

Socio-economic impacts of the Common Fisheries Policy on South and Central Tyrrhenian Sea (GSA 10) demersal trawl fisheries

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Abstract. European and national fisheries policies aim at reverting to a sustainable exploitation of fish resources and to ensure the economic and social sustainability of fishing activities in the medium to long term (Art. 2 of Regulation [EU]No. 1380/2013).

The aim of this study was to assess the socio-economic impact of national and European management measures, implemented in the past ten years, on demersal trawl fisheries in South and Central Tyrrhenian Sea (GSA 10).

An effectiveness and efficiency evaluation was performed to establish whether the objectives of the management policies were achieved (effectiveness) and at what cost (efficiency).

The economic and social effectiveness of the measures of the Italian management plans showed a limited performance, particularly in economic terms, due substantially to reduced landings, increased operating costs and reduced labour productivity. The efficiency assessment, which involved analysis of the results of the EU cohesion policy financed by the structural funds, demonstrated that despite the considerable financial outlay the measures failed to mitigate the economic and social impact of the Common Fisheries Policy.

Keywords: Common Fisheries Policy, Socio-economic impact, demersal trawl fisheries

1 Evolution of the main demersal trawl fisheries management measures

In 1982, Act of 17 February 1982, No. 41, approving the “Plan for the rationalization and development of marine fisheries”, introduced a first comprehensive framework for the management of fishing activities. Forty years on, the objective of Art. 1 – to promote the rational utilization and enhancement of marine biological resource through an equal development of sea fishing – is still topical. The Act laid the foundation of a system based on effort regulation, an approach that has been considered as the most appropriate for its features of Italian as well as Mediterranean fisheries and which has characterized their management for several decades (Caddy, 2009). However, the current state of demersal resources demonstrates that effort management through input measures has failed to achieve the expected results (Vielmini et al., 2017; Colloca et al., 2017). The adoption of input control measures, which include control of the fishing capacity, can

lead to various disadvantages in comparison to regulation through output control; the main disadvantage is that it only addresses one of the components that determine fishing mortality, i.e. capacity. In this case, operators would be inclined to replace the regulated factor with those not subject to control for example by increasing the level of technology used in order to improve catches and reduce the time they require (overcapitalisation and increasing of vessel “catchability”) (Sabatella R.F, 2011). That approach is now being criticized by the scientific community and the introduction of measures based on output, like the quota system, are suggested also in the Mediterranean Sea (Cardinale et al., 2017).

The entry into force of Council Regulation (EC) No. 1967/2006 “Concerning management measures for the sustainable exploitation of fishery resources in the Mediterranean Sea” and of Regulation (EC) No. 1198/2006 was followed in 2008 by the adoption of a new approach based on Management Plans, which the Mediterranean Member States were required to adopt for a number of fishing activities in their waters. The aim of the European Commission was to introduce a national and EU-level multiannual management plan system combining effort management and specific technical measures based on a decentralized decision-making process (Sabatella E. C. et al., 2017).

The Malta MedFish4Ever Ministerial declaration on the protection of Mediterranean fish resources (30 March 2017) accelerated the adoption of management measures for Italy’s demersal stocks. The declaration laid down a detailed work programme for the next 10 years, including the objective of ensuring proper data collection and enhancing the knowledge on stocks to achieve sustainable management of stocks. In June 2019, Regulation (EE) No. 2019/1022 established a multiannual plan for the fisheries exploiting demersal stocks in the western Mediterranean Sea. The first five years of the plan envisage a substantial reduction of fishing activities in terms of days at sea.

2 Economic and social sustainability

The evaluation of the socio-economic impacts of the Common Fisheries Policy (CFP) on demersal trawl fishing in GSA10 was conducted by selecting appropriate indicators to analyse the economic, social and labour productivity dimensions. The selected indicators are those used in the Italian Management Plans and in Impact Assessment concerning the Commission's proposal for the 2012 reform of the Common Fisheries Policy ((EU COM (2011)) to evaluate if the objectives have been reached or not.

