SPRFMO

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Adelaide, Australia 18 to 22 January 2017

FAC 04 – Doc 06

Further information to assist SPRFMO deliberations on the financial contribution formula

Secretariat (prepared 25 September 2016)

1. FAC 2016 Report. Item 6(a): Review of the formula for the calculation of contributions related to the catch component for pelagic fishery resources

At its second meeting in 2015, the FAC agreed that the contribution formula in the Financial Regulations should be reviewed at its next meeting and the Commission tasked the Secretariat to develop options for a revised contribution formula for the pelagic catch component of the formula, and consider the respective allocations between squid and other pelagic species.

The third FAC discussed the Secretariat's paper on possible options for revising the pelagic catch component of the SPRFMO budget contribution formula (FAC-03-05), in particular the five scenarios outlined in the paper, but did not reach a clear conclusion. To resolve the immediate issue of budget contributions for the 2016-17 financial year, the FAC Chairperson suggested that the FAC be guided by the following principles:

1. **consistent with the Commission's earlier recommendations, interfere as little as possible with the agreed formula in the Financial Regulations;**
2. **aim in principle to move towards a formula that reduces volatility in the movement of members' contributions;**
3. **no member should contribute less in 2016-17 than in 2015-16; and**
4. **no member's contribution should increase unreasonably.**

The FAC expressed general support for these principles. Some members suggested they could be a useful guide for future meetings when the Committee is required to deliberate on financial contributions.

The FAC Chairperson indicated his assessment that it would not be possible at this meeting to reach consensus on an amendment to the budget contribution formula in the Financial Regulations. He proposed a table of contributions for the 2016-17 financial year based on scenario 3 of the Secretariat's paper (15/30 catch split for weighting squid and other pelagic species), modified by applying the principles referred to above.

On the advice of the FAC, the Commission asked the Secretariat to develop further information to assist the Committee in its future deliberations on the contribution formula.

2. SPRFMO Contribution Formula

The SPRFMO financial contribution formula consists of three (four) parts:

(a) A base fee of 10% divided in equal shares between all Members of the Commission. Developing countries are eligible for a base fee reduction provided that they have not fished in the previous financial year.

(b) A national wealth component of 30% (subdivided into 15% GNI, and 15% GNI per capita).

(c) A catch component of 60%; subdivided into 45% for pelagic and 15% for demersal fishery resources.

(d) (For the first year until 2014, the pelagic resources were further subdivided with 5% for squid and 40% for all others).

3. The Issue

The financial contributions resulting from the adopted formula (Table 1, Figure 1, red) have proven to be volatile and uneven, giving rise to substantial swings in member contributions over relatively short intervals. Thus, the contributions actually adopted by the Commission differed substantially from those assessed using the adopted formula Table 1, Figure 1, grey).

Reference years	*09-11*	*10-12*	*11-13*	*12-14*	*13-15*	*09-11*	*10-12*	*11-13*	*12-14*
Contributions in %	**Adopted formula**					**Actual**			
Financial years	**13/14**	**14/15**	**15/16**	**16/17**	**17/18**	**13/14[1]**	**14/15**	**15/16**	**16/17**
Australia	5.4	6.4	6.8	7.2	6.5	5.4	5.9	7.0	7.4
Belize	1.0	0.9	0.7	-	-	1.1	1.0	0.8	-
Chile	15.6	8.0	4.4	2.2	4.1	19.9	16.2	11.4	9.6
China	23.4	33.8	40.5	43.4	41.5	17.3	18.5	26.5	26.2
Cook Islands	1.4	1.4	1.3	1.3	1.3	1.4	1.3	1.3	1.4
Cuba	1.0	1.0	0.9	0.9	0.9	1.0	1.0	0.9	0.9
Ecuador	-	-	0.8	0.9	0.9	0.0	0.0	0.8	0.9
European Union	21.4	14.0	10.9	12.3	13.1	22.9	18.7	12.3	13.5
Faroe Islands	3.8	3.4	2.7	2.8	2.8	4.1	4.8	3.3	2.9
Korea	4.0	4.5	4.4	4.2	3.9	4.0	4.7	6.0	6.0
New Zealand	11.5	15.5	15.5	14.8	15.5	11.5	15.1	15.0	15.1
Peru	-	-	1.5	1.7	1.4	-	-	1.5	3.2
Russian Federation	2.8	2.6	2.6	2.2	2.3	2.9	3.0	3.6	3.0
Chinese Taipei	4.2	5.1	4.5	3.2	3.0	2.9	2.8	3.0	2.7
Vanuatu	4.6	3.6	2.5	2.9	2.8	5.7	7.0	6.6	7.3
Total	100	100	100	100	100	100	100	100	100

Table 1. *Contributions in % based on the adopted formula (red) and as adopted by the Commission (grey).*

