass relative to the best estimate of escapement that would have existed if no anthropogenic influences had impacted the stock.
- **Benchmarking of the present situation of eel populations** in each river basin.

⁴⁵ <https://www.ramsar.org/>

- **Development of management measures** based around eight different approaches (see Art. 2 (8) with associated timescales).
- **Development of transboundary EMP** with both other MSs as well as with relevant third countries. However, to date only one transboundary EMP (between ES and PT) has been prepared and adopted by the Commission.
- **Mandatory restocking targets for eels** <12 cm caught in EU fisheries (60% to be achieved by 2013).
- **Reduction in fishing effort by 50%.**
- **Establishment of control and enforcement** (including catch monitoring) mechanisms.
- **Requirement to collect data** on eel biomass estimates, mortality rates, fishing effort and stocking rates for analysis by the Commission and its partners.

In addition to these direct functions, the Eel Regulation has catalysed the development of eel conservation and management legislation in MSs. It has also brought managers together from different regions and organisations within MS to develop the plans and associated measures. For instance, the EMP development process in IT has been highly participatory and has resulted in some comprehensive documents on best practises from the UK and ES. The role of the Joint EIFAAC/ICES Working Group on Eels (WGEEL) has been considerably enabled by the Eel Regulation and its data reporting requirements.

The Eel Regulation has also stimulated other EU-funded actions to support the recovery of the European eel. One such example is [SUDOANG](#) project, which started in March 2018 that aims to provide managers with tools and joint methods that support the conservation of the European eel and its habitat in the South-West Europe (SUDOE) area and is being funded under the priority axis “Protecting the environment and promoting resource efficiency” of the Interreg SUDOE programme. SUDOANG supports a number of task groups building various models to estimate barrier-related mortality, eel recruitment in the SUDOE region, escapement and also investigates various government platforms. Other EU-funded projects include [AMBER](#) (citizen-mapping of barriers in European rivers), the Interreg IIIB Atlantic area Project [Indicang](#) (establishing abundance indicators) and [POSE](#) (a DG MARE service contract to estimate the escapement of silver eels (see Walker *et al.*, 2011).

Furthermore, the Regulation has raised awareness of the need for conserving and managing European eel throughout its range.

It needs to be noted that it is difficult to systematically isolate the results and outcomes that could or would not have been otherwise achieved without the Eel Regulation, especially given its close relationship with other EU initiatives (especially the WFD) and the CITES listing. In particular, isolating the outcomes of measures implemented via WFD specifically for individual species (i.e. eel) is challenging and currently not documented within progress assessments for River Basin Management cycles.

EQ12. What would be the most likely consequences of stopping the application of the measures as required in the Eel Regulation?

The MS authorities contacted over this evaluation stressed the fact that the objectives of the Regulation can only be achieved over the long-term (e.g. 50 years or more) and

therefore consider this to be a permanent process that needs to be continued to be effective.

The impact of one or more MSs stopping to apply the measures from the Regulation depends on which one and their territory's particular contribution to the European eel stock. For instance, FR is a key participant due to the importance of the Bay of Biscay in terms of glass eel flows and spawner escapement and thus has a significant role in the conservation and management of this single stock.

At present, the only major change in the MS participation in the Regulation would be that of the UK in the event of their withdrawal from the EU. The UK's Department for Environment, Food and Rural Affairs (Defra) have confirmed that, as with other relevant EU legislation, the Eel Regulation will be rolled over into UK legislation within the UK Withdrawal Act (Defra, pers. comm., 16 January 2019 to the external study). This confirmation suggests that the provisions, measures and activities would be continued in the UK as in the EU. Progress reporting under the Regulation to the Commission is likely to be discontinued.

Under the scenario of the UK withdrawal, and to ensure comprehensive and quality scientific advice it would be key that the UK continues to contribute to the work of the Joint EIFAAC/ICES/GFCM Working Group on Eels (WGEEL), including responding to any related data calls that the group may make. Trade of glass eels between the UK and the EU may no longer be allowed.

Most of respondents to the Public Consultation (almost two thirds) being asked to indicate which consequences they foresaw if the intervention would be withdrawn, referred to negative consequences, mainly the eel population being more endangered and a risk that MSs will no longer implement protective measures.

Overall, it is clear that the Eel Regulation provided added value to what could be achieved by MSs at the national or regional levels in terms of recovering the eel population. It was also confirmed by the vast majority of the respondents to the Public Consultation.

6. CONCLUSIONS

This section summarises the main conclusions of the evaluation.

Relevance

As confirmed by the scientific advice, the status of the European eel remains 'critical'. The stock is in decline, despite significant re-stocking efforts. The recruitment is at an all-time low and exploitation of the stock is currently unsustainable.

Therefore, the Eel Regulation is still relevant and basically fit for purpose as an instrument to help the European eel stock to recover. It ensures that management can be applied at all eel life stages and allows to address both fisheries and non-fisheries related anthropogenic impacts.

Effectiveness

In terms of ensuring the recovery of the European eel, the Regulation's effectiveness is still far from certain. However, it is widely recognised that the recovery of the European eel will take many decades, given the long life-span of the species.

The Eel Regulation has been effective in that the key EU MSs with natural eel habitats have developed comprehensive EMPs. However, the escapement levels are still well below the general objective of the Regulation of at least 40% of the silver eel biomass that would have existed if no anthropogenic influence had impacted the stock.

Whilst restocking is a measure that features in many EMPs, only six achieved their EMP stocking target. Whilst in 2013 a lack of funding constrained restocking, the increasing cost of glass eel is a more recent issue. The long-term use of restocking as a key conservation measure is questioned. It seems more a short term emergency measure until greater natural migration in freshwater is possible, given its uncertain contribution to spawner escapement and subsequent recruitment, as well as the risks involved (e.g. disease introduction, as well as mortality from poor handling).

The target of reducing fishing effort by at least 50% has met some success. Fishing effort has declined in SE, IT, DK, FR and DE. However, effort appears to have risen in the UK and PL.

The control of eel fisheries is hindered by some shortcomings of the EU control system in relation to monitoring and control tools for fishing vessels of less than 10 m. The intra-EU trade, including that of glass eels for restocking in another country, is not fully monitored and the full traceability of eel traded between MSs is yet to be established. However, it has been increasingly recognised that this is key to controlling illegal exports from the EU. Also, the monitoring and control of recreational eel fisheries appear to be incomplete.

There have been some local successes and examples of good practice (fisheries-related, including traceability, and in terms of habitat restoration and improved spawner connectivity). Those may be a source of inspiration for other MSs for strengthening the implementation of their EMP and various activities.

Efficiency

A monetarised analysis of the cost-benefits of the Eel Regulation is impossible to provide at this stage, since MSs do not quantify the direct costs of implementing the Regulation, the responsibility for which is often spread across a number of different government departments.

The direct environmental benefits of the EMP actions (e.g. eel stock recovery through reduced fishing mortality and increased spawner escapement) and the indirect environmental benefits (reconnected coastal, estuarine & riverine ecosystems) are long-term in nature, still nascent and yet to be fully quantified in terms of their environmental benefits. Likewise it is difficult to quantify the socio-economic benefits of the EMP measures to date, especially given landings have stabilised and fishing effort has (mainly, but not in all MSs) reduced. Only when stock recovery becomes more evident and fishing opportunities consolidated will the socio-economic benefits become more apparent.

Moreover, there is scope for improving the efficiency of the reporting by MSs (e.g. Progress Reports and data calls).

Coherence

The Eel Regulation is essentially coherent with a number of EU fisheries and environmental legislation and with wider international agreements. Highly relevant are:

Common Fisheries Policy (policy framework), Water Framework Directive and Marine Strategy Framework Directive (for eel-related habitat and environmental protection), Habitats Directive (for the conservation of eel-related habitats), CITES (trade related issues) and CMS (international cooperation). Nevertheless, there is scope to improve synergies between River Basin Management Plans under the WFD and the EMPs under the Eel Regulation, and the authorities tasked with their delivery, including harmonisation and prioritisation of measures, specifically around hydro-morphological pressures. In recent years the GFCM has recognised the need for eel management in the Mediterranean. It also benefits from restrictions in the trade of European eels outside of the EU through CITES, and there is scope to expand the role of the CMS in eel conservation worldwide.

EU added-value

The Eel Regulation has provided a strong catalyst for MSs' actions to address the issues affecting the recovery of the European eel. It has also brought managers together from different regions and organisations within MSs to develop the plans and associated measures. Moreover, it has stimulated other EU-funded actions to support the recovery of the European eel, such as the SUDOANG project in South West Europe. The Regulation has also helped to raise awareness of the need for conserving and managing European eels throughout its range.

Sustainability

The evaluation does not conclude comprehensively on whether the effects of the Eel Regulation are likely to endure since the recovery of the eel is a long process.

There is no 'end date' for the Eel Regulation. Current measures remain in force until the Regulation is amended or repealed. The recovery of the European eel population is a long-term process, with some MS considering 2050 as a reasonable point by which the Regulation's target of 40% escapement across the EU might be reached.

Once the European eel stock has fully recovered, at that point the Regulation could be reconsidered, and a management plan put in place. In the meantime the regular progress reports as required in the Regulation should be continued.

Overall conclusion

The adoption of **the Eel Regulation has been an important milestone in the long process towards the recovery of the European eel**. It remains as relevant now as it was in 2009. Nevertheless, despite notable progress in reducing fishing effort and a concerted attempt to develop a pan-EU management framework, **the status of the eel remains critical**. The Regulation's success in ensuring the recovery of the European eel is still far from certain, as it is widely recognised that **the recovery of the European eel will take many decades**. In this respect, further ambition is needed to implement the Regulation with a greater focus on non-fisheries related measures.

ANNEX 1: PROCEDURAL INFORMATION

1. LEAD DG, DeCIDE PLANNING/CWP REFERENCES

Lead DG: Directorate-General for Maritime Affairs and Fisheries (DG MARE)

Planning reference: PLAN/2018/2447

2. ORGANISATION AND TIMING

This evaluation has been steered by the DG MARE since 21 March 2018 under the scrutiny of an inter-service group (ISG) comprising of representatives of SG, DG ENV and DG MARE.

The ISG met seven times and was consulted at each stage of the evaluation process. It reviewed each deliverable produced by the contractor as well as this Staff Working Document.

3. EXCEPTIONS TO THE BETTER REGULATION GUIDELINES

None

4. CONSULTATION OF THE RSB (IF APPLICABLE)

Not applicable

5. EVIDENCE, SOURCES AND QUALITY

The evaluation is based on three pillars:

- the external expertise: ‘Evaluation study on evaluation of the Eel Regulation’, carried out by a consortium of consultants led by Coffey International Development during the period 21 September 2018 – 03 July 2019;
- the International Council for the Exploration of the Sea (ICES) recurrent advices on eels and the ad hoc assessment of Member States’ progress reports;
- the Commission’s analysis of the use of the European Maritime and Fisheries Fund (EMFF) and the European Fisheries Fund (EFF) for the implementation of the Eel Regulation, carried out through two auxiliary tasks with FAME Support Unit.

List of main documents of relevance is provided for in **Annex 3.3**.

The evaluation is considered to be robust and well informed.

ANNEX 2: STAKEHOLDER CONSULTATION

The consultation activities were carried out in line with the Commission's Better Regulation Toolbox, tool #55. They were composed of a public consultation (via feedback to the Evaluation Roadmap and the Public Consultation), specific and targeted consultations, as well as *ad-hoc* written contributions.

1. FEEDBACK TO EVALUATION ROADMAP AND AD HOC CONTRIBUTION

The **Evaluation Roadmap**⁴⁶ summarising the context, purpose and scope of the upcoming evaluation and outlining the expected approach was published at the Commission website prior the evaluation. Stakeholders were able to provide feedback on the Evaluation Roadmap from 13 April to 11 May 2018.

The feedback was provided by 16 stakeholder organisations (5 from SE, 3 from FR and the UK each, 2 from DE, 1 from EL and FI each, and 1 Brussels-based EU level organisation – Europêche) and two unaffiliated individuals (from RO and NL).

Published responses repeatedly highlight some of the perceived key issues that evaluation of the Eel Regulation will need to consider, including:

- mixed opinion on whether the 40% silver eel escapement target is achievable;
- incomplete or inconsistent reporting by MSs;
- use of metrics that are challenging to measure and report against;
- perceived lack of clarity about short-term and long-term targets;
- scale and effects on management of the illegal trade in eels from Europe to Asia;
- lack of evidence on the effectiveness of restrictions on fishing and restocking on the status of the eel stock;
- absence of an internationally coordinated management plan for the whole stock area; and
- coherence of the Eel Regulation with other international and European instruments.

Some of the key most-frequently raised issues in contributions included:

1. A significant hydropower mortality and illegal fishing as factors influencing the stock as well as oceanic factors;
2. A need for alternative targets in the Regulation to reduce anthropogenic (but not related to fishing), for instance: temporary shutdown of hydropower turbines, restoration of habitats, etc., and a need for intermediate targets;
3. A need for improved control, monitoring and traceability system;
4. Insufficient and unequal implementation level of EMP in MS;
5. Uncertainty of the effectiveness of restocking operations;
6. Socio-economic consequences of restrictions on eel fishing, in particular the total ban, as well as an importance of eel fishing as a cultural heritage (e.g. in SE).

Some of those issues were also raised in separate contributions. The Baltic Sea Advisory Council (BSAC), UK's Department for Environment, Food and Rural Affairs (Defra) and a coalition of NGOs provided *ad hoc* contributions to the Evaluation Roadmap, and

⁴⁶ Evaluation of Eel Regulation, https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2018-1986447_en.

Dutch and French governments to the Public Consultations. BSAC underlined the meaningfulness of fighting illegal fishery, facilitating migration routes, and in particular socio-economic consequences of total ban on eel fishing. The Dutch government expressed its support to strengthen the Regulation. Both, French and Dutch governments stressed the need for improving implementation of EMPs.

2. TARGETED CONSULTATION

Targeted consultation was undertaken by the external study consultants with key stakeholder groups across all relevant MSs. Consultation focused on stakeholders that are directly impacted by the Regulation (e.g. competent/managing authorities responsible for developing, implementing and monitoring against EMPs, for control and enforcement, for implementing EMFF; fishers and farmers, and those involved in eel restocking and trade), those that have an interest in the implementation of the Regulation (e.g. international organisations such as implementing CITES and the CMS, and NGOs), or those that may be under-represented in the public consultation (e.g. research bodies). Around 200 potential stakeholder organisations were identified. See **Annex 3.2** listing main stakeholders consulted.

Consultation with stakeholders was based upon one of three questionnaires as follows: one targeted at MS competent/managing authorities, two targeted at MS fisheries control authorities and one targeted at all other stakeholders. Responses to questionnaires were collated in a database and analysed by the external study consultants.

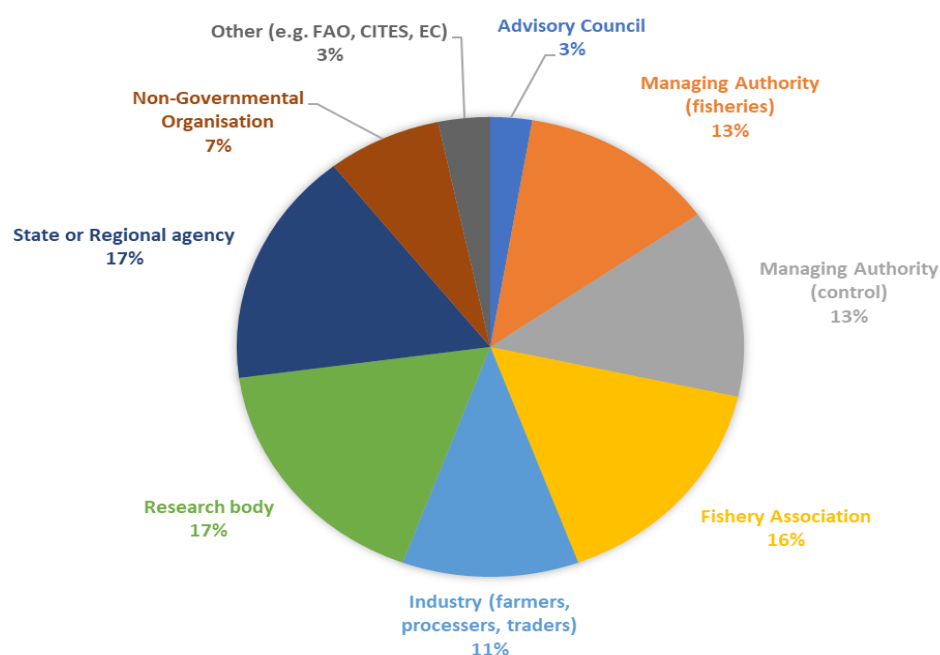
Information in support of the evaluation of control and enforcement of measures of the Eel Regulation by MS has been obtained according to two main sources:

- Information reported by MSs in response to a dedicated control questionnaire submitted by DG MARE under its own initiative in 2017 and 2018 to a sample of MSs to understand the success or otherwise of eel conservation related control systems in the EU and to identify the main challenges. The following MSs responded: DE, ES, FR, EL, IT, NL, PL, SE and UK. Some MSs (e.g. HR and PT) did not respond to DG MARE questionnaire.
- Information reported by MSs in response to a dedicated control questionnaire prepared by the expert team. Two different questionnaires have been prepared for MS having submitted an EMP: a simplified questionnaire for those MSs who responded to the DG MARE questionnaire to avoid repetition of efforts, and a full questionnaire for those MSs who have not been consulted by DG MARE or who did not respond to DG MARE.

Consultations based on the questionnaires were conducted mainly via email and telephone. Further, more than 23 in-depth face-to-face and telephone interviews were held with relevant stakeholders; these were focused on stakeholders in case study countries (DK, FR and IT) but also included other key stakeholders both within and outside the EU. Interviews sought to follow the themes covered in the questionnaires.

In total, **174 questionnaires were issued**, distributed to stakeholders in 24 MSs, and to a variety of stakeholders, as shown in **Figure 7**. Almost 50% of questionnaires were issued to stakeholders in six MSs (IT, UK, BE, SE, NL and DE), with lesser numbers of questionnaires issued to stakeholders in the remaining 18 MSs.

Figure 7: Questionnaire distribution by stakeholder category



At the time of writing of the external evaluation study, 11 MSs responded to the questionnaire, and 11 did not respond. Details are shown in the **Table 2** below. Among the 11 who did not respond, information on control was nevertheless available from the questionnaire received by DG MARE (ES, NL and SI). Note that the six MSs that have been exempted from submitting an EMP have not been consulted.

Table 2: Summary of responses from the control questionnaires

Questionnaire received	No response to questionnaire	Exempted from EMP
BE	BG	AT
CZ	DK	CY
DE*	EE	HU
FR*	ES*	MT
GR*	FI	RO
IT*	HR	SK
LT	IE	
LV	LU	
PL*	NL*	
SE*	PT	
UK*	SI*	
11	11	6

*Note: * denotes MS having replied to DG MARE questionnaire in 2017 and 2018.*

Responses to questionnaires were collated in a database and analysed by the external study consultants.

Respondents' profile

Around 80 responses to questionnaires were received. Responses were received from stakeholders across 15 MSs from a variety of stakeholders as shown in **Figure 8 below**, and over 40% of responses were received from respondents in IT and NL, reflecting to some extent the distribution of questionnaires.

