The Impact of Climate Change on Fisheries in the North Western Waters:

Examining policy, research, and potential mitigation and adaptation strategies

Regulatory and technological challenges for fishing vessels energy transition

Jérôme Jourdain

Union des Armateurs à la Pêche de France

I - Context

- The **Paris Agreement (2015)** brings all nations to undertake ambitious efforts to **combat climate change and adapt to its effects**

- The Paris Agreement requires all Parties to put forward their best efforts through nationally determined contributions (NDCs)

- In 2018, **IMO adopted an initial strategy** on the reduction of GHG emissions **from ships** :
  - to reduce CO_2 emissions per transport work, as an average across international shipping, **by at least 40% by 2030, pursuing efforts towards 70% by 2050, compared to 2008**
  - **total annual GHG emissions from international shipping should be reduced by at least 50% by 2050 compared to 2008**

I - Context

- Global emissions from the **international shipping sector have globally increased since 1990**, hence the IMO's objective of peaking emissions as soon as possible and **reducing them compared to 2008**

- **Where does the European fishing fleet, whose international character of is less marked than that shipping, fit in all of this ?**

- **How EU fishing fleet can succeed his energy transition and reduce GHG emissions ?**

I - Context

- **(1) Presentation of the results from « GESPECHE » study**

UAPF initiated in 2019 a study on the analysis of reports sent to the climate change convention (UNFCCC) on the **evolution of GHG emissions from fishing vessels since 1990 (reference year for the objectives of the Paris Agreement)**

- **(2) Presentation of the results from « JAUGE SKIL FAUT » study**

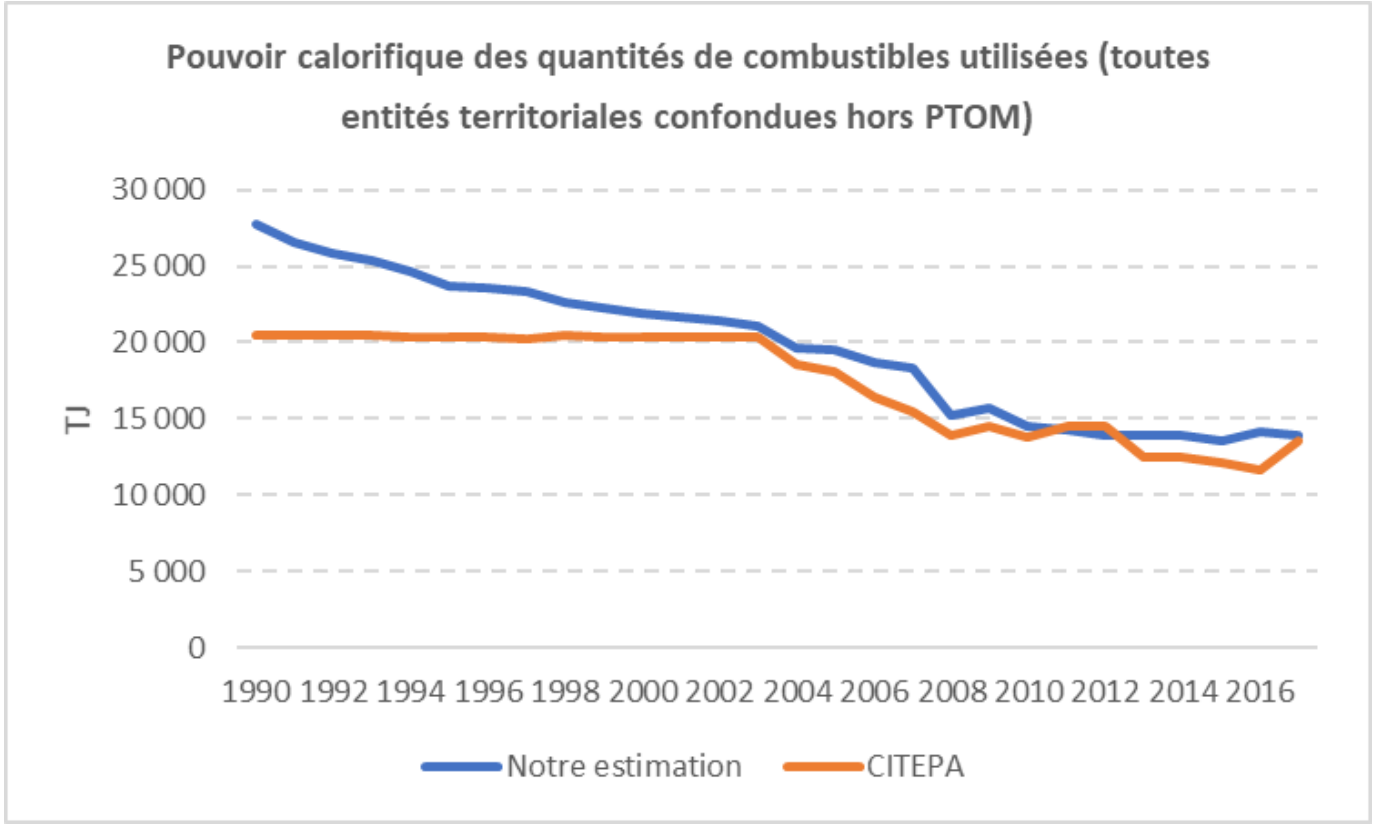
Summary of regulatory changes applicable to fishing vessels within the EU over the past 25 years

