

Conservation and sustainable management of salmon through fishing licences in Ireland¹

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Brief summary of the case

As a response to the critical depletion of salmon stocks (75% decline in recent decades)¹, the salmon management regime operating in Ireland was radically revised in 2006 in advance of the 2007 commercial salmon fishing season. A key part of the changes to the management of salmon was that the Irish Government committed to aligning with the scientific advice for the management of salmon stocks. The important outcome of this decision was that indiscriminate mixed stock salmon fishing at sea (drift netting) was ceased. As part of the change to the management regime the price of the existing recreational and commercial salmon fishing licenses was doubled, with the increased revenue being used to support the development of the Salmon Conservation Fund. This fund supports projects which aim to improve the conservation status of salmon.

The licencing scheme helps to regulate the fishing pressure on the salmon stocks while the funding provided by licencing provides an important source of funding for conservation actions (e.g. restoration of habitats). The available data on catch and status of salmon indicates that, while the overall management of salmon stocks cannot be solved by inland fish licencing alone, the Irish licencing regime combined with the broader measures for stock management and conservation has delivered improvements. The earmarked contribution also directs both the angling and commercial sector to support the maintenance and recovery of fish stocks, with indirect benefits in terms of raising awareness of the status of salmon stocks.

1 Description of the design, scope and effectiveness of the instrument

1.1 Design of the instrument²

A licencing scheme for angling and commercial fishing of salmon (i.e. wild salmon and sea trout) is in place in Ireland. The scheme was revised in 2007 with a purpose to improve the conservation of salmon and the regulation of salmon fishing while simultaneously collecting funds to monitor and sustainably manage the species. The licencing scheme is part of the broader efforts aimed at supporting the conservation of salmon in Ireland which stocks have been recognised as in decline for decades throughout Europe (e.g. WWF 2000, Nasco 2016, IUCN RedList 2016).

The current licence fees range from tens of EUR to over / around hundred EUR, depending on the number of river basin regions and/or time period they cover (see Table 1.3.1), with 50%

¹https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2007_Conservation_Status_Report.pdf

²Unless otherwise mentioned, information under this section is based on information provided by Inland Fisheries Ireland Webpage <http://www.fisheriesireland.ie/Salmon-Management/wild-salmon-management-in-ireland.html> and <http://www.fisheriesireland.ie/Salmon-Management/salmon-conservation-fund.html>

of the fee being earmarked to the Salmon Conservation Fund (see section 1.3 below). Since then there has been some, but very limited, fluctuation in the fee rates over the years with the upper band of the fee starting at EUR 128 in 2007 and dropping to 100 EUR in 2016.

The licencing is an element of the broader salmon management tagging scheme for wild salmon and sea trout that has been in place since 2001, underpinned by dedicated legislation (Fisheries (Amendment) Act, No. 35 of 1999). Under the tagging scheme all fishermen must attach a coded tag to each salmon (any size) or sea trout (over 40 cm) they catch and retain while keeping a logbook of each fish caught. The logbooks - and any unused tags - are returned to the River Basin Districts within a limited period of time after the fishing season or expiry of licence. The logbook information, together with the information on licences sales, contributes to the monitoring of salmon status.

The whole salmon management regime is underpinned by annual quotas set for the recreational and remaining commercial salmon fisheries. In the case of the commercial salmon fishery there is a cap on the number of available licenses and a detailed process for allocating them, in the case of the recreational salmon fishery there is no cap on the number of licenses, but there are restrictions on the number of fish which can be caught on different rivers. These quotas are determined on an annual basis based on scientific advice on the status of stocks. Any changes in the quotas require an amendment to underpinning legislation. Since the 2007 revision, harvesting of fish is only allowed on stocks which are shown to have a surplus of fish over the conservation limit (see below). The adoption of the quotas has led to a significant reduction of salmon fishing since they were introduced in 2001 (from over 250,000 salmon in 2001 to over 20,000 in 2014, see Figure 1.4.1).