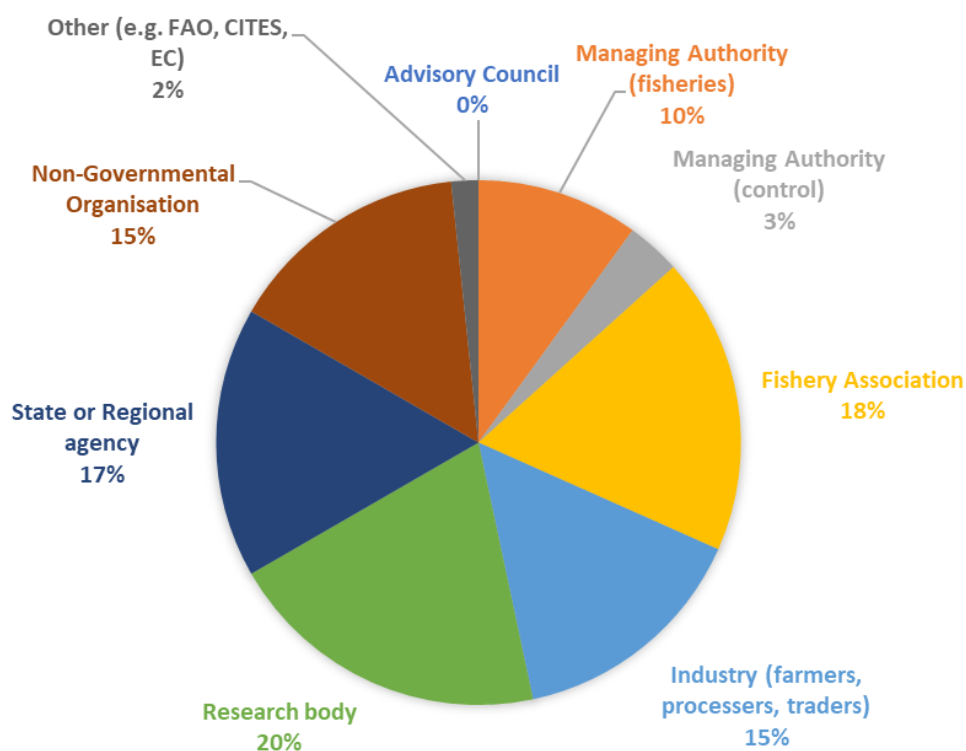


Figure 8: Questionnaires received by stakeholder category

Targeted consultation results

As regards the **relevance of the Eel Regulation**, almost all respondents reported that it remains highly relevant given the critical status of the eel population.

In terms of the **effectiveness of the Eel Regulation**, a number of respondents suggested that recovery of the eel population will take many decades and thus it is difficult to judge the effectiveness of measures already taken under the Regulation. Many stakeholders considered the Regulation to have been particularly effective in reducing fisheries-related eel mortality, though noted that the focus has perhaps been too much on fisheries-related management measures and that there has been insufficient action taken by MSs to address non-fisheries anthropogenic mortality.

Stakeholders typically acknowledged that the Regulation has usefully driven forward the preparation of EMPs within MSs, though in many cases also suggested that the approach to preparing, implementing and monitoring progress against EMP management measures needs to be improved and made more consistent across MSs. In the majority of countries, EMPs have remained as static documents, rather than being used to encourage adaptive management based on the findings of the latest monitoring and research. As an example of this lack of responsiveness, most EMPs encourage restocking, which is now felt to be an ineffective long-term management measure. Regular review and update of EMPs, and

improved reporting on progress against EMP targets, should be encouraged, as should the sharing of any recognised good practices or key research findings across MSs.

As regards the control of eel fisheries, all MSs consulted reported that eel control measures fall under the responsibility of different Ministries and competent bodies and that cooperation mechanisms have been implemented through dedicated steering platforms. The eel fisheries control have been subject to a risk-assessment analysis to identify priorities. A number of MSs identified as main risks the illegal fishing in freshwater bodies of eels at all life stages, illegal trade in the aquaculture sector and misreporting of catches.

Catch registration of professional fishermen and eel buyers for catches in marine waters or freshwater have been established. Catch declarations by professional fishermen (for both marine and fresh waters) are mandatory. Only FR reported having implemented a declaration system for recreational fishermen based on paper form. As regards sales notes, DK, FR and NL specified that buyers of eels are mandated to declare electronically purchases of eels from fishermen in real time (marine and fresh water eels). In the UK, buyers are requested to declare purchases of eels “periodically”. Other MS did not specify information in this respect.

According to MS authorities, full traceability of eels is not readily available. The paper-based traceability system enforced by the Control Regulation that concern eel caught in marine waters is not yet fully implemented. To note, two MSs (DK, SE) reported having implemented electronic traceability system but limited to marine species. Furthermore, MS authorities inspecting lorries transporting the eel may encounter difficulties to ascertain the validity of the document presented in case of control.

As regards an appropriate reporting system to ensure that the 60% glass eels reserved for restocking are used for this purpose, MSs feedback indicates they can only implement such reporting systems for activities under their competence (i.e. for glass eels caught in their territory and by their vessels used for restocking operations in their territories).

Several countries reported having implemented control practices that go beyond the minimum EU requirements. These include: more stringent conditions for monitoring glass eel catches (FR, UK), use of modern technologies to detect illegal fishing (DK, EE, LT, LV, PL, SE), coordination of police forces at national level to fight illegal trafficking of glass eels (ES, FR) or support of citizens for reporting suspected infringements (DK, SE, UK, and PL). Some countries (e.g. EL, IT and SE) have involved their CITES management authorities in the national control system through national instruments (permit scheme in EL, CITES registries in IT and SE).

Many stakeholders highlighted concerns about the evident trade in illegal, unreported and unregulated fished eels undermining the effectiveness of the Eel Regulation. It was broadly felt that there is a need for improved control measures to assist in addressing illegal trade, particularly around the activities of small fishing vessels that are understood to form the bulk of the fleet targeting eels.

Considering the **sustainability of the Eel Regulation**, respondents again suggested that management efforts around non-fisheries anthropogenic mortality should be increased, looking at improving eel habitat connectivity and improving the quality of eel habitat. Such measures are considered most likely to have long-term beneficial impacts on the eel population.

Stakeholders held mixed views around the **coherence of the Eel Regulation** with EU and international initiatives. They typically considered that the **efficiency of the Eel Regulation** could be improved through better exploiting synergies with EU and international instruments, such as the Water Framework Directive and Habitats Directive, which could better reflect the critical status of the eel population. It was also suggested that efficiency could be improved by encouraging the further development and improvement of progress reporting on EMPs, noting that this has historically varied substantially in quality and robustness, making monitoring of overall progress under the Eel Regulation very challenging. The burden on MS reporting could also be eased by reporting requests from various bodies, including DG MARE and ICES, being coordinated. Finally, a number of questionnaire respondents indicated that it would be beneficial for the Eel Regulation to allow for interim targets and encourage the setting of timelines for achievement of targets.

Other points raised by several stakeholders included the need for a more cohesive funding approach to implement EMPs and associated management measures, the need for greater efforts to raise the profile of eel and its critical status, as well as the need for a central coordinating body for the recovery of the European Eel.

3. PUBLIC CONSULTATION

The Commission launched the Public Consultation (PC)⁴⁷ on 14 December 2018 for the obligatory 12-week period that ended on 8 March 2019. The consultation aimed to gather feedback from two types of respondents: professionals familiar with the Eel Regulation and the EU citizens not familiar with the legislation but interested in eel stock recovery.

The PC questionnaire prepared with an assistance of the external study consultants was divided into two sections: an experts' survey and a general survey. The experts' survey included 12 closed and 11 open questions. The questions were more specific and complex, and they referred to all the six evaluation criteria. The general survey was more generic and briefer. It included three closed and one open question. The questionnaire was prepared in English language and translated to all EU languages accessible on the EU Survey website.

In total, 160 respondents took part in PC, of which 152 responded to experts' survey and 8 to general survey. Also *ad-hoc* written responses were received from the Sustainable Eel Group (SEG), the Baltic Sea Advisory Council (BSAC), as well as the French and the Netherlands governments.

Respondents' profile

Sixteen MSs (57%) and two non-EU countries (Norway and Albania) were represented in the contributions. More than 40% of respondents came from FR (66 contributions), followed by ES (20), NL (14), DE (10), UK (8), PT (7), BE and SE (6 each).

Out of 160 respondents, 45 gave their contributions as "EU citizens" without institutional affiliation (28.1%) and 115 respondents in a professional capacity (71.9%) as representatives of: a company or business organisation (26), NGOs (19), academic or research institutions (18), environmental organisation (18), public authority (12), business association (8), trade union (3), and "other" (11).

⁴⁷ https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2018-1986447/public-consultation_en

Respondents' self-description in relation to the Eel Regulation was as follows:

- *I work for an environmental body with an interest in the implementation of the Eel Regulation* (18.1%);
- *I have a general interest in matters concerning fisheries in the European Union* (17.5%);
- *I work for a public administration responsible for developing, implementing and/or monitoring the Eel Regulation* (16.9%);
- *I am a fisher or farmer involved the production and/or sale of eels* (10%);
- *I work for a research body with an interest in the Eel Regulation* (8.8%);
- *I represent an international organisation with an interest in the implementation of the Eel Regulation* (6.9%);
- *Other* (21.9%), for instance hydropower producers, fisheries advisors, organisations representing fishermen and other NGOs.

Fields of activity of respondents' organisations were: environment (42.5%), fishery (31.3%), aquaculture (4.4%), other (21.9%), for instance hydropower, shipping, agriculture and law enforcement. Their organisations varied in terms of size: large with over 250 employees (20%), medium (10.6%), small (16.3%) and micro (25%).⁴⁸

Public consultation results

There is a significant imbalance in the number of respondents to the Public Consultation (PC) experts' survey (n=152 out of 160; 95%) and the general survey addressed to non-specialised respondents (n=8). This suggests that the issue of recovery of eel population could be too technical for the general public to provide feedback on, and that knowledge about and/or interest in this issue is rather limited. It is difficult to make any broader conclusions on the basis of eight contributions, but nonetheless almost all of those respondents supported actions by the EU to ensure stock recovery. Contributions by experts to the PC were at high completion rate. About 75% of respondents provided comments to all open-ended questions and one third of respondents also added general comments at the end of the survey. 15 respondents (9.4%) uploaded additional documents. However, it is doubtful to what extent the results presented are indeed representative of the expert community across Europe, since 40% of all contributions came from just one country (FR).

Overview of responses

The relevance of the Eel Regulation was considered high. All objectives were assessed as fit-for-purpose by the vast majority of respondents. The majority of them also confirmed the EU added value of the intervention in comparison to what could be achieved by MS at national or regional levels. However, respondents were much less convinced that the overall aim of achieving the 40% eel escapement target was achievable.

The measures to recover the eel population in Europe were widely supported. The vast majority supported all forms of limiting eel fishing (recreational and professional, in freshwater and the sea) and facilitating eel migration through rivers, and a small majority also indicated to support restocking. However, the results also suggest that changes in addressing the issue of eel stock recovery are necessary. Three quarters of respondents indicated the regulation requires alternative targets to ensure it delivers on its objectives

⁴⁸ Not all respondents specified the size of organisation, n=115.

and two thirds indicated it requires amendment or simplification. Suggestions included: further restrictions of fishing and trade, generally reinforcing the regulation, reducing migration barriers and recovery of migration routes and habitats, and the need to better understand the problem (scientific research and monitoring).

Achievements of the regulation, especially at the national level, were assessed much less positively than its relevance. According to the majority of respondents, although MSs managed to implement EMPs, they did not manage to achieve the targets set in those plans. Respondents highlighted that the regulation managed to raise awareness of the critical situation of the eel population and to introduce some measures, which may reduce pressure on the stock rather than directly increase the stock. As regards barriers hindering the effectiveness of the regulation, respondents highlighted in particular those that are external: hydropower mortality and poaching, or insufficient implementation (rather than the legislation itself). When asked about other actions which could help the recovery of the eel population, most indicated the need to restore migration routes (address hydropower mortality) and habitats or reduce pollution. However, the majority of respondents also supported a total ban on eel fishing.

It was more challenging for respondents to assess efficiency, sustainability and coherence of the regulation and many of them selected either “neither agree nor disagree” or “don’t know” answers.

Experts’ survey - details

Relevance

Overall, respondents assessed the relevance of the Eel Regulation positively. The majority of them considered all the objectives listed as still relevant (Q1). More than nine in ten respondents agreed that there remains a need to ensure that anthropogenic mortalities are reduced, for a European recovery plan for the European eel, and for MSs to implement EMPs. 86.8% agreed that there remains a need to ensure that control and enforcement activities take place in EU waters at all stages of the eel supply chain. 85.5% agreed that there remains a need to ensure the origin and traceability of all live eels imported to and exported from MS. 82.2% agreed that there remains a need to ensure fishing effort and catches are regulated. 75.67% of respondents agreed that it remains appropriate to regulate the supply of glass eels for restocking operations and 67.8% agreed that there remains a need to ensure the escapement to the sea of at least 40% of the adult eel biomass. The lowest number of respondents, but still the majority, agreed that it remains appropriate to seek to reduce catching of eels to at least 50% of 2006 levels (57.9% agreed and 28.3% disagreed).

While the target to ensure 40% eel escapement to the sea was perceived as “relevant”, less than half of respondents (45.4%) indicated that it was indeed “achievable” (Q2). When analysed by sector, business sector respondents tended to indicate more frequently that they disagreed with the statement that this target was achievable (44.1%), while representatives of NGOs and academic communities tended to agree (66.7% and 58.8%, respectively). Out of those who provided additional comments (Q3, n=127), 34.8% highlighted a number of issues with the 40% target itself, namely: the target is not measurable, not ambitious enough, not based on scientific evidence, set for pristine rivers rather than real-life situations, not comparable between MSs or, in fact, too ambitious. Others referred to external reasons why the target is unachievable: unresolved problem with barriers to eel migration and hydropower-turbines mortality (14.8%), the policy at

the national level being insufficiently implemented (6.7%).

The vast majority of respondents (76.3%) indicated that alternative targets (Q4) were needed to ensure that the regulation delivers on its objective of securing the recovery of the European eel. One in ten respondents disagreed. Out of those respondents who provided additional comments and proposals in an open-ended question (Q5, n=103), 22.3% highlighted the need to further limit eel fishing, in particular glass eel fishing and recreational fishing, and 9.7% mentioned a total ban on eel fishing. 16.5% proposed targets related to reduction of migration barriers (hydropower, dams; turbines' closures during migration periods) and 11.7% proposed focusing on recovery of estuaries, rivers and habitats and reducing pollution (including PCBs and endocrine disruptors). Other proposed targets were related to: better understanding of the problem (scientific research and monitoring) (5.9% of respondents) and introducing interim targets and deadlines for implementation (5.3% of respondents).

On question if the regulation needed amendments or simplification (Q6), the majority of respondents indicated that it did (64.5%), compared to only one in ten who disagreed and about one third without a specified opinion. From those who provided suggestions on amendments or simplification in an open-ended question (Q7, n=121), many (39.7%) did not specify concrete steps and 9.9% suggested it was the implementation that needed to be improved rather than the regulation itself. Other suggestions included:

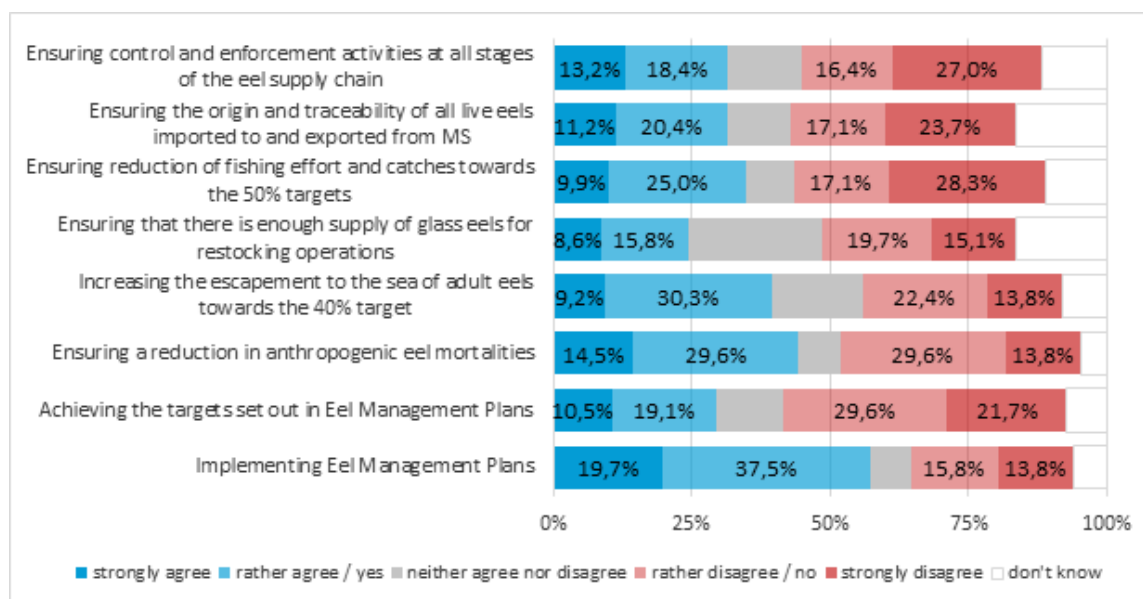
- introducing stricter rules on fishing and trade (including a total ban on fishing) and reinforcing the regulation (20.7%),
- modifying the escapement objective (clarification or setting more realistic target) (9.1%),
- introducing more harmonized standards or indicators to assess effects across countries (7.4%).

Effectiveness

The opinions on the effectiveness of the current measures for the recovery of European eel stock against the same set of objectives of the regulation were mixed.

The achievement of some objectives was assessed more positively than others (Q8, n=152, see **Figure 9**), for example, the implementation of EMP was the only objective that the majority of respondents (57.2%) agreed that it was achieved. But the majority of respondents (51.3%) indicated that targets set out in EMP remain not achieved. A relative majority of respondents indicated that the regulation managed to increase the adult eels' escapement to the sea towards the 40% target (3.3 percentage points difference between positive and negative answers) and to ensure a reduction in anthropogenic eel mortalities (0.7 percentage points difference between positive and negative answers). As regards other objectives, more respondents indicated that they were not achieved, and in most responses the difference in responses was between 9 and 12 percentage points.

Figure 9: What has the Eel Regulation achieved?



Most respondents shared their views on successes of the Eel Regulation (Q10) and barriers hindering its effectiveness in open text comments (Q9), 147 and 139, respectively.

In terms of successes of the Regulation, 7.5% of respondents who provided comments referred to increased stock or reduced mortality, 25.2% referred to more indirect effects which can lead to reducing mortality in the long term (reducing fishing effort, removing barriers to migration, improved control, restocking programmes, implementation of EMPs), and 29.9% referred to raised awareness of the problem, increased efforts and cooperation of different actors and MS. 10.2% mentioned other achievements and 12.9% indicated no or limited achievements or negative consequences.

As regards barriers hindering effectiveness, respondents mentioned as follows:

- external barriers (39.1%), such as: inability to reduce hydropower mortality (13.9%), black market and poaching (12.6%);
- issues with the regulation itself (18.5%);
- problems with its implementation (17.2%), especially bad quality or insufficient implementation of EMPs.

Most of respondents indicated that they supported all the measures of the Eel Regulation (Q11, n=152). The measure most frequently supported (9 out of 10 respondents) was facilitating fish migration through rivers. Almost three quarters of respondents supported limiting recreational eel fishing in freshwater (74.3%) and the sea (73.7%). The majority also supported limiting professional fisheries in the sea (69.7%) and freshwater (65.8%). Restocking waters with young fish was the least supported measure, but still supported by a majority of respondents (53.3%).

In a separate question (Q12), respondents were asked if they were in favour of implementation of total or partial bans on eel fishing to aid recovery of the European eel stock. This measure was also supported by a majority of respondents (61.2%) and opposed by one third of them (33.6%). Respondents from the business sector were most likely to disagree that they supported the implementation of total or partial bans on eel fishing (58.8%, n=40). Conversely, 83.3% of respondents representing environmental

organisations supported it.

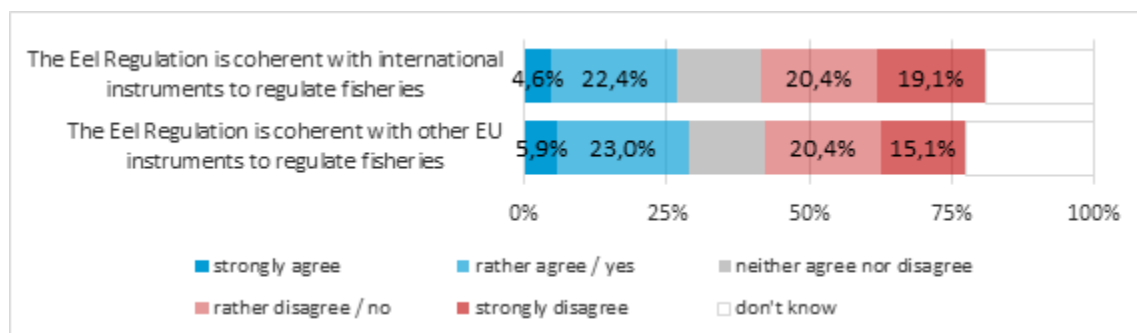
In additional comments related to bans on eel fishing (Q12a), 34.3% justified supporting a total ban mainly because of the critical condition of the eel population and need for urgent action and 5% mentioned fishing being of the main reasons of stock decline. Out of those who indicated that they did not support a ban (28.6%), 15.7% highlighted that other factors are responsible for the decline of the stock (such as hydropower, pollution), 5.7% mentioned that a ban would lead to increased poaching, and another 5.7% referred to negative social and economic consequences of a total ban.