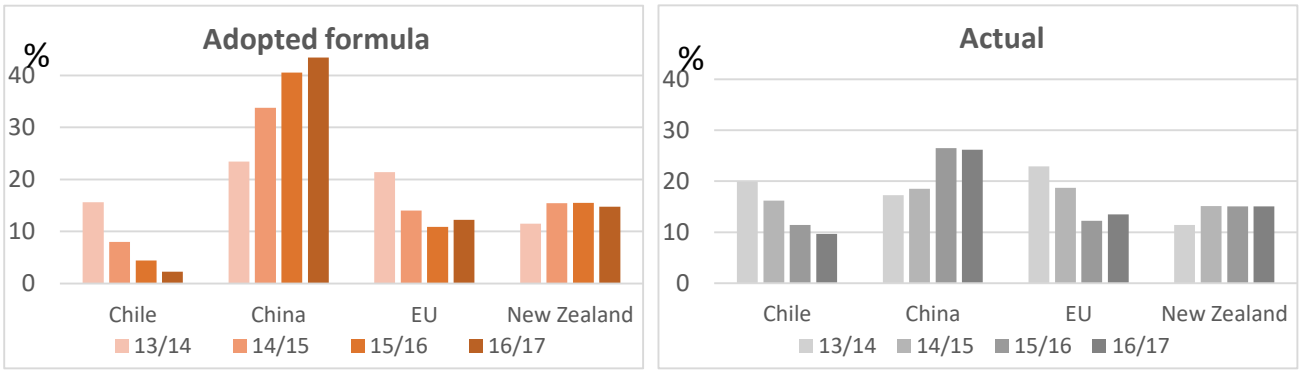

Figure 1. *Financial contributions of the four largest contributors in %, (a) based on the adopted formula (red) and (b) as actually adopted by the Commission (grey).*

4. Approach

This paper aims to assist the Members in finding a financial formula that results in a more equal share of individual contributions as well as providing a good balance between stability and predictability and maintaining acceptable responsiveness to changes in catch. A formula that would work well for SPRFMO in the long-term should generate contributions that are closer to the contributions actually agreed rather than to the contributions resulting from the currently adopted formula.

The Secretariat has explored a number of different options but was mindful to not introduce extensive changes to the adopted formula, and to preserve the relationship between its major parts. Thus, this paper does not explore changes to the basic fee and national wealth component, and does not question the split between the pelagic and the deep-sea resources.

In the interest of enabling comparisons between different scenarios, the earlier years in all subsequent tables and figures have been adjusted to reflect the current membership.

[1] Contributions for the 13/14 financial year have been adjusted by accounting for China and Vanuatu who joined after the first Annual Meeting.

5. Possible options

We note that on their own, none of the alternative options described below appear to achieve the desired results. It is the combination of different options that could lead to more promising outcomes in terms of addressing the issues currently experienced with the adopted formula; some possible combinations (scenarios) are shown in Annex 1.

1. Increasing average catch periods

5-years catch average	Contributions (%)				
	13/14	14/15	15/16	16/17	17/18
Australia	5.4	5.6	5.9	6.4	6.7
Chile	19.5	17.8	11.7	5.7	4.5
China	19.7	22.8	28.3	36.7	40.8
Cook Islands	1.3	1.3	1.3	1.3	1.3
Cuba	0.9	0.9	0.9	0.9	0.9
Ecuador	0.9	0.9	0.9	0.9	0.9
EU	21.1	19.6	18.3	13.5	12.1
Faroe Islands	4.0	3.7	3.4	3.1	2.8
Korea	3.6	3.8	4.0	4.2	4.1
New Zealand	10.0	10.4	12.4	15.3	15.5
Peru	1.8	2.0	2.3	2.3	1.4
Russia	2.5	2.6	2.6	2.4	2.5
Chin. Taipei	3.7	3.9	4.0	4.2	3.8
Vanuatu	5.6	4.8	4.1	3.2	2.7
Total	100	100	100	100	100

Increasing the average catch period has a stabilising result on the financial contributions by distributing catch fluctuations over a larger number of years and thus preventing sharp annual variations within the individual financial contributions.

Note that an increase in the average catch period does not change individual contributions, it only has a short-term smoothing effect.

An increase to a five-year period could be applied right away.

2. Separating the two pelagic catch components

The participation in the two pelagic fisheries, Jack mackerel and squid, is at present uneven and each of these resources is largely caught by different Members. Therefore, under the current formula in which the two pelagic resources are pooled without distinction, any pronounced increases or decreases in either of these fisheries have a contrary effect on the financial contributions of those fishing the other resource, even if their catches remain stable.

Separating the catches of Jack mackerel from those of squid in the financial formula, as shown under options 2.a and 2.b below, would have a major influence on the apportionment of contributions.

2.a. Subdividing the pelagic catch component (split)

Catch Split	Contributions (%)				
	13/14	14/15	15/16	16/17	17/18
Australia	5.2	6.2	6.9	7.2	6.5
Chile	14.7	11.6	11.1	4.3	9.3
China	23.4	25.1	27.0	27.7	26.7
Cook Islands	1.3	1.3	1.3	1.3	1.3
Cuba	0.9	0.9	0.9	0.9	0.9
Ecuador	0.9	0.9	0.9	0.9	0.9
EU	20.9	15.4	12.2	16.8	17.8
Faroe Islands	3.6	3.5	2.8	2.8	2.8
Korea	3.9	4.5	5.9	5.8	4.7
New Zealand	11.3	15.3	15.5	14.8	15.5
Peru	2.5	3.9	2.4	3.1	1.8
Russia	2.7	2.7	3.4	2.2	2.5
Chin. Taipei	4.2	3.7	3.1	2.6	2.5
Vanuatu	4.4	5.0	6.5	9.6	6.9
Total	100	100	100	100	100

Subdividing the pelagic catch component into one for Jack mackerel and another for squid, as the Commission initially did, increases the overall stability of financial contributions, as shown in the Secretariat's paper last year (FAC-03-05).

However, such a split does tend to have a "freezing" effect, where changes in the relative size of each fishery no longer have any influence, and contributions are driven from participation within each fishery. Thus, before opting for a pelagic catch split option, it should be considered that (a) if the level of participation within, or (b) the relative catch size of either fishery should change in the future, some Members could be stuck with a contribution that might be deemed unfair. In case a pelagic catch split option is adopted, the Secretariat recommends the inclusion of a regular review.