In particular, the economic sustainability is oriented to increase the long-term resilience of the sector and to encourage fishing on species that produce high price commodities ((EU COM (2011)). The economic indicators included: a) medium and long-term profitability in terms of gross profit margin; b) short-term profitability in terms of the ratio of current revenues to break-even point (CR/BEP) and in terms of the value of production and average landing prices, which provide valuable information on market and production trends.

The social sustainability could be reached increasing the quality of employment (wages, safety and working conditions), making the sector an attractive source of

employment and giving alternative development options to coastal communities ((EU COM (2011)). The assessment of the social dimension was performed in terms of social stability by using the average cost of labour per employee and employee number. The importance of this indicator relies on the fact that labour remuneration provides purchasing power to the society at large. To this aim it is important to assess if the sector under consideration (the fishing sector in this case) is paying “the right level” of wage to workers. Finally, labour productivity was assessed in terms of gross value added/full-time equivalent (GVA/FTE), which provides information not only on the economic growth and competitiveness of the sector, but also on employee wellbeing. The indicators used for the analysis are listed in table 1.

Table 1. Indicators used for trend analysis

Dimension	General aim	Indicators
Economic	To promote the profitability of the fishing industry	Gross profit margin (medium to long-term indicator)
		CR/BEP (short-term indicator)
Social	To improve sale channel and ex-vessel prices	Value of landings
		Value of landings/volume of landings
Productivity	To promote social stability	Cost of labour/employee
		Number of employees
Productivity	To increase labour productivity	Gross value added/number of full-time employees (GVA/FTE)

Analysis of the trends of the indicators highlighted a substantial decline of long-term profitability (figure 1); the gross profit margin and short-term profitability (CR/BEP) showed a slight improvement in the last few years of the series even though they failed to return to the values they had reached before the crisis of 2008. The profit reduction that affected the sector, particularly demersal trawl fisheries, is not merely the consequence of reduced average production, but can also be ascribed to exogenous factors such as increased production costs and sales system in efficiency, which underpin the ever-widening gap between production and consumption prices, all to the benefit of intermediaries (Maiorano, 2019). The shrinking employment figures have affected demersal trawl fisheries in a generalized manner. Notably, the loss of job has been associated with a limited increase in average labour costs, while GVA/FTE highlights a persistently low productivity (Coppola, 2019).



Fig. 1.– Demersal trawl fishery indicators, GSA 10

3 Evaluation of the effectiveness of the measures envisaged by the Italian national management plans

The sustainability objectives – not only environmental but also economic and social – are key elements of the national management plans for Italian demersal trawl fisheries. The earliest plans for these fisheries were implemented in 2010 (Director's Decree No. 44 of 17 June 2010; MiPAAFT, 2010) and were subsequently updated and implemented in 2011 (Director's Decree of 6 September 2011; MiPAAFT, 2011). Although the first generation of management plans for demersal trawl fisheries should have covered the period 2011-2013, they were extended several times and remained in force until 31 December 2017. The chief measure envisaged by these plans was capacity reduction through vessel decommissioning associated with a range of technical measures like temporary cessation and technical stops, to reduce stock exploitation and promote sustainability. The Director's Decree of 30 January 2018 introduced a new generation of management plans (2018-2023; MiPAAFT, 2018) to address the overexploitation of the remaining stocks, some of which were in even worse condition than before the introduction of the first-generation plans. Again, the measures were substantially based on effort reduction as measured by days at sea. Either generation of management plans

set general objectives both for the economic and the social dimension that were to be achieved via specific objectives in the framework of an integrated management and overall sustainability approach. The economic and social objectives set by the plans are reported in table 2.

Table 2. General and specific objectives set by the two generations of demersal trawl fisheries management plans (MPs) for the economic and social dimension

MPs	Dimension	General objectives	Specific objectives
2011-2017	Economic	To improve the economic status of fisheries workers	1. To keep fishery profitability above the inflation rate
	Social	To maximize employment opportunities in fisheries areas	1. Based on the biological targets, to develop job opportunities in fisheries-related activities
2018-2023	Economic	To promote a profitable fishing industry	1. To increase fleet profitability 2. To ensure that current revenues exceed break-even revenues
	Social	To mitigate the social impacts of effort reduction	1. To keep the cost of labour at the guaranteed minimum wage 2. To preserve current FTE employment levels