On a question about other actions at EU or MS levels that could be undertaken to recover the eel population in Europe (Q13, n=144), 43.8% respondents highlighted the need for ecological actions (restoring migration routes, rivers, shelters, reducing pollution etc.), 16.0% mentioned improving monitoring activities, traceability, scientific research and evaluation of current activities, 13.9% referred to enhancing control of legal and illegal fishing, and 9.7% mentioned further limitation of fishing, including a total ban.

Coherence

The coherence of the Eel Regulation was assessed rather negatively. 39.5% of respondents indicated they disagreed that the regulation is coherent with international fisheries instruments (“external coherence”) and 35.6% selected the same answer for coherence with other EU instruments (“internal coherence”). The proportion of respondents who disagreed that the regulation was externally coherent exceeded those who agreed by 12.5 percentage points. In terms of internal coherence negative assessment exceeded positive by 6.6% percentage points. The details are presented in **Figure 10** (Q14, n=152). The proportion of respondents who indicated that they “didn’t know” was substantial and exceeded one third of all respondents in both cases.

Figure 10: How coherent is the Eel Regulation with other instruments?



Respondents who provided additional comments (Q14a) in most cases did not clearly specify the issues with coherence. 19.1% of those who commented (n=131) referred to inconsistencies within Common Fisheries Policy (MSY principle), Water Framework Directive not applicable to eels, Habitat Directive, and 9.9% referred to other issues (e.g. ban of export leading to illegal trade, protecting predators etc.).

EU added-value

Respondents indicated that the Eel Regulation provided added value to what could be achieved by MS at national or regional levels (Q15, n=152). More than three quarters of respondents valued the EU intervention, compare to 7.9% who did not.

In an open-ended question, respondents were also asked what the consequences of withdrawing the intervention would be (Q16). Most of them (59.9%, n=147) referred to negative consequences, mainly the eel population being more endangered and a risk that MSs would no longer implement protective measures. 12.9% mentioned positive consequences, such as fishing no longer being limited.

Efficiency

Opinions on the efficiency of the Eel Regulation were rather ambiguous (Q17, n=152). 40.8% of respondents disagreed that the same or better results in terms of eel stock recovery could have been achieved at lower cost, whereas 18.5% agreed with the statement. On the other hand, 36.2% disagreed that the costs of administering and implementing the regulation are proportionate to the environmental and socio-economic benefits achieved, with 18.4% agreeing with this statement. One quarter of respondents indicated that administering and implementing the regulation has been carried out at the lowest possible cost, however, a majority of respondents "neither agreed nor disagreed" and "did not know" whether they agreed or disagreed with this statement (34.9% and 24.3%, respectively).

Opinions whether the regulation could be simplified but still achieve the same result were mixed. Almost equal proportions of respondents (35.5%) agreed and disagreed (34.2%) and did not specify their opinion (30.3%).

Most of the respondents were not able to assess the efficiency of the regulation in comparison with other policy instruments or mechanisms (Q18, n=152). 54.6% responded that they "didn't know". Among the remaining respondents, a larger proportion disagreed (29,6%) that other instruments provided better cost-effectiveness.

Only 15% of all respondents provided examples of more cost-effective policy instruments and mechanisms (Q19, n=23) and tended to propose alternative actions such as: recovery of migration routes and habitats, reducing fishing, improved international cooperation, and controlled opening of exports to Asia.

Sustainability

Responses to questions on the sustainability of the effects of the regulation were varied (Q20, n=152). A slightly larger proportion of respondents indicated that they disagreed that the effects of the intervention were likely to last after it ended (37.5% compared to 30.9% who agreed, a difference of 6.6 percentage points). A substantial proportion of respondents (one third) indicated that they "did not know" whether the effects were likely to last.

General survey - details

Out of eight respondents who participated in the survey addressed to non-specialised respondents, one indicated that they had never heard about the problem of the decreasing European eel population compared to seven respondents who had (Q21).

All eight respondents indicated that they "rather agreed" that they supported action by the EU to regulate eel fishing to ensure the recovery of the species (Q22).

With regards to specific measures to recover the population of eel in Europe (Q23), all respondents supported facilitating fish migration through rivers; seven out of eight

respondents supported limiting professional eel fisheries in the sea and in freshwater, and limiting recreational eel fishing in freshwater, whereas six respondents supported restocking waters with young fish. Five out of eight respondents supported limiting recreational eel fishing in the sea.

Summary of ad-hoc written contributions submitted

Four written contributions have been submitted in response to the Public Consultation from the Sustainable Eel Group (SEG), the Baltic Sea Advisory Council (BSAC) as well as the French and Netherlands governments. They are summarised as follows:

- 1) The SEG considers that the Regulation as such is effective (increasing awareness, management plans, protective action, comprehensive approach) and that the implementation needs to be strengthened. It suggests keeping the Regulation in place, possibly with minor modifications. It notes that the key to the successful protection of the European eel across Europe are: strengthening the international coordination and evaluation, refocusing protective actions on a geographically partitioned basis (EMUs), implementing full traceability of eels and eel-products, extending the protection of the eel beyond the borders of the EU, prioritising the eel and increasing its protection in policies such as the Water Framework Directive, Natura 2000, and others, to address the non-fishing impacts.
- 2) The BSAC sent as its contribution to the Public Consultation the BSAC joint position papers on eels prepared in the framework of consultations held in 2017 and 2018 (including on the possible ways forward to improve the situation of European eel and the measures to promote the recovery of eel). Given the electronic format of the on-line consultation process, BSAC members were encouraged to respond individually.
- 3) The French government indicated that: i) achieving the goal of a 40% escape rate is only possible in the long term, given the life cycle of the species and the state of the stock; ii) the need to adopt intermediate targets in national management plans; iii) the need to focus efforts the proper implementation of the EMPs (with emphasis on non-fisheries anthropogenic mortality factors).
- 4) The Dutch government noted that: i) the decline in eel mortality has not yet led to an increase in the biomass, ii) the recovery of eel stocks is slow; iii) further management is needed to improve eel status and make fisheries more sustainable. It made several suggestions to strengthen the Eel Regulation, while ensuring a level playing field within the EU and with third countries.

ANNEX 3: METHODS AND ANALYTICAL MODELS

1. Evaluation Question Matrix

RELEVANCE			
Evaluation questions	Judgement criteria	Indicators	Methods
EQ1. To what extent are the existing measures for the recovery of European eel stock under the Eel Regulation still relevant ?	<ol style="list-style-type: none"> 1. The current state of the eel stock and whether conservation measures are still required. 2. The EMP structure as defined by the Eel Regulation is still relevant to current needs. 	<ol style="list-style-type: none"> 1. Trends in recruitment indices for key European sea basins over 2007 - 2017. 2. Measures stipulated as required in the EMPs are relevant and adequate to current needs. 	<ol style="list-style-type: none"> 1. Examinations of scientific evidence. 2. Face to face meeting with ICES / WGEEL group members.
EQ1a How well the objectives of the Eel Regulation (still) correspond to needs within EU?	<ol style="list-style-type: none"> 1. The extent to which eel landings, escapement levels and river basin conditions have recovered sufficiently to warrant the measures being continued. 	<ol style="list-style-type: none"> 1. Eel landing patterns, escapement levels and river basin management plan indicators (GES status change). 	<ol style="list-style-type: none"> 1. ICES, EUROSTAT & GFCM data. 2. Progress reports, scientific reports, stakeholder consultations, case studies. 3. RBMP reports (key selected river basins only).
EQ1b. How well adapted is the Eel Regulation to subsequent legal provisions or scientific advances / assessments (linked to the reformed CFP, environmental policy, reporting and compliance)?	<ol style="list-style-type: none"> 1. Extent to which the Regulation's objectives and measures remain relevant following CFP reform, the introduction of new environmental policies and measures, and EU reporting and evaluation approaches. 	<ol style="list-style-type: none"> 1. Review of the key relevant reformed CFP elements (e.g. conservation, profitability, equal access, common market provisions (see EQ 3), developments in environmental policy (e.g. WFD, MSFD & Natura 2000) to ensure continued relevance. 	<ol style="list-style-type: none"> 1. Desk study 2. PC 3. Stakeholder consultations 4. Case studies
EQ1c. How relevant is the need for eel conservation and management to EU citizens ?	<ol style="list-style-type: none"> 1. The extent to which EU citizens are aware and possibly affected by the status of European eel populations and the role of the Regulation in addressing this. 	<ol style="list-style-type: none"> 1. Qualitative assessment of public awareness of the issue and how it affects people. 	<ol style="list-style-type: none"> 1. PC.

EFFECTIVENESS			
Evaluation questions	Judgement criteria	Indicators	Methods
<p>EQ2 To what extent have the current measures for the recovery of European eel stock under the Eel Regulation met its objectives (see next column)?</p>	<ol style="list-style-type: none"> 1. EMPs implemented and specific targets achieved. 2. European eel stock has recovered. 3. Anthropogenic mortalities (e.g. non-fisheries related) have been reduced. 4. Adult eel escapement progressed towards the long term 40% escapement objective. 5. Supply of glass eels sufficient for restocking operations. 6. Fishing effort reduced by at least 50% relative to the average effort 2004-2006 or ensure reduction of catches by at least 50%. 7. Origin and traceability of all live eels imported and exported from MS territory maintained. 8. Control and enforcement activities in support of the implementation of the EMPs have taken place in EU waters and at all stages of the eel supply chain. 	<ol style="list-style-type: none"> 1. Measurable progress towards EMP targets. 2. Recruitment indices for glass & yellow eels. 3. Non-fisheries-related measures that have increase eel recruitment & survival. 4. Estimates of escapement levels in selected key river basins. 5. Restocking rates by MS and 3rd countries, market price analyses. 6. Eel landings⁴⁹ by MS and 3rd countries. 7. Inter-EU and extra-EU (banned since 2010) import and export levels. 8. Analysis of inspections / control activities carried out on eel fishing activities / farming across EU Member States (in marine and inland waters), content of controls and evidence as regards the enforceability of the measures for the recovery of the European eel stock under the Eel Regulation 	<ol style="list-style-type: none"> 1. Analysis of Progress Reports 2. ICES reports 3. Progress Reports, stakeholder consultations, case studies 4. Progress reports, scientific reports, stakeholder consultations, case studies 5. ICES data calls and price survey (<.12 cm) 6. ICES, EUROSTAT & GFCM data. 7. EUROSTAT, CITES and other trade data. Supported by stakeholder consultations to obtain non-quantitative and anecdotal information on legal and illegal trade patterns. 8. EU and Member State control reports, stakeholder consultations and case studies.

⁴⁹ Fishing effort is not currently monitored by WGEEL, only landings

EFFECTIVENESS			
Evaluation questions	Judgement criteria	Indicators	Methods
<p>EQ3. If the measures for the recovery of European eel stock under the Eel Regulation have only partially met the objectives in EQ 1, what factors have they hindered their achievement and how?</p>	<ol style="list-style-type: none"> 1. Identification of the key barriers to achieving the objectives. 2. Identification of the common and outstanding successes and resulting best practises that have allowed progress towards achieving the objectives. 3. Identification of best practices in transboundary areas. 4. Supply chain transparency and control points will need to be examined at key points within and on the borders of the EU, covering both inward and outward flows. 5. Have the control & enforcement measures at EU and MS levels been adequately resourced and implemented? 	<ol style="list-style-type: none"> 1. Characterisation and if possible, quantification of key barriers, including social, cultural, legal, trade, political, fiscal and technical issues. 2. Common approaches that have been causal in achieving measurable progress towards EMP targets (see above in EQ 1). 3. Common approaches in resolving transboundary eel conservation issues. 4. High level mapping of the main supply chains and critical control points at EU level and more detailed in DK, FR & IT to identify main internal and border control points. Based on this, evaluation of controllability and leakage. 5. Based on (3) above, examination of the main control measures and their adequacy at fishery, supply chain and border points. 	<ol style="list-style-type: none"> 1. Examination of EMPs and the resultant progress reports. Discussions with stakeholders, and ‘deep dives’ at case study level. 2. Examination of EMPs and the resultant progress reports. Discussions with stakeholders, and ‘deep dives’ at case study level. 3. Examination of EMPs and the resultant progress reports. Discussions with stakeholders, and ‘deep dives’ at case study level. 4. Literature review, discussions with stakeholders, and ‘deep dives’ at case study level. TRAFFIC reports are particularly relevant. 5. Examination of EMPs and the resultant progress reports. Discussions with stakeholders (inc. control authorities), and ‘deep dives’ at case study level.
<p>EQ4. To what extent has the Eel Regulation contributed to achieving the objectives of the Common Fisheries Policy, in particular to ensure that fisheries and aquaculture activities are environmentally sustainable in the long-term and are managed in a way that is consistent with the objectives of achieving economic, social and employment benefits, and of contributing to the</p>	<ol style="list-style-type: none"> 1. Extent to which wild eel fisheries (i) safeguard stock reproduction for high long-term yield (ii) lay the foundations for a profitable industry, (iii) share out fishing opportunities fairly, and (iv) conserve marine resources. 2. Extent to which eel farming has been developed in sustainable way that relieves pressure on wild stocks. 3. Extent to which (i) producers are enabled 	<ol style="list-style-type: none"> 1. Indicators include (i) long-term recruitment indices, (ii) profitability of key parts of the value chain, (iii) no evidence of unequal fishing opportunities and (iv) evidence of ecosystem benefits from eel conservation actions. 	<ol style="list-style-type: none"> 1. Apart from the L/T recruitment indices, this will mainly be examined at case study level.

EFFECTIVENESS			
Evaluation questions	Judgement criteria	Indicators	Methods
availability of food supplies.	to best market eel products, (ii) purchasers along the supply chain are well informed and (iii) common marketing standards are maintained.		

SUSTAINABILITY			
Evaluation questions	Judgement criteria	Indicators	Methods
EQ 5 Are the effects likely to last after the intervention ends?	1. The extent to which measures implemented under the Eel Regulation have long-term impacts, even if the intervention were to cease.	1. Mainly qualitative analysis of the permanence and longer-term impact of fishing effort restrictions, river basin improvements (to assist survival and escapement) and restocking.	1. Case studies.

EFFICIENCY			
Evaluation questions	Judgement criteria	Indicators	Methods
EQ6. To what extent have the costs associated with implementing the Eel Regulation been proportionate to the environmental and socio-economic benefits that this has generated? Could the same results have been achieved with less funding?	1. Extent to which the costs of administering, implementing and overseeing EMP actions have been balanced by the environmental and socio-economic benefits accruing from improved eel stocks.	1. Qualitative assessment of the costs and benefits. 2. Quantitative assessment of the costs (administration and implementation of the measures, compliance, opportunity and other) and benefits (environmental, social and economic accruing from the EMPs).	1. Targeted stakeholder consultations. 2. Case studies. 3. EMFF funding records (inc. recent FAME reports).

EFFICIENCY

Evaluation questions	Judgement criteria	Indicators	Methods
EQ7. Could the use of other policy instruments or mechanisms have provided better cost-effectiveness?	1. The extent to which alternative options exist and an assessment of their relative cost-effectiveness and contribution to the objectives of the Regulation (see EQ 1).	1. Examination of the alternative options e.g. non-fisheries-related environmental (e.g. through the WFD, MSFD, Habitats Directive, etc) and trade (e.g. CITES) approaches to examine the additionality and cost-effectiveness of the measures under the Regulation.	1. Targeted stakeholder consultations. 2. Case studies.
EQ8. How timely and efficient is the process for reporting and monitoring?	1. The extent to which the tri-annual Member State reporting system works in terms of timeliness and sufficiency.	1. Examination of the responsiveness and adequacy of Member State Progress Reports in identifying progress made against their EMP targets and the overall objectives of the Regulation.	1. Member State Progress Reports. 2. ICES WKEMP analyses

COHERENCE

Evaluation questions	Judgement criteria	Indicators	Methods
EQ9 To what extent are the measures for recovery of the European eel stock under the Eel Regulation coherent with wider EU policy and interventions which have similar objectives (e.g. Common Fisheries Policy, fisheries control regulation, environmental legislation and in particular Water Framework Directive)?	1. The extent to which wider fisheries and environmental policies remain coherent with the objectives and measures under the Eel Regulation.	1. Consultative identification of key conflicts or incompatibilities between EU polices and measures.	1. Desk research, with some stakeholder consultation.
EQ10 To what extent are the measures under the Eel Regulation coherent with international obligations (e.g. under CITES and CMS)?	1. The extent to which the Eel Regulation continues to be coherent with the current eel-related measures and commitments under (i) the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and (ii) the Convention on Migratory Species (CMS).	1. Evaluation the latest CITES and CMS measures related to European eel conservation to determine consistency with the measures under the Eel Regulation.	1. Desk study. 2. Targeted stakeholder consultations e.g. with TRAFFIC, CITES

EU ADDED VALUE

Evaluation questions	Judgement criteria	Indicators	Methods
<p>EQ11 What is the additional value resulting from the EU measures for the recovery of European eel stock under the Eel Regulation, compared to what could reasonably have been expected from Member States acting at national and / or regional levels?</p>	<ol style="list-style-type: none"> 1. Extent that the Eel Regulation has provided additional impetus / support to address eel conservation objectives. 2. Extent that it is possible to isolate results and outcomes that could or would not have been otherwise achieved without the Eel Regulation. 	<ol style="list-style-type: none"> 1. There is consensus among MS Authorities and other stakeholders that the Eel Regulation has provided a significant boost to addressing barriers to eel stock recovery. 2. It is possible to identify results / outcomes that can be directly attributed to the Eel Regulation. 3. There is consensus among MS authorities and stakeholders that the identified results / outcomes would not have been achieved without the Eel Regulation. 	<ol style="list-style-type: none"> 1. PC 2. Targeted consultations 3. Case studies
<p>EQ12 What would be the most likely consequences of stopping the application of the measures as required in the Eel Regulation?</p>	<ol style="list-style-type: none"> 1. Extent that MS authorities are able to identify positive and negative implications of stopping the application of the measures as regulated in the Regulation. 	<ol style="list-style-type: none"> 1. MS authorities and stakeholders identify main positive and negative implications. 	<ol style="list-style-type: none"> 1. PC 2. Targeted consultations 3. Case studies