For the purpose of this paper and without prejudice to the decision of the Commission, the Secretariat has examined the effects of a 30%:15% split of Jack mackerel to squid.

2.b. Applying a weighting to different fisheries within the pelagic catch component

Catch Weighting	Contributions (%)				
	13/14	14/15	15/16	16/17	17/18
Australia	5.2	6.2	6.9	7.2	6.5
Chile	18.7	11.7	7.7	3.0	6.8
China	17.5	24.9	34.0	37.4	33.8
Cook Islands	1.3	1.3	1.3	1.3	1.3
Cuba	0.9	0.9	0.9	0.9	0.9
Ecuador	0.9	0.9	0.9	0.9	0.9
EU	22.3	15.4	11.6	14.0	15.6
Faroe Islands	3.9	3.5	2.8	2.8	2.8
Korea	3.9	4.5	5.2	4.8	4.3
New Zealand	11.3	15.3	15.5	14.8	15.5
Peru	2.9	3.9	1.9	2.2	1.6
Russia	2.8	2.7	3.0	2.2	2.4
Chin. Taipei	2.9	3.7	3.9	3.0	2.7
Vanuatu	5.4	5.1	4.5	5.5	4.9
Total	100	100	100	100	100

Although currently not obvious, the pooling of the two pelagic resources in the adopted formula has a mitigating influence on the effects of catch fluctuations by spreading these among a higher number of participants. Therefore, the introduction of a weighting factor for the different species (similar to CCAMLR and GFCM) might be a good alternative to a catch split in achieving fairer and more predictable contributions. It would minimise the undesirable effects described above in case of future changes within or between these fisheries and thus could be a more future-proof option than splitting the fisheries.

The Secretariat has explored several weighting factors for squid (from 0.2 to 0.5) and found that a factor of 0.33 (i.e. weighting Jack mackerel 3 times more than squid) appears to be already having an effect on variations and lowering extreme individual contributions, while still being reasonably reflective of catch changes.

3. Replacing catches with catch entitlements[2]

Entitlement	Contributions (%)				
	13/14	14/15	15/16	16/17	17/18
Australia	6.4	7.1	7.2	7.1	7.1
Chile	9.2	6.5	5.1	5.2	5.6
China	22.9	30.0	34.3	36.8	37.3
Cook Islands	1.3	1.3	1.3	1.3	1.3
Cuba	0.9	0.9	0.9	0.9	0.9
Ecuador	0.9	0.9	0.9	0.9	0.9
EU	20.7	15.1	13.7	13.5	13.4
Faroe Islands	3.7	3.4	3.2	3.2	3.2
Korea	3.9	3.9	3.8	3.7	3.6
New Zealand	11.6	14.8	15.3	15.0	15.0
Peru	3.9	3.3	3.1	2.5	2.2
Russia	5.5	4.5	4.1	3.9	3.8
Chin. Taipei	4.0	4.6	4.0	3.0	2.8
Vanuatu	5.1	3.8	3.1	2.9	2.9
Total	100	100	100	100	100

The variability of Jack mackerel catches in the high seas has caused considerable unpredictability in the formula. Thus, using catch entitlements (where possible) instead of reported catches has a further stabilising effect on the formula. Catch entitlements do not exhibit much variation (and are not expected to do so into the future). Solely for budget purposes (and without any other consequences), this would necessitate the allocation of an average high seas proportion of Chiles total entitlement[3].

The Secretariat notes that exchanging Jack mackerel and demersal catches for entitlements in the financial formula would increase the contributions of Members that have not been fishing some (or all) of their entitlement and are thus less (or not) considered in the catch component of the current financial formula.

It is also noted that in the case of a quota transfer, such a measure would reverse the current practice by allocating the contributions to the Member with the original entitlement and not to the Member on the receiving end of the transfer.

[2] *In SPRFMO catch entitlements are only in use for the Jack mackerel and bottom fisheries.*
[3] *The Secretariat has calculated that the annual average of the Chilean high-seas catches since 2007 amounts to about 15% of its total entitlement (the other 85% being caught in the Chilean EEZ).*

4. Introducing a component for "Fishing Activity"

Fishing Activity	Contributions (%)				
	13/14	14/15	15/16	16/17	17/18
Australia	6.0	6.9	7.5	7.7	7.3
Chile	13.8	7.6	5.0	5.1	4.8
China	20.9	29.1	35.8	35.9	36.6
Cook Islands	1.3	1.3	1.3	1.3	1.3
Cuba	1.2	1.2	1.3	0.9	0.9
Ecuador	0.9	0.9	0.9	0.9	0.9
EU	20.2	13.8	11.6	11.6	13.8
Faroe Islands	4.1	3.5	2.8	2.8	2.8
Korea	4.6	5.0	5.2	5.3	4.8
New Zealand	10.8	14.2	14.5	14.4	14.5
Peru	3.2	3.5	2.5	2.6	2.1
Russia	3.5	3.5	3.2	2.9	2.7
Chin. Taipei	4.7	5.4	5.2	5.3	3.9
Vanuatu	4.8	4.0	3.3	3.4	3.6
Total	100	100	100	100	100

The variability of catches is one of the major drivers on the volatility of the financial contributions. Introducing a "Fishing Activity" component (similar to SEAFO, IATTC and IOTC) would reduce the relative influence of catches in the contribution formula, while continuing to ensure that 60% of the formula was directly related to economic benefits derived from SPRFMO fisheries.