3.1 Evaluation of the effectiveness of the management measures

Within management policy impact assessment (IA), the ability of a measure to meet management objectives through the management plans is defined as effectiveness. The latest EU guidelines (EC, 2009; COM, 2015) regarding IAs require ex-ante and ex-post evaluation of management measures in terms of effectiveness. Some recent studies have tried to adapt these guidelines to EU-wide fisheries management and have proposed specific indicators –the Target Effectiveness Indicator (TEI) and the Limit Effectiveness Indicator (LEI) –to evaluate the effectiveness of CFP socio-economic measures (Malvarosa et al., 2019). The LEI and TEI have recently been employed to assess management measure effectiveness in the framework of the integrated management of coastal areas (Gambino et al., 2016). At present, the ex-post evaluation of results can only be performed for the 2011-2017 plans, since those that came into force in 2018 (and were updated in January 2019) have not yet produced measurable results due to the lack of relevant data. The reference points (RPs) laid down for the first-generation plans should be considered as threshold values (LRPs, Limit Reference Points) and are best analysed by the LEI, which allows assessing whether and to what extent an objective has been met and involves a comparison with baseline data, to provide a measure of the direction of change.

Table 3. Range and interpretation of LEI (Limit Effectiveness Indicator) values

LEI	LEI value	Interpretation
LEI=A/B <i>A=indicator/reference point</i> <i>B=indicator/baseline</i>	LEI=-1	Worse than both the baseline condition and the reference point
	LEI=0	Better than the baseline condition but worse than the reference point
	LEI=1	Better than both the baseline condition and the reference point

Source: Processing of SOCIOEC data (2015).

One or more indicators were developed for each specific objective to measure their achievement. Two indicators identified for two specific objectives, respectively the economic dimension and the social dimension, and their RPs (the % variation on baseline, calculated as the average value of the indicators in 2004-6) are reported in table 4.

Table 4. Dimensions, specific objectives, indicators and reference points for the demersal trawl fleet as envisaged by the 2011-2017 national management plans for GSA10

Dimension	Specific objective	Indicator	Baseline	Reference point
Economic	To improve fishing fleet profitability	Gross profit per vessel (€)	68,700	+86%
Social	Based on the biological targets, to develop employment opportunities in fisheries-related activities	Cost of labour per employee (€)	27,500	+39%

Source: Processing by NISEA of MiPAAFT data (2011).

For the ex-post evaluation of the socio-economic effects of the management plans 2011-2017 on GSA 10 demersal trawl fisheries, the indicators were calculated and compared to their RPs at three time points of the reference period: 2010, the year the plans were drawn up (baseline); 2013, their intended expiry date; and 2017, the last effective date after the repeated extension of the plans, and the year the second-generation plans were drawn up. The results of the evaluation using the LEI are reported in the next table.

Table 5. Ex-post evaluation of the economic and social effectiveness of the measures of the national management plans 2011-2017 on the demersal trawl fleet operating in GSA 10 using the Limit Effectiveness Indicator (LEI)

Year	Economic dimension Gross profit/vessel (€)				Social dimension Cost of labour/employee (€)			
	Baseline	LRP	Outcome	LEI	Baseline	LRP	Outcome	LEI

2010	68,700	127,782	47,399	-1	27,500	38,225	13,980	-1
2013	68,700	127,782	16,349	-1	27,500	38,225	11,309	-1
2017	68,700	127,782	49,796	-1	27,500	38,225	10,669	-1

Source: Processing by NISEA of MiPAAFT data (2011) and National Fisheries Data Collection Programme 2010-2017.

The consistently negative LEI (-1) reflects poor economic and social sustainability and shows that the management plans did not perform well in GSA 10 (table 5).

The management plans 2018-2023, as updated in January 2019 (MiPAAFT, 2018), aim at reducing mortality from fishing (F) in direct proportion to the percent reduction of fishing capacity (2018) and effort (2019-2020). At variance with the first-generation plans, the new plans provide for ex-ante evaluation of the effectiveness of the measures through a simulation of their biological, economic and social effects both in 2020 (the end of the first period of plan implementation and the year when measure effectiveness is to be evaluated) and in 2023 (final year of plan validity).