Finally, the set quotas and the tagging scheme take account of different regional and local river dynamics. Rivers which have an identifiable surplus over the established conservation limit³ are open for fishing whereas rivers meeting in excess of 65% of the conservation limit are only granted a catch & release status. Rivers for which there is insufficient scientific information or that are closer to or below the conservation limits remain closed. Such rivers are generally targeted by rehabilitation actions financed through funds generated by the licencing scheme (i.e. the Salmon Conservation Fund).

The both the tagging and licencing are managed by Inland Fisheries Ireland, covering 17 fishery districts in six river basins. The scientific advice underpinning the conservation limits is provided by the Standing Scientific Committee.

1.2 Drivers and barriers of the instrument⁴

The revision of the salmon management regime, carried out in 2006 and implemented in the 2007 season, appears to have been driven by two key factors. Firstly, building on the scientific evidence there was a general consensus among the scientists, managing bodies and

³ The 'conservation limit' for a river is the number of spawning salmon required to produce the next generation of salmon. This is developed using a range of scientific indices, i.e. fish counter data, rod catch and analysis of salmon fry (Juvenile abundance index) through catchment wide electrofishing undertaken on selected rivers.

⁴ Unless otherwise mentioned, information under this section is based on an interview with Dr. Ciaran Byrne from Inland Fisheries Ireland.

stakeholders that the salmon fish stocks were diminishing at alarming rate, requiring the establishment of a more stringent conservation and management regime. In particular, it was acknowledged that, given the migratory life cycle of salmon, the conservation of depleting stocks required more effective measures to be taken both in the inland waters and in the marine environment, with both the commercial fishermen (marine) and recreational anglers (rivers) being subject to restrictions (e.g. McGinnity et al. 2003). Secondly, an intervention by the Irish and UK conservation NGOs, leading to the European Commission taking Ireland to the European Court of Justice for a failure to implement the EU Habitats Directive's provisions for salmon⁵, helped to speed up the process (Dr. Byrne, pers. com).

The new regulatory framework meant a compulsory closing of Irish mixed stock fishery⁶. Addressing hardship for commercial salmon fishermen (i.e. drift net fisheries) whose livelihood was affected by the tightened regulatory framework was considered as one of the key barriers to be overcome during the 2006 revision. This was dealt with by introducing a dedicated voluntary hardship scheme (EUR 25 – 30 million) that allowed commercial fishermen – with mixed stock salmon fishermen as its primary target - to exit the fishery sector (Forde et al. 2014). The uptake of the scheme was facilitated by dedicated and transparent calculations both as regards the level(s) of compensation payment and “business as usual” forecast of diminishing net revenues due to already diminishing stocks (Collins et al. 2006). Furthermore, applying the increase in licencing fee across all stakeholders, including both commercial and recreational fishermen, was considered to help to balance the burden between the key stakeholder groups (Dr. Byrne, pers. com).

In addition to the 2006 revisions, some barriers for the implementation and future development of the instrument can also be identified. According to a representative of the Inland Fisheries Ireland, the functioning of the Salmon Conservation Fund is characterised by delays between project proposals and implementation, affecting the implementation of the fund in the most effective manner (Dr. Byrne, pers. com). This time lag is due to a number of reasons; dealing with a regulatory burden associated with the implementation of fisheries projects (e.g. different land use, planning and environmental regulations), challenges related to working with groups of stakeholders that are mainly voluntary based, and delays caused by physical conditions on the ground (e.g. heavy rains and flooding delay river restoration works).

The legislative basis underpinning the licencing scheme provides a firm basis for implementing the regime. However, as any changes in the regime require an amendment to underpinning legislation, it is also considered that this makes the system somewhat rigid in terms of introducing updates and improvements making the regime lag somewhat behind the most recent information and needs of the users (Dr. Byrne, pers. com). Furthermore, given the strong socio-economic and cultural dimensions associated with salmon fishing, the decision-making linked to the licencing system has a strong political element to it (Dr. Byrne,

⁵http://europa.eu/rapid/press-release_IP-06-906_en.htm and http://europa.eu/rapid/press-release_IP-07-391_en.htm

⁶ Fishing salmon at sea, i.e. under conditions where the geographic origin of salmon cannot be identified. A condition of the hardship scheme was that a fisherman who opted to partake in the scheme could not participate in the fishery again if it reopened. A number of fishermen did not take a payment from the hardship scheme hoping that stocks would recover and they would be allowed to go back drift netting. This has not happened.

pers. com). This can form a barrier in terms of further development of the system, e.g. opportunities for increasing the fees to reflect the continued low stock numbers are limited by differences in stakeholders' and political interests.