FRANCE FILIÈRE PÊCHE

II – Studies : GESPECHE

(GHG emissions from french fishing fleet)

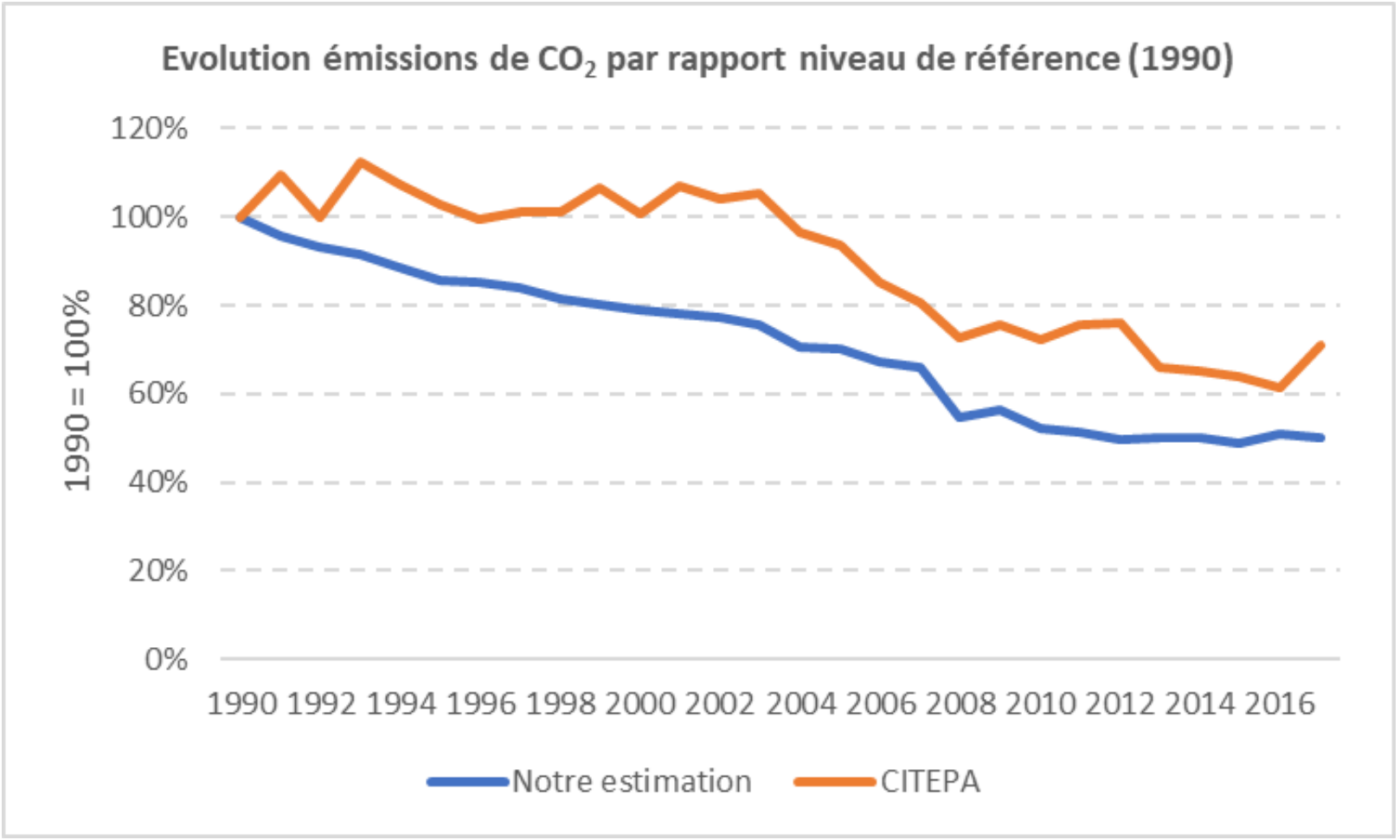
- **2 methods :**
  - **« TOP DOWN » :** consumption of French vessels regardless of their nationality, from purchases on French territory *(method chosen by French administration because of the low contribution of the fishing sector to national emissions (0.3%)* ;
  - **« BOTTOM UP » :** consumption of French vessels based on their level of activity *(method applicable to others European fleets)*



