



# Landing the blame

Overfishing in EU waters 2001–2015



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## Summary

Every year, the EU is provided with clear scientific advice on safe fishing levels, designed to encourage sustainable fishing. Despite this, European ministers set quotas far above what scientists recommend – leading to overfishing and lost economic potential. By analysing these decisions, we can determine which Member States are responsible for overfishing in EU waters.

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Decades of overfishing have led to depleted fish populations and billions of euros in lost economic potential. Recent reforms of the EU's Common Fisheries Policy (CFP) recognised the need to manage fish stocks according to best available science and affirmed Member States' commitment to sustainable fishing.

A central management technique in the CFP, and a key component in the transition to sustainable fisheries, is the annual setting of fishing quotas – formally Total Allowable Catches (TACs) – for the following year.

These quotas are set by ministers of EU Member States during a closed-door session of the Council of the European Union. Ministers are provided with scientific advice by ICES (International Council for the Exploration of the Sea), covering most commercial fish stocks under quota management in the North-East Atlantic. Despite this, ministers exit the meeting with many TACs for their fishing fleets set above scientific recommendations.

Using published data from ICES and the outcomes of the TAC negotiations we are able to compare how the scientific advice matches up with the TACs that have been set. These datasets provide a total of 248 TACs over 15 years, although data issues do exclude some of the potential comparisons. The resulting database and comparisons have been published online in conjunction with this research.

After combining all the TAC comparisons, our results show that from 2001 to 2015 the agreed TACs have exceeded scientific advice by 20%, falling from 33% to 7% over the time period. While the number of TACs set above scientific advice has remained consistent with approximately 7 out of every 10 TACs continuing to be set above advice, the amount by which advice is exceeded for these TACs has decreased from 42% to 18%. As long as TACs continue to be set above scientific advice, the problem of overfishing is expected to continue.

### **Who is to blame for this?**

As different TACs are allocated amongst different combinations of Member States, we can analyse the link between the presence of particular Member States in a TAC decision and whether the outcome followed scientific advice. Through this method we can identify the Member States responsible for pushing TACs above scientific advice, and thus working against the transition to sustainable fisheries in the EU.

The Member States with the largest amount of gross tonnage above scientific advice are Denmark, the UK and Spain. As a percentage of their total fishing quota, accounting for differences in size, the Member States with the highest amount of excess TAC are Spain, Portugal and the Netherlands. While published data does not allow for a full comparison, TACs that involved non-Member States such as Norway, the Faroes and Iceland are even more likely to exceed scientific advice.

An end to overfishing in EU waters requires concerted action from all Member States. While there has been steady progress in adhering to scientific advice, the practice of setting TACs above advice still remains, delaying the transition to sustainable fisheries. In making this dataset of comparisons available, we hope to further encourage individual ministers to follow scientific advice and guarantee the sustainable management and full economic potential of our shared natural resources.

# 1. Sustainability and the Common Fisheries Policy

The transition to sustainable fisheries in European waters has been slow and remains incomplete. After decades of overfishing, many fish stocks remain depleted and are reproducing at low rates. Rebuilding fish stocks would result in both environmental and economic benefits, but detailed science and responsive management will be required.

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Management of European waters under the Common Fisheries Policy (CFP) traces its lineage to the Treaty of Rome in 1958. Since this time, the policy has expanded in both coverage and ambition, and has seen many changes to the European fishing fleet as well as the fish stocks the fishing fleet depends on. The most recent reforms of the CFP (2002 and 2013) have focused on the issue of overfishing and the need to harvest fish at sustainable levels.

The key objective in the sustainable management of fisheries, while extracting as much of the resource as possible, is what is referred to as the maximum sustainable yield (MSY). This is the highest rate at which a fish stock can be fished without depleting the stock and future catches. While technical debates around MSY measurement and interpretation have arisen and will continue to be raised, the principle is that when fished to low levels, fish stocks will reproduce at lower rates and yields will decrease, leading to environmental and economic hardship. As a result, fishing below MSY would result in more landings than at present, although a transition period is required.

According to the most recent data (2013), 52% of assessed stocks managed under the CFP are fished sustainably and 39% of stocks are within safe biological limits.<sup>1</sup> While these figures are a significant improvement compared to fish stocks observed ten years ago, there still remains a great deal of lost economic potential in EU fisheries.

Our recent report, *Managing fisheries in the public interest*, estimated that rebuilding most commercial EU fish stocks in North Atlantic waters to their MSY would deliver over 2 million additional tonnes of fish a year at a value of €1.6 billion. The adjustments to the EU fishing fleet at this MSY state

would see approximately €824 million in additional net profits, between 20,000 and 64,000 new jobs and €8000 in additional fishing wages per fisher.<sup>2</sup> These estimates are sensitive to other policy changes but they do demonstrate the tremendous potential to allow fish stocks to rebuild and harvest a larger amount of fish below MSY. Interestingly the Mediterranean and Black Sea are in the worst shape in terms of ecological health but are almost entirely managed through effort restrictions rather than a quota system, and so the TAC analysis here does not cover these European waters.

## 2. The annual quota-setting process

Every year a network of organisations go through the process of gathering data, providing advice, giving feedback, making recommendations and negotiating TACs. It is a complex process that begins with the biological assessment of fish stocks and ends with TACs at the Member State level after a series of closed-door negotiations.

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The first stage of the quota-setting process involves biological assessment of the state of fish stocks. Throughout the year, Member States collect data on fishing activities as well as conducting survey research on the state of stocks. ICES then compiles this data, as well as developing its own research. On the basis of these biological datasets, including estimates of discards by vessels, ICES assesses the state of the stocks for the North-East Atlantic and Baltic Seas.