1.3 Revenue collection and use⁷

The revenue (50% of fees) from the sale of salmon fishing licenses is earmarked for the Salmon Conservation Fund, this way being channelled directly to support the conservation and sustainable management of salmon stocks and habitats they depend on. The fund is managed by Inland Fisheries Ireland with a range of actors (e.g. fishery owners and angling clubs) being responsible for implementing concrete projects on the ground. Thus far, the projects have mainly involved actors on the recreational fishing sector with no commercial fishermen having yet used the fund.

Table 1.3.1 and Figure 1.3.1 below provides information on the amount of revenue collected through the licencing system, showing a drop of revenue from over EUR 600,000 / year in the early years to just over EUR 500,000 / year in the recent years. This reduction in revenue is directly related to the reduced number of people taking up the licence; there are many reasons behind the decline according to a representative of the Inland Fisheries Ireland. Salmon stocks have yet to recover fully (see section 1.4 below), leading several members of the angling community to abstain from fishing, either for conservation reasons or due to feeling disappointed in the "rate of return" for their licence (Dr. Byrne, pers. com). Furthermore, the recent economic recession in Ireland is likely to also have contributed to the reduction in licence sales.

The revenue is channelled directly back into the management of salmon stocks through an annual project application process. The number of project applications and funding requested varies between years, however in general it seems that on average over half of the applications are successful in getting funded, with the total budget of these approved projects matching just over 50% of the total funding requested.

Table 1.3.1 Trends in the revenue accumulated to and funding provided by the Salmon Conservation Fund
Source: own analysis, based on Salmon conservation Fund annual reports (2007-2014)

Year	Fee (EUR) ¹	Funds collected via licence sales (EUR)	Total funds available (EUR) ²	Number of project proposals received ³	Total funds requested	Number of projects funded	Total funds allocated to projects (EUR)	No. project proposed vs. approved	Funds requested vs. funds allocated
2007	128	636,858	636,858	64	1,460,000	34	636,000	53%	44%
2008	134	697,186	882,402	39	2,814,585	10	774,085	26%	28%
2009	134	654,157	762,474	25	2,041,626	12	756,000	48%	37%
2010	120	579,552	67,352	42	1,267,812	25	615,385	60%	49%
2011	120	607,704	973,539	40	992,389	37	682,927	93%	69%

⁷ Unless otherwise mentioned, information under this section is based on review of Salmon Conservation fund annual reports (2007-2014) available at <http://www.fisheriesireland.ie/Salmon-Management/salmon-conservation-fund.html>

2012	120	555,799	1,237,144	29	684,281	26	397,054	90%	58%
2013	100	541,070	1,381,160	46	1,016,740	39	571,996	85%	56%
2014	100	512,248	1,321,412	29	794,768	26	730,985	90%	92%

1) Upper band fee (Class 'A' licence)