Relatively continuous decline according to our estimates: -50% 2017 compared to 1990

Different reflection with the "TOP DOWN" data: -29% (-40% for 2016)

Consequence of the plateau over 1990 - 2003. During this period Spain (-25%), Portugal (-33%) and UK (-21%) had already fallen



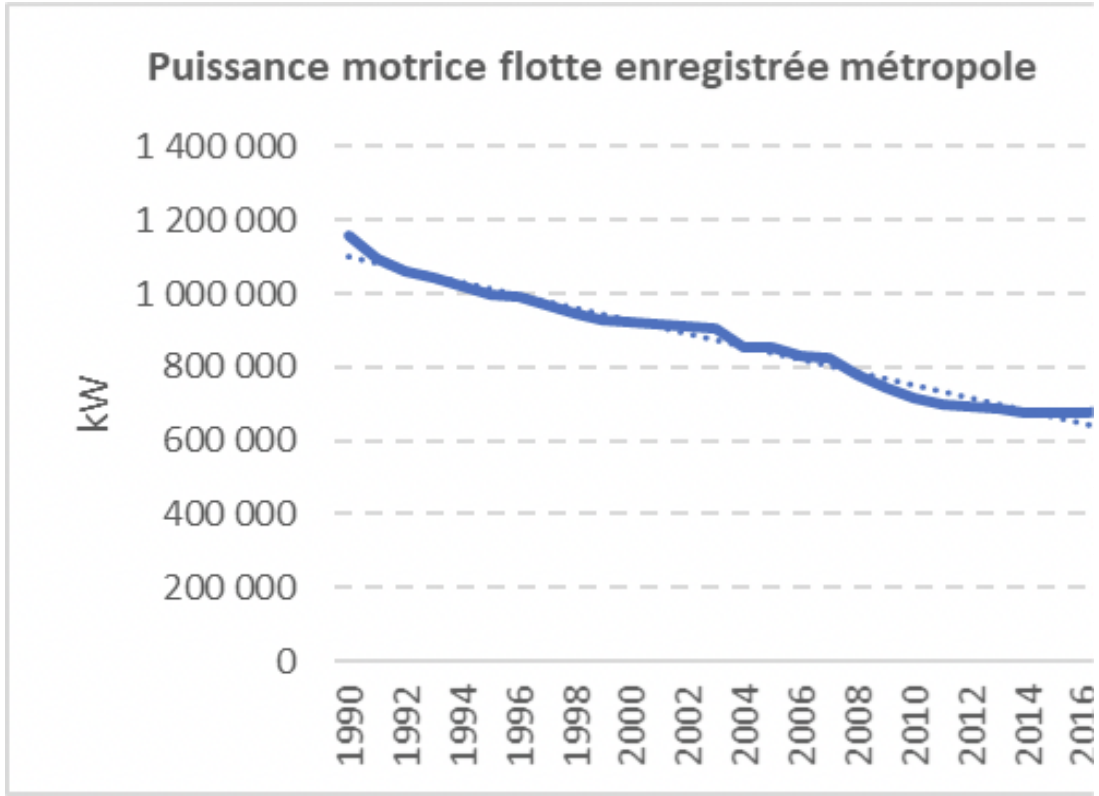
Results of the two methods confirm sharp reductions in the overall levels of GHG emissions from the French fleet, which will enable the reduction targets set by the IMO for 2030 to be reached from 2017.