A "Fishing Activity" component would be equally shared by all Members participating in the SPRFMO fisheries, including those who are not catching fish but whose vessels (reefer and bunkering vessels) are supporting fisheries. These supporting activities are currently not considered in the contribution formula.

After running a few scenarios, it appears that allocating 10% for such a new component, and reducing the catch component accordingly (to 50%), already has a noticeable stabilising effect.

It is noted that a "Fishing Activity" component would also increase the voluntary contributions of some CNCPs that are providing transhipment and bunkering services.

5. Capping annual increases

Introducing a cap for a maximum individual contribution increase from one year to the next in the financial formula would limit the flexibility of the organisation with regard to determining the total budget. It carries the risk to actually make the organisation inoperative if additional required services (such as a VMS) resulted in a budget increase above the limit set by the financial regulations. Because of these far-reaching implications this option was not further explored.

6. Conclusions

The options discussed above show that there is a potential to increase the predictability and stability of the individual contributions towards the SPRFMO budget. Employing any of the measures addressed above will have an effect towards the envisioned objective. However, the cumulative effect achieved by combining different options is more likely to provide a desirable outcome. The Secretariat has explored the effects of a large number of combination of options (scenarios). To illustrate the different cumulative effects resulting from the combinations, Annex 1 presents some indicative scenarios. Other combinations can be produced upon request.

It is interesting to see that combining a fishery activity component and a 5-year-average with an entitlement-split (Figure 4, Scenario 3a) virtually eliminates the variability of contributions from Members participating in the pelagic fisheries. In contrast, the effects of combining a fishing activity component and a 5-year-average with catch weighting (Figure 3, Scenario 2b), or with entitlement weighting (Figure 4, Scenario 3b), are more reflective of the pelagic catch changes as well as close to the actually agreed financial contributions. They also seem to have a positive effect on stability, predictability and more equal apportionments (see Annex 1, Figure 5).

7. Annexes

ANNEX 1. Some scenarios combining different options
ANNEX 2. Catches in the SPRFMO Convention Area from 2007 to 2015
ANNEX 3. Catch entitlements for Jack mackerel and bottom fisheries
ANNEX 4. Fishing activity
ANNEX 5. Actual contributions by SPRFMO Members since 2013
ANNEX 6. Summary table: Contribution formulas used by other RFMOs

8. ANNEX 1. Some scenarios combining different options

Scenario 1: introducing a "Fishing Activity" component (option 4) and increasing average catch periods (option 1)

The combination of option 4 (a 10% Fishing Activity component) with option 1 (increasing the average catch period from 3 to 5 years) has an effect on smoothing inter-annual contributions while also achieving a slightly more equal distribution among Members. The effect (yellow) is shown in Table 2 and - for the four major contributing Members - in Figure 2, against the assessed contributions using the adopted formula (red). However, note that a simple year-by-year comparison will not give a fair impression as the effects of low or high catches will not always be apparent in the same year(s) as under the adopted formula.

Reference years	*09-11*	*10-12*	*11-13*	*12-14*	*12-14*	*07-11*	*08-12*	*09-13*	*10-14*	*11-15*
Contributions %	**Adopted formula**					**Combined "5-years Catch Period" and "Fishing Activity"**				
Financial years	**13/14**	**14/15**	**15/16**	**16/17**	**17/18**	**13/14**	**14/15**	**15/16**	**16/17**	**17/18**
Australia	5.2	6.2	6.9	7.2	6.5	6.2	6.4	6.6	7.1	7.4
Chile	15.1	7.7	4.4	2.2	4.1	17.5	16.0	11.0	6.0	5.1
China	22.8	32.7	40.6	43.4	41.5	18.2	20.9	25.5	32.5	35.9
Cook Islands	1.3	1.3	1.3	1.3	1.3	1.5	1.3	1.3	1.3	1.3
Cuba	0.9	0.9	0.9	0.9	0.9	1.1	1.1	1.1	1.1	1.1
Ecuador	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
European Union	21.1	13.8	11.0	12.3	13.1	20.2	18.8	17.8	13.8	12.7
Faroe Islands	3.6	3.2	2.8	2.8	2.8	4.6	4.1	3.7	3.2	2.8
Korea	3.9	4.3	4.5	4.2	3.9	4.4	4.6	4.8	5.0	5.0
New Zealand	11.3	15.3	15.5	14.8	15.5	9.7	10.1	11.8	14.2	14.4
Peru	2.5	2.8	1.5	1.7	1.4	2.3	2.7	3.1	3.2	2.2
Russian	2.7	2.5	2.6	2.2	2.3	3.2	3.5	3.3	3.0	3.1
Chinese Taipei	4.1	4.9	4.5	3.2	3.0	4.4	4.6	4.6	4.8	4.6
Vanuatu	4.5	3.4	2.6	2.9	2.8	5.7	5.1	4.5	3.8	3.4
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 2. *Comparison of percentage contributions based on (a) the adopted formula (red) and (b) applying a 5-year catch period as basis for the assessments and introducing a "Fishing Activity" component of 10%.*