Table 6. –Expected values of the economic and social indicators in 2020 and 2023 and comparison with current situation (demersal trawl fisheries, GSA 10)

Trawlers 06-24m GSA10	Average value 2013-15				2020				2023			
	Gross profit margin	CR/BEP	Cost of labour/FTE	FTE	Gross profit margin	CR/BEP	Cost of labour/FTE	FTE	Gross profit margin	CR/BEP	Cost of labour/FTE	FTE
Scenario 0 Status quo	-3.08	0.95	11,107	660	7.61	1.30	11,919	648	7.67	1.30	11,913	648
Scenario 1 F-5%					11.64	1.45	16,270	456	22.83	1.85	16,188	315

Source: MiPAAFT (2018).

According to the ex-ante evaluation (table 6), the management plans 2018-2023 should achieve a fairly satisfactory economic performance, since all the economic indicators included in the simulation show an improvement compared to 2015. As regards social sustainability, the number of FTE jobs is expected to decline as a result of fishing effort reduction.

4 Evaluation of the efficiency of the management measures envisaged by the Italian national management plans

The IA of structural fund efficiency is directed at establishing the adequacy of the public resources allocated to support the sector, i.e. whether the desired effects have been achieved at a reasonable cost (European Commission, 2004).

The final results of the two most recent (expired) programmes, FIG 2000-2006 and EFF 2007-2013, are summarized in the next two paragraphs.

4.1 Evaluation of the FIG 2000-2006 Programme

Within the FIG 2000-2006 programme Italy spent a total of €934 million, accounting for a utilization rate of 88%; about 25% was used to finance the adjustment of the fishing effort (Priority axis I). The performance indicators identified for the evaluation

of the FIFG displayed a positive trend (table 7). However, the increment of value added per employee was affected less by improved productivity than by the job cuts in the sector, which in 2000-2006 were particularly harsh.

Table 7. - Indicators and results of the evaluation of the impact of the FIFG 2000-2006 programme

Indicator	Baseline	Target	Results on 31/12/2006
Value added per employee in the fisheries sector	€19,000	20% increase	€31,000
% Coverage of domestic sea-food consumption with farm products	9.8% (value)	15% in value	12% in value
(value and quantity)	16.3% in quantity	20% in quantity	19% in quantity
% Coverage of domestic sea-food consumption with pre-served products	14.9% in value	18% in value	16% in value
	9.1% in quantity	13% in quantity	11% in quantity (2003)

Source: MIPAAF, EFF Operating Programme (updated April 2010)

Overall, the FIFG measures directed at the fleet proved effective to the extent that they contributed to speed up the capacity reduction, thus making the measure more “acceptable” despite the fact that it affected jobs and social conditions in several areas.

4.2 Evaluation of the EFF 2007-2013 Programme

At the end date, the total public outlay accounted for more than €710 million in terms of commitments, equalling 93% of the Operative Plan budget; payments were about €690 million, equal to about 97%. Approximately 44% of all funds were used to finance Axis 1 measures; the cost of permanent cessation was about €166 million.

According to the European Commission’s ex-post evaluation (European Commission, 2017) the measure involving permanent cessation was inefficient, because the objective of reducing overcapacity could have been reached by other management measures. The compensations envisaged for temporary cessation are also considered inefficient, because they were provided as a partial mitigation of the consequences of protracted stops. Only about 1600 fishers received socio-economic compensations in Italy. The figure was lower than expected and was due partly to the limited attractiveness of the sector to young fishers, to fishers’ age, to the lack of real diversification opportunities and to the availability of other EU funds financing retraining.

According to OpenCohesion data on the EFF impact on employment, the EU-level targets were not achieved (table 8).