II – Studies : GESPECHE

(GHG emissions from french fishing fleet)

How this reduction is possible ?

- **EU rules for managing the capacity of the fishing fleet** : in 27 years, the French fishing fleet has lost 41% of its engine power, so that in 2017, engine power was only 59% of the engine power recorded in 1990.



II – Studies : GESPECHE

(GHG emissions from french fishing fleet)

How this reduction is possible ?

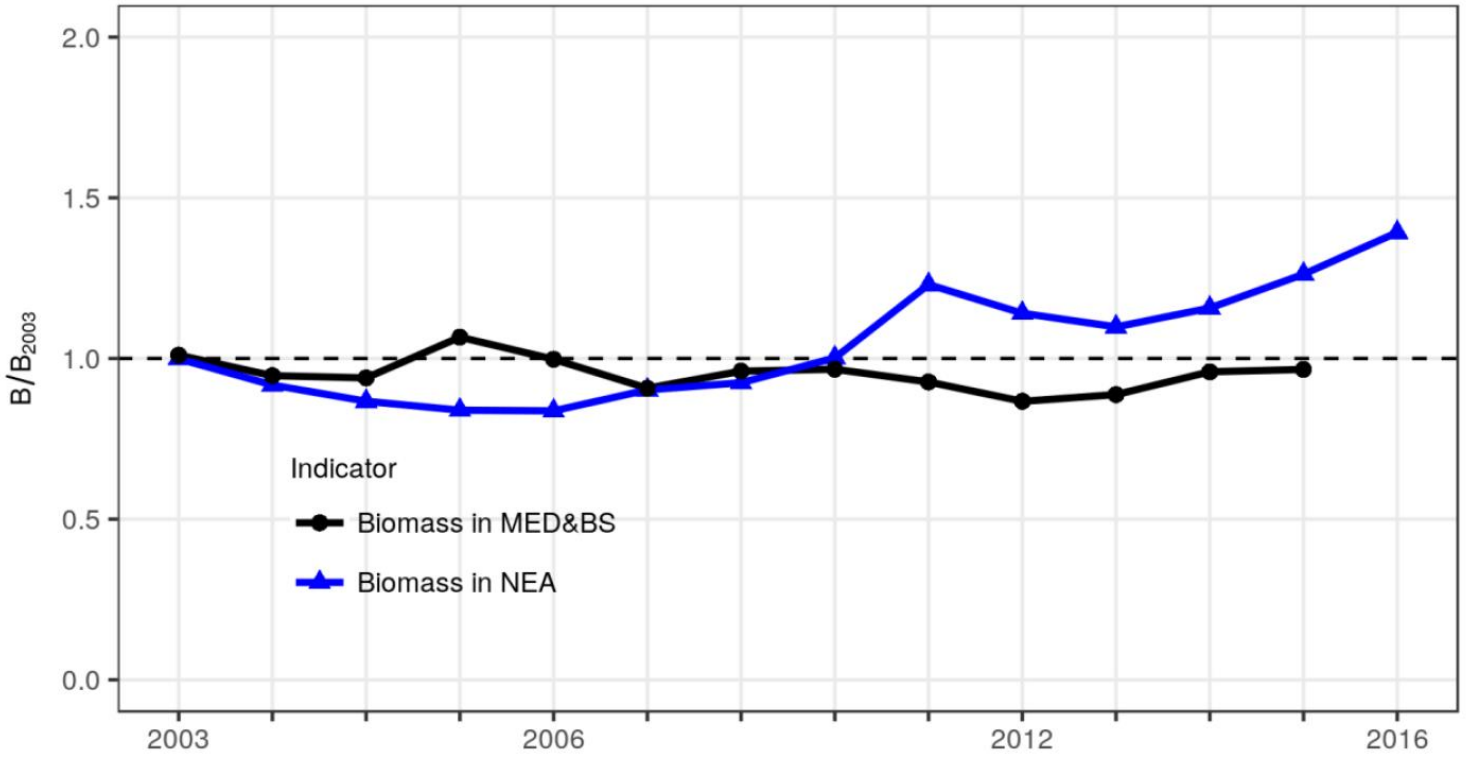
- The number of EU vessels in 2018 was 81 644 compared to 103 834 in 1996 = **22.000 fishing vessels less in 20 years**, only 65.000 remain operational (75% under 12 metres).

