



REFORMING HARMFUL FISHERIES SUBSIDIES: MAKING THE ECONOMIC CASE FOR MEXICO

Background

Negotiations on fisheries subsidies in the World Trade Organization (WTO) are a unique opportunity to conclude an effective, global agreement to end the trade distortions and environmental damage caused by harmful fisheries subsidies, securing healthy fisheries and sustainable livelihoods for the people who depend on them. WTO members have made a commitment to fulfil UN Sustainable Development Goal 14.6¹ by adopting an agreement on comprehensive and effective disciplines on harmful fisheries subsidies by the end of 2019. A WTO agreement would provide a global framework for national fisheries subsidies reforms.

The need to reform harmful fisheries subsidies has been part of the WTO agenda since the Doha Round began in 2001. In 2009, nearing the 7th WTO Ministerial Conference (MC7), the Chair of the Negotiations Group circulated a draft document outlining rules for disciplining fisheries subsidies. Several developing countries reacted by primarily arguing a right to develop their fisheries and a responsibility to coastal communities dependent on subsidies to make a living.

In this context, at national level in Mexico, WWF started a series of dialogues with academics, the fishing sector, and the government. Reaching agreement on the harmful effects of certain types of fisheries subsidies proved difficult with representatives from both the government and the fishing sector at the table. However, the data was irrefutable and presented a consistent message, namely that there is no evidence to prove that fisheries subsidies are helping Mexico develop its industry. In fact, catch levels have remained constant for the last two decades while the number of vessels has increased, which means the industry is less productive per vessel and workers make less money.

¹ UN SDG 14.6 states that "By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation."

A report by the Organization for Economic Co-operation and Development (OECD) found subsidies that reduce the cost of fishing through financial support for fuel, gear, or bait expenditures, are the most likely to increase both legal and illicit fishing effort, potentially leading to stock depletion (Martini and Innes, 2018). Furthermore, these subsidies tend to favor fishers with greater extractive capacities, often at a cost to smaller scale fishers. According to the same OECD report, alternative programs designed to help the operational or business skills of fishers have less impact on effort and deliver benefits to a wider range of participants in the fishery.

An overview of fisheries subsidies in Mexico

Information on fisheries subsidies in Mexico can be compiled from the *Rules of Operation*, which is published annually. According to this data, fisheries subsidies in Mexico are in the order of US\$ 100 million² a year and represent about 80% of the total amount the government budgets for fisheries. The agency that administrates the funding is Conapesca, which is part of the Ministry of Agriculture and Livestock (Sagarpa)³. In 2018 the Conapesca budget was US\$152 million a year, of which US\$ 118 million were delivered as subsidies. Congress allocates the total budget to Conapesca and the *Rules of Operation* are defined by Sagarpa, so the amounts and types of subsidies are not defined entirely by Conapesca.

While information available for each subsidy program might not be directly comparable year to year, it is possible to follow the evolution of subsidies by grouping them according to type of expenditure. In this paper we have identified six main types of subsidies: fuel, modernization, buy-backs, Propesca, infrastructure and studies, and other subsidies. Modernization and fuel are the largest, apart from the category of other subsidies, with marine diesel and artisanal gasoline making up the fuel subsidies group.

Table 1. Composition of fisheries subsidies in Mexico 2014-2016 (Thousand Dollars) ⁴

Type of Program	2014	2015	2016	Total	% Total
Modernization ^a	26,995	18,405	22,248	67,647	21%
Buybacks ^b	1,091	438	849	2,378	1%
Propesca ^b	5,421	10,456	14,930	30,807	10%
Infrastructure and studies ^b	7,759	14,717	6,476	28,952	9%
Fuel ^a	11,105	19,043	18,261	48,408	15%
Other subsidies ^c	53,167	39,906	49,209	142,282	44%
TOTAL ^c	105,538	102,964	111,973	320,475	100%

Sources: (a) Cota-Leal and Rolón-Sánchez (2018); (b) Sagarpa annual report (Informe de Labores); (c) Total subsidies were obtained from Causanatura and the amount of other subsidies is the difference between Causanatura reported total subsidies and government reported subsidies under the other named categories.

² All values throughout the document in Mexican pesos were converted to United States dollars using March 2019 conversion rates from Banco de México (Banco de México, 2019).