2. Targeted Consultations stakeholders list

Prospective list of stakeholders consulted in the Member States

Member State	MS Competent authority	Other stakeholders
BE Belgium	Landbouw en Visserij	Amicale des Pêcheurs du Brabant (fishing society) Research Institute for Nature and Forest (INBO) (research body) Agency for Maritime Services and Coast (state agency) Brussels Institute for Management of the Environment (IBGE-BIM) Sustainable Eel Group (NGO)
CZ Czechia	Ministry of Agriculture	Czech Fishing Union (CFU) Board (fishery association) Czech Fish Farmers Association (fishery association) River Administrations (state agency)
DE Germany	Federal Ministry of Food and Agriculture	Institute of Inland Fisheries (state agency) Thünen Institute of Fisheries Ecology (research body) State research Centre of Agriculture and Fisheries (research body) German Fisheries Association (fishery association) German association of eel traders and eel farmers (Initiative zur Förderung des Europäischen Aals e.V, IFEA) (NGO) Albe fish farm GmbH & Co. KG (industry - farming) DEUTSCHER FISCHEREI VERBAND /Aalversandstelle (industry – restocking)
DK Denmark (Case Study)	Ministry of foreign affairs, Fishery political office	Danish AgriFish Agency Danish Technical University (research body) Danish Fishermen's Association (fishery association) Dansk Amatørfiskerforening (fishery association) DANISH AQUACULTURE ASSOCIATION (fishery association) Eel farm, Jupiter Ål (industry – farming) ROYAL DANISH SEAFOOD (eel farming, processing)
EE Estonia	Fisheries Resources Department of Ministry of Environment	Ministry of Agriculture, Fishery Economics Department (state agency) Estonian University of Life Sciences, Centre for Limnology (research body) Lake Võrtsjäve Fisheries Development Agency (industry – restocking coordination) Triton PR AS (industry – farming, processing)
ES Spain	Ministerio de Medio Ambiente y Medio Rural y Marino	Department of Marine Investigation, AZTI (state agency / research body) VALENCIANA DE ACUICULTURA (industry – farming) Universitat Politècnica de València, Grupo de Acuicultura y Biodiversidad (research body)
FI Finland	Ministry of Agriculture and Forestry	Natural Resources Institute Finland (state agency) Finnish Game and Fisheries Research Institute (research body) Federation of Finnish Fisheries Associations (fishery association) Finish Federation for Recreational Fishing (fishery association) Association of Sea Fishers in Southern Finland (fishery association) Finnish Association for Nature Conservation (NGO)
FR France (Case Study)	Ministre de l'Agriculture et de l'Alimentation Ministère de l'Agriculture et de la pêche	Comité de gestion des poissons migrateurs (state agency) Direction de la Pêche et de l'Aquaculture (state agency) Museum National Histoire Naturelle (research body) Comité National des Pêches et des Elevages Marins (fishery association) Comité National de la Pêche Professionnelle en eau douce (fishery association) Association pour le Repeuplement de l'Anguille (fishery association) OP ESTUAIRES (producers organisation)

Member State	MS Competent authority	Other stakeholders
		ETHNOCONSERVATION (NGO) Gurruchaga Maree SARL (industry – buyer)
GR Greece	Ministry of Rural Development and Food	FISHERIES RESEARCH INSTITUTE (state agency / research body) University of Patras (research body)
IE Ireland	Department of Agriculture, Food and the Marine Department of Communications, Energy and Natural Resources	Department of Environment, Heritage and Local Government (state agency) Marine Institute (state agency / research body) Central Fisheries Board (fishery association) A Bord Iascaigh Mhara (BIM - The Irish Sea Fisheries Board) (state agency) Inland Fisheries Ireland (state agency)
IT Italy (Case Study)	Ministry of Agricultural, Food and Forestry	Centro di ricerca per la Zootecnia e l'Acquacoltura (ZA) (state agency / research body) Associazione Mediterranea Acquacoltori (fishery association) University of Bologna (research body) Emilia Romagna Region (regional authority) Federcoopesca Emilia Romagna (fishery association) AGCI AGRITAL – Emilia Romagna (fishery association) Federazione Italiana Pesca Sportiva e Attività Subacquee, Ferrara (fishery association) Ittica Luciani srl (industry – processing) Medusa (industry – processing)
LT Lithuania	Fisheries Department of the Ministry of Agriculture of the Republic of Lithuania (Baltic Sea) Ministry of Environment (inland waters)	Nature Research Centre, Laboratory of Marine Ecology (research body) Environmental Protection Agency (state agency)
LU Luxembourg	Ministère de l'Agriculture, de la Viticulture et de la Protection des consommateurs Département de l'environnement	
LV Latvia	National Board of Fisheries of the Ministry of Agriculture	Ministry of Environment (state agency) Latvian Fish Resources Agency (state agency) Latvian Anglers Association (fishery association)
NL Netherlands	Department of Fisheries - Ministry of Agriculture, Nature and Food Quality	Dutch foundation of eel traders (NeVePaling) (fishery association) Dutch Association of fish farmers (NEVEVI) (fishery association) DUPAN Foundation (NGO) Nijvis Group (eel farms, traders, processors) IMARES / WAGENINGEN (research body) COMBINATIE VAN BEROEPVISSERS (fishery association) Glasaal Volendam BV (industry – hatchery)
PL Poland	Ministry of Maritime Economy and Inland Waterways Ministry of Agriculture and Rural Development	Sea Fisheries Institute (state agency / research body) Stanislaw Sakowicz Inland Fisheries Institute (state agency / research body) Polish Anglers Association (fishery association) Alldan (industry – glass eel trading)
PT Portugal	Ministério do Mar Direcção Geral das Pescas e Aquicultura	Centre for Marine and Environmental Research (CIIMAR), University of Porto (research body) Portuguese Institute of Sea and Fisheries (INIAP/IPIMAR) (research body)
SE Sweden	Ministry for Rural Affairs Ministry of Environment and	Swedish Agency for Marine and Water Management (state agency)

Member State	MS Competent authority	Other stakeholders
	Energy – Natural Environment Division	Scandinavian Silver Eel (industry - farming) Skåne county board, Kristianstad (industry – restocking) Stockholm University, Baltic Sea Centre (research body) Swedish University of Agricultural Sciences, Institute of Freshwater Research (research body) Swedish Anglers Association (fishery association) Swedish Society for Nature Conservation (NGO)
UK United Kingdom	Department for Environment, Food and Rural Affairs	Environment Agency, Scottish Environment Protection Agency, Natural Resources Wales, Northern Ireland Environment Agency (state agencies) Marine Scotland Science (state agency / research body) Centre for Environment, Fisheries and Aquaculture Science (research body) Lough Neagh Eel (industry – fishery) / Lough Neagh Fishermen's Cooperative Society (fishery association) Glass Eels Ltd (industry- trade) Severn & Wye Smokery (industry – processing)

List of other stakeholders consulted

Stakeholder	Role / Remit
Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) – Scientific Services	International agreement aiming to ensure that international trade of wild animals and plants does not threaten their survival.
Convention of Migratory Species (CMS) – Aquatic Species Team	As an environmental treaty focused on the conservation and sustainable use of migratory species, including eels. CMS brings together the States where migratory animal species spend different parts of their life cycle including migratory routes, and lays the legal foundation for internationally coordinated conservation measures throughout a migratory range.
European Association of Fish Producers Organisations (EAPO)	Represents 38 Producer Organisations from 10 Member States.
European Inland Fisheries and Aquaculture Advisory Commission (EIFAAC)	Promote the long-term sustainable development, utilization, conservation, restoration and responsible management of European inland fisheries and aquaculture, consistent with the objectives and principles of the FAO Code of Conduct for Responsible Fisheries and other relevant international instruments.
Europeche	Representative body for fishermen in the European Union representing around 45,000 vessels, both artisanal and large scale, 80,000 fishermen and counting 16 member organisations from 10 European countries.
Fisheries and Aquaculture Monitoring and Evaluation (FAME) Support Unit	Assists the European Commission in monitoring and evaluating the implementation of the EMFF.
Fisheries Area Network (FARNET) Support Unit	FARNET is the community of people implementing Community-Led Local Development (CLLD) under the European Maritime and Fisheries Fund (EMFF). This network brings together Fisheries Local Action Groups (FLAGs), managing authorities, citizens and experts from across the EU.
Joint EIFAAC/ICES/GFCM Working Group on Eels	Report on the status of the European eel stocks and provide advice to support development and implementation of EC Regulation No. 1100/2007 for eel stock recovery.
Low Impact Fishers of Europe	Aim to provide a clear and coherent voice at EU level for smaller scale fishers who use low impact fishing gears and methods.
Coalition Clean Baltic	Joint NGO, comprised of NGOs from the countries of the Baltic Sea region, with goal of protecting and improving the Baltic Sea environment and natural resources. Eel status is one of their key working areas.
Eel Stewardship Association	The Eel Stewardship Association (ESA) is founder of the Eel Stewardship

Stakeholder	Role / Remit
	Fund and owner of the esf trademark. ESA was established in 2015 by industry organisations of the Netherlands and Germany and it is hoped it will be adopted elsewhere. The main goal is to accelerate the eels recovery in Europe and adopting measure to ensure sustainable use of the stock.
Advisory Councils	Advisory Councils e.g. Baltic Sea, North Sea, South-Western Waters, North Western Waters, Mediterranean, Aquaculture and Market.
European Anglers Alliance	The European Anglers Alliance (EAA) is the pan-European organisation for recreational angling.
Aquaculture Advisory Council (AAC)	This stakeholder-led organisation has as main objective to provide the European institutions and the Member States with recommendations and advice on issues related to the sustainable development of the sector.
Baltic Sea Fisheries Forum (BALTFISH)	Regional body providing a platform for discussion on important fisheries issues in the Baltic Sea.
North Western Waters Advisory Council (NWWAC)	A representative fisheries stakeholder body which is legally recognised as an organisation aiming an European Interest. It is established in Ireland and it produces regular advice on its own initiative or at request of the European Commission and the concerned Member States on all relevant matters related to fisheries management in the EC offshore waters within the EEZ of Ireland, part of United Kingdom and France (ICES areas Vb, VIa and VII).
North Sea Advisory Council (NSAC)	The NSAC prepares and provides advice on the management of fisheries in the North Sea on behalf of its members; fisheries organisations and other stakeholders including environmental organisations.
South Western Waters Advisory Council (SWWAC)	The SWWAC brings together all actors who have an interest in Fisheries Management to put forward opinions to the European Commission and the Member States on the management of the fisheries in the South Atlantic.
TRAFFIC	Wildlife trade monitoring network; an NGO working globally on trade in wild animals and plants in the context of both biodiversity conservation and sustainable development.
IUCN Anguillid Eel Specialist Group	A specialist IUCN group of experts seeking to promote research on anguillid species and advocate their conservation.

3. Reference list of the literature consulted

- Acou A., Boisneau C. & Feunteun E. (2009).** Prédiction des pics de dévalaison des anguilles argentées à partir des données environnementales : état des connaissances et développement d'un modèle opérationnel sur la Loire pour la gestion du turbinage. Rapport du Muséum National d'Histoire Naturelle, CRESCO, Dinard
- AZTI (2013).** I Jornadas españolas de Ika Anguila. Irailak 28, 29, 30 de septiembre, 2013. Palacio Miramar Jauregia. Donostia-San Sebastián. Laburpen liburua Libro de resúmenes. 128 pp.
- Belpaire, C., Geeraerts, C., Evans, D., Ciccotti, E. & Poole, R. (2011).** The European eel quality database: Towards a pan-European monitoring of eel quality. *Environmental monitoring and assessment*. 183. 273-84. 10.1007/s10661-011-1920-2
- BMLFUW (2017).** Nationaler Gewässerbewirtschaftungsplan 2015 [Austria national RBMP 2015]. Report from Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft (https://www.bmlfuw.gv.at/wasser/wisa/fachinformation/ngp/ngp-2015/text/textdokument_ngp2015.html)
- Butts, I.A.E., Sørensen, S.R., Politis, S.N., Tomkiewicz, J. (2016).** First-feeding by European eel larvae: A step towards closing the life cycle in captivity. *Aquaculture* 464: 451-458.
- CITES (2017).** Amendments to Appendices I and II of the Convention adopted by the Conference of the Parties at its 14th meeting, The Hague (Netherlands), 3–15 June 2007. Notification to the Parties. No. 2007/022.
- CMS (2016).** First Range State Workshop on the European Eel <https://www.cms.int/en/meeting/first-range-state-workshop-european-eel>.
- Council of the European Union (1992).** Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, known as the Habitats Directive
- Council of the European Union (1996).** Council Regulation (EC) No 338/97 of 9 December 1996 on the protection of species of wild fauna and flora by regulating trade therein
- Council of the European Union (2002).** Council Regulation (EC) No 2371/2002 of 20 December 2002 on the conservation and sustainable exploitation of fisheries resources under the Common Fisheries Policy.
- Council of the European Union (2009).** [Council Regulation \(EC\) No 1224/2009](#) of 20 November 2009 establishing a Union control system for ensuring compliance with the rules of the common fisheries policy, amending Regulations (EC) No 847/96, (EC) No 2371/2002, (EC) No 811/2004, (EC) No 768/2005, (EC) No 2115/2005, (EC) No 2166/2005, (EC) No 388/2006, (EC) No 509/2007, (EC) No 676/2007, (EC) No 1098/2007, (EC) No 1300/2008, (EC) No 1342/2008 and repealing Regulations (EEC) No 2847/93, (EC) No 1627/94 and (EC) No 1966/2006
- Council of the European Union (2017).** Council agreement on 2018 fishing quotas in the Atlantic and North Sea. Accessed at: <https://www.consilium.europa.eu/en/press/press-releases/2017/12/13/council-agreement-on-2018-fishing-quotas-in-the-atlantic-and-north-sea/pdf>
- Council of the European Union (2018a).** Proposal for a Council Regulation fixing for 2018 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in Union waters and, for Union fishing vessels, in certain non-Union waters, and amending Council Regulation (EU) 2017 / 127 <http://data.consilium.europa.eu/doc/document/ST-5382-2018-INIT/en/pdf>
- Council of the European Union (2018b).** Atlantic and North Sea: Council agrees 2019 fishing quotas. <https://www.consilium.europa.eu/en/press/press-releases/2018/12/19/atlantic-and-north-sea-council-agrees-2019-fishing-quotas/>
- Council of the European Union (2018c).** Council Regulation (EU) 2018/120 of 23 January 2018 fixing for 2018 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in Union waters and, for Union fishing vessels, in certain non-Union waters, and amending Regulation (EU) 2017/127. 168 pp.
- Council of the European Union (2019).** Council Regulation (EU) 2019/124 of 30 January 2019 fixing for 2019 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in Union waters and, for Union fishing vessels, in certain non-Union waters. *Official Journal of the European Union*. 31.01.2019, 166 pp.

- Crook, A (2010).** Trade in *Anguilla* species, with a focus on recent trade in European Eel *Anguilla anguilla*. June 2010. A TRAFFIC Report prepared for the European Commission Contract 070307/2007/479422/MAR/E2.
- Deelder, C. L. (1970).** Synopsis of Biological Data on the Eel *Anguilla anguilla* L. FAO Fishery Synopsis No. 80, Rome 1970, 84 pp.
- Dekker, W (2016).** Food for Thought. Management of the eel is slipping through our hands! Distribute control and orchestrate national protection. ICES Journal of Marine Science (2016), 73(10), 2442–2452. doi:10.1093/icesjms/fsw094
- Dekker, W and L. Beaulaton (2016).** Faire mieux que la nature? The history of eel restocking in Europe. *Environment and History* 22 (2016): 255–300. doi: 10.3197/096734016X14574329314407
- Dekker, W., B. Van Os & J. Van Willigen (1998).** Minimal and maximal size of eel. Short Note. *Bull. Fr. Pêche Piscic.* 349:195-197
- Environment Agency (2011).** The Eel Manual. GEHO0211BTMU-E-E Environment Agency, United Kingdom.
- European Commission (2003).** Development of a Community Action Plan for the management of European Eel. Communication from the Commission to the Council and the European Parliament. Brussels, 01.10.2003COM(2003) 573 final. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52003DC0573&from=en>
- European Commission (2008).** Commission Decision 2008/292/EC of 4 April 2008 established that the Black Sea and the river systems connected to it did not constitute a natural eel habitat for European eel for the purposes of the Regulation.
- European Commission (2009).** Commission Decision 2009/310/EC of 2 April 2009 approving requests by Cyprus, Malta, Austria, Romania and Slovakia for exemption from the obligation to prepare an Eel Management Plan in accordance with Council Regulation (EC) No 1100/2007.
- European Commission (2010).** Summary of Conclusions. 54th Meeting of The Scientific Review Group on Trade in Wild Fauna and Flora. Brussels 3rd December 2010. https://circabc.europa.eu/sd/a/49ab3fc9-646b-4b35-ac42-f0333479ce24/54_summary_srg.pdf
- European Commission (2011).** Seas for life- Protected - sustainable - shared European seas by 2020
- European Commission (2014a).** Report from the Commission to the Council and the European Parliament. On the outcome of the implementation of the Eel Management Plans, including an evaluation of the measures concerning restocking and of the evolution of market prices for eels less than 12 cm in length. Brussels, 21.10.2014. COM(2014) 640 final.
- European Commission (2014b).** Science for Environment Policy: DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol. Eels can be used to help monitor water's ecological quality.
- European Commission (2015).** EU Water Framework Directive. http://ec.europa.eu/environment/water/water-framework/info/intro_en.htm
- European Commission (2017).** Implementation and evaluation of Regulation (EC) 1224/2009 establishing a Union control system for ensuring compliance with the rules of the common fisheries policy as required under Article 118 REFIT Evaluation of the impact of the fisheries regulation. Report from The Commission to the European Parliament and the Council COM/2017/0192 final. 9 pp.
- European Commission (2018a).** Directorate-General for Maritime Affairs and Fisheries – Unit D.3 (2018): FAME SU Report EMFF use for the implementation of the Eel Regulation', Brussels. 12 pp.
- European Commission (2018b).** Evaluation Roadmap. Ref. Ares(2018)1986447 - 13/04/2018. See https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2018-1986447_en
- European Commission (2018c).** IMPACT ASSESSMENT. Accompanying the document 'Proposal for a Regulation of the European Parliament and of the Council on the European Maritime and Fisheries Fund and repealing Regulation (EU) No 508/2014 of the European Parliament and of the Council' Commission Staff Working Document. {COM(2018)390final} - {SEC(2018)276final}
- European Commission (2019a).** EFF and Eel Regulation. Summary Report. European Commission - Directorate-General for Maritime Affairs and Fisheries, Unit D.3. Prepared by the FAME SU, Brussels

European Commission (2019b). Report from the Commission to the European Parliament and the Council on the implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC) Second River Basin Management Plans First Flood Risk Management Plans

European Environment Agency (2017). Natura 2000 Network Viewer. <http://natura2000.eea.europa.eu/#>

European Environment Agency (2018). European waters Assessment of status and pressures 2018. EEA Report No 7/2018.

European Parliament & the Council of the European Union (2000). Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishes a framework for Community action in the field of water policy.

European Parliament & the Council of the European Union (2008). Directive 2008/56/EC of 17 June 2008 establishes a framework for community action in the field of marine environmental policy.

European Parliament & the Council of the European Union (2013). Regulation (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy, amending Council Regulations (EC) No 1954/2003 and (EC) No 1224/2009 & repealing Council Regulations (EC) No 2371/2002 & (EC) No 639/2004 and Council Decision 2004/585/EC. 40 pp.

European Parliament & the Council of the European Union (2014). Regulation (EU) No 508/2014 of the European Parliament and of the Council of 15 May 2014 on the European Maritime and Fisheries Fund and repealing Council Regulations (EC) No 2328/2003, (EC) No 861/2006, (EC) No 1198/2006 and (EC) No 791/2007 and Regulation (EU) No 1255/2011 of the European Parliament and of the Council. Official Journal of the European Union L 149/1.

European Parliament & the Council of the European Union (2017). Regulation (EU) 2017/1004 of the European Parliament and of the Council of 17 May 2017 on the establishment of a Union framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the common fisheries policy and repealing Council Regulation (EC) No 199/2008. *Official Journal of the European Union*. 30.06.2017, 21 pp.

European Parliament & the Council of the European Union (2018). Proposal for a Regulation of the European Parliament and of the Council amending Council Regulation (EC) No 1224/2009, and amending Council Regulations (EC) No 768/2005, (EC) No 1967/2006, (EC) No 1005/2008, and Regulation (EU) No 2016/1139 of the European Parliament and of the Council as regards fisheries control. COM/2018/368 final. 91 pp.

GFCM (2018). Recommendation GFCM/42/2018/1 on a multiannual management plan for European eel (*Anguilla anguilla* L.) in the Mediterranean. Forty-second session of the Commission. FAO headquarters, Rome, Italy, 22–26 October 2018. Appendices (p23-30).

Hanel, R (2019). Research for PECH Committee – Environmental, social and economic sustainability of European eel management, European Parliament, Policy Department for Structural and Cohesion Policies, Brussels. Downloaded from [http://www.europarl.europa.eu/RegData/etudes/STUD/2019/629189/IPOL_STU\(2019\)629189_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/STUD/2019/629189/IPOL_STU(2019)629189_EN.pdf) on 20/02/2019

Hansson, S., Bergström, U., Bonsdorff, E., Härkönen, T., Jepsen, N., Kautsky, L., Lundström, K., Lunnery, S.-G., Ovegård, M., Salmi, J., Sendek, D., Vetemaa, M. (2017). Competition for the fish–fish extraction from the Baltic Sea by humans, aquatic mammals, and birds. *ICES Journal of Marine Science*, fsx207

ICES (1976). First report of the working group on stocks of the European eel, Charlottenlund, 27–31 October 1975. ICES CM1976/M:2 (mimeo), 34 pp.