- It is undeniable that **technological progress has improved the efficiency of fishing vessels since 1990 :**
  - the **performance of fishing vessels** in quantities caught per quantity of fuel used has improved ;
  - the **increase in biomass of stocks exploited in European waters** visible since 2010 is very probably a second factor likely to support the improvement of the energy efficiency of ships.

II – Studies : GESPECHE

(GHG emissions from french fishing fleet)

- **Various conservation and management measures for stocks exploited** in European waters and **framework for monitoring compliance** with these measures have favored a recovery of stocks, particularly in the North-East Atlantic, with the result increase in exploitable biomass

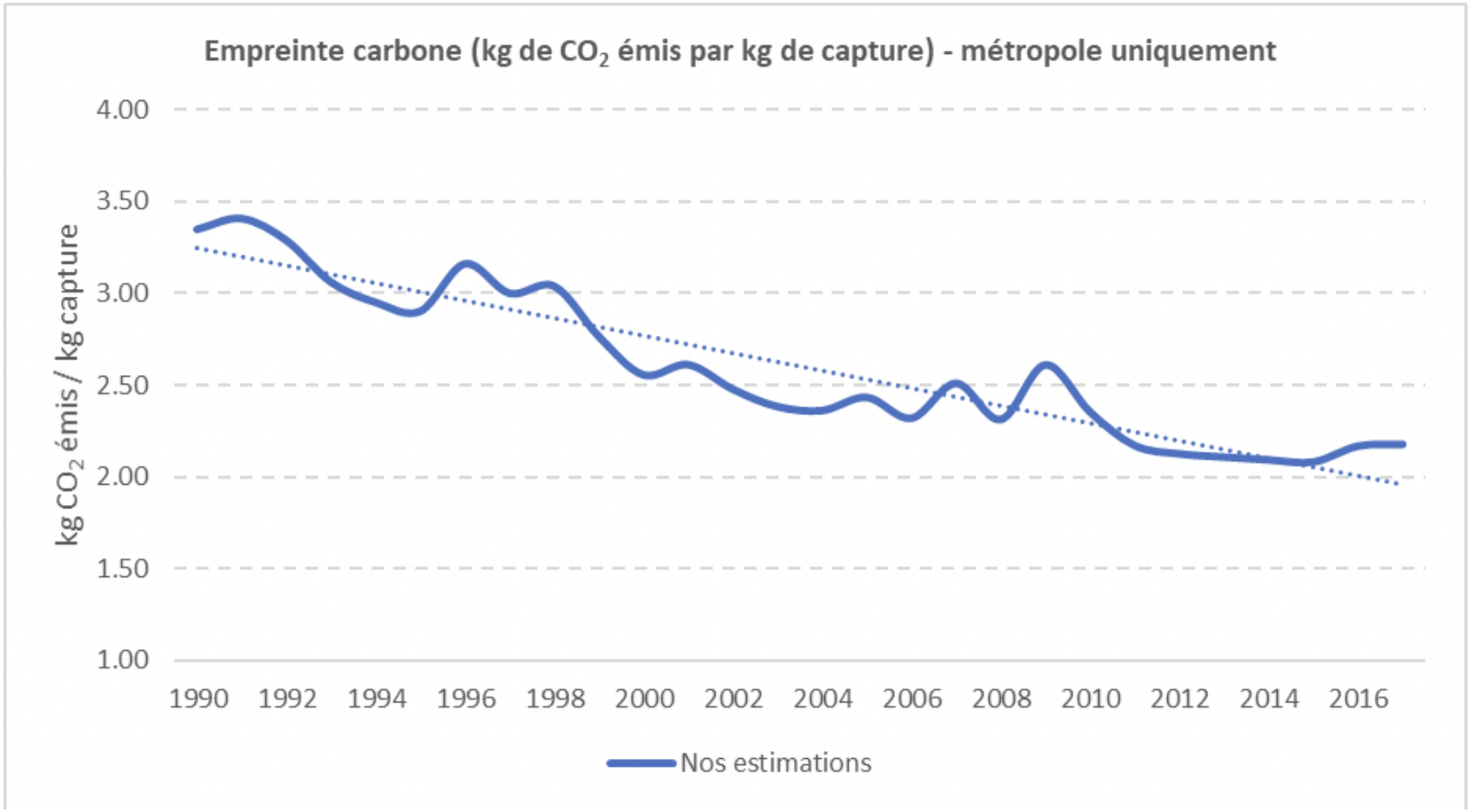


STECF (2018) Monitoring the performance of the Common Fisheries Policy. *STECF-Adhoc-18-01*.

II – Studies : GESPECHE

(GHG emissions from french fishing fleet)

- As a consequence of improving the energy efficiency of fishing vessels, the **ratio of quantity of CO2 emitted / quantity of catches obtained by the French fishing fleet has decreased significantly since 1990.**



II – Studies : GESPECHE

(GHG emissions from french fishing fleet)

- **Should we rely on these results to do nothing ?**
- **How to support the energy transition of fishing vessels which goes beyond global objectives of GHG reduction ?**
- **What are the main obstacles to achieving this ?**

➔ **Study « JAUGE SKIL FAUT »**

II – Studies : JAUGE SKIL FAUT

(impacts of regulations on the Gross Tonnage)