³ Since December 1st, 2018 the Ministry of Agriculture and Livestock changed to SADER. Given that all figures of this document are previous to this date, the report will continue using the acronym of SAGARPA.

⁴ Causanatura reported total subsidies may differ from government sources, depending on which categories of "other subsidies" are considered subsidies or not. Mexican government sources might not include some of these categories when reporting a total subsidies amount, considering them not to be subsidies. The following subsidy categories are included in the total amount reported by Causanatura: Fuels, Modernization, Propesca/Bienpesca, Capacity Building, Buybacks, Marketing and Processing, Aquaculture Development, Infrastructure and Studies, Administrative and Management Projects, Compliance, Supply Chains, Promoting Seafood Consumption, and a category of No Information.

Modernization - Industrial fleets receive 70% of the budget for modernization, and of this amount government programs allocate half for updating engines, repairing or renovating vessels, installing modern navigation systems, and improving fishing gear. The rest of the budget is allocated to the artisanal fleet, mostly for engine replacements. The installation of satellite tracking systems in the artisanal fleet would be an example of a modernization subsidy which could serve to increase safety at sea and make enforcement easier. However, these programs receive less than 1% of the total amount of subsidies dedicated to modernization.

Table 2. Evolution and composition of subsidies for modernization from 2014-2016 (Thousand Dollars)

Type of Program	2014	2015	2016	Total	% Total
Improvement of industrial vessels	18,897	14,490	14,011	47,398	70%
Engines for artisanal boats	6,681	3,620	5,013	15,314	23%
Exchange of old for new artisanal boats	1,331	218	2,801	4,350	6%
Installation of satellite systems	67	0	337	404	1%
Installation of refrigeration systems	18	77	86	181	0%
TOTAL	26,995	18,405	22,248	67,647	100%

Source: Cota-Leal and Rolón-Sánchez (2018). "Pescando Datos: Análisis del ejercicio de los subsidios para combustibles y modernización de la flota pesquera en México." Pescando Datos.

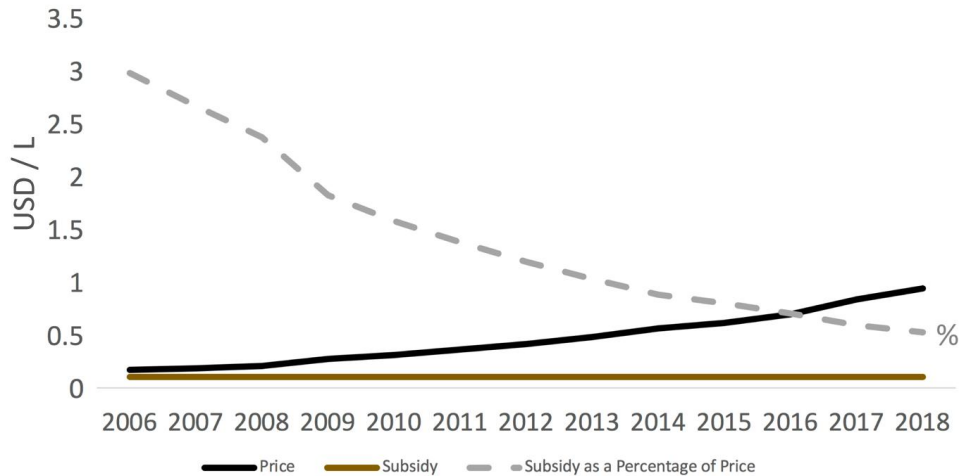
Buybacks - Fishing effort following a buyback of licenses and/or vessels can increase unless safeguards are put in place to prevent new entry, reentry, and the reinvestment of buyback funds to expand capacity (Curtis and Squires 2007). In Mexico, the limitation on number of vessels is not strict and it remains possible to get a new permit years after disposing of a license or vessel through a buyback. This situation, in addition to the fact that there are buybacks every year, turns the practice into a modernization scheme where the money obtained for buying a "lemon" could be used for securing a new vessel with more fishing capacity. The amount disbursed in buybacks dropped from about US\$6.3 million a year in each of 2009 and 2010 to an average of about US\$1 million a year from 2012 to 2014.