Data quality is highly variable, with only 45% of stocks fully known; advice is provided in six categories that range from data-rich to data-poor stocks.<sup>3</sup> For data-rich stocks, precise quantitative assessments are available, while advice for data-poor stocks is based on broad trends in the stock or generalised management rules.

The European Commission (EC) also receives advice from the Scientific, Technical and Economic Committee for Fisheries (STECF) that focuses on the economic and social impacts of implementing TAC packages. Lastly, the EC also has consultations with Regional Advisory Councils (RACs), which are regional stakeholders including industry representatives and environmental groups. The EC formulates a draft proposal for all the TACs at the end of the summer that can be finalised after proposals are made with third countries. The TACs sometimes rise at this stage, but on the whole, the EC usually proposes TACs in line with advice.

The EC negotiates through Regional Fisheries Management Organisations (RFMOs) with third countries on behalf of EU Member States to set TACs for shared waters. These include Iceland, the Faroe Islands, Norway and, to a smaller extent, other countries such as the Russian Federation. For the Atlantic, the RFMO is the North East Atlantic Fisheries Commission (NEAFC), an organisation that pre-dates the CFP.

These negotiations are often more difficult because there is no established system for dividing TACs and issues such as migratory species can complicate the process. If agreements are not reached at this international level the involved countries and the EC simply set their own TACs unilaterally, which often results in TACs well above ICES advice. The TACs set in RFMOs are included in the EC proposal as quotas that cannot be amended due to the involvement of third countries.

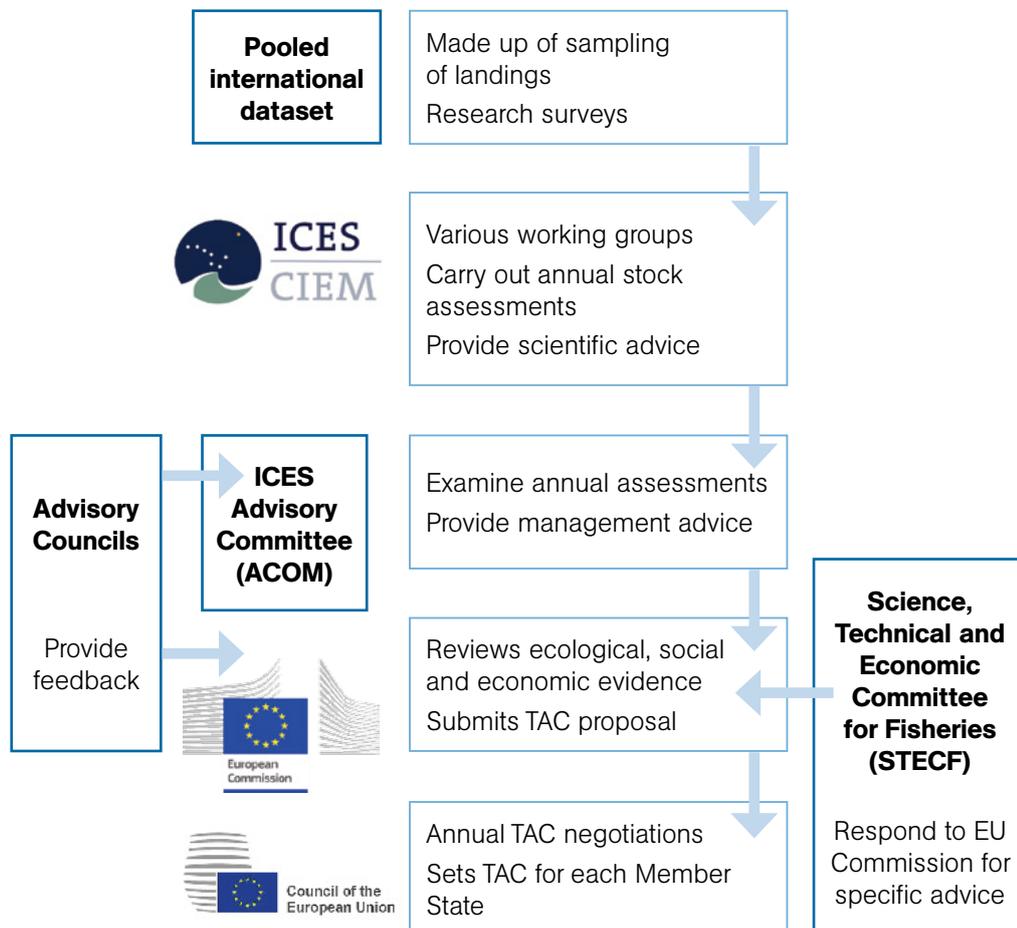
Before the proposal reaches the Council it first passes through Commission Working Parties and the Committee of Permanent Representatives to the EU. The working parties carry out highly technical assessments and checks of the proposals, usually with industry expert input. This step mainly involves checking for errors, and no substantive changes are made to proposal in terms of TAC values.

Finally, the proposal is sent to the Council and during three days of negotiations a final package deal is reached on setting TACs. The Council is composed of agricultural and/or fisheries ministers from the 28 Member States, referred to as the Agricultural and Fisheries configuration of the Council. It is joined by the relevant EU commissioner. Despite fisheries falling under the ordinary legislative procedure, the Council has sole discretion over TACs, with no binding involvement of the European Parliament. The Council is headed by a rotating presidency, held by one of the Member State ministers for a six-month term.