ICES (2002). European eel. In CES Cooperative Research Report No. 255. p940 - 948

ICES (2007). EC request on the Draft EU Guidelines for Eel Management Plans (Council Regulation n° 1100/2007). 7 pp. <http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2007/Special%20Requests/EC%20guidelines%20for%20eel%20MP.pdf>

ICES (2008). The report of the 2008 Session of the Joint EIFAAC/ICES Working Group on Eels, September 2008; ICES CM 2008/ACOM:15. 192 pp. and Country Reports.

ICES (2009). European eel. In Report of the ICES Advisory Committee, 2009. ICES Advice 2009, Book 9, Section 9.4.9. 4 pp.

- ICES (2010a).** European eel. In Report of the ICES Advisory Committee, 2010. ICES Advice 2010, Book 9, Section 9.4.9. 9 pp.
- ICES (2010b).** The report of the 2010 Session of the Joint EIFAC/ICES Working Group on Eels, September 2010; ICES CM 2009/ACOM:19. 198 pp.
- ICES (2013a).** Report of the WGEEL. 13–15 May, Denmark. ICES CM 2013/ACOM:32.
- ICES (2013b).** Report of the Joint EIFAAC/ICES Working Group on Eels (WGEEL), 18–22 March 2013 in Sukarrieta, Spain. 4–10 September 2013 in Copenhagen, Denmark. ICES CM 2013/ACOM:18. 851 pp.
- ICES (2013c).** Report of the Workshop on Evaluation Progress Eel Management Plans (WKEPEMP), 13–15 May 2013, Copenhagen, Denmark. ICES CM 2013/ACOM:32. 757 pp.
http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2013/WKEPEMP/wkepemp_2013.pdf
- ICES (2013d).** European eel. In Report of the ICES Advisory Committee, 2013. ICES Advice 2013, Book 9, Section 9.4.7. 7 pp
- ICES (2014).** Report of the Joint EIFAAC/ICES/GFCM Working Group on Eel, 3–7 November 2014, Rome, Italy. ICES CM 2014/ACOM:18. 203 pp.
- ICES (2015a).** EU request on criteria for CITES non-detriment finding for European eel (*Anguilla anguilla*). ICES Special Request Advice, Northeast Atlantic. Published 30 April 2015. 7 pp.
- ICES (2015b).** Report of the Workshop on Eel and CITES (WKEELCITES), 10–12 March 2015, Copenhagen, Denmark. ICES CM 2015/ACOM:44. 57 pp.
- ICES (2016a).** Report of the Joint EIFAAC/ICES/GFCM Working Group on Eel (WGEEL), 24 November–2 December 2015, Antalya, Turkey. ICES CM 2015/ACOM:18. 130 pp.
- ICES (2016b).** Stock annex for the European Eel. Downloaded from
http://www.ices.dk/sites/pub/Publication%20Reports/Stock%20Annexes/2016/Anguilla_anguilla_SA.pdf
- ICES (2016c).** Report of the Workshop on Eel Stocking (WKSTOCKEEL), 20–24 June 2016, Toomebridge, Northern Ireland, UK. ICES CM 2016/SSGEPD:21. 75 pp
- ICES (2017a).** ICES Advice on fishing opportunities, catch and effort – European eel. DOI: 10.17895/ices.pub.3440
- ICES (2017b).** Report of the Working Group on Eels (WGEEL), 3–10 October 2017, Greece. ICES CM 2017/ACOM:15.
- ICES (2018a).** ICES Advice on fishing opportunities, catch and effort – European eel throughout its natural range. Published 7 November 2018. <https://doi.org/10.17895/ices.pub.4601>.
- ICES (2018b).** EU request relating to estimates of stock parameters for European Eel Management Units. ICES Special Request Advice. North Atlantic ecoregions. Published 17 December 2018. sr.2018.35, 10 pp. <https://doi.org/10.17895/ices.pub.4671>
- ICES (2018c).** Report of the Joint EIFAAC/ICES/GFCM Working Group on Eels (WGEEL), 5–12 September 2018, Gdańsk, Poland. ICES CM 2018/ACOM:15. 152 pp.
- ICES (2018d).** Report of the Workshop for the Review of Eel Management Plan Progress Reports (WKEMP), 17–19 July and 13–16 November 2018, Copenhagen, Denmark. ICES CM 2018/ACOM:46. 100 pp.
- ICPDR (2015).** The Danube River Basin District Management Plan — Update 2015, International Commission for the Protection of the Danube River (<http://www.icpdr.org/main/activities-projects/river-basin-management-plan-update-2015>).
- ICPE (2015).** Aktualisierung des Bewirtschaftungsplans nach § 83 WHG bzw. Artikel 13 der Richtlinie 2000/60/EG für den deutschen Teil der Flussgebietseinheit Elbe für den Zeitraum von 2016 bis 2021, Flussgebietsgemeinschaft Elbe (<https://www.fgg-elbe.de/berichte/aktualisierung-nach-art-13.html>)
- ICPR (2015).** The international river basin district Rhine (IRBD Rhine), 2nd RBMP from International Commission for the Protection of the Rhine (<http://www.iksr.org/en/water-framework-directive/river-basin-management-plan-2015/index.html>).
- Jacoby, D. & Gollock, M. (2014).** *Anguilla anguilla*. The IUCN Red List of Threatened Species 2014: e.T60344A45833138. <http://dx.doi.org/10.2305/IUCN.UK.2014-1.RLTS.T60344A45833138.en>.

- Jacoby, D., J. Casselman, V. Crook, M-B DeLucia, H. Ahnf, K. Kaifu, T. Kurwieg, P. Sasal, A. Silfvergrip, K. Smith, K. Uchida, A. Walker & M. Gollock (2015).** Synergistic patterns of threat and the challenges facing global anguillid eel conservation. *Global Ecology and Conservation* 4 (2015) 321–333
- Kirkegaard, E. (Ed.), Aarestrup, K., Pedersen, M. I., Jepsen, N., Kirkegaard, E., Koed, A., ... Tomkiewicz, J. (2010).** European eel and aquaculture. Charlottenlund: DTU Aqua. Institut for Akvatiske Ressourcer. DTUAqua-rapport, No. 229-2010. http://orbit.dtu.dk/files/6581078/229-2010_European-Eel-and-Aquaculture.pdf
- Kottelat, M. and J. Freyhof (2007).** Handbook of European freshwater fishes. Publications Kottelat, Cornol and Freyhof, Berlin. 646 pp
- Kroes, M., H. Wanningen, N. Breve and P. van Puijenbroek (2015).** 'Fish migration possibilities in the Netherlands; state of the art (barriers, solutions, monitoring), session E8, International Conference on Engineering and Ecohydrology for Fish Passage (https://scholarworks.umass.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1949&context=fishpassage_conference)
- Motova, A. (2014).** Economic impact of eel trade ban – general trends. Study in support to the STECF 2014. Publications Office of the European Union, Luxembourg, EUR 26941 EN, JRC 9253, 10 pp.
- MRAG (2017).** IUU Fishing Risk in and around Japan. Final Report JP2278 for WWF Japan. 393 pp.
- NASCO (2015).** Maintaining and improving river connectivity: The current position and experience in England (annex 4, CNL(15)43), Report at the Theme- based Special Session of the Council of NASCO (North Atlantic Salmon Conservation Organization) (http://www.nasco.int/pdf/2015%20papers/CNL_15_43.pdf)
- Outhwaite, W. and Brown, L. (2018).** Eastward Bound: Analysis of CITES listed flora and fauna exports from Africa to East and Southeast Asia 2006 to 2015. TRAFFIC International, Cam-bridge, United Kingdom.
- Pawson, M. (2012).** Does translocation and restocking confer any benefit to the European eel population? A review. London: Sustainable Eel Group (SEG).
- Rhône-Méditerranée RBD (2016)** 'Tableau de bord du SDAGE Rhône-Méditerranée — version mai 2016' (<http://www.rhone-mediterranee.eaufrance.fr/gestion/sdage2016/tableau-de-bord.php>)
- Sanada, Y. (2018).** News report on the catch of glass eels (eel larvae) and its import. Downloaded from https://www.jwcs.org/data/180407NewsReportGlassEels_EN.pdf
- SEG (2018).** Quantifying the illegal trade in European glass eels (*Anguilla anguilla*): Evidences and Indicators Sustainable Eel Group. SEG-Report:2018-1-V1.
- Seine RBD (2016).** Tableau De Bord du Schema Directeur D'amenagement et de Gestion des Eaux, Bilan 2016, Bassin de La Seine et des Cours d'Eau Côtiers Normands (http://www.eau-seine-normandie.fr/mediatheque/Dossier_partage/INSTITUTIONNEL/SDAGE_2016_2021/TdB_SDAGE_2016_CB-4.2_big.pdf)
- SEPA (2015).** The river basin management plan the Scotland river basin district 2015- 2027, Scotland 2nd RBMP, Scottish Environment Protection Agency (<https://www.sepa.org.uk/environment/water/river-basin-management-planning/the-current-plans/>)
- Svedäng, H., and L. Gipperth (2012).** Will regionalisation improve fisheries management in the EU? An analysis of the Swedish eel management plan reflects difficulties. *Marine Policy*, 36: 801–808
- TRAFFIC (2015).** Overview of reported trade in *Anguilla anguilla* for 2012–2015, with a focus on illegal trade. Internal briefing prepared by TRAFFIC for the European Commission. Version 2.
- UNCLOS (1982).** United Nations Convention on the Law of the Sea (UNCLOS) of 10 December 1982. http://www.un.org/Depts/los/convention_agreements/texts/unclos/UNCLOS-TOC.htm
- Van Ael, E., Belpaire, C., Breine, J., et al. (2013).** Are persistent organic pollutants and metals in eel muscle predictive for the ecological water quality? *Environmental Pollution*, 186C, 165–171. DOI:10.1016/j.envpol.2013.12.006.
- Walker, A.M., Andonegi, E., Apostolaki, P., Aprahamian, M., Beaulaton, L., Bevacqua, P., Briand, C., Cannas, A7, De Eyto, E., Dekker, W., De Leo, G., Diaz, E., Doering-Arjes, P., Fladung, E., Jouanin, C., Lambert, P., Poole, R., Oeberst, R. & Schiavina, M. (2011).** Pilot projects to estimate the

potential and actual escapement of silver eel. Service Contract No. SI2.539598. Lot 2. Final Report. Accessed from https://ec.europa.eu/fisheries/documentation/studies/silver-eel_en

Wold, C. (2018). Options for Developing an Agreement Under the Convention on Migratory Species for European eels. Prepared for the Sargasso Sea Commission.

WWF, European Environmental Bureau, the European Anglers Alliance and European Rivers Network (2018). Bringing life back to Europe's Waters: The EU Water Law in Action. Lead authors: Martina Mlinaric (WWF-EU) and Jack Rhodes.

ANNEX 4: COMMISSION DECISIONS UNDER THE EEL REGULATION

Member State	Commission decisions approving EMP
BE	C(2009)10510 final of 5.1.2010
CZ	C(2009)9429 final of 30.11.2009
DE	C(2010)2133 final of 8.4.2010
DK	C(2009)10241 final of 22.12.2009
EE	C(2009)9358 final of 30.11.2009
EL	C(2010) 8218 final of 29.11.2010
ES	C(2010) 6360 final of 1.10.2010
FI	C(2010)1872 final of 29.3.2010
FR	C(2010)947 final of 15.2.2010
IE	C(2009) 5962 final of 30.7.2009
IT	C(2011)4816 final of 11.7.2011
LT	C(2009)10244 final of 22.12.2009
LU	C(2009)7681 final of 14.10.2009
LV	C(2009)9372 final of 30.11.2009
NL	1 st decision: C(2009)7830 final of 20.10.2009 Commission Implementing Decisions, amending EMP: C(2011)3930 final of 10.6.2011 and C(2018)2153 of 16.04.2018
PL	C(2009)10601 final of 6.1.2010
PT	C(2011) 2248 final of 5.4.2011
SE	C(2009)7699 final of 14.10.2009
UK	C(2010)1865 final of 13.4.2010

C(2008)1217 of 04/04/2008

2008/292/EC: Commission Decision of 4 April 2008 establishing that the Black Sea and the river systems connected to it do not constitute a natural habitat for European eel for the purposes of Council Regulation (EC) No 1100/2007

C(2009)2231 final of 2.4.2009

2009/310/EC: Commission Decision of 2 April 2009 approving requests by Cyprus, Malta, Austria, Romania and Slovakia for exemption from the obligation to prepare an Eel Management Plan in accordance with Council Regulation (EC) No 1100/2007 (notified under document number C(2009) 2231)

C(2012)3118 of 21/05/2012

COMMISSION IMPLEMENTING DECISION approving the Transboundary Eel Management Plan for the Miño/Minho River submitted by Spain and Portugal to the Commission in accordance with Council Regulation (EC) No 1100/2007 establishing measures for the recovery of the stock of European eel

ANNEX 5: EMP IMPLEMENTATION

1. Scope and availability of Member State EMPs and Progress Reports

Member State	EMP Scope				Availability of EMPs and Progress Reports			
	Eel Management Units (No.)	Number of EMPs	Transboundary Considerations	Habitat Coverage	EMP	1st Progress Report (2012)	2nd Progress Report (2015)	3rd Progress Report (2018)
Belgium	Scheldt, Meuse (2)	1		Freshwater	Y	Y	Y	N (tables only)
Czech Republic	Odra, Labe (2)	1		Freshwater	Y	Y	N	Y (no data tables)
Germany	Ems, Weser, Eider, Schlei/Trave, Maas, Rhein, Warnow/Peene, Elbe, Oder (9)	9		Freshwater Transitional Coastal	Y	Y	Y	Y
Denmark	Denmark inland (1)	1	EMP excludes trans-boundary river basins shared with Germany.		Y	Y	Y	Y
Estonia	Narva River, West Estonia (2)	1	Narva River shared with Russia; extent of collaboration not clear.	Not confirmed	Y	Y	N	Y
Spain	Galicia, Asturias, Cantabria, Basque Country, Murcia, Navarra, Cataluña, Cuenca del Ebro, Valenciana, Castilla La Manchalslas, Baleares, Andalucía (12)	1 national EMP and 12 specific EMPs	The Minho International River Plan was developed with Portugal.		Y	Y	N	Y
Finland	Entire Finland (1)	1		Not confirmed	Y	N	Y	Y (no data tables)
France	Rhône – Méditerranée, Adour, Garonne, Loire, Bretagne, Seine-Normandie, Artois-Picardie, Rhin-Meuse, Corse (9)	1		Freshwater Transitional Coastal	Y	Y	Y	Y (missed tables 3 & 7)
Greece	North-Western Greece, Western Peloponnesos, East Macedonia – Thrace, Central Greece - Aegean Islands (4)	1		Freshwater Transitional	Y	Y	Y	Y
Ireland	Eastern, North-Western, Western, Shannon, South Western, South-Eastern (6)	6	Transboundary agreements in place with the United Kingdom for the Neagh Bann EMU.		Y	Y	Y	Y (no data tables)

Member State	EMP Scope				Availability of EMPs and Progress Reports			
	Eel Management Units (No.)	Number of EMPs	Transboundary Considerations	Habitat Coverage	EMP	1st Progress Report (2012)	2nd Progress Report (2015)	3rd Progress Report (2018)
Italy	All 20 Italian Regions (note there is no eel fishing in 11 of these)	Of 20 EMUs, nine have prepared EMPs: Sadegna, Puglia, Lazio, Umbria, Toscana, Emilia-Romagna, Veneto, Friuli Lombardia		Freshwater Transitional	Y	Y	Y	Y
Lithuania	Lithuania (1)	1			Y	Y	Y	Y
Luxembourg	Maas, Rhein (2)	1		Not confirmed	Y	Y	N	N
Latvia	Latvia (1)	1		Freshwater Transitional Coastal	Y	Y	N	Y
Netherlands	Netherlands (1)	1		Freshwater	Y	Y	Y	Y
Poland	Oder, Vistula (2)	1			Y	Y	Y	Y
Portugal	Minho and Lima, Cávado, Ave & Leça, Douro, Vouga, Mondego, Lis & Ribeiras do Oeste, Tejo, Sado & Mira, Guadiana, Ribeiras do Algarve (8)	2 (one national EMP and one transboundary EMP)	The Minho International River Plan was developed with Spain.		Y	Y	Y	N
Sweden	Single unit, but reporting distinguishes between Inland Waters, Eastern region and Western region	1		Transitional Coastal Open Marine	Y	Y	Y	N (tables only)
United Kingdom	Northumbria, Humber, Anglian, Thames, South-East, South-West. Severn, West Wales, Dee, North-West, Solway, Tweed, Neagh Bann, North-East Northern Ireland, North-West Northern Ireland, Scotland (17)	14		Freshwater, Transitional Coastal	Y	Y	Y	Y

Source: External consultant review of EMPs and Progress Reports

2. Member State Progress in implementing their EMPs

Member State	Management Measures Overview	Implementation of Management Measures (based on ICES 2013a, ICES 2017b and Progress Reports)	Achievement of escapement target?
Belgium	Commercial fisheries: Prohibiting fishing	2018 Progress Report states that since 2007 all commercial fisheries in inland waters in Flanders are prohibited. In Wallonia, commercial eel fisheries have been prohibited since (at least) 1954. Report indicates decrease in commercial fisheries catches.	No
	Commercial fisheries: Controlling poaching	Country Report indicates specific action taken since 2014 to seize illegal fishing equipment and suggests this has resulted in decreased offence rates.	
	Recreational fishing: Gear restrictions	2018 Progress Report states that since 2009 recreational fisheries with fykes in the Scheldt river in Flanders are prohibited. This resulted in a decrease of catches. In Wallonia fishing for eel was still possible between 2006 and 2016, but there was a release obligation during that period. Since 2017, eel fishing is prohibited in Wallonia.	
	Recreational fishing: Closed season	2018 Progress Report states that since 2010 there is an obligation for recreational fishermen to release every fish caught during the night (whole year), and in the period from the 16th of April till the 31st of May (day and night), and this is estimated to have resulted in decreased catches.	
	Recreational fishing: Minimum landing size	2018 Progress Report states that in 2013 MLS was raised to 300mm (relevant to Flanders only).	
	Installation of fish passes	2018 Progress Report shows continued increase in installation of passes (from 71 in 2008 to 198 in 2017).	
	Restocking	2018 Progress Report states that glass eels are stocked in March-April immediately after delivery (no quarantine period). The length at stocking is approximately 7 cm. Annual restocking varies between ~120 and ~550 kg glass eels, sourced from the UK or France.	
	Other: Monitoring; Water and Habitat Quality	Country Report indicates other management measures have been implemented, but these are not reported on in the 2018 Progress Report. Extent of implementation not clear. Examples in Country Report include monitoring of eel contaminant levels for Water Framework Directive monitoring, and monitoring of eel mortality at pumping stations.	
Czech Republic	Commercial fisheries: Prohibited	2018 Progress Report (technical report; no tables provided) indicates decrease in fisheries by 50% from 2004-2006 to 2014-2016.	Not clear
	Recreational fisheries: Closed season in autumn	2018 Progress Report (technical report; no tables provided) states there is limited data on recreational fishing. Regulations have been enacted to ensure these measures are implemented.	
	Recreational fisheries: Reduction in maximum catch to 2 specimens		
	Recreational fisheries: Minimum landing size		
	Monitoring: Mortality at hydropower plants; presence of parasitic nematodes	2018 Progress Report (technical report; no tables provided) describes studies, but not clear to what extent measures put in place to address observed mortality factors. Notes likely increase in number of hydropower plants.	
	Restocking	2018 Progress Report (technical report; no tables provided) reports 8 million individuals released in the EMP area 2010-2016.	
Germany (Note management measures vary by EMU; i.e. not all measures are	Commercial and recreational fisheries Closed season	2018 Progress Report indicates that this measure has been fully implemented in two EMUs. Within 33 % of the German eel river basin, a closed season has been introduced for eel. Data indicates that fishing effort has decreased from 2008 across all EMUs.	Variable; yes within some EMUs, no within others.
	Commercial and	2018 Progress Report indicates measure has been fully or partially implemented across all EMUs. Within about 96 % of the total German	