Propesca⁵ - The program "Propesca" was created in 2014 as a way to support low-income fishers who are affected by a new regulation, seasonal closure, no-take-zone or a contingency that considerably affects their income. In order to receive this support, fishers are required to attend training courses on best management practices, commercialization, fishing regulations, sanitary best practices, labor security, development of sustainable fishing gear, fishing regulations, corporative organization, aquaculture reproduction practices, or participation in genetic and diversification research. Upon completion of courses, each fisher or aquaculture related applicant can receive up to US\$412 a year. Yearly amounts disbursed through the program increased after 2014 and currently make up about 10% of fisheries subsidies. In 2018, the government disbursed US\$12 million to approximately 31 thousand fishers in 20 states (Conapesca, 2018b).

⁵ Starting in April of 2019, "Propesca" will come into effect under the new name "Bienpesca". Bienpesca is a subcomponent of the new administration's strategy to increase fishing productivity. Bienpesca will still function as Propesca did, offering the same monetary support to fishers who attend training courses. https://conapesca.gob.mx/wb/cona/rop_2019_componente_impulso_capitalizacion

Fuel Subsidies - There are two ways fuel subsidies are disbursed: 1) as artisanal gasoline, which is used by small scale fishing vessels; and 2) as marine diesel, which is used by industrial vessels. The subsidized share of fuel prices fell from 60% per liter in 2009 to 11% just one decade later.

Figure 1. Evolution of the amount of subsidy per liter of fuel (marine diesel)

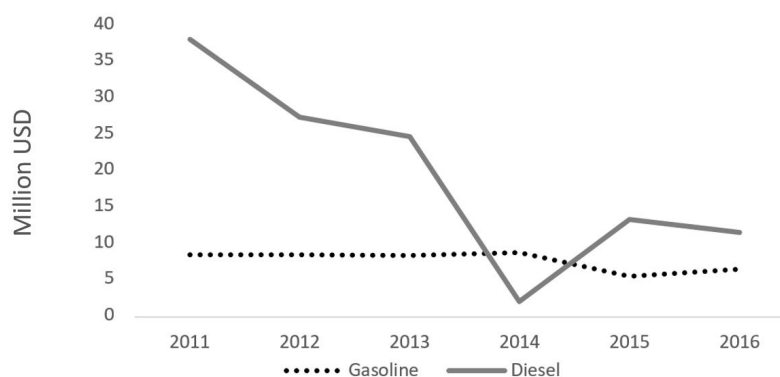


Sources: Diesel prices from 2006 to 2015 are obtained from (SIE, 2018). Diesel prices from 2016 are obtained from (PEMEX, 2018). Diesel prices from 2017-2018 are obtained from (Comisión Reguladora de Energía, 2018). Consumer Price Index (CPI), for analyzing real and nominal prices, are obtained from (Banco de México, 2018).

Not all fuel used in fisheries is subsidized. The quantity of fuel that can be subsidized depends on the amount of money authorized by Congress. The number of liters that can be subsidized is obtained by dividing the total amount of money authorized for fuel subsidies by the per liter subsidy. Subsidies per vessel are defined by a quota, which is determined by considering the maximum liter use per day (depending on power and consumption of the machine), active days per cycle (coastal and fishing), and an adjustment factor. The subsidy to fishermen depends on the share and total volume of subsidized fuel defined⁶.

⁶ In addition to this specific subsidy for fisheries, there is a general subsidy for all fuel in Mexico. The general subsidy worked as a tax when international prices were low and as a subsidy when international prices were high. With perhaps only a brief exception in 2009, this has functioned as a net subsidy for gasoline. In December of 2016 a new policy came into effect that would eliminate the subsidy. However, despite this change, the net price of gasoline in Mexico is still lower than the average price for gasoline abroad.

Figure 2. Evolution of fuel subsidies for fisheries in Mexico (2011-2016)



Source: Cota-Leal and Rolón-Sánchez (2018). "Pescando Datos: Análisis del ejercicio de los subsidios para combustibles y modernización de la flota pesquera en México." Pescando Datos.

Other subsidies, infrastructure and studies – There are components in the *Rules of Operation* that are evaluated project by project. It is difficult in these cases to determine if the subsidy could be considered "capacity enhancing" or not, without reviewing each project. The *Rules of Operation* of 2018 describe seven categories of subsidies that we classified as "other subsidies"—Infrastructure and studies, capacity building, fisheries administrative and management projects, compliance, promotion of seafood consumption, product marketing and processing, and aquaculture. For the last six years the *Rules of Operation* have been consistent.