The Council passes proposals in one of three ways. It can pass the TAC package by consensus whereby no Member State formally objects to the current proposal. It can pass the proposal through a unanimous vote. Lastly, it can pass legislation through a qualified majority vote (QMV), which requires at least 15 Member States, representing at least 65% of the EU's population, to vote in favour. The QMV can be blocked by four Member States representing at least 35% the EU's population. The Council meeting is started through a round of opening statements and response from the EC, after which Member States retreat to their delegation rooms. Then the President and Commissioner hold a series of bilateral meetings with Member States to hear their concerns and wishes. Only the President together with the Commissioner hold amendment powers. They amend the proposal accordingly and after several rounds will call a vote. In the case of a failure to reach a qualified majority after the three days are over, the TACs will be set at the next Council meeting the following month.

When the TAC is agreed, the proportion received by each Member State is allocated. This is typically determined through the principle of relative stability, whereby Member State shares are decided based on historical catches, although occasionally there are small deviations in these amounts. It is then up to Member States to distribute this quota to their fleet, and national quota systems vary substantially.

Figure 1: Quota setting process in the EU



### A history of exceeding scientific advice

For nearly as long as EU waters have been under quota management, studies using published fishing data have noted problems with the implementation of the management system. Biais (1995) noted that between 1984 and 1992 there was good compliance with scientific advice only when proposed changes to TACs were small.<sup>4</sup> Where ICES proposed a large decrease in TACs the Council was likely to agree on a TAC larger than the advice given.

The link between TACs and landings has also been analysed by Karagiannakos (1996), who found that for demersal fish stocks, landings corresponded more closely to fish stock biomass than to the TACs, concluding that enforcement issues exist – an issue visited later in this paper. He also found that TACs for sole and plaice were consistently set above scientific advice.<sup>5</sup>

More recently, studies have begun to analyse the TAC-setting procedure itself. Villasante et al. (2011) analysed 40 stocks from 1990 to 2007. Their conclusion is that TACs were set 19% above ICES advice after the first CFP reform (1992–2001) and 21% after the second reform (2002–2008).<sup>6</sup> O’Leary et al. (2011) analysed 44 stocks from 1987 to 2011, and found that TACs were set 33% above ICES advice and that there was no noticeable improvement after the second CFP reform.<sup>7</sup> Looking specifically at deep-sea fish stocks, Villasante et al. (2012) found not only that agreed quotas were set above scientific advice in 50% of the cases from 2002–2011 and that significant enforcement issues remain in enforcing TACs once they have been set.<sup>8</sup>

Last year our *Landing the blame* series was the first study to link the setting of TACs above advice with the presence of ministers representing their Member State in the negotiation process. Results showed that the United Kingdom, Poland and Spain left the Council negotiations with the most TACs in excess of scientific advice for the Atlantic, Baltic and deep-sea respectively.<sup>9,10,11</sup> As this series of publications covered only one year of Council negotiations (2015), there was not enough data to assess responsibility without a few TACs strongly influencing the results. This study attempts to expand on this work by analysing the last 15 years of TACs.

## 3. Data

For the first time, a comprehensive database has been compiled which analyses ICES advice and regulated TACs for EU Member States. This database allows for a detailed comparison covering all 248 TACs over a 15 year period.

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To analyse scientific advice and EU Member State behaviour, a database has been compiled covering all available fish stocks and all available years for which ICES advice and regulated TACs are published. ICES advice is published annually and the files are hosted online at the ICES Advice web portal. From these files, historical advice was extracted and used to populate the database for a 15-year period from 2001 to 2015.

TAC advice from ICES required adjustments to be analysed in this study. In most cases these adjustments were undertaken to harmonise the different fish stocks for analysis, such as converting Atlantic salmon from number of individuals to tonnes, or to take an average where ICES has provided a range for its TAC advice. Where data has been adjusted to address any of these issues, or where a decision between different TAC recommendations has been made, a summary note is provided in the same row as the data point with a description of the action taken.

TACs for Member States were extracted from Council Regulations hosted on the EUROLEX and FAOLEX online legal databases. The historical TACs by Member State were extracted from these files and compiled in the database for a 15-year period from 2001 to 2015. In many cases, amendments have been made since the original Council Regulation. These amendments have been separately coded and added to the database. In most cases the principle of relative stability is followed in the allocation of TACs between Member States, but there are occasionally deviations from a strict annual share, especially at low quantities.

A last source of data for the comparison of regulated TACs are fishing agreements with third countries that take place outside of the annual meetings of the Council. At present there is no European or national authority that compiles data for these agreements. Separate searches for the various agreements from news articles and individual government agencies were conducted to cover the same time period, although the data in this area remains partial.

This database, compiling and comparing ICES advice and TACs has been published online to allow for replication studies and to establish a common source that can be used for future research.

### **Data matching and data limitations**

With the compiled data from ICES advice and TAC regulations, a complicated procedure of matching ICES areas to TAC areas is required because the data provided by each source does not cover the same area. No published matching file exists, but analysis can be made from the historical advice and the TAC reported in the ICES advice files, as well as comparison made with data other organisations including the EC and Seafish. For most areas there is a close match between ICES and TAC areas or else the ICES area needs to be split across multiple TAC areas. Where this takes place it is assumed that the advice is split in equal proportion to the TACs in this area. The consequence of this division is that included TACs will have the same percentage value either above or in line with the ICES advice. In a few cases, notably for blue whiting and mackerel, a joint TAC is recorded across multiple TACs. In our database the total TAC is split evenly across the component TACs.