2) Including unallocated funds carried forward from previous year

3) From 2010 onwards, fund opened for external (non-IFI) applicants

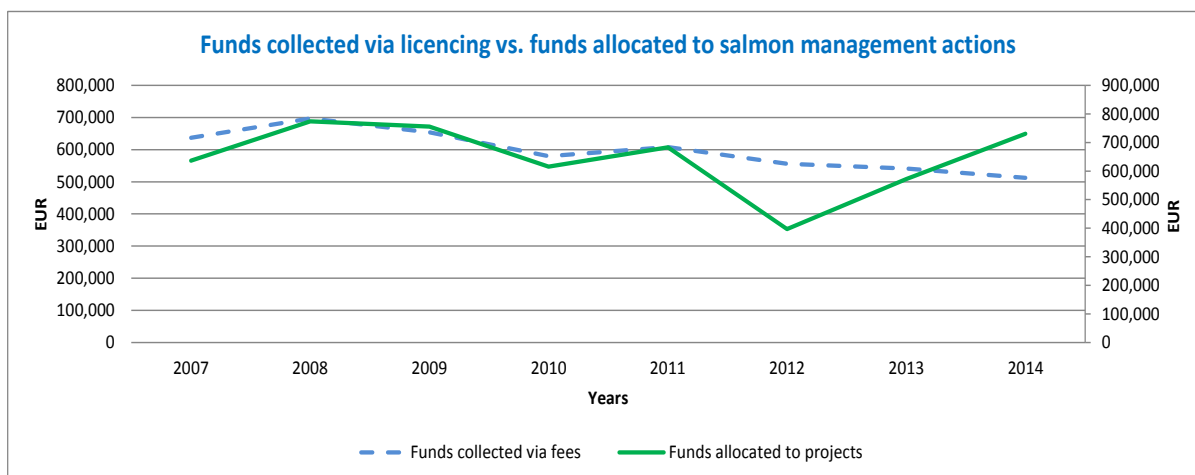


Figure 1.3.1 Funds collected via licencing fee vs. funding allocated to concrete management actions

Source: own presentation, based on annual reports

The projects funded by the Salmon Conservation Fund are all related to the management and conservation of salmon stocks. The funding is targeted between rivers based on an assessment of their salmon conservation status, level of water quality and the maximum potential project benefits to the river, with funding prioritised for those rivers in most need of rehabilitation.

The types of actions funded include:

- Fish passage improvement (e.g. removal of barriers, modification of weirs, and construction of fish passes)
- Spawning enhancement via improvement of habitats (addition/raking of gravel or cleaning of existing substrates)
- Creation of instream structures
- Protection of river banks (fences, stiles, cattle drinks etc.)
- Riparian zone improvement (tree pruning and strategic tree planting)
- Removal and control of invasive species that negatively impact rivers and river banks
- Assessing conservation limit status and feasibility studies for future actions

The annual allocation of funding between these different activities varies throughout the years (Table 1.3.2), however on average it seems that basic monitoring of the status of stocks (e.g. monitoring conservation limits and establishment / maintenance of fish counters in rivers) systematically take up around 40% of the annual budget. Different habitat management related activities, and river bank management especially, take up the rest of the annual budget with research playing a minimum role in the mix.

Table 1.3.2 Trends in type of activities funded by the Salmon Conservation Fund

Source: own analysis, based on annual reports

Year	River bank protect.	Spawning ground rehab.	Instream structures	Fish passage improvement	Riparian zone improve.	Weirs & pools rehab.	Fish counter (i.e. monitoring)	Research	Conservation limit attainment assessment
2007	31%	13%	10%	8%	1%	3%	0%	1%	31%
2008	16%	1%	0%	16%	1%	3%	40%	0%	23%
2009	10%	2%	0%	0%	2%	3%	43%	18%	22%
2010	18%	5%	6%	8%	2%	1%	31%	2%	23%
2011	16%	6%	3%	31%	2%	5%	15%	8%	14%
2012	26%	6%	7%	5%	14%	9%	6%	6%	21%
2013	29%	15%	5%	9%	9%	3%	13%	2%	15%
2014	23%	2%	9%	13%	2%	4%	29%	1%	17%
Average	21%	6%	5%	11%	4%	4%	22%	5%	21%

1.4 Environmental impacts and effectiveness

As Figure 1.4.1 shows, there has been a considerable decline in salmon catches (i.e. the harvest) since 2001 reflecting the diminishing stocks of salmon (Inland Fisheries Ireland, 2014). The entry into force of the river basin specific regulation and conservation limits stabilised the situation to around 25,000 salmon per year. In parallel, the assessment of the conservation status of salmon in Ireland shows a slight improvement with a change in the overall status of “unfavourable-bad” during the 2001-2006 period to “unfavourable-inadequate” in 2007-2012⁸. In particular, the status of salmon habitats has improved from unfavourable to favourable⁹.