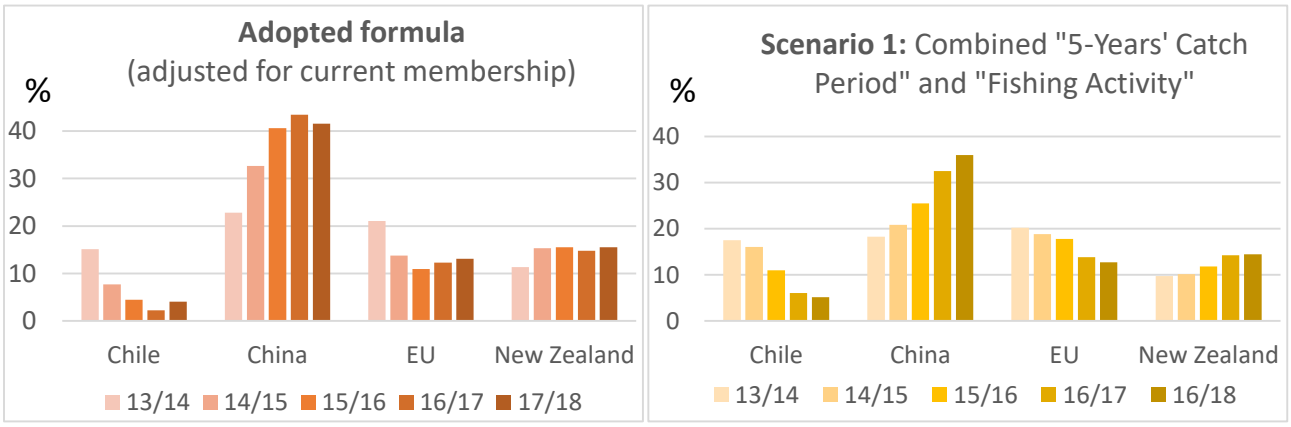

Figure 2*. Comparison of the financial contributions in percent based on the adopted formula (red) and Scenario 1 (yellow) for the four highest contributing Members.*

NOTE: The following scenarios all include an increased average catch period of 5 years and a 10% "fishing activity" sub-component (as part of the catch component of the contribution formula).

Scenario 2: Adding a separation of the pelagic catch component (option 2) to Scenario 1

Separating the pelagic fisheries can be achieved through splitting the fishery components (option 2a) or through adding a weighting factor to the different species (option 2b). Table 3 and Figure 3 illustrate the effects of combining either a catch split (Scenario 2a) or a catch weighting (Scenario 2b) option with a 5-years-average and a fishing activity component (Scenario 1). As explained above, the catch weighting scenario (2b) shows more movement in response to catch changes than a catch split scenario.

Contributions %	Scenario 2a: Catch Split					Scenario 2b: Catch Weighting				
Financial years	13/14	14/15	15/16	16/17	17/18	13/14	14/15	15/16	16/17	17/18
Australia	6.2	6.4	6.6	7.1	7.4	6.2	6.4	6.6	7.1	7.4
Chile	15.0	15.5	13.0	9.8	10.2	19.8	19.5	14.7	8.9	7.8
China	21.3	21.5	22.2	23.5	24.5	15.3	16.4	19.2	25.8	29.9
Cook Islands	1.5	1.3	1.3	1.3	1.3	1.5	1.3	1.3	1.3	1.3
Cuba	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Ecuador	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
European Union	19.7	18.7	18.5	15.9	15.2	20.8	19.4	19.1	15.4	14.0
Faroe Islands	4.4	4.1	3.8	3.5	2.8	4.8	4.3	3.9	3.4	2.8
Korea	4.4	4.6	4.8	5.3	5.8	4.4	4.5	4.8	5.2	5.4
New Zealand	9.7	10.1	11.8	14.2	14.4	9.7	10.1	11.8	14.2	14.4
Peru	2.2	2.6	3.3	4.2	2.7	2.4	2.8	3.5	4.0	2.5
Russian Federation	3.2	3.5	3.4	3.2	3.5	3.3	3.6	3.4	3.1	3.3
Chinese Taipei	5.2	4.7	4.2	4	3.8	3.6	3.7	3.8	4.2	4.1
Vanuatu	5.1	5.0	5.2	5.9	6.4	6.3	5.9	5.7	5.4	5.0
Total	100	100	100	100	100	100	100	100	100	100

Table 3. *Comparison of financial contributions in percent if combing scenario 1 with (a) catch splitting (Option 2.a, light blue), and (b) catch weighting (Option 2.b, light green).*