After these adjustments, ICES advice and regulated TACs can be directly compared. As Member States are allocated a relative share of the TAC, these same proportions are used to convert ICES advice for the overall TAC to representative figures at the Member State level. Any TAC level lower than the ICES figure is simply categorised as in line with advice. In practice, having one fish stock at a very high biomass level or with very low fishing mortality does not necessarily aid in the recovery and sustainable management of other stocks. With certain ecosystem dynamics and predator–prey relationships, the opposite may be the case.<sup>12</sup>

For some TACs there was no agreement reached with the relevant third countries for certain years. In these instances the EU TAC can still be compared with the appropriate EU portion of the ICES advice. This is calculated based on the average EU share of the TAC for years where a TAC agreement was reached. Many of these comparisons strongly impact the results, such as the large EU TAC for blue whiting in 2005.

In some examples the regulated TAC is set at a level below that found in the ICES advice. As ICES advice is an upper limit rather than a target, this is not interpreted as a TAC below advice or a negative value, but rather as a TAC that is in accordance with ICES advice. Setting a TAC below the ICES limit should certainly not hold any compensating power for setting other TACs above scientific advice.

As this study analyses the difference in all quantities summed across all TACs compared to ICES, there are no calculation issues where ICES advice is 0 for a particular stock and the difference between advice and any TAC is infinity, as has been problematic in other comparison studies analysing fish stocks individually.<sup>13</sup>

## 4. Methodology

Through analysing the outcome of these closed-door quota negotiations we can better understand which ministers are pushing for TACs above scientific advice.

### Theories of political behaviour

In assigning responsibility for TACs rising above ICES advice, there is an assumption of political self-interest among ministers present in the negotiations. The assumed mechanism at work is that TACs are raised because ministers from the affected Member States have negotiated a TAC rise to support their national industry and gain political support from a key industry in their portfolio. This assumed mechanism is supported by the fact that ministers often leave these closed-door negotiations proclaiming to the fishing industry and sometimes to the media that they have fought hard and secured additional fishing quota for their national fleet.

The following media quotes are typical of the tone of accomplishment adopted by ministers after negotiations conclude with their national fishing industry receiving quotas above scientific advice:

*“It was absolutely vital that Ireland’s case for an increase in this TAC was accepted.”*

**Dermot Ahern, Irish Minister for Communications, Marine and Natural Resources (September 2002).**<sup>14</sup>

*“I am delighted that we were able to secure the best possible deal for the UK fishing industry.”*

**Richard Benyon, UK Minister of State, Department for Environment, Food and Rural Affairs (December 2012).**<sup>15</sup>

*“I am delighted that common sense eventually prevailed and that a cut was averted.”*

**Simon Coveney, Irish Minister for Agriculture, Food and the Marine (December 2012).**<sup>16</sup>

A rise in monkfish TAC of 15% was achieved “*despite the fact that the Commission intended to maintain the 2013 quota for Spain.*”

**Miguel Arias Cañete, Spanish Minister of Agriculture, Food and Environment (December 2013).**<sup>17</sup>

*“While fishermen had feared there would be major cuts, we were able to keep the same quota as last year for many species, in addition to important increases to the North Sea cod and haddock quota, which will benefit Scottish fishermen.”*

**George Eustice, UK Minister of State, Department for Environment, Food and Rural Affairs (December 2014).<sup>18</sup>**

This sentiment is not always unanimous, however. Some ministers have stated that they were pushing for TACs to align with scientific advice. Making matters more complicated, because the share of fishing quota going to different Member States is almost entirely fixed through what is known as relative stability – the historic proportion of fishing activity by a Member State for a fish stock – this could result in a Member State receiving fishing quotas above scientific advice against their own negotiating position.

One example of this position is the view of the Swedish Minister of Rural Affairs, Sven-Erik Bucht, after the 2015 negotiations, that the key Baltic TACs for Sweden were set too high.<sup>19</sup> Without more transparency it is not possible to evaluate the quota negotiations apart from their outcomes. If certain Member States are receiving TACs above scientific advice against their own wishes, this should be demonstrated in TACs exceeding scientific advice by a larger amounts when the Member State in question is not directly part of the negotiation.

Even within the political self-interest framework there is the possibility that ministers may also act in collaboration with other ministers to trade favours through what is known as ‘log-rolling’. This may include favours outside of fisheries management itself and into EU agricultural policy. The extent to which this takes place is difficult to extrapolate empirically.

For non-fishing Member States, it is understood that their role in these negotiations is minimal, and these Member States are excluded from the analysis here as they do not hold any TACs to be compared to scientific advice.

### **The link between scientifically-based TACs and the health of fish stocks**

From a biological perspective it is the biomass, the catch and the corresponding fishing mortality that is of direct relevance, whereas the TAC level is important to fish stocks only indirectly. It could be the case that catches are less than the TAC. It could also be the case that catches exceed the TAC due to lack of enforcement by national authorities. While this would clearly be in violation of the CFP, studies have shown a problem of ‘overshooting’ quotas across a number of fish stocks,<sup>20</sup> and this is especially acute in deep-sea fisheries.<sup>21</sup> A study by Patterson and Résimont (2007) found that between 1988 and 2005, landings were more strongly determined by the state of the stock than by TACs

themselves.<sup>22</sup> All of these studies use data on reported catches and may therefore underestimate the problem, as there have been high estimates of unreported catches in EU waters,<sup>23</sup> although recent legislation has attempted to address this problem.<sup>24</sup>

Some of the same studies that have analysed the extent to which TACs are set above scientific advice have also analysed the link between following scientific advice and achieving ecological and economic outcomes. Villasante et al. (2011) estimated that exceeding advice has contributed to stock decline, which had resulted in reduced catches for 63% of the stocks they analysed.<sup>25</sup> O'Leary et al. (2011) used a population-modelling approach and found that in some instances the rise in TACs above scientific advice put the stock at risk of collapse in future years.<sup>26</sup>

## 5. Results

The comparisons between scientific advice and the corresponding fishing quota can be analysed by year, by Member State and by species. The results point towards important trends, with some Member States holding a comparatively larger share of TACs above scientific advice.