The slow recovery of salmon stocks can be partly attributed to the difficulties in conserving salmon in the marine environment (Dr. Byrne, pers. com). Unlike conservation of salmon in inland waters, marine conservation efforts are affected by a range of diffuse factors (e.g. climate change, oceanographic factors, sea lice, food availability, predation) which cannot be targeted by the licencing system. Consequently, efforts to restore river and coastal habitats – no matter how successful - cannot guarantee the overall success in conservation.

However, the above trends indicate that the Irish conservation regime for salmon is delivering some improvements, especially in terms of status of salmon habitats. The licence revenue scheme has been an integral part of this success, guaranteeing ongoing funding for conservation and directing the fisheries stakeholders themselves to support the maintenance and recovery of fish stock.

⁸Estimated population size in 2007-2012 around 244 000 individuals, <https://www.npws.ie/article-17-reports-0/article-17-reports-2013>

⁹ EU EIONET database:

<http://art17.eionet.europa.eu/article17/reports2012/species/report/?period=3&group=Fish&country=IE®ion>

Finally, while the licencing scheme explicitly targets wild salmon and sea trout it also has broader environmental benefits. Several of the conservation measures, such as the protection of river banks and restoration of riparian zones, focus on improving the overall status of rivers hence it is evident that the scheme also indirectly contributes to improving the overall quality of freshwater habitats. The only possible negative impact of salmon conservation driven restoration might be that salmon spawning grounds require a different kind of substrate (gravel) than some other species (Dr. Byrne, pers. com). This might in some places favour salmon reproduction over the reproduction of other species such as sea trout or brown trout.

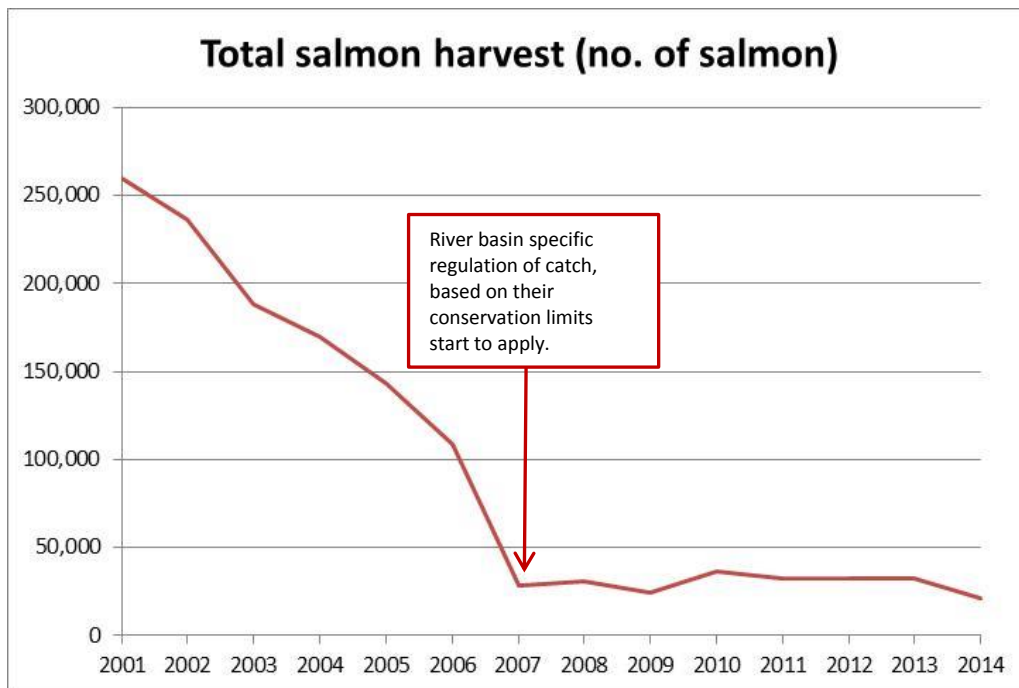


Figure 1.4.1 Trends in salmon catch
Source: own presentation, based on annual reports

1.5 Other impacts

The adoption of a more stringent management regime in 2007 resulted in a significant reduction in the numbers of commercial salmon fishermen. As outlined above (section 1.2), a dedicated hardship scheme was established to support the fishermen who opted to exit the sector while the increased price of angling licences helped to share the restrictive burden between the two stakeholder groups.