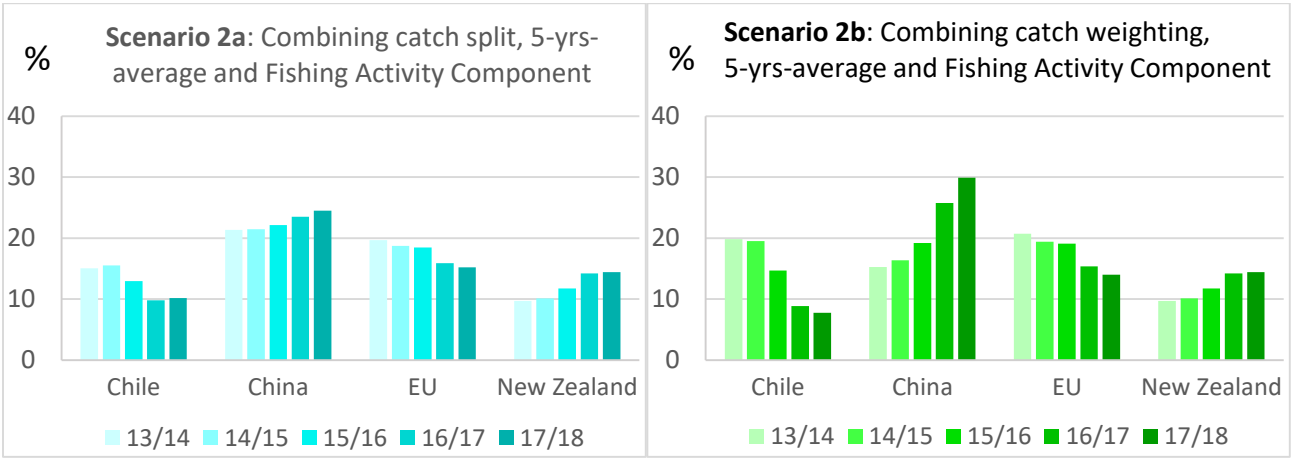

Figure 3*. Comparison of the financial contributions in percent by highest contributing Members: scenario 2.a (combination of catch split, combined with 5-years-average and Fishing Activity, light blue), and scenario 2.b (catch weighting, combined with 5-years-average and Fishing Activity, light green).*

Scenario 3. Replacing catches with entitlements (option 3)

The only option not yet included in a scenario is option 3, the replacement of catches with entitlements (where possible). Using this option further evens out both the inter-annual differences of the individual contributions as well as those between Members.

The "freezing" effect described for the catch-split option is even more pronounced in the entitlement-split scenario (Scenario 3a, Table 4 and Figure 4); the only movements observed here occur if the players or the relative entitlements within a fishery change. For example, the withdrawal of the EU from the deep-sea fisheries is reflected in the opposite contribution-trends exhibited by the EU on one side, and New Zealand and Australia on the other.

In contrast, an entitlement-weighting scenario (Scenario 3b, Table 4 and Figure 4) still maintains a visible relationship to catches (entitlements) while having an additional smoothing and equalising effect in comparison to a scenario 2b.

Contributions in %	Scenario 3a: Entitlement split					Scenario 3b: Entitlement weighting				
Financial year	13/14	14/15	15/16	16/17	17/18	13/14	14/15	15/16	16/17	17/18
Australia	7.0	7.0	7.3	7.7	7.8	7.0	7.0	7.3	7.7	7.8
Chile	8.6	8.6	8.5	8.5	8.7	11.0	10.5	9.7	8.7	8.2
China	21.4	21.4	21.4	21.5	21.5	15.4	16.7	18.6	22.2	24.5
Cook Islands	1.5	1.3	1.3	1.3	1.3	1.5	1.3	1.3	1.3	1.3
Cuba	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Ecuador	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
EU	20.1	19.7	18.4	16.4	16.1	22.0	21.2	19.4	16.5	15.8
Faroe Islands	4.2	4.1	3.9	3.6	3.5	4.5	4.3	4.0	3.7	3.4
Korea	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.7
New Zealand	10.7	11.0	12.1	13.8	14.1	10.7	11.0	12.1	13.8	14.1
Peru	3.8	4.1	4.4	4.5	4.2	4.6	4.8	4.9	4.5	4.0
Russian Federation	5.6	5.8	5.7	5.5	5.5	6.6	6.7	6.3	5.6	5.3
Chinese Taipei	5.2	5.2	5.2	5.3	5.3	3.5	3.7	3.7	3.9	3.9
Vanuatu	5.2	5.2	5.2	5.3	5.3	6.5	6.3	5.9	5.4	5.1
Total	100	100	100	100	100	100	100	100	100	100

Table 4. *Annual contributions in % combining 5-years average and Fishing Activity with Jack mackerel and deep-sea entitlement (a) split (Scenario 3a, blue) and (b) weighting (Scenario 3b, green).*

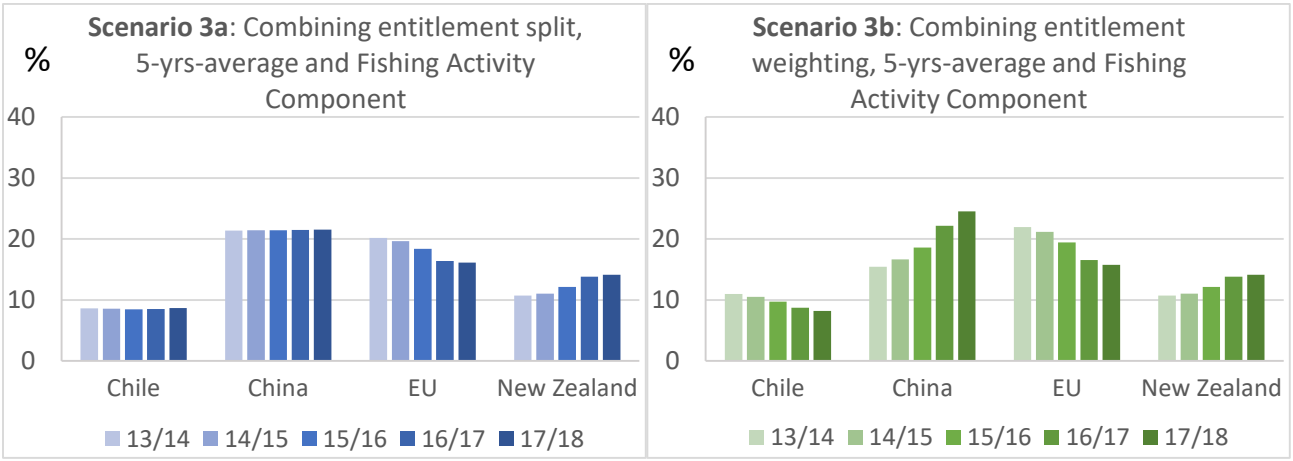

Figure 4*. Comparing financial contributions in percent of the four largest contributors in two combinations: a) under an entitlement split scenario blue), and (b) under an entitlement weighting scenario (green).*

Comparison of Scenarios 2a, 2b, 3a and 3b

Figure 5 allows a side-by-side comparison of the contributions of the highest contributors based on the adopted formula and four scenarios. These are plotted for the first and the most recent financial year.