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With a dataset covering multiple TACs for multiple species allocated to multiple Member States over multiple years, the results can be broken down across a number of dimensions, each analysis providing insight into a particular issue.

Looking at which Member States have received the most quota in excess of scientific advice, Denmark, the United Kingdom and Spain top the list with just under half of the EU's excess TAC shared between these three Member States (Table 1).

However, as this ranking of Member States roughly aligns with overall landings by Member States, more analysis is required to assess the link between a given Member State and the setting of TACs above scientific advice.<sup>27</sup> To normalise by the total amount of quota a Member States receives, the second column shows the percentage by which a Member State's TAC is above scientific advice. On this measure Spain, Portugal and the Netherlands come out on top with 37%, 37% and 26% of their TAC, respectively, above scientific advice over the 15-year period, and Finland and Estonia come out at the bottom with 10% and 12% of their TAC above scientific advice, respectively.

Combining both measures of excess TAC reveals the Member States which hold the largest amounts of fishing quota above scientific advice, and also the Member States which hold the most in proportion to the size of their overall TAC (Figure 1). It appears that the Member States with the smallest amount of TAC are also the ones more accepting of scientific advice.

**Table 1: League Table of TAC vs ICES Advice by Member State (Average from 2001-2015)**

<i>Member States</i>	<i>Excess TAC (tonnes)</i>	<i>Excess TAC (%)</i>
Denmark	89,943	<b>17%</b>
United Kingdom	77,077	<b>20%</b>
Spain	53,367	<b>37%</b>
The Netherlands	43,401	<b>26%</b>
Ireland	38,297	<b>24%</b>
France	33,775	<b>18%</b>
Sweden	32,538	<b>18%</b>
Germany	30,626	<b>22%</b>
Poland	20,116	<b>14%</b>
Portugal	15,892	<b>37%</b>
Finland	11,473	<b>10%</b>
Latvia	9,655	<b>14%</b>
Estonia	8,209	<b>12%</b>
Lithuania	3,100	<b>14%</b>
Belgium	2,849	<b>16%</b>
<b>EU</b>	<b>471,490</b>	<b>20%</b>

**Figure 2: ICES advice and excess TAC by member state**

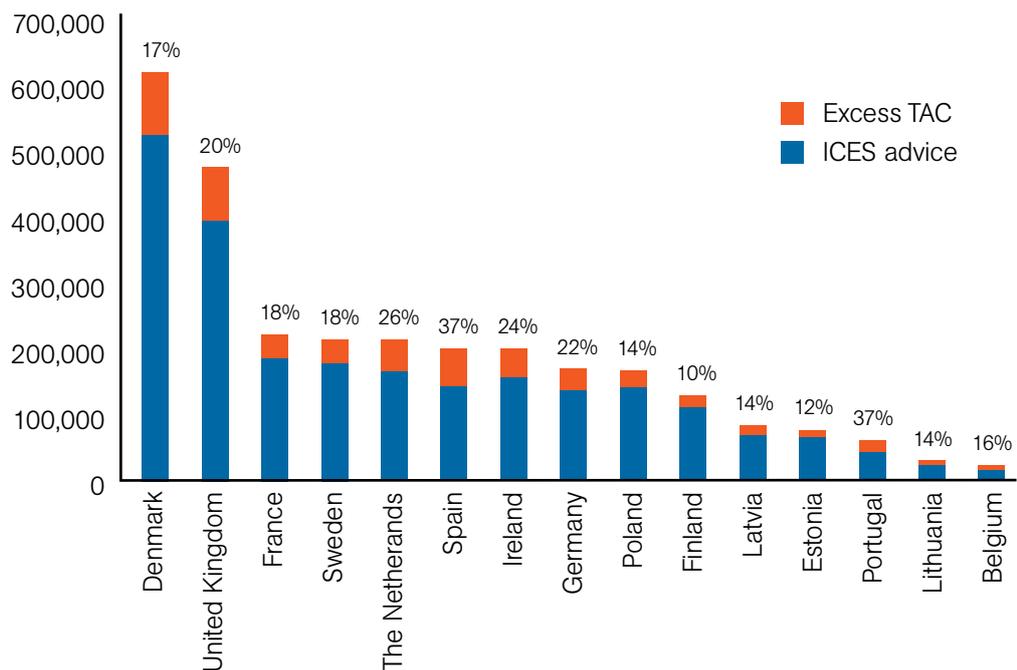
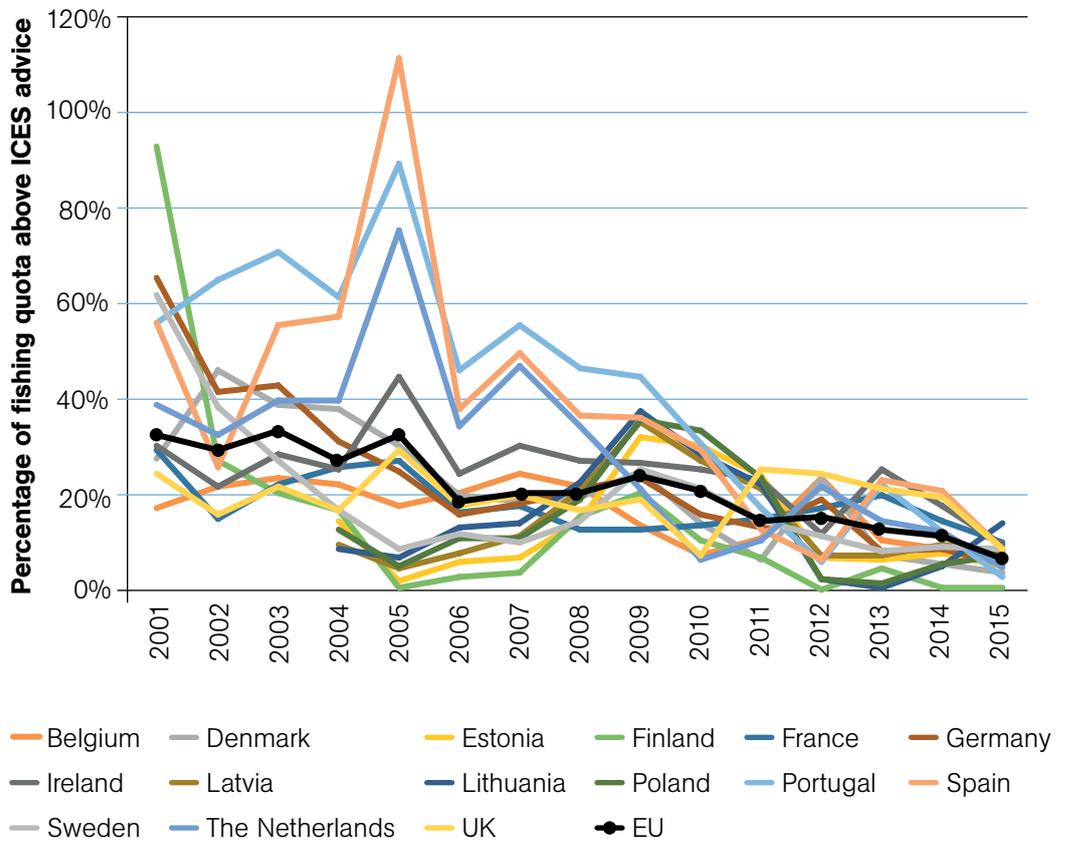