Awareness raising is not an explicit objective of the licencing scheme, however directing fisheries stakeholders to support the maintenance and recovery of fish stocks is likely to have indirect benefits in terms of awareness rising.

2 Stakeholder engagement

The 2007 revision of the licencing system was both informed and influenced by stakeholders. Firstly, scientific evidence on the decreasing status of salmon stocks was a strong driver for the reform, with key stakeholders (e.g. commercial and recreational fishermen) consulted in the development of the revised system (e.g. Collins et al. 2006). Secondly, the action by NGOs resulting in a case against Ireland in the European Court of Justice is considered to have sped up the process (Dr. Byrne, pers. com).

The Standing Scientific Committee – as the main scientific advisory body for salmon fisheries in Ireland – was the statutory advisory body responsible for providing data underpinning the 2007 reform. The information provided by the Committee supported the Independent Salmon Group’s work. This group was tasked to gather evidence, consult stakeholders and further advise the Government. The group sought guidance from a wide range of state agencies and other statutory bodies and it also undertook a direct consultation process meeting with 87 individuals representing 46 different agencies, organisations, groups, as well as individual stakeholders (Collins et al. 2006). Furthermore, information and advice provided by the North Atlantic Salmon Conservation Organisation (NASCO) was taken into account in the process.

As a result, the 2007 reform was underpinned by a common understanding among the stakeholders on the depleted state of salmon stocks, including the need for a dedicated action to address the problem. However, addressing the socio-economic (e.g. cultural) implications on the commercial sector and managing the somewhat competitive relationship between commercial and recreational fishermen posed some challenges to the reform (Dr. Byrne, pers. com). These sensitivities continue to require attention during the ongoing implementation of the conservation measures.

As for the ongoing implementation, the river-specific quotas based on conservation limits continue to be reviewed on an annual basis by the Standing Scientific Committee. Changes in the quotas require an amendment to underpinning secondary legislation, accompanied by a statutory 30 day public consultation period which is open to all stakeholders (e.g. NGOs) to submit their views on the proposed quotas. The resulting changes in river-specific fishing quotas are then communicated to the Fisheries District Committees – which includes representatives of both commercial fishermen and anglers - that decide how the allotted quotas should be divided between the commercial and recreational sectors.