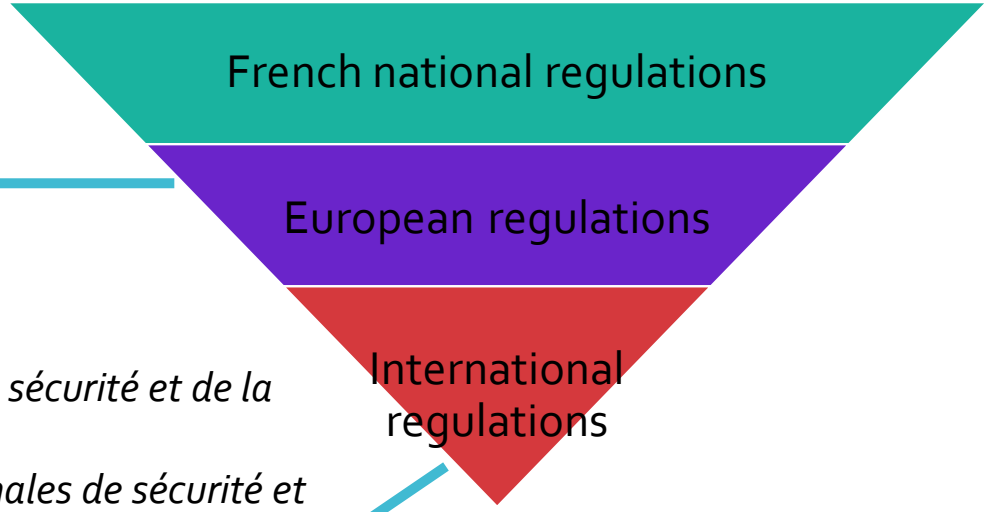
- **Context :**
  - 1992 reform of the Common Fisheries Policy (CFP) : **limitations on the tonnage and propulsive power of EU vessels**
  - The measurement of this volume has not changed for 25 years
  - The need to increase the tonnage for purposes of seeking better profitability, better crew comfort, or to adopt architectures or technologies that minimize environmental impacts, **is in particular not a motivation for which the CFP done right**

- A strong feeling on the part of fishing professionals that vessel tonnage is poorly suited to the economic and technical challenges that arise for the construction of today's vessels

- **JAUGE SKIL FAUT =** Summary of regulatory changes applicable to fishing vessels within the EU over the past 25 years

II – Studies : JAUGE SKIL FAUT

(impacts of regulations on the Gross Tonnage)



- **<u>EUROPEAN REGULATIONS :</u>**

Working condition :

- *Directive 89/391/CEE (amélioration de la sécurité et de la santé des travailleurs au travail)*
- *Directive 93/103/CEE (prescription minimales de sécurité et de santé au travail à bord des navires de pêche)*

CFP :

- *Plan d'orientation pluri-annuel*
- *Directives relative au stockage des rejets*

- **<u>OMI :</u>**

Conventions : *LOAD LINE, COLREG, MARPOL, LSA, TONNAGE London Convention*

Recommandations : *TORREMOLINOS, Recueil des règles de sécurité pour les navires de pêche, Directives facultatives pour la conception navire de pêche, Mesures de sécurité recommandées pour les navires de pêche <12m*

II – Studies : JAUGE SKIL FAUT

(impacts of regulations on the Gross Tonnage)

- Impact of regulatory changes on the Gross Tonnage of some examples of vessels

Catégorie de longueur réglementaire	<12m	12m<L<24m			L>24m	
Type de navire	Chalutier de fond coquiller	Senneur Danois	Fileyeur	Chalutier	Chalutier Surgélateur	Thonier Senneur
Longueur hors tout	11.7 m	21.9 m	18.15 m	21.9 m	54.55m	78.33m
Largeur hors membre	4.7 m	7.30 m	6.95 m	6.64 m	13.0 m	14.7 m
Jauge	21.3 UMS	117.7 UMS	125.2 UMS	132.0 UMS	1491 UMS	2130 UMS
Capacité de cale	14 m3	36 m3	25 m3	62 m3	600 m3	1300 m3
Puissance Propulsive	140 kW	382 kW	335 kW	434 kW	2250 kW	3091 kW

II – Studies : JAUGE SKIL FAUT

(impacts of regulations on the Gross Tonnage)

Catégorie de longueur réglementaire	<12m	12m<L<24m			L>24m	
Type de navire	Chalutier	Senneur danois 21m	Fileyeur 18m	Chalutier 22m	Chalutier surgélateur	Thonier-Senneur