Figure 3: TAC above ICES advice by Member State



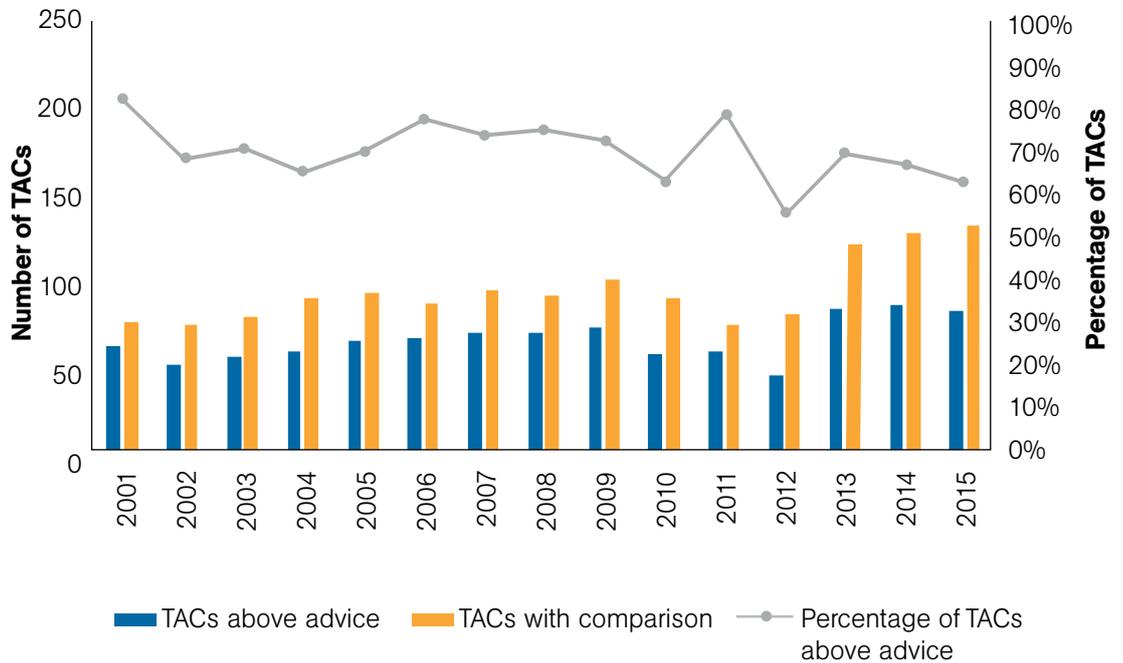
Analysing this same measure as a time series reveals that Spain, Portugal and the Netherlands had at least 33% of their quota above scientific advice from 2001 to 2007 (except for Spain in 2002), but that that number has decreased and there is now much less variance between Member States. Overall the EU percentage shows a decrease over the 15-year period, from 33% in 2001 to 7% in 2015.

Another way to analyse the data is by looking at the number of TACs in excess of ICES advice, leaving aside the magnitude by which that advice was exceeded. This measure shows a fairly consistent level of 70% of the TACs being set above scientific advice from 2001 to 2015, although the number of TACs that can be compared with ICES advice due to complete information increases over this period.