Member State	Management Measures Overview	Implementation of Management Measures (based on ICES 2013a, ICES 2017b and Progress Reports)	Achievement of escapement target?
implemented in all EMUs)	recreational fisheries: Minimum landing size	eel river basin area, the minimum size valid for commercial fishermen and anglers for catching eels was increased to 45 or 50 cm; for 4 % of the water area the legislative implementation procedure is still in progress. Data indicates that fishing effort has decreased from 2008 across all EMUs.	
	Commercial and recreational fisheries: Restriction in coastal waters	2018 Progress Report indicates that this measures has been fully or partially implemented across all EMUs where restocking is applicable. In some EMUs a ban on trawling has been in place since 2006; in others fishing has been completely prohibited since 2009, and across all EMUs there is very little commercial fishing for eel. Data indicates that fishing effort has decreased from 2008 across all EMUs.	
	Restoration of river continuity	2018 Progress Report indicates partial implementation in applicable EMUs. A reduction in mortality caused by hydroelectric installations to near zero has so far not been achieved.	
	Reduction in eel traps	2018 Progress Report indicates partial implementation in applicable EMUs.	
	Trap and transport	2018 Progress Report indicates failure to implement in one EMU, and full or partial implementation in other applicable EMUs. The number of silver eels carried to areas without appreciable anthropogenic mortality has risen since 2008 and in the period 2013-16, at about 12.4 tonnes per year, more than doubled. In the EMU Weser, silver eels were transported right to the North Sea in 2013, as an experiment. In 2017, further Catch & Carry operations took place, which are to be continued in 2018 and beyond.	
	Restocking	2018 Progress Report indicates restocking plans have been fully or partially implemented across all EMUs where restocking is applicable. Overall, during the period 2014-2016 considered here, about 32.3 million glass eels, 15.6 million advanced farm eels and 0.2 million bootlaces were restocked; less than planned in the EMP. Regulations promote restocking in some EMUs, and in some EMUs targets for restocking have been raised from 2019.	
	Monitoring	2018 Progress Report indicates studies undertaken, focusing on quality of eel restocking material, elver monitoring, yellow eel stock status and silver eel monitoring. Studies are considered to have considerably improved the data situation on the eel stock and its dynamics in German inland and coastal waters.	
	Predator control: Cormorants	2018 Progress Report indicates full or partial implementation across applicable EMUs. Regulations prevent significant damage by cormorants to fish stocks, including the eel stock, but there is limited evidence of any actions taken to control the cormorant population.	
Denmark	Commercial fisheries: Gear controls	2018 Progress Report notes reduction in fishing effort and catches.	No (anthropogenic mortality target achieved, but not escapement target)
	Recreational fisheries: Closed period October to July, and gear controls	2018 Progress Report notes reduction in fishing effort and catches.	
	Commercial and recreational fisheries: Minimum Landing Size	2018 Progress Report notes increase from 360mm in 2009 to 400mm from 2013 onwards.	
	Removing migration barriers	2018 Progress Report indicates high number of migration obstacles removed, including two major hydropower stations and close to 100 smaller dams and weirs.	
	Predator control: Cormorants	2018 Progress Report indicates reduction in breeding pairs of cormorants in line with the National Management Plan for Cormorants. Notes no research has been undertaken to evaluate the effect of this on the local eel population.	
	Restocking	2018 Progress Report indicates restocking has been fully implemented in line with EMP targets. The Danish EMP proposed annual restocking of 0.8 million eels; the actual amount of restocked eel was 1.2-1.4 million per year from 2010 to 2017.	

Member State	Management Measures Overview	Implementation of Management Measures (based on ICES 2013a, ICES 2017b and Progress Reports)	Achievement of escapement target?
Estonia	Restocking	2018 Progress Report indicates restocking undertaken annually since 2011. Eels are restocked only into the waterbodies of Narva River Basin District, sourced from France or the Netherlands. Stocking is funded partly by the Environmental Investment Centre and partly by fishermen.	Yes, though high level of uncertainty in some calculations and most likely this is an overestimate
Spain (Note management measures vary by EMU; i.e. not all measures are implemented in all EMUs)	Commercial fisheries: Closure of fisheries / reduce fishing effort	In some EMUs fishing days have been reduced, and in others eel fishery licensing has ceased, and in some cases fisheries have been totally closed.	Variable; yes within some EMUs, no within others
	Commercial fisheries: Minimum Landing Size	No information available.	
	Recreational fisheries: Closure of fisheries / reduce fishing effort	Fishing seasons have been reduced and then further reduced in some cases in 2018-2019, fisheries have been closed (e.g. through designation of protected rivers and no further issue of fishing licences), and quotas (e.g. 4 eels or 1kg per day) have been introduced variously across EMUs.	
	Predator control: Cormorants and mink	Programmes exist in some EMUs to manage cormorants and American mink.	
	Trap and transport	In some EMUs, hydropower companies have been obliged to trap and transport eels.	
	Removing migration barriers	Obstacles have been demolished and eel passes introduced variously across EMUs. In some cases, turbines have been temporarily disconnected to enable migration.	
	Improve water quality	To be delivered via Water Framework Directive.	
	Implement scientific studies	Studies have, for example, investigated the potential impacts of hydropower turbines on eel.	
	Restocking	In some EMUs, caught eel is reserved for stocking.	
Finland	Restocking	2018 Progress Report indicates 'official' restocking undertaken since 2011 (~200,000 individuals per year), though suggestion it has been occurring since the late 1800s. On average, since 2010 around 58 % of all restocking operations have been targeted at sea areas. The restocking target of 0.5 million glass eels set out in the Eel Management Plan has not been achieved.	Not clear
France (Note management measures vary by EMU; i.e. not all measures are implemented in all EMUs)	Commercial fisheries: Fishing ban / Reduction in fishing effort	Eel fishing ban is present across some EMUs, for various eel life stages. 2018 Progress Report indicates number of fishing authorisations has generally decreased across EMUs from 2009 onwards.	Not clear; likely to be below target
	Commercial fisheries: Quotas	2018 Progress Report indicates eel fishing quota varies from 2010 onwards across EMUs; no obvious trend.	
	Commercial fisheries: Closed seasons	2018 Progress Report indicates fishery closures in place across all EMUs; duration of closures varies across EMUs and across marine and freshwaters. In some EMUs if the eel quota by type of fishing is reached, the fishing season is closed for that type of fishing.	
	Recreational fisheries: Fishing ban	2018 Progress Report indicates that recreational fishing for silver eel and glass eel is forbidden. Yellow eel fishing deemed insignificant and recreational yellow eel fishing at night is banned.	
	Restocking	2018 Progress Report indicates variable annual restocking of glass eels from 2010 onwards. Restocking effort varies significantly across EMUs. A proportion of eel catches are kept for restocking.	
Greece	Commercial fisheries: Prohibition of fyke nets in lagoons	The use of fyke nets, the traditional eel static fishing gear in Greece called "volkos" is totally prohibited in all lagoons and in the leased seaports in the Amvrakikos Bay.	Not clear
	Commercial fisheries:	Fishing of small eel below 30 centimetres, for commercial exploitation, is banned throughout the country	

Member State	Management Measures Overview	Implementation of Management Measures (based on ICES 2013a, ICES 2017b and Progress Reports)	Achievement of escapement target?
	Minimum landing size		
	Commercial fisheries: Closed season	Eel fishing is totally prohibited in rivers and rivers delta in an area 3 nautical miles from the estuaries from 1st November to the end of January every year. Additional closures in some EMUs.	
	Recreational fisheries: Fishing ban	Recreational eel fishing is totally prohibited in Greece	
	Restocking	Intensive aquaculture producers are obliged to give 10% (of the glass eel they buy as fries for their business) for restocking. Authorized lagoon extensive aquaculture operators are obliged to give 30% of the eel they harvest, for restocking. 2018 Progress Report indicates variable annual restocking of glass, silver and yellow eels from 2012 onwards,	
Ireland	Commercial and recreational fisheries: Closure / catch and return	All management regions confirmed total closure of the eel fishery for the period 2009 to 2014 with no commercial or recreational licences issued. All commercial fisheries remained closed in 2016 and recreational fisheries, confined to angling, were obliged by law to release all eels caught. Despite the closure of commercial eel fishing in Ireland, a number of instances occurred whereby eel transport lorries were detected transferring eels apparently from N. Ireland (L. Neagh fishery) to Britain or mainland Europe. Continued closure of the eel fishery in Ireland will be subject to review of eel stocks in relation to the EU Council regulation and consequent recovery of European eel stocks.	Yes, in all but one EMU.
	Trap and transport programme (and other measures) to reduce migration barriers	Extensive trap and truck programmes on the Shannon, Erne and Lee river systems. 2015 Progress Report indicates annual silver eel trap and truck efforts.	
	Improve water quality	Implemented via the Water Framework Directive.	
Italy (Note management measures vary by EMU; i.e. not all measures are implemented in all EMUs)	Commercial fisheries: Closed seasons	2018 Progress Report provides evidence of closed seasons of varying lengths across all EMUs. Evidence of reduced fishing effort.	No (anthropogenic mortality target achieved in some EMUs, but not escapement target).
	Commercial and recreational fisheries: Minimum landing size	2018 Progress Report indicates minimum size increased from 300mm to 500mm in 2014.	Reduced fishing effort.
	Recreational fisheries: Quotas	2018 Progress Report indicates quotas in place in some EMUs (e.g. 5 silver eel per fisherman reduced to 2 silver eel per fisherman in 2011).	
	Predator control: Perch	2018 Progress Report provides evidence of perch control in some EMUs.	
	Installation of eel passes	2018 Progress Report provides evidence of eel passes being installed in some EMUs.	
	Restocking	2018 Progress Report provides evidence of glass eel restocking, which varies in quantity across EMUs, and which in most EMUs has not been undertaken annually, but sporadically since the EMPs were prepared. Proportion of caught eels required to be retained for restocking. Restocking has typically not met targets and restocking has in most EMUs been with eels larger than 12cm.	
Lithuania	Commercial fisheries: Reduction in trap numbers	2018 Progress Report provides evidence of implementation; in 2008 gear quota for Lagoon fyke nets in the Curonian Lagoon was 413 and from 2009 onwards this has been limited at 223.	No
	Commercial and recreational fisheries: Closures	2018 Progress Report provides evidence of implementation; yellow eel fishery in the inland has been closed from 2015. Specialised fishery for eels in coastal waters is banned.	

Member State	Management Measures Overview	Implementation of Management Measures (based on ICES 2013a, ICES 2017b and Progress Reports)	Achievement of escapement target?
	Recreational fisheries: Quota	2018 Progress Report provides evidence of implementation annually since 2009; reduction in daily bag limit to 3 specimens; before 2009 this was 5.	
	Removing migration barriers	No evidence of implementation	
	Predator control by reduction in cormorant	No evidence of implementation	
	Restocking	2018 Progress Report provides evidence of implementation annually since 2011 (peaked in 2013 and declined since)	
Luxembourg	Removal of migration barriers	No evidence of implementation; not covered in 2016/17 Country Reports or 2018 Progress Reports	No
Latvia	Commercial and recreational fisheries: Minimum landing size	2018 Progress Report provides evidence of implementation annually since 2016 with introduction of 500mm limit.	No
	Recreational fisheries: Quota	2018 Progress Report provides evidence of implementation annually since 2016 with introduction of bag limit to 3 specimens.	
	Removal of migration barriers	No evidence of implementation	
	Restocking	2018 Progress Report provides evidence of implementation annually since 2011, with sporadic restocking of up to ~270kg glass eel per year.	
Netherlands	Commercial fisheries: Closed season	2018 Progress Report provides evidence of implementation annually since 2009 with closed fishing season running from September to December. Any changes in fishing effort not reported.	No
	Commercial fisheries: Minimum landing size	2018 Progress Report provides evidence of implementation with minimum size of 280mm.	
	Commercial fisheries: Closed areas	2018 Progress Report provides evidence of implementation annually since 2009 with the closure of eel fisheries in contaminated areas.	
	Recreational fisheries: Catch and release	2018 Progress Report provides evidence of implementation since 2009.	
	Reduction in barriers to migrations	2018 Progress Report indicates intention to reduce mortality at hydroelectric/pumping stations, but no evidence of implementation provided.	
	Restocking	2018 Progress Report indicates implementation with records of glass and yellow eel restocking since 1946, Average restocking of glass eel ~800kg per year between 2009 and 2017 (4,300kg average for yellow eel per year over same period).	
Poland	Commercial and recreational fisheries: Closed season	2018 Progress Report provides evidence of implementation annually since 2010 with closed fishing season running from December to March. Closed season expanded from 30 days to 120 days in 2016.	No
	Commercial and recreational fisheries: Minimum landing size	2018 Progress Report provides evidence of implementation annually since 2010, with minimum size of 500mm.	
	Commercial fisheries: More selective gears	Gear selectivity requirement adopted in 2016; minimum mesh bar length set for fishing nets/sieves (20mm).	
	Commercial fisheries: Limiting poaching	No evidence of implementation.	

Member State	Management Measures Overview	Implementation of Management Measures (based on ICES 2013a, ICES 2017b and Progress Reports)	Achievement of escapement target?
	Recreational fisheries: Daily catch limits	2018 Progress Report provides evidence of implementation annually since 2010, with limit of 2 specimens per day (from 4 previously).	
	Eel passes and other measures to reduce migration barriers	No evidence of implementation, though areas selected within National Parks to develop unobstructed spawning migration routes for silver eel and information regarding migration obstacles has been gathered.	
	Predator control by reduction in cormorant	No evidence of implementation	
	Restocking	No restocking data provided in 2018 Progress Report, though 2016/17 Country Reports indicate restocking in 2010.	
Portugal	Commercial fisheries: Prohibit fishery outside of certain areas	No 2018 Progress Report available; 2016/17 Country Report suggests implemented.	Not clear
	Commercial fisheries: Gear restrictions	No 2018 Progress Report available; 2016/17 Country Report suggests implemented.	
	Commercial fisheries: Catch reporting required to obtain new annual licence	No 2018 Progress Report available; 2016/17 Country Report suggests implemented.	
	Commercial fisheries: Closed season (October – December)	No 2018 Progress Report available; 2016/17 Country Report suggests implemented.	
	Commercial fisheries: Reduce number of licences	No 2018 Progress Report available; 2016/17 Country Report suggests implemented.	
	Recreational fisheries: Prohibited	No 2018 Progress Report available; 2016/17 Country Report suggests fully implemented in marine waters and partially implemented in freshwater.	
	Mitigate impact of existing migration obstacles	No 2018 Progress Report available; 2016/17 Country Report suggests partially implemented.	
	Monitoring: Monitoring and control of glass eel poaching	No 2018 Progress Report available; 2016/17 Country Report suggests implemented.	
	Monitoring: Stock studies	No 2018 Progress Report available; 2016/17 Country Report suggests partially implemented.	
Sweden (Note management measures vary by EMU; i.e. not all measures are implemented in all EMUs)	Commercial fisheries: Closed seasons and areas	From 2007, licence is required to fish and this was followed by additional restrictions. Since 2012, closed seasons introduced. Fishing along west coast prohibited. 2018 Progress Report provides evidence of reductions in fishing effort.	No
	Recreational fisheries: Ban	2018 Progress Report indicates implementation of ban since 2007 (with some exempted locations).	
	Trap and transport programme	2018 Progress Report provides evidence of implementation. Hydropower companies have performed stocking of quarantined glass eel at the Swedish west coast as a voluntary measure, and in some cases infrastructure has been remodelled to enable migration. Country Report indicates trap and transport programme saw movement of 47,000 silver eels between 2011 and 2014 and that programme continued to at least 2017.	
	Restocking of glass eel	2018 Progress Report provides evidence of implementation annually since 2010. Country Report indicates target for restocking was 2.5 million individuals annually and that this target has typically been reached with an exception in 2015.	

Member State	Management Measures Overview	Implementation of Management Measures (based on ICES 2013a, ICES 2017b and Progress Reports)	Achievement of escapement target?
United Kingdom (Note management measures vary by EMU; i.e. not all measures are implemented in all EMUs)	Commercial fisheries: Fishery ban / quota	2018 Progress Report provides evidence of implementation, with effective eel fishery bans or zero quota measures in place in some EMUs.	Variable; yes within some EMUs, no within others.
	Commercial fisheries: Closed seasons	2018 Progress Report provides evidence of implementation with closed seasons for next and trap fishing since 2010.	
	Commercial fisheries: Gear restrictions	2018 Progress Report indicates limitations on some gear types in some EMUs (e.g. removal of fyke net as a legal fishing means in Northern Ireland).	
	Commercial fisheries: Minimum landing size	2018 Progress Report provides evidence of implementation, with MLS raised to 400mm in some EMUs.	
	Recreational fisheries: Fishery ban / catch and release	2018 Progress Report provides evidence of implementation, with either effective fishery bans or 100% catch and release measures in place since 2009.	
	Measures to prevent eel entrainment in river structures, including fish recovery and return systems	2018 Progress Report provides evidence of implementation; significant number of eel passes installed and refurbished, and screens installed at water intakes.	
	Monitoring	2018 Progress Report provides evidence of implementation with creation of glass eel monitoring sites; monitoring distribution of parasitic worm <i>A. crassus</i> ; various other funded studies.	
	Improvement of eel habitat	2018 Progress Report provides evidence of implementation with wetted area assessments for migration barrier impacts	
Restocking	2018 Progress Report provides evidence of implementation, though restocking is limited and most significant in Neagh/Bann EMU (up to ~2700kg) – here restocking targets have rarely been reached (only in 2014 over the past decade).		

Source: External consultant review of EMPs and Progress Reports

3. Good practices in eel conservation

FISHERIES

- 1) **The development of multi-stakeholder platforms in the preparation of regional EMPs** in Italy is considered a particular success. The process involved all relevant operators, including fishers, vallicoltura⁵⁰ farmers and aquaculture operators. It has been beneficial in: (i) raising awareness of the danger to the eel stock among local fishers; and (ii) tailoring the measures to the local conditions and habitats (e.g. in deciding when the rest period could be more effective while taking into account also the interests of local fishers, or where restocking would have higher success rates).
- 2) **A series of best practice guidance** has been produced in the UK, including the ‘Eel Manual’ that has four components covering (i) eel and elver passes, (ii) screening at intakes and outfalls: measures to protect eel, (iii) stocking European eels and (iv) monitoring elver and eel populations (Environment Agency, 2011). This document was developed from recommendations made at a workshop of experienced practitioners, bringing together expertise, shared practical experiences and lessons that have been learnt so far. ES has also produced a guidance manual around five themes (Management Plans, Eel Monitoring and Management Methods, Aquaculture and Marketing, Fisheries, Research and Management Measures) as a result of a series of national conferences (AZTI, 2013).
- 3) **Restocking obligation**: FR implemented a national glass eel catch quota further broken down in two sub-quotas: a sub-quota for consumption (40%) and a sub-quota for restocking (60%). The restocking sub-quota ensures reservation of part of the catch potential for this purpose. The measure is further supported by a modification of the sales notes format, which has to specify the destination of the concerned catches.
- 4) **Granting restocking financial support through a State Aid scheme rather than through EMFF**. The EMFF rules prevent release of advance payments to beneficiaries, and this was seen as a major impediment for the attractiveness of the measure. Given this, in France authorities preferred not to open the relevant EMFF measure, and to implement financial aid for restocking through a State Aid Scheme that allows releases of advanced payments to beneficiaries. The French authorities applied a similar approach to support silver eel release in the Mediterranean with aids granted under the scope of the *de minimis* state aid rules. These measures contributed to improve implementation of eel stock enhancement measures by professional organisations.

NON-FISHERIES

- 1) There have been some local successes in terms of **habitat restoration and improved spawner connectivity**. In Italy’s Emilia Romagna region fish ladders have been opened on the rivers Po and Reno and are planned on the Savio. In the

⁵⁰ Traditional rearing, usually of wild stocked juveniles, in lagoons, mainly in Italy

Reno ladder, eel passage has already been observed; in the Po river, a dedicated monitoring tool for eels is soon to be installed. The intervention on the Po River is expected to allow eels to return to a very large hydrographic basin, including Italian Northern lakes, such as Garda. IT considers the target of 60% escapement could be achieved by 2050, and their intermediate target of 17.5% escapement by 2020 has already been achieved. IT attempts to focus restocking efforts on protected waters, often using glass eels from the same watershed, to increase potential spawner numbers.