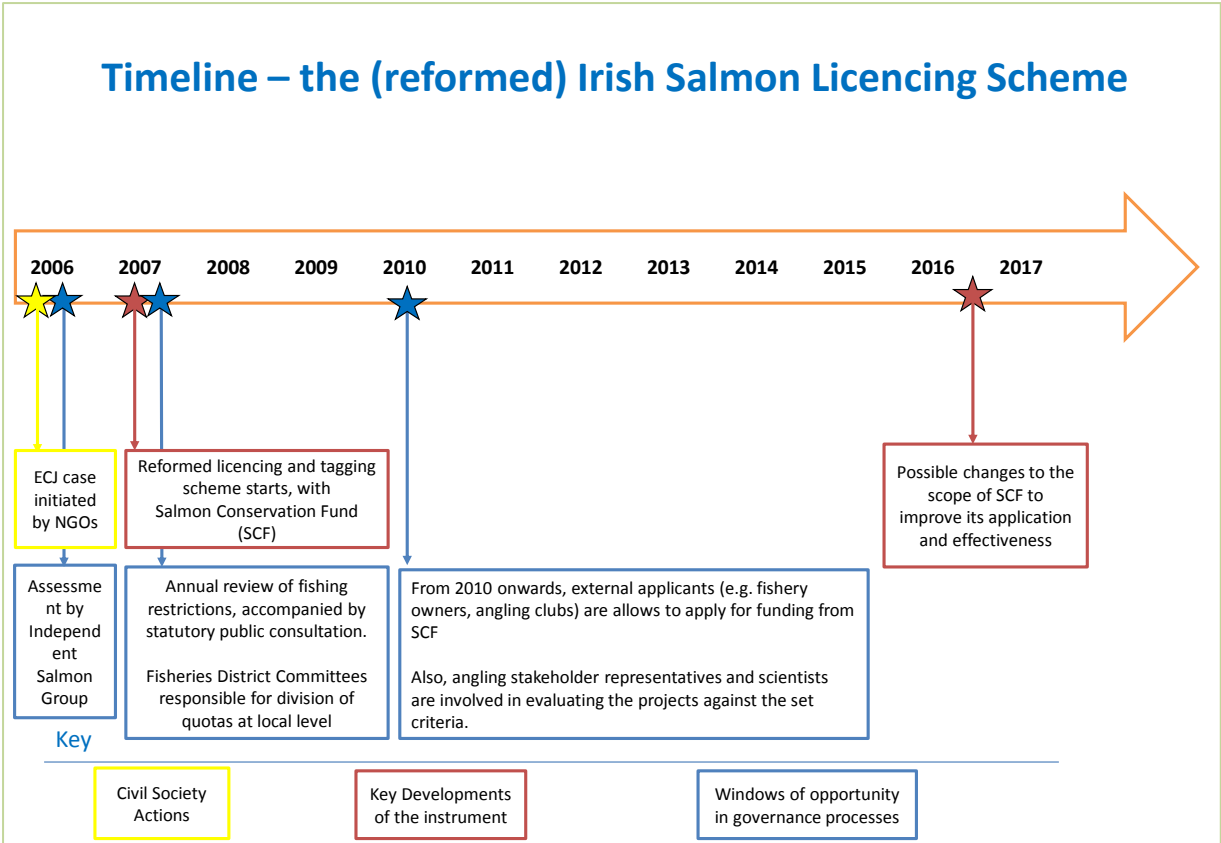


Figure 1.5.1 Timeline for the development, adoption and implementation of the Irish salmon fishing licence scheme.

3 Windows of opportunity

The key windows of opportunity in the policy cycles for the Irish salmon fishing licence are outlined in Figure below. Key mechanisms are in place for both scientific information and public views to enter the process, including public consultation and involvement of scientific experts and other key stakeholders project evaluation.