Table 2: EU TAC in excess of ICES advice

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>Excess TAC</b>	33%	30%	34%	28%	33%	19%	21%	21%	25%	21%	15%	16%	13%	12%	7%

Figure 4: Number of TACs above ICES advice



Given the previous finding shown in Figure 3, the gradual decline in the percentage of fishing quota above scientific advice comes from a reduction over time in the amount by which scientific advice is exceeded, rather than in the number of TACs that exceed ICES advice. Indeed, the amount by which advice is exceeded in the agreed TAC is characterised by an erratic but visible decline (Figure 4). This finding may indicate that the biological perspective on fisheries management is increasingly acknowledged as relevant and important across many fish stocks.

Figure 5: Excess TAC where ICES advice is exceeded

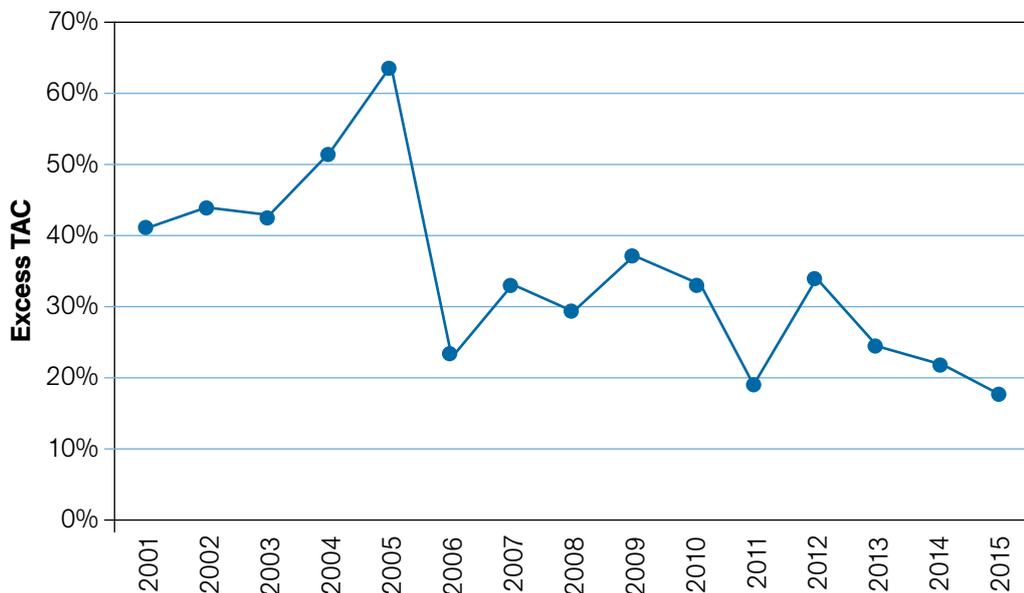


Table 3: League table of TAC vs ICES advice by species (Top 15)

<b>Species</b>	<b>Excess TAC (tonnes)</b>	<b>Excess TAC (%)</b>
Blue whiting	91,726	<b>52%</b>
Horse mackerel	71,553	<b>45%</b>
Mackerel	68,925	<b>22%</b>
Sprat	65,399	<b>16%</b>
Herring	59,324	<b>12%</b>
Cod	40,288	<b>45%</b>
Plaice	9,263	<b>12%</b>
Hake	8,762	<b>19%</b>
Anchovy	8,713	<b>54%</b>
Whiting	8,626	<b>36%</b>
Norway lobster	8,189	<b>15%</b>
Megrims	6,327	<b>37%</b>
Haddock	3,777	<b>9%</b>
Anglerfish	3,732	<b>14%</b>
Redfish	2,969	<b>30%</b>

The results of our comparative analysis in the EU waters can also be analysed by species. Blue whiting, horse mackerel, mackerel, sprat, herring and cod make up 85% of the TAC over ICES advice. Here, like the results found for Member States, there is a bias towards the fish stocks with larger TACs. Of the major species, blue whiting, horse mackerel, cod and anchovy stand out for having a high percentage of species-specific TAC that is above scientific advice (Table 3).

## 6. Discussion

The results presented here build on previous studies to reveal a more comprehensive comparison, and point to new trends and the role of Member States in the quota-setting process. Progress is occurring while many EU fish stocks are transitioning towards sustainable levels.

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### Comparison with other studies

Some of the key results can be compared to earlier studies of TACs and scientific advice. Analysing 40 stocks, Villasante et al. (2010) found that TACs were set 19% above ICES advice after the first CFP reform (1992–2001) and 21% after the second reform (2002–2008).<sup>28</sup> O’Leary et al. (2011) found that for 44 stocks from 1987 to 2011 TACs were set 33% above ICES advice and that there was no noticeable improvement after the second CFP reform.<sup>29</sup>

Our results, covering nearly 248 TACs (one stock can be made up of multiple TACs), match closely these two studies in the years covered. Looking at the EU TACs we find on average TACs are set 20% above advice from 2001–2015. The most significant difference from these earlier studies is the inclusion of large TACs that exceed ICES advice in large quantities such as blue whiting, horse mackerel and mackerel. Since these previous studies have been published the level of TAC above scientific advice has fallen, leading to a lower percentage over the expanded time period, but this does not offset the inclusion of the additional TACs with larger differences between TACs and advice. In the 2015 *Landing the blame* series, the top Member States for receiving quota in excess of scientific advice were the UK in the Atlantic, Poland in the Baltic and Spain in the deep-sea.<sup>30,31,32</sup> Two out of these three Member States also feature near the top over the 2001–2015 period analysed here, showing some stability from year to year that is also visible in Figure 2.