The adopted formula is shown in red. The blue columns represent split scenarios (light blue for catch-split and dark blue for entitlement-split). The green columns represent weighting scenarios (light green for catch weighting and dark green for entitlement weighting). All four scenarios are combined with a 5-year average and a fishing activity component.

The performance of the scenarios can be assessed by comparing them to the actual contributions indicated by black line markers.

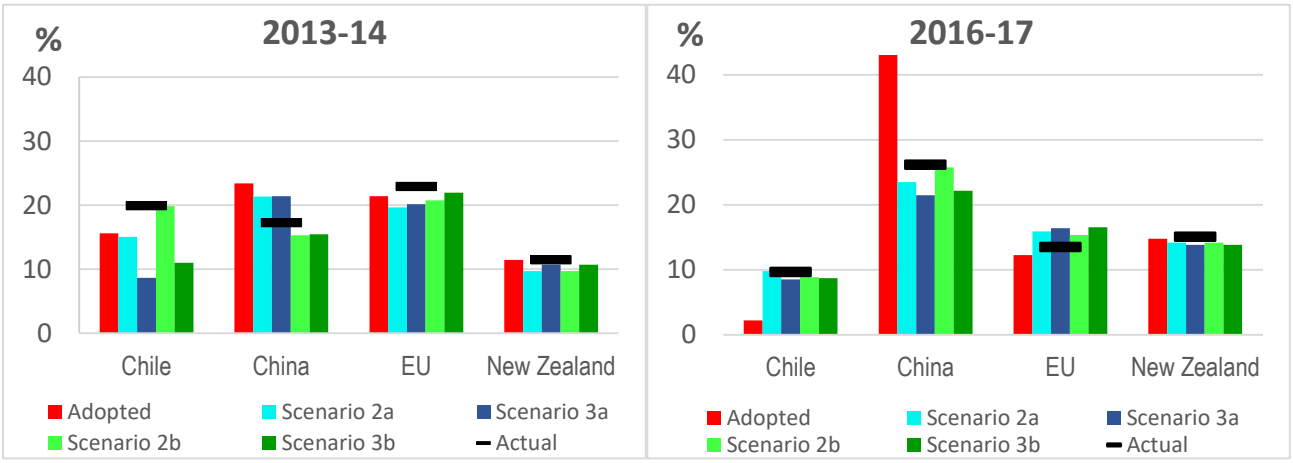

Figure 5. *Comparison of financial contributions in percent of the four main financial contributors for the first and the current financial years, based on the adopted formula (red), (a) the two fishery split scenarios (light blue= catch-split combined, dark blue= entitlement split combined) and b) the two weighting scenarios (light green = catch weighting combined, and dark green = entitlement weighting combined). The actual contributions are indicated by black line markers.*

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9. ANNEX 2. Catches* of in the SPRFMO Convention Area from 2007 to 2015 (in tonnes)

Category	Participants	2015 estimate	2014	2013	2012	2011	2010	2009	2008	2007
Bottom	Australia	216	204	272	374	154	95	107	177	301
Bottom	China									409
Bottom	EU		165				314	2 908	2 442	743
Bottom	New Zealand	1 706	1 224	1 659	1 045	1 707	1 909	1 053	969	1 278
JM	Belize						2 262	5 976	16 349	
JM	Chile	56 805	4 014	6 348	4 337	56 552	110 234	365 071	565 440	326 109
JM	China	29 885	21 762	8 502	13 238	33 528	66 189	117 963	143 182	140 582
JM	Cook Islands									7
JM	Cuba					8				
JM	EU	29 134	21 407	10 390		2 278	68 175	117 924	135	132 603
JM	Faroe Islands						11 747	21 118	25 955	38 700
JM	Korea	5 749	4 099	5 378	5 492	9 377	8 267	14 534	13 568	12 180
JM	Peru		2 557	2 697	5 346	674	40 516	13 326		
JM	Russian Federation	2 606				8 229		9 648	5 187	
JM	Vanuatu	21 249	15 808	15 105	16 261	7 641	46 584	84 843	109 011	120 206
Squid	Chile			22	9	45				
Squid	China	323 636	332 523	264 000	261 000	250 000	142 000	70 000	79 064	46 400
Squid	Chinese Taipei	10 072	4 795	7 759	14 177	35 418	29 206	12 319	31 161	14 750
Squid	Japan						498			
Squid	Korea	7 203	7 203	6 034	8 310	7 410	6 742		804	
Squid	Peru		1 190							

*Catches include both target species and bycatch species

10.ANNEX 3. Catch entitlements* for Jack mackerel and bottom fisheries (tonnes)