- 2) In FR, L'Agence de la Biodiversité (eaufrance) has conducted a **national census of all obstacles across rivers**, which did not exist prior to the adoption of the FR EMP. Although relevant information was only available for certain areas in some EMUs, and not harmonised, the result is the ROE online database ([*Référentiel des Obstacles à l'Écoulement*](#)) which is maintained and updated.
- 3) **Modelling periods for temporary switch-off of electric turbines**: in the Loire area a scientific model (Acou et al. 2009) has been developed and further refined to identify the best periods for temporarily switching-off of electric turbines with a reasonable accuracy. This facilitated the implementation of the measure, which from operators perspective, should only be implemented when necessary due to the high associated foregone revenues. Similar models are yet to be developed or refined for other EMUs.

TRACEABILITY AND CONTROL

- 1) **Improved batch traceability** through 'simple permitting scheme'.
In Greece a national system for controlling intra-EU trade in European eel is implemented by issuing 'simple permits'. With these simple permits from/to other European countries, after checking all the relevant documents, intra-imports / intra-exports are certified preventing any illegal and non-conforming export (in other EU MS) of such specimens. This mechanism is implemented by the Greek Regional Management Authorities after consultation with the relevant Regional Fisheries Authorities according to the following procedure:
 - A three-member regional committee is present during all harvests. For each harvest batch this committee issues a Certificate of Restocking only after the free release of 30% of the batch for restocking purposes.
 - The committee issues a written Certificate of Legality for each eel batch, certifying that this is produced in accordance with National and Community legislation, including cohesion with the National Eel Management Plan. So the batch is legal for trade in Greece.
 - The Greek Regional Management Authorities of the CITES Convention issue the so-called 'simple permits' so the batch is permissible for intra-EU trade.
- 2) **Increased monitoring of eel catches by an e-declaration system**
The Telecapêche electronic reporting and data processing platform was developed by professional fishermen and has now been used for over five years, mainly in France but more recently on the River Parret in the UK. It allows the professional fishing organisations to submit real-time catch declarations (via SMS) and to have access to total catches landed.

NL implemented an electronic weekly catch registration system for yellow and silver eel fisheries. However, the system does not allow specification of the maturity stage of eel caught.

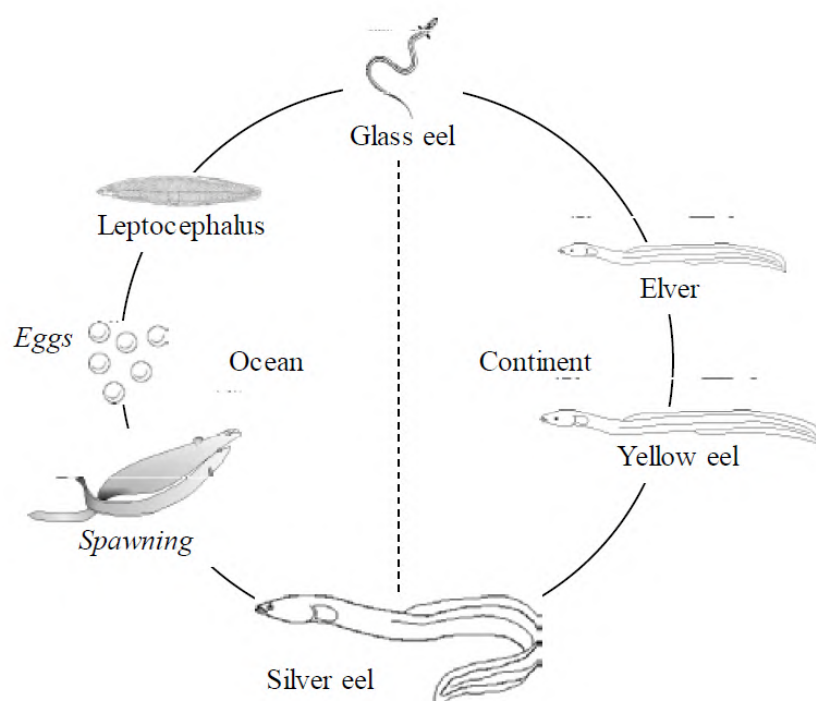
- 3) Some MS have implemented **electronic “net to plate” traceability systems** (e.g. DK, ES, SE). SE is considering extending the scope of the national traceability system to freshwater products, which will unambiguously cover eels at all stages irrespective of the nature of the ecosystem from where they originate.
- 4) Several MS reported utilisation of **modern technologies to detect illegal gears** deployed to catch yellow and silver eels. Modern technologies include drones (i.e. DK, EE, LT, LV, PL, SE) and side scan sonars (i.e. DE, LV and UK). Detection of illegal fishing activities targeting glass eels, which take place mostly during night hours, is supported by the utilisation of heat detectors and night binoculars (DK, FR and UK).
- 5) In MS where illegal trafficking of live glass eels is suspected to occur, the **control burden is shared by the different national police authorities**, with main national police corpses in charge of intelligence and coordination (i.e. Gendarmerie in FR, Guardia Civil in ES).
- 6) DK, SE, UK, and PL in a near future, have implemented **systems to facilitate reporting to Authorities of suspected infringements to fishing rules** by citizens. Systems implemented include dedicated websites (DK, SE and PL) or telephone hotlines (UK).

ANNEX 6: EUROPEAN EEL STATUS AND IMPACTS ON THE STOCK

Life cycle of the European eel

The newly hatched larvae in the Sargasso Sea drift with the Gulf Stream and the North Atlantic Current to the continental shelf of Europe where they metamorphose into glass eels that enter continental waters at an age of approximately 1-2 years. Glass eels then settle in estuaries or migrate further up in the river basin before they become yellow eels settling for 2-25 years (or even 50 years) prior to maturation and metamorphosis to the silver eel stage. The European eel life cycle is shorter for population in the southern part of their range compared to the north. An adult distribution covers freshwater habitats and adjacent brackish and coastal marine waters of Iceland and Europe from Norway southward, Northwest Africa, and the Mediterranean and Black Sea watersheds of Turkey and the Middle East.

Figure 11: The life cycle of the European eel (source ICES 2013c, diagram: Willem Dekker).



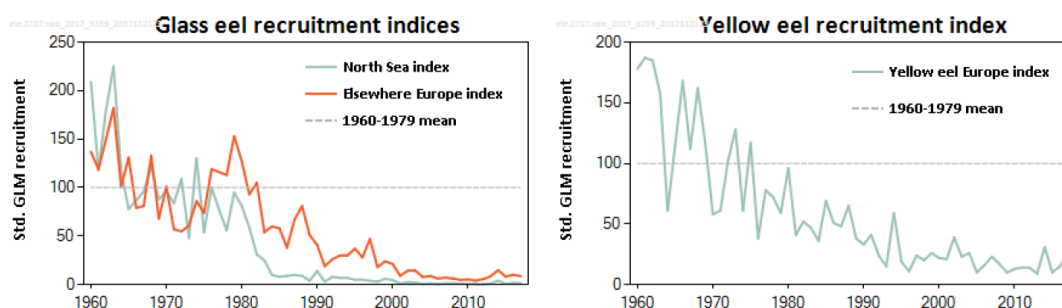
State of the European eel

The Commission monitors the status of the European eel based on recurring scientific advice and ad-hoc specific requests. The International Council for the Exploration of the Sea (ICES) delivers annual advice on the state of the eel stock, the management of the fisheries and other anthropogenic factors impacting the eel, revealing long-term declines in the abundance of the stock and in recruitment. The reports of the joint EIFAAC/ICES/GFCM Working Group on Eel (WGEEL) document the ongoing process of describing the stock state and developing a methodology for giving scientific advice on management to effect a recovery of the stock.

According to ICES, the European eel (*Anguilla anguilla*) stock remains in dramatic decline, recruitment is at an all-time low, and exploitation of the stock is currently unsustainable.

ICES have advised for about 20 years on a precautionary basis that all anthropogenic mortality affecting production and escapement of eels should be reduced to as close to zero as possible. The ICES stock advice published in November 2018 confirms that the status of eel remains ‘critical’ and that recruitment remains low (see **Figure 12 below**), and the decline in recruitment is mirrored by a long-term decline in commercial and recreational fishery landings despite significant re-stocking efforts.

Figure 12: Eel recruitment indices



Eel recruitment indices strongly declined from 1980 to about 2010, and have remained at a low level since. The annual recruitment of glass eel to European waters in 2018 was 2.1% of the 1960–1979 level in the ‘North Sea’ series and 10.1% in the “Elsewhere Europe” series. The annual recruitment of young yellow eel to European waters in 2018 was 29% of the 1960–1979 level (ICES, 2018a).

Fisheries impact

Fisheries impact local eel populations and spawner escapement in 15 out of 20 countries reporting to the WGEEL (ICES 2017b). In total, fisheries make up for more than 50% of anthropogenic mortality in 29 of 62 EMUs, where data for fishing and hydropower mortality was reported.

According to ICES estimates, in 2017 the EU harvested around 2,300 tonnes of eels (ICES, 2018c) with FR, UK, DK and SE taking around two-thirds of the EU wild catch between them. Tunisia (149 t), Turkey (38 t) and Norway (10 t) are the main non-EU producers of yellow and silver eels. This is less than a quarter of the 1990 landings of around 10,000 t and since 2011 glass or yellow / silver eel wild production has stabilised at historically low levels (see **Figure 13**).

Figure 13: Yellow and silver eel fishery landings by country

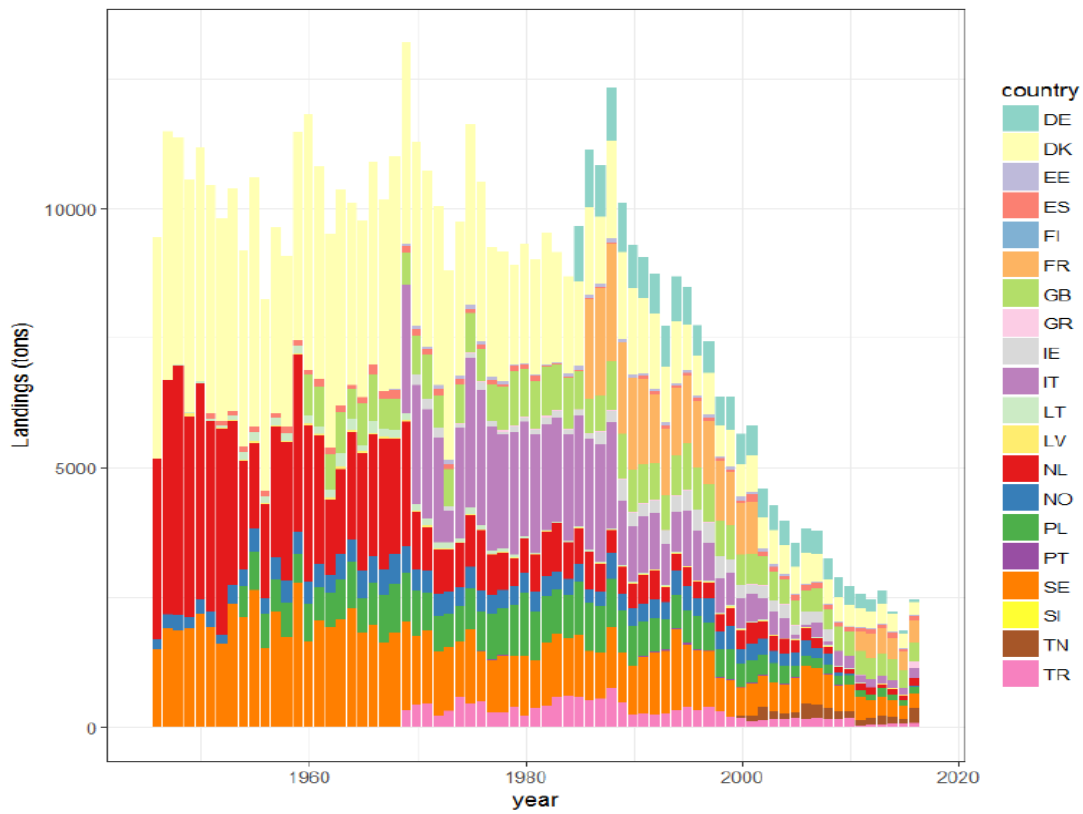
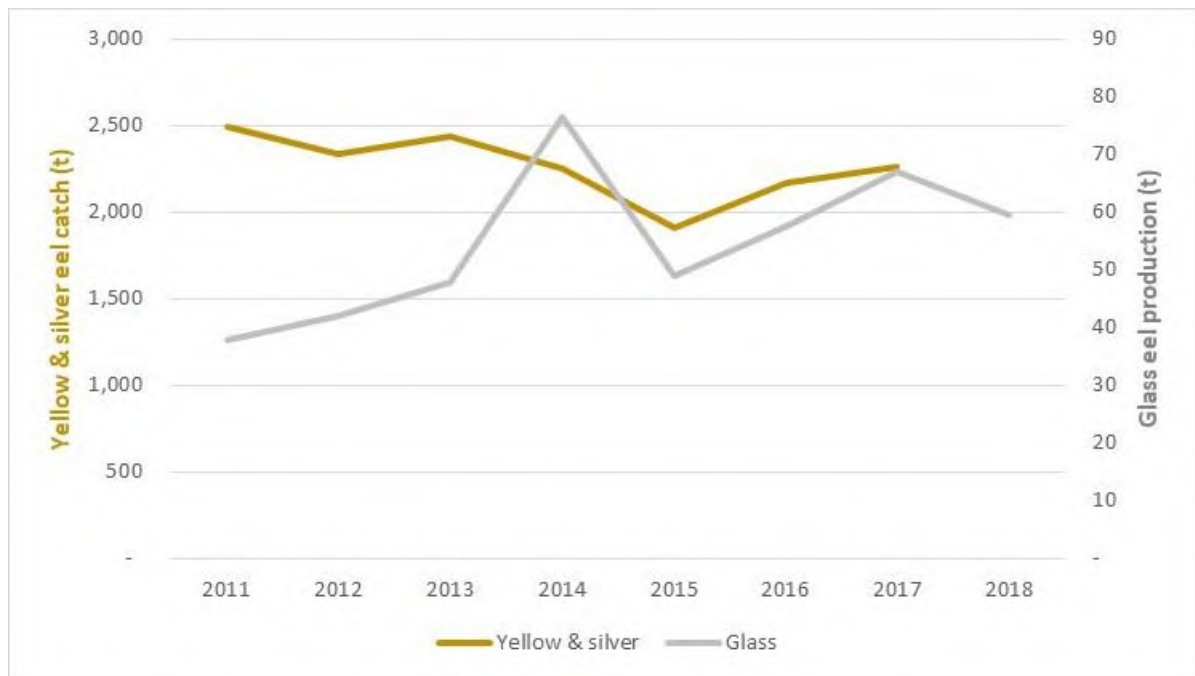


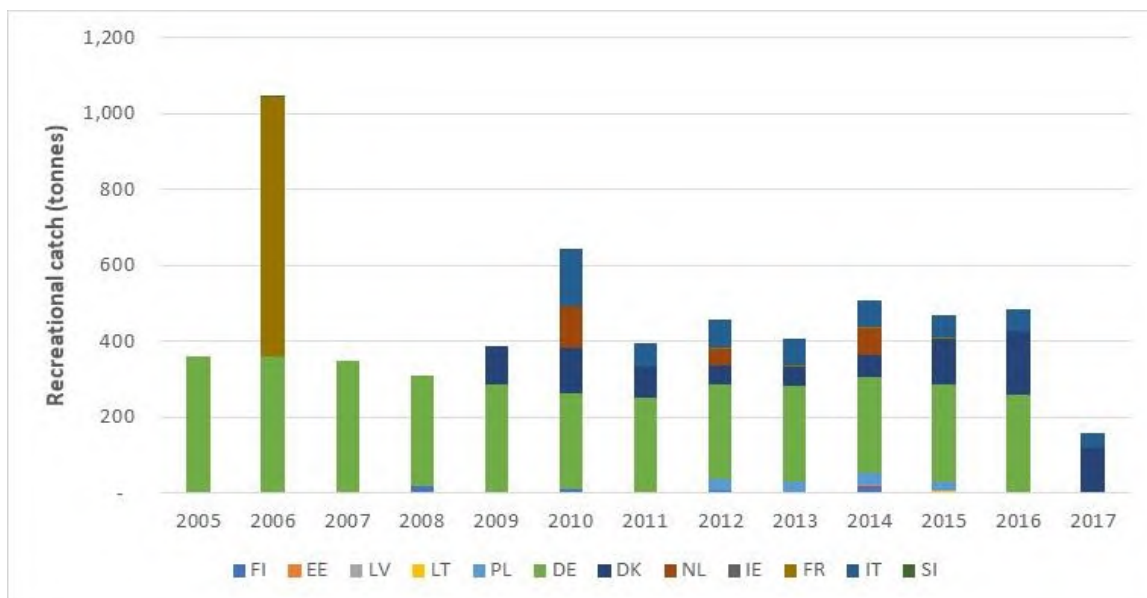
Figure 14: EU wild eel fishery production



Source: ICES Working Group on Eels (ICES, 2018c)

Recreational landings/non-commercial fishing (the capture or attempted capture of living aquatic resources mainly for leisure and/or personal consumption), mainly of yellow and silver eels which during the 1980's exceeded over 1,000 t in FR alone, are now around 161 t, mostly from DK and DE, but MS reporting is now limited. Recreational fisheries for glass eel used to exist in FR and ES but have been forbidden in FR since 2010. IE and SE also ban recreational fisheries. Recreational landings were estimated as 2 t for glass eel in 2018 (ICES, 2018c).

Figure 15: Recreational eel catches in the EU (2005 - 2017) Source: ICES, 2018c



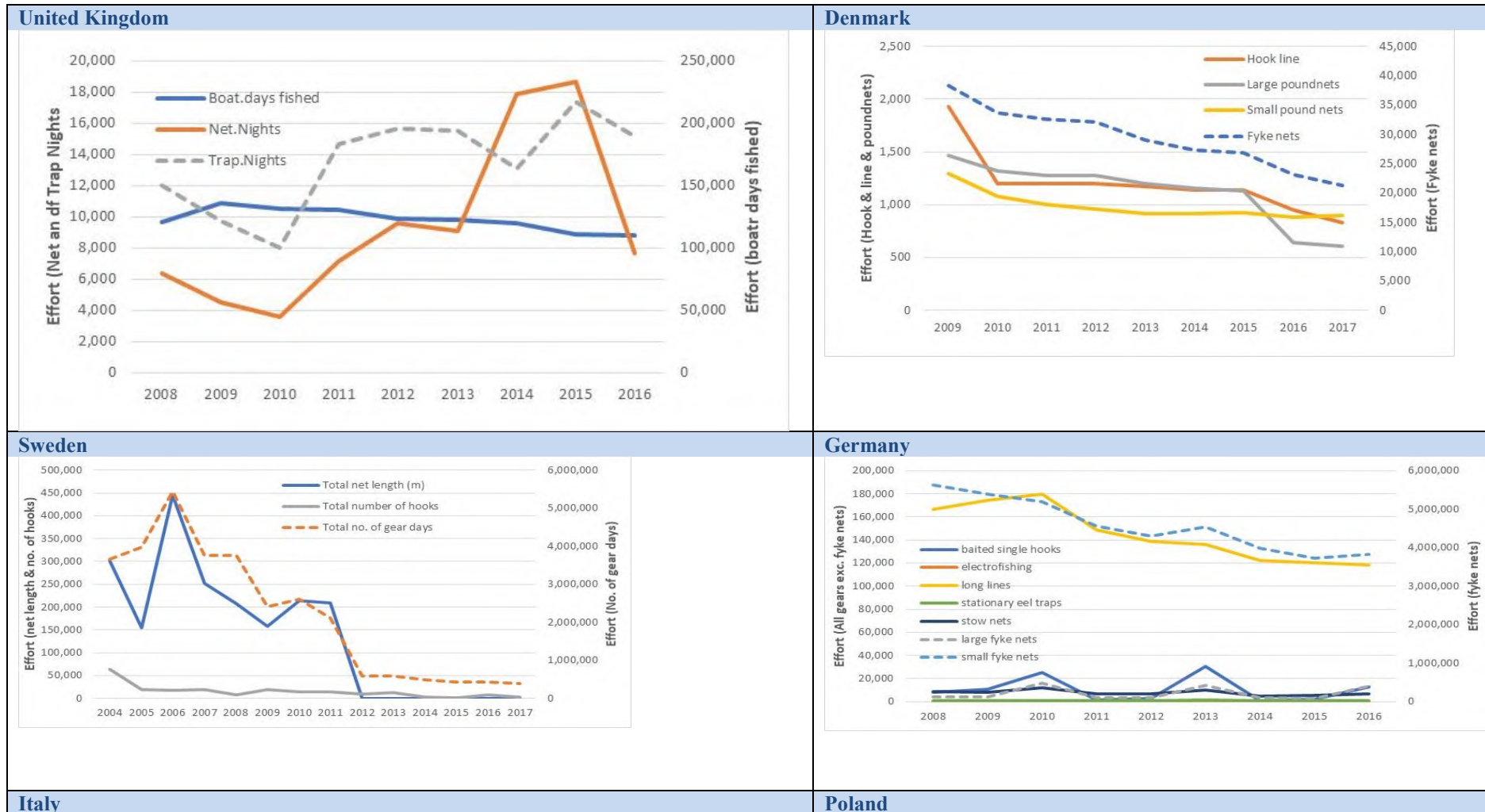
Recreational catches of eels can be significant (≈ 500 tonnes per year) in certain MS (e.g. DE, DK, FR, IT, PL) that did not prohibit recreational fishing for eels at certain stages, or at any stage.