Type d'impact	m3	N/Q	N/A	m3	N/Q	N/A	m3	N/Q	N/A	m3	N/Q	N/A	m3	N/Q	N/A	m3	N/Q	N/A
Division 211 [2]	0.0	2	0	10.0	0	0	7.0	0	0	10.0	0	0	180.0	0	0	200	0	0
Division 213 [3]	0.1	4	4	0.4	0	12	0.3	0	12	0.4	0	12	9.2	1	7	9.9	1	7
Division 215 [4]	2.5	0	7	8.1	0	6	6.5	0	7	5.5	0	6	18.1	0	4	8.2	0	4
Division 218 [5]	0.0	0	6	0.0	0	6	0.0	0	6	0.0	0	6	7.0	0	0	11.0	0	0
Division 226 [6]	0	0	0	0.7	0	3	0.7	2	0	0.7	1	0	0	0	0	0	0	0
Division 227 [7]	28.1	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Division 228 [8]	0	0	0	0	0	0	0	0	0	0	0	0	240.3	0	2	255.9	0	2

Jauge Initiale	21.3	117.7	125.2	132	1491	2130
Jauge après application réglementation	26.9	122.8	129	136.4	1620	2269
Écart (en %)	+26%	+4%	+3%	+3%	+9%	+7%

II – Studies : JAUGE SKIL FAUT

(impacts of regulations on the Gross Tonnage)

- Conclusions of the study are that the changes in the regulations which were analyzed generally have a very different influence depending on the length classes of the vessels :
  - Strongest influences having been identified for, on the one hand, vessels of less than 12 meters, and on the other hand for those of much more than 25 meters)

- These results indicate that the origin of the need for additional tonnage faced by fishing companies which invest, probably does not lie mainly in the need to meet new standards, **but with different needs :**
  - **The current framework does not anticipate the implementation of new technologies (LNG, hydrogen, etc.)**
  - **Does not take into account the search for better energy efficiency that goes beyond the current mandatory standard**

III – Conclusion

REGULATIONS CONSTRAINTS :

- **Management capacities of the GT and power engine**

Both were originally designed to regulate the evolution of capacities supposedly reflected the fishing capacities, and not the emission of GHG

- It is not possible to replace a vessel with a larger one with the same hold capacity, which prevents any attempt to move intermediate to other fuels/propulsion engine

- Large EU fishing fleet and old which could not be replaced immediatly even if the profitability of the flag allowed it

III – Conclusion

TECHNICALS CONSTRAINTS :

- EU fishing companies are continuously devising and implementing creative solutions to save energy
- However, with current technologies, we do not have a direct alternative to fossil fuels, but we are trying to reduce our environmental impact by improving efficiency
- **Lack of mature alternative technologies** or adapted to the size of the fishing vessels *(what can be deployed on shiping vessels cannot necessarily be deployed on fishing vessels)* :
  - Developed technologies : hybrid engine, bulb, hull, propeller, on-board power management,…
  - « Breakup » technologies : LNG, hydrogen, electric engine, etc.

- What logistics for marketing ? In which timetable ?
- How to equip the ports (charging stations, LNG storage, maintenance, crew training, etc.) ?

III – Conclusion

Beware of false good ideas !

- Is the reducing in the speed suitable for fishing ?
- Is fishing less far from the coast a solution ?
- Create XXL offshore MPAs to conserve carbon sinks ?
- Fishing less than MSY levels ?
- Revision of the EU management capacities ? Yes, it is probably necessary, but how ?

To keep in mind

- CO_2 emissions from fishing production indicate a lower impact compared to the production of other animal proteins
- Environmental carbon footprint is even lower considering that wild caught fish does not require land, being artificially fed, use of water supply, antibiotics or pesticides, nor locking up in cages.

THANK YOU FOR YOUR ATTENTION

Email address : jj@uapf.org