4.3 Table 8. Fisheries employment levels outcome indicators (OpenCohesion)

Outcome indicators*	EU target value	Italy target value	Final value
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FLAG jobs created	4,619	1,920	139
Fisheries jobs created	6,930	3,200	111
FLAG jobs maintained	26,530	23,099	355
Fisheries jobs maintained	52,437	32,400	2,860

Source: <https://cohesiondata.ec.europa.eu/2014-2020/ESIF-2014-2020-Achievement-Details/aesb-873i>

In general, jobs declined sharply during the EFF programming period (European Commission, 2017). The fact that the funds were channelled towards Priority axis 1, especially permanent cessation, clearly contributed to the job loss. The ex-post evaluation of the EFF highlights Priority axis 4, concerning the sustainable development of fisheries areas and the creation of fisheries local action groups (FLAGs). According to the “Study on the implementation of Axis 4 of the European Fisheries Fund” MARE/2011/01, Axis 4 seems to have contributed to preserve about 9,000 jobs and to create 6,000-8,000 more, although these data disagree with those of the EU OpenCohesion database. In Italy FLAGs began operating late; therefore, at variance with other Member States like Spain, they did not exert favourable effects on employment figures on fisheries value added.

It may thus be concluded that, as demonstrated by the indicators, the socio-economic impacts of the CFP have not been mitigated by the measures funded by the EU despite the substantial outlay of the structural funds.

5 Conclusion

Eight years into the CFP and almost 10 since the adoption of the first national management plans for demersal trawl fisheries, the Mediterranean fish stocks are still exploited above the maximum sustainable yield (Stecf, 2017). The consistent overfishing is due to excessive effort. As a result, in the past 20 years the Italian fishing sector has undergone a reduction of fleet capacity and fishing effort, which has resulted in considerable job cuts. The 2018 update of the management plans for demersal trawl fisheries has also introduced effort regulation as the main technical measure.

The outcome of these policies has been a marked reduction in the volume and value of production in all areas from 2004 to 2017 (Maiorano, 2019). The reduced production is due to the effort reduction as well as to economic factors (incidence of the energy cost), social problems (difficulty in finding specialized workers) and ecological issues (probable increase in the actual effort due to greater vessel efficiency and to increased fishing effort by the other Mediterranean fleets).

Effort rationalization has not enhanced profitability for the remaining demersal trawlers.

The ex-post evaluation of the economic and social effectiveness of the measures of the national management plans 2011-2017 demonstrated their poor effectiveness, particularly in the economic sector. The negative value of the LEI is to be ascribed to the use of high RPs and to a general deterioration of the profit indicators, due essentially to reduced catches and labour productivity and to increased operating costs.

The ex-ante efficiency evaluation of the second-generation management measures (2018-2023) leads to expect a marked reduction in FTE jobs, particularly in 2023, due to the progressive reduction of days at sea.

As regards the support provided by the structural funds, the sums allocated for permanent and temporary cessation and socio-economic compensations have proved inefficient and have not improved fishers' conditions despite the substantial outlays.

One of the factors hampering the achievement of the biological, but also economic and social, sustainability targets is the poor sharing of objectives among management bodies (European Commission and national and regional administrations). The modes of management plan implementation should lead to the creation of a body with specific roles and responsibilities in plan management, surveillance and monitoring. The governance should be inspired to recent approaches in this field, especially as regards co-management and responsive management, with a broader stakeholder involvement in management, surveillance and monitoring.

A further obstacle hampering the recovery of the sector is the poor fisher and owner awareness of the changes that have affected fisheries in the past few years; this results in their limited ability to address and adjust to such changes by adopting a more entrepreneurial stance based on continuous training and a greater use of investment. The levels of activity are progressively declining, also due to the adoption of the recent management measures (national and multiannual management plans); average productivity is slightly improving, but it will be able to achieve levels that ensure economic sustainability only if it is accompanied by a consistent effort reduction. The direct effects of these changes will be lower employment levels in terms of FTE; since the cost of labour is proportional to revenues, due to the widespread application of profit-sharing contracts, incomes may increase only in presence of increased daily value added. In Italy, several local operators have adopted quality labels, have created or strengthened the role of Producer Organizations or have undertaken direct sale, thus promoting commercial strategies that improve the traceability and quality of fresh local products. However, the distribution network and sales system is still inadequate and inefficient, also due to fishers' typical business risk aversion and to the near absence of training opportunities directed at upgrading their skills, which would enable the adoption of new sales technologies, like the exploitation of digital markets.

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