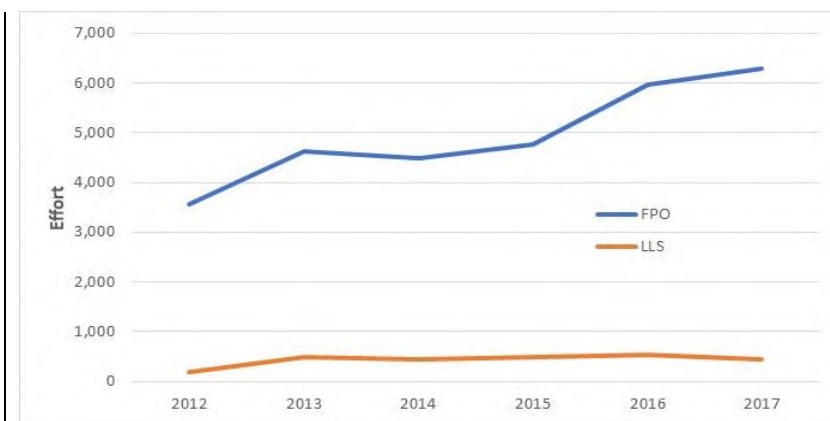
Additional unaccounted catches from IUU glass and silver eel fisheries exist (SEG, 2018).

Fishing effort

The most recent results on fishing effort for the six top eel fishing MS in the EU (UK, DK, SE, DE, IT, PL) is presented in the **Figure 16**. Note that FR did not submit effort data in 2018.

Figure 16: Fishing effort of the six major eel producers in the EU



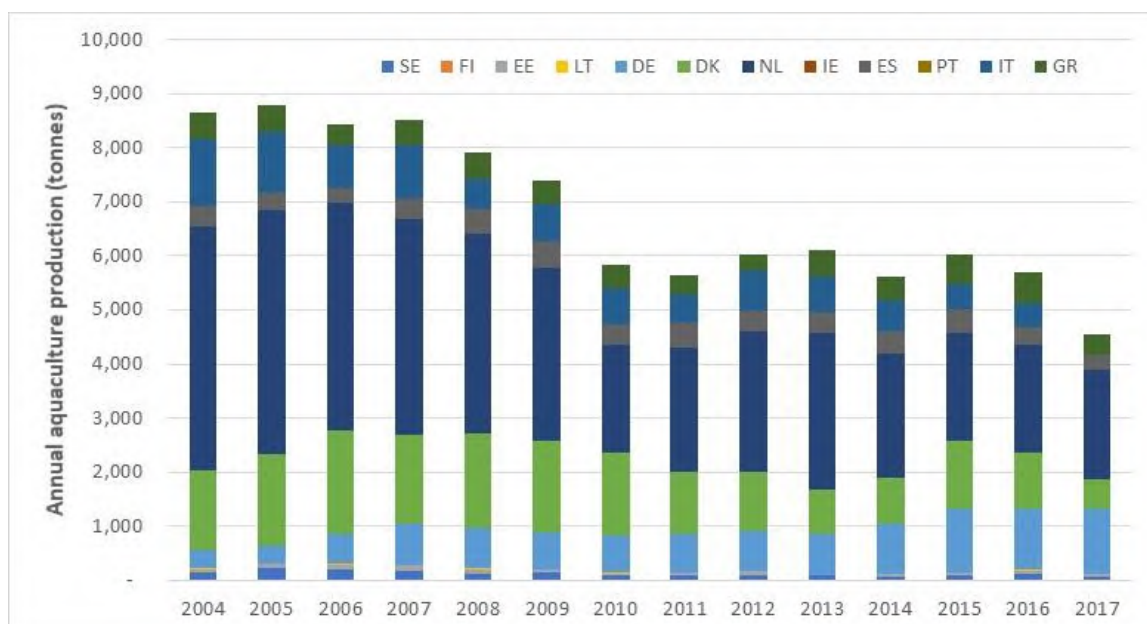


Source: Data extracted from Form 7 of ICES data call (ICES, 2018c).

Aquaculture production

Aquaculture production of eels increased until the end of the 1990s. It started to decline since the mid-2000s from 8,000–9,000 tonnes to approximately 5,000–6,000 tonnes now, mainly reflecting a reduced demand from multiple-retailers who have responded to pressure from environmental NGOs to stop using wild glass eel-based aquaculture products (Kirkegaard et al, 2010). Most eel farms now use recirculation aquaculture systems (RAS), especially in the Netherlands and Germany where the majority of farmed eels are produced. It should be noted that eel aquaculture is based on wild recruits, and some of them are subsequently released as on-grown eel for stocking (around 10 million eels, making a mean weight of 20 g to the overall 200 t of wild catch, according to ICES). Although it is now possible to close the cycle of Japanese eel (*Anguilla japonica*) production, so far it has not been possible to spawn and then wean European eels in any significant quantities.

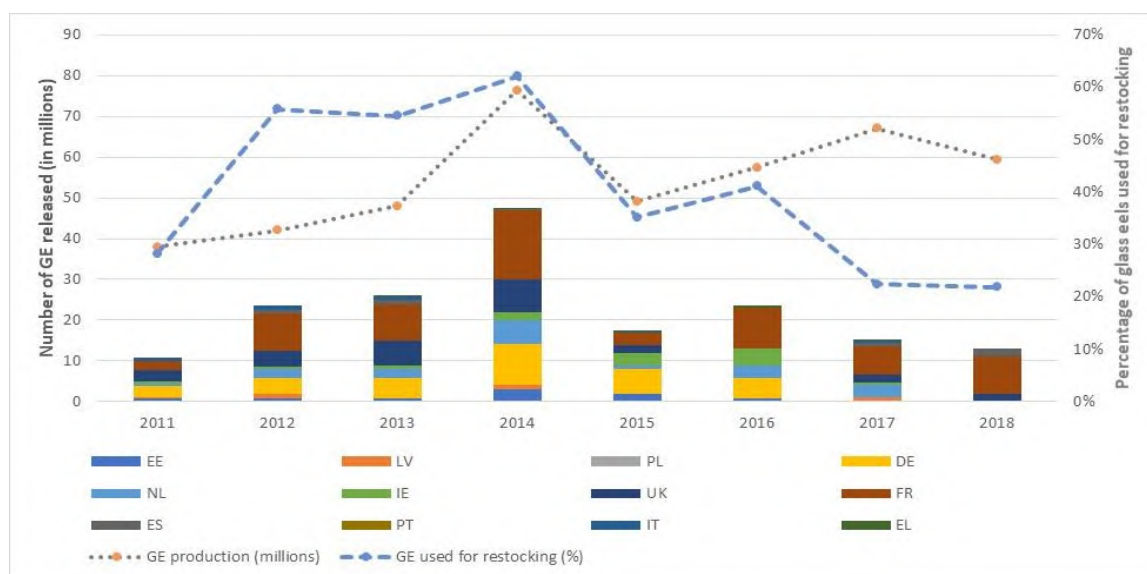
Figure 17: EU aquaculture production (2004 - 2017) Source: ICES, 2018c



Restocking of glass eel

The restocking of glass eel peaked in the 1990s, followed by a steep decline to a low in 2009. The amount of glass eels restocked increased in 2014 when the lower market prices guaranteed a larger number of glass eels could be purchased for fixed restocking budgets but has decreased since then (see **Figure 18** below). However, glass eel restocking has decreased since then.

Figure 18: Reported production and restocking of glass eel not including those in quarantine by country (in millions) and as a proportion of production (%), ICES, 2018b

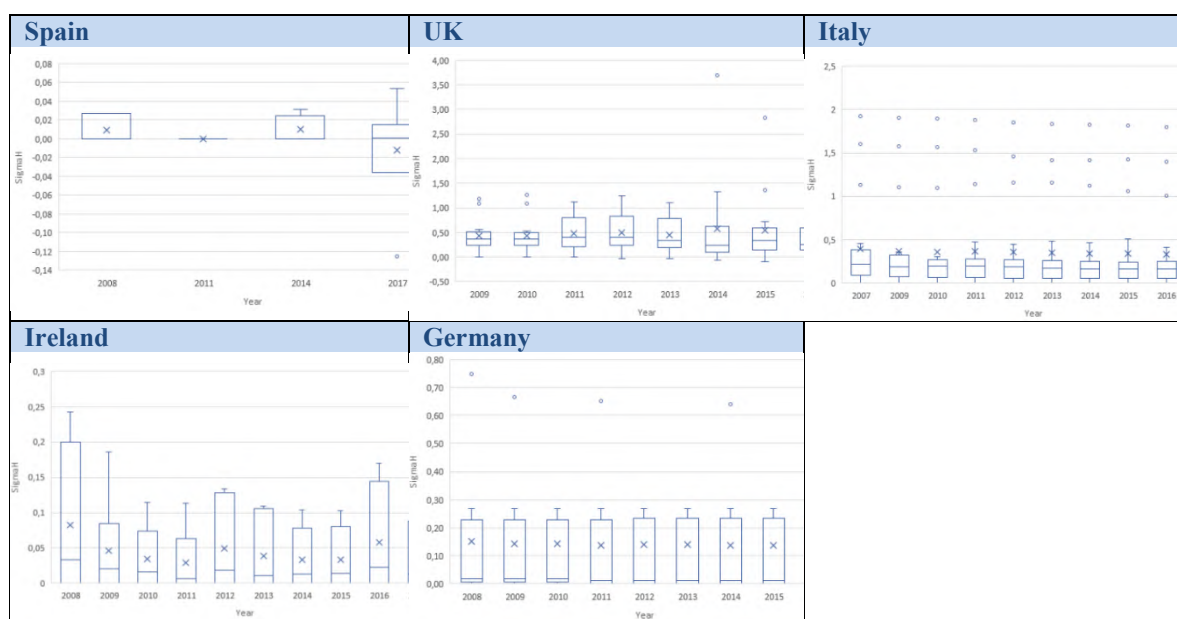


Impacts outside fishery - hydropower mortality

Estimations of MS suggest, that hydropower mortality accounts for more than 50% of anthropogenic mortality in 33 of 62 EMUs, where data for fishing and hydropower mortality was reported (as reported by ICES 2017b).

The impact of hydro dams on migration and escapement is included in the reporting regime developed by the Commission for the Eel Regulation, is referenced as Sigma H (ΣH) and described as the anthropogenic mortality rate outside the fishery, summed over the age groups in the stock.

Figure 19. Box plots showing anthropogenic (non-fisheries) mortality ΣH (by ICES)



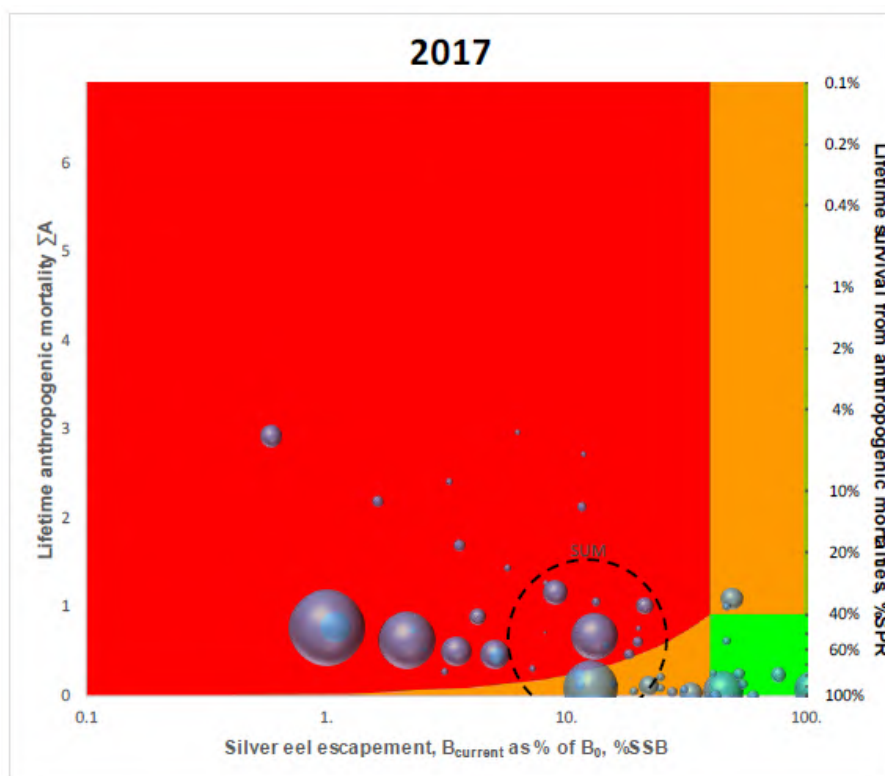
These data suggest that anthropogenic mortality outside the fishery whilst variable (ΣH can depend upon environmental conditions (flooding vs. drought) at the time of the down-stream migration) has not declined significantly over the past decade.

Escapement levels

Eel Management Plans for river basin districts are designed to reduce mortality to a level (B_{lim}) that allows at least 40% of the silver eel biomass to escape to the sea with high probability, relative to the best estimate of escapement that would have existed if no anthropogenic influences had impacted the stock (e.g. when the stock was at B_0 , as opposed to the current silver eel biomass escapement biomass, $B_{current}$). This 40% escapement level is essentially a proxy $B_{trigger}$ for the trigger reference point for biomass at maximum sustainable yield ($B_{MSY-trigger}$).

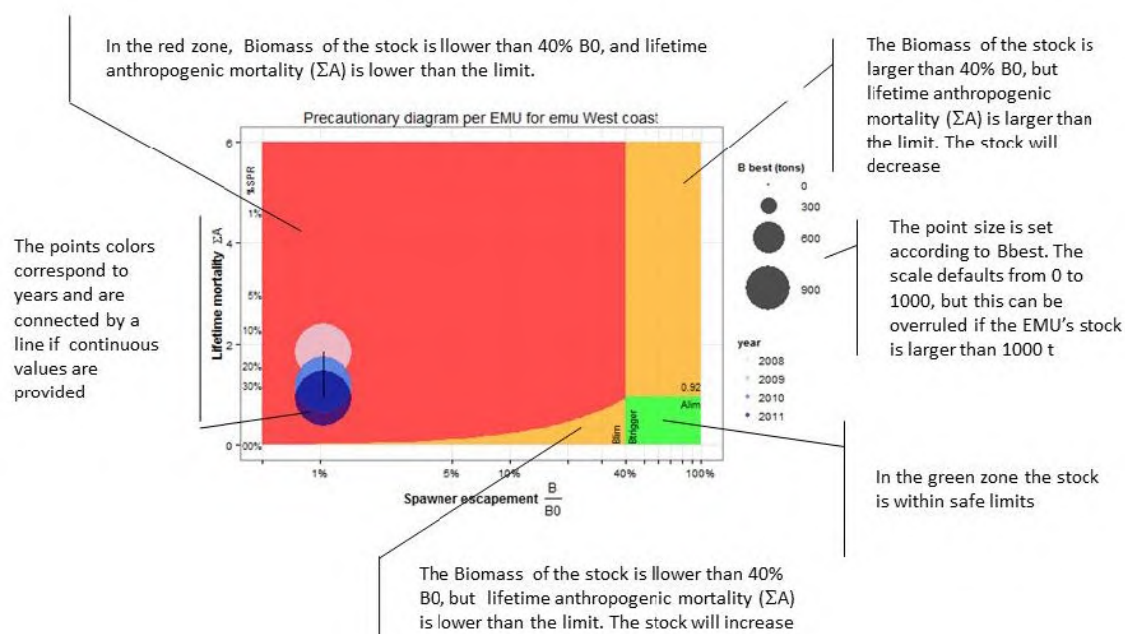
Figure 20 presents the status of the stock (horizontal, spawner escapement ($B_{current}$) expressed as a percentage of the pristine (B_0) escapement) and the anthropogenic impacts. These results suggest that in 2017 the spawner (silver eel) escapement from the majority of EMUs was below the 40% target (ICES, 2018c). This serves to emphasise that silver eel escapement levels from the majority of EMUs is below the 40% escapement reference point (shown on the horizontal axis).

Figure 20: Modified Precautionary Diagram for Eel Management Units



Source: ICES (2018c). Data from the 2018 Data call or from Country Reports provided to WGEEL. Note that all indicators have been used as reported, despite some inconsistencies and errors

Figure 21. Explanations of the Modified Precautionary Diagram for Eel Management Units [Source: ICES, 2013c]



ANNEX 7 SUMMARY OF THE EU AND INTERNATIONAL LINKAGES APPLICABLE TO EUROPEAN EEL

EU rules	<p>CFP Common Fisheries Policy</p>	<p>WFD Water Framework Directive</p>
	<ul style="list-style-type: none"> • Restore population above levels that produce maximum sustainable yield (MSY). • Prohibits vessels to target eel fishing across a three-month period, which in 2019 includes glasseels and recreational fisheries. • Requires fisheries related data on all stocks caught and by-caught, including eels. 	<ul style="list-style-type: none"> • Covers key eel habitat including rivers, lakes, estuaries and coastal waters. • Required surface water ecosystems to meet good ecological status and good chemical status. • Obligation of non deterioration of the status of all water bodies, with possible exemptions under certain conditions for new projects affecting the physical characteristics of water bodies
	<p>Marine Directive Marine Strategy Framework Directive</p>	<p>Habitats Directive Natural habitats and wild fauna & flora</p>
	<ul style="list-style-type: none"> • Objective to achieve or maintain good environmental status of marine waters by 2020. • Based on assessing good environmental status descriptors, including eutrophication, healthy fish populations, contaminants etc. 	<ul style="list-style-type: none"> • Protect endangered and/or vulnerable animals and characteristic habitats. • European eel is not listed under species Annexes. • Important habitats, including estuaries and coastal lagoons, are protected via Special Areas of Conservation (SAC) designations.
International instruments	<p>UNCLOS</p>	<p>IUCN</p>
	<ul style="list-style-type: none"> • Fishing for European eel is prohibited in the high seas, but allowed within EEZ. • Management must secure immigration and emigration of the species. • Coastal states are responsible for management, as are states through which migrations occur. 	<ul style="list-style-type: none"> • IUCN Red List assesses European eel as critically endangered. • But assessment is borderline with a listing of endangered possible/achievable at next review due in 2019.
	<p>CITES</p>	<p>CMS Convention on Migratory Species</p>
	<ul style="list-style-type: none"> • European eel is listed on Appendix II which requires an export permit or re-export certificate subject to specific conditions. • Since 2010, import and export of eel from the EU has been prohibited (ICES, 2018). 	<ul style="list-style-type: none"> • European eels is listed on Appendix II, which requires parties to endeavour to agree cooperative conservation actions. • Future role of CMS to link conservation activities in the Sargasso Sea and in Europe & North Africa is currently being explored.