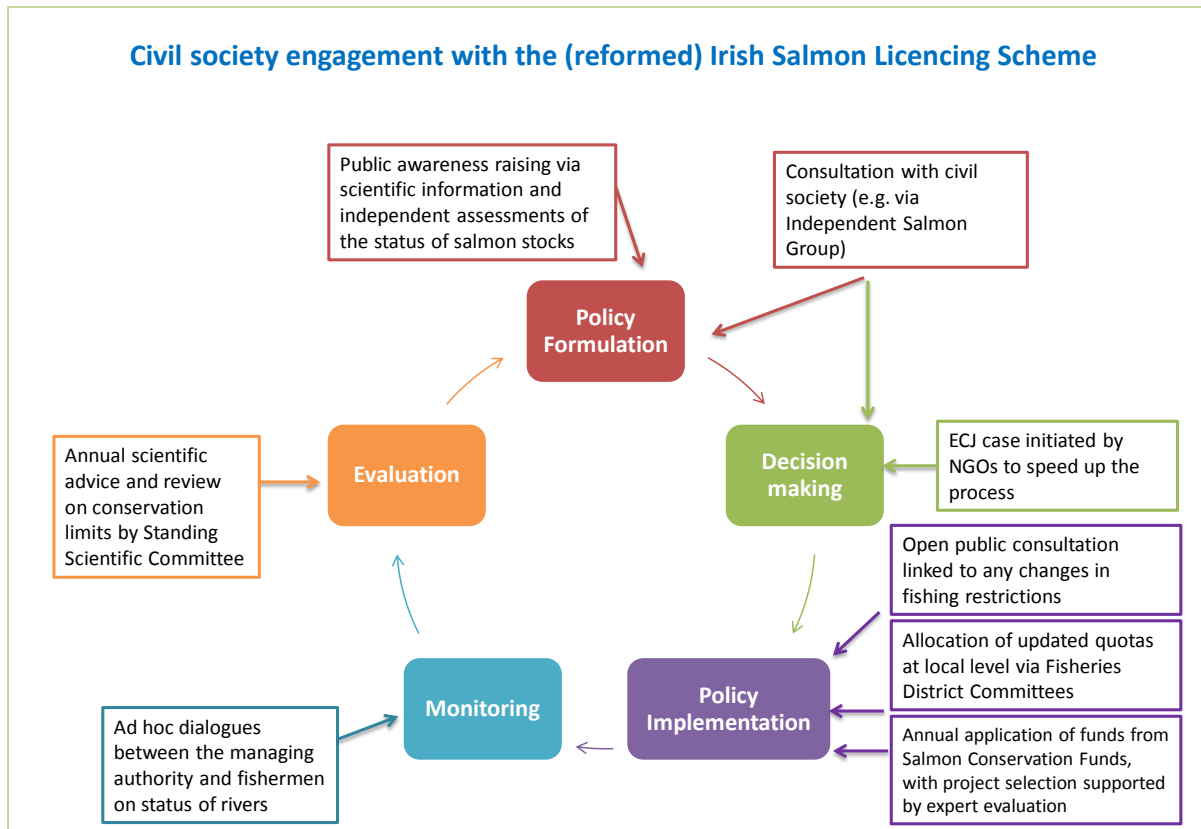


Figure 1.5.1 Key engagement opportunities for civil society in the context of Irish salmon fishing licence scheme.

4 Insights into future potential/reform

4.1 Actual planned reforms and stakeholder engagement

According to the Inland Fisheries Ireland, the current system is quite labour and resource intensive to manage (Dr. Byrne, pers. com). Modernisation and streamlining of the regime will, however, require updates to the principle legislation which might take some time to accomplish. No timelines are yet agreed for such update.

4.2 Suggestions for future reforms – instrument design and civil society engagement

As regards future plans, the Inland Fisheries Ireland recognises a number of areas for future improvements including:

- Exploring links with other sectoral policies that impact the success of salmon conservation measures (e.g. impacts of agriculture and waste management on water quality)
- Widening the scope of the Salmon Conservation Fund (e.g. in terms of types of projects funded)
- Improving the access to the fund by stakeholders

4.3 Suggestions for replicability

There seems to be no reason why the Irish licencing system with its earmarked conservation funding component could not be successfully adopted in other European countries, including used to support the conservation and sustainable management of other species.

Based on the Irish example, the key aspects to take into consideration include ensuring the support from key stakeholders, e.g. by putting in place accompanying compensation (hardship) mechanisms and ensuring a fair distribution of the conservation burden between stakeholders. Furthermore, undisputable and independent scientific evidence (e.g. engaging with international agencies) supported by a robust ongoing monitoring form the basis for both the adoption and implementation of such schemes.

Finally, careful “relationship management” between stakeholders competing over the same resource is likely to be required throughout the planning and implementation. As a consequence, regular and repeated political interventions are likely to emerge – and need to be managed - in relation to particular rivers and stakeholder groups (notably commercial and recreational fishermen, local / indigenous people, conservation NGOs).

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ⁱ This case study was prepared as part of the study ‘Capacity building, programmatic development and communication in the field of environmental taxation and budgetary reform’, carried out for DG Environment of the European Commission during 2016-2017 (European Commission Service Contract No 07.027729/2015/718767/SER/ENV.F.1) and led by the Institute for European Environmental Policy (www.ieep.eu). This manuscript was completed in December 2016.