Category	Participants	2016 Comm-4	2015 Comm-3	2014 Comm-2	2013 Comm-1	2012 IM	2011 IM	2010 inferred	2009 inferred	2008 inferred	2007 inferred
Bottom	Australia	451	451	451	451	451	451	451	451	451	451
Bottom	New Zealand	2 194	2 164	2 164	2 164	2 164	2 164	2 164	2 164	2 164	2 164
JM	Belize	0	0	0	1 031	896	1 344	1 182	2 507	2 935	2 573
JM	Chile†	44 550	44 550	43 500	37 469	27 888	41 833	86 672	183 738	215 183	188 631
JM	China	29 200	29 200	27 655	29 256	25 443	44 524	66 968	141 969	166 265	145 749
JM	Cook Islands	0	0	0	0	0	0	0	0	0	0
JM	Cuba	0	0	0	0	0	0	0	0	0	0
JM	Ecuador	1 100	1 100	0	0	0	0	795	1 686	1 974	1 731
JM	European Union	28 100	28 100	26 052	31 046	27 099	40 649	65 439	138 726	162 467	142 420
JM	Faroe Islands	5 100	5 100	5 062	5 355	4 657	6 986	11 660	24 719	28 949	25 377
JM	Korea	5 500	5 500	3 580	3 764	3 273	4 910	9 588	20 326	23 804	20 867
JM	Peru	7 400	7 400	4 238	18 636	16 207	24 310	28 262	59 913	70 167	61 509
JM	Russian Federation	15 100	15 100	13 445	19 944	16 526	20 658	36 424	77 216	90 431	79 273
JM	Vanuatu	21 500	21 500	19 966	21 116	18 363	27 545	46,984	99,604	116,650	102,257

* From 2013 onwards actual catch entitlements were used. 2011 and 2012 entitlements were based upon the voluntary limits imposed by the various interim measures (IM). The 2007 to 2010 entitlements were inferred from annual total catches and the average percentage entitlements for 2011 to 2016.

† In the case of Chile, the Secretariat calculated that from 2007 to 2015 it had fished an annual average of about 15% of its catches in the Convention Area, and attributed its high-seas entitlements accordingly.

NOTE: There are no catch entitlements for squid so; therefore, actual catch figures were used. Also, historic demersal actual catches of the EU and China were included.

Years in which Members and CNCPs participated in the SPRFMO fisheries with catcher, reefer or bunkering vessels.

Members	2015	2014	2013	2012	2011	2010	2009	2008	2007
Australia	✓	✓	✓	✓	✓	✓	✓	✓	✓
Chile	✓	✓	✓	✓	✓	✓	✓	✓	✓
China	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cook Islands									✓
Cuba					✓				
Ecuador									
European Union	✓	✓	✓		✓	✓	✓	✓	✓
Faroe Islands						✓	✓	✓	✓
Korea	✓	✓	✓	✓	✓	✓	✓	✓	✓
New Zealand	✓	✓	✓	✓	✓	✓	✓	✓	✓
Peru		✓	✓	✓	✓	✓	✓		
Russian Federation	✓			✓	✓	✓	✓	✓	
Chinese Taipei	✓	✓	✓	✓	✓	✓	✓	✓	✓
Vanuatu	✓	✓	✓	✓	✓	✓	✓	✓	✓
CNCPs	2015	2014	2013	2012	2011	2010	2009	2008	2007
Colombia									
Liberia	✓	✓	✓	✓	✓	✓			
Panama	✓	✓	✓	✓	✓	✓			
USA									

12.ANNEX 5. Contributions by SPRFMO Members since 2013

Financial Contributions	2013/14	2014/15	2015/16	2016/17
Australia	$49 692	$48 914	$47 703	$59 543
Belize	$12 079	$8 295	$5 428	
Chile	$257 811	$133 123	$77 986	$77 986
China	$160 215	$152 481	$181 114	$211 659
Cook Islands	$11 733	$11 078	$8 879	$10 959
Cuba	$12 200	$7 869	$6 168	$7 528
Ecuador			$5 781	$7 266
European Union	$276 721	$153 619	$83 879	$109 043
Faroe Islands	$51 630	$39 429	$22 610	$23 435
Korea	$48 768	$38 497	$40 892	$48 162
New Zealand	$102 706	$124 466	$102 813	$121 899
Peru			$9 941	$26 020
Russian Federation	$32 588	$24 317	$24 540	$24 540
Chinese Taipei	$62 141	$22 724	$20 837	$21 456
Vanuatu	$52 630	$57 434	$45 152	$58 698
Total budget	**$918 069**	**$822 246**	**$818 000**	**$830 000**
Total contributions	**$1 078 284**	**$822 246**	**$683 723**	**$808 194**

China's, Peru's and Vanuatu's first year contributions have been scaled up to 12 months.

NOTE: Total Members' contributions often differed from the total budget due to

(a) new entries of Members during a financial year (2013/14 and 2015/16),
(b) using monies in the accumulated surplus account to reduce contributions (2015-16), and
(c) introducing an "Other contributions" category (2016-17).

13.ANNEX 6. Summary Table: Contribution formulas used by other RFMOs

RFMO	Base	Wealth	Catch	Years assessed	Other measures
CCAMLR	~ 95%		4%	3	Catch weighting 1:5:10
GFCM	10%	35% (GNI/cap)	55%	3	Catch weighting 4:1
NAFO	30%	-	60%	2	10% coastal fee
NEAFC	33%		66%		
NPFC	35%	10%	55%	3	
SEAFO	30%	60% (GNI/cap)		3	10% Fishing Activity fee
SIOFA	10%	30%	60%	3	
SPRFMO	10%	30%	60%	3	
CCSBT	30%		70%		
IATTC	10%		70%	3	10% Fishing Activity fee. 10% Utilisation Fee
ICCAT	Very different. It has multiple base components and assesses contributions based upon combinations of GNP/Cap and total catch/cannery production				
IOTC	10%	40% (GNI/Cap)	40%	3	10% Fishing Activity fee
WCPFC	10%	20%	70%	3	