### Third countries and study limitations

One important point to note is the role of third countries. Many TACs are set in agreements with third countries including the Faroe Islands, Iceland, Norway and Russia. These countries are also pursuing a certain outcome in the negotiations. Unlike the Council negotiations, in these third country meetings it is not uncommon for countries to leave or avoid the

Table 4: TACs above ICES advice based on third country share

<i>Division</i>	<i>Excess TAC (tonnes)</i>	<i>Excess TAC (%)</i>
Large third country share (>33%)	181,808	24%
Small third country share (<33%)	289,682	19%

negotiations altogether and set their own chosen TAC unilaterally – most notably in the prolonged ‘mackerel war’ between the EU and Norway and Iceland. These actions can push the TAC above ICES advice even with the EU following advice for what they feel is their share of the stock.

Our compiled database shows that these TACs in which third countries are involved are much more likely to be set above ICES advice, as can be seen in Table 4 by the large TAC percentage (24%) above advice when third countries have a significant share. The interpretation of this result is that third countries could top the league table if they were compared to EU countries. This result is understandable given the option for third countries to leave or avoid the negotiating table and set their own TACs unilaterally. Unfortunately, as we lacked data on third-party TACs and a more comprehensive list of third-party agreements, an analysis that included these countries could not be completed. This could be an area of further study if the historic third-party agreements with details on TAC share by country become published. The consequence of this is significant, as these initial findings suggest that the EU quota negotiations are more conducive to following scientific advice than the absence of these negotiations or the quota-setting process altogether, as is the case when third countries are involved.

Another important note is that only reported catches (without including discards and estimates of IUU – illegal, unreported and unregulated fishing) are taken into account; the current results could be significant underestimates and the total removals of catches could be substantially higher than suggested by the data used in this study. Updating estimates of overshoot is another potential area for future study.

### **Some progress in following advice; some progress in sustainable fish stocks**

There are signs of progress in the amount of excess TAC that is set annually, but improvement must be seen in the context of the reformed CFP which states that the “maximum sustainable yield exploitation rate shall be achieved by 2015 where possible and, on a progressive, incremental basis at the latest by 2020 for all stocks”.<sup>33</sup> Earlier documents from the EC also clarify that their proposals were to reduce fishing pressure gradually to reach the maximum sustainable yield exploitation rate in 2015,<sup>34</sup> a goal that has now passed.

Still, there is an expected link between progress in the number of fish stocks now fished sustainably and progress in following scientific advice. What is likely is that following scientific advice and healthier fish stocks work in a positive feedback loop, whereby adhering to scientific fishing limits leads to a larger fish stock biomass, and less severe advised fishing limits in the future which in turn are easier for ministers to follow.

### **Explaining Member States' behaviour**

The reason that some Member States are more likely to push TACs above scientific advice is likely based on multiple factors. The short-term political incentive is to provide for the fishing industry rather than to transition to healthier stock levels, but the results show variance between Member States. What is likely is not that the worst offenders are necessarily ministers who differ in ideology or belief, but that there are important environmental factors impacting different fish stocks. For example, Finland and Estonia fish in Eastern Baltic waters where the biomass has recovered to high levels, whereas Spain and Portugal are the largest Member States fishing in Western European waters where biomass is low and where ICES advises larger reductions in fishing activity. This is an important piece of future research in itself, although the mechanism for increasing biomass is understood and involves following the very scientific advice that is often exceeded.

## 7. Conclusions

If EU fish stocks are to recover to sustainable levels, scientific advice on fishing quotas must be respected. Member States, especially those with the largest difference between their TACs and scientific advice, prolong this transition to better environmental and economic outcomes by pushing for higher TACs in the short term.

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Based on their earlier comparative analysis of TACs and scientific advice, O’Leary et al. (2011) concluded that for the Common Fisheries Policy, “It is likely that the 2012 reform will be similarly ineffective unless decision-making is changed so that catch allocations are based on science rather than politics.”<sup>35</sup> In the years since the 2012 reform we can still see evidence of politics entering the quota-setting process, but we can also see signs of improvement, both in following scientific advice and in the health of fish stocks themselves.

The role of politics is unlikely to be removed entirely from the quota-setting process, but in analysing which Member States are advocating for higher quotas during the negotiations we can identify and better understand the barriers to reaching sustainable fish stocks. The results from this study draw attention to the role of the Ministers from Spain, Portugal, the Netherlands and third countries. Even so, as every Member State still receives some quota in excess of scientific advice, a clear call to follow scientific advice would be beneficial from all Member States. Greater transparency would also benefit the process, both in terms of allowing the positions of Member States to be scrutinised more openly, but also to improve the reputation of the CFP and the fishing industry, as the role that scientific advice plays would become more apparent.

A positive feedback loop between following scientific advice and healthier fish stocks implies that even though Member States fish different stocks with different biomass levels, the mechanism through which to build biomass is to respect scientific advice in setting fishing quotas. Ministers would be wise to look beyond the next year when making such important decisions about the biological and economic health of the marine environment.

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**Thanks to:** Sebastian Villasante and Manel Antelo

**Designed by:** the Argument by Design – [www.tabd.co.uk](http://www.tabd.co.uk)

**Cover image:** CGP Grey via Flickr

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Registered charity number 1055254

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ISBN 978-1-908506-89-4