Subsidy	Description ⁷
Infrastructure and studies	Provides just over US\$515,000 for fisheries basic infrastructure (such as docks or ramps) and for studies to build such works.
Capacity building	Provides up to US\$10,000 for training courses on the use of new technologies.
Fisheries administrative and management projects	Provides up to US\$ 1 million per case, for projects to recover ghost gear, create fishing refuges, carry out a census and properly register fishers, ensure permits and licenses are in order, and install working tracking devices on fishing vessels.
Compliance	Provides about US\$103,000-\$309,000 for fishing resources, community surveillance, and regulation compliance campaigns.
Promotion of seafood consumption	Provides about US\$26,000-\$515,000 dollars for promotional materials, campaigns, and for participating in seafood festivals.
Product marketing and processing	Provides about US\$10,000-\$77,000 for adding value to fishing products and improving commercialization schemes.
Aquaculture	Provides up to approximately US\$257,000 to aquaculture and mariculture projects. Fresh water aquaculture is an important part of this component.

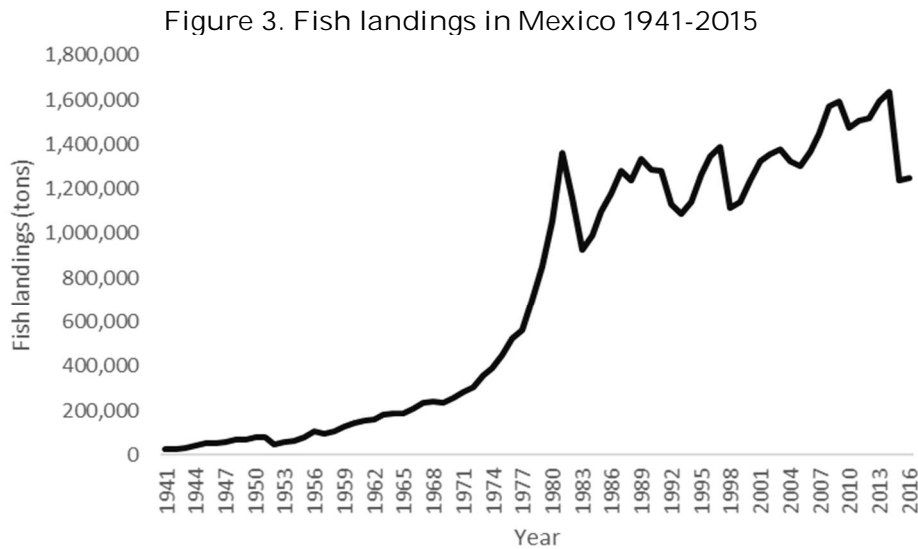
⁷ Mexican pesos were converted to United States dollars using March 2019 conversion rates from Banco de México (Banco de México, 2019). Dollars are then rounded to thousands or millions depending on the amount.

The negative effects of certain types of subsidies on productivity

Starting in 2014, the official objective of fuel subsidies in Mexico became to increase profits by increasing the capital of aquaculture and fisheries economic units (Cota and Rolón, 2018). This objective ignores national and international findings that subsidies geared towards increasing capital often lead fisheries to a point of exploitation beyond the maximum economic yield (WWF and PNUMA, 2007; Milazzo, 1998; Sumaila and Delagran, 2010; Oceana, 2015; UNEP, 2004). This adds pressure to potentially overexploited fisheries, thus threatening the continuity of the fishery and reducing profits for all involved.

Some countries that continue to deliver fisheries subsidies argue that it is their right to develop their fisheries. However, this argument has limits and could be false in certain cases. For example, in Mexico, subsidies were key to increasing the size of the fleet and continue to be an important element in maintaining the fleet operational. Still, this increase in the fleet has not resulted in increased catches overall or increased productivity.

The value of catch in Mexico has kept steady for the last 35 years. Throughout this time, the Mexican government has been spending money in the form of subsidies to develop its fisheries. A steady production with increasing number of vessels and fishers is negatively affecting the productivity of labor and capital. From 1941 to 1981 fishing production in Mexico rose from 26,000 to 1.36 million tons. Since then, production has remained steady at approximately 1.3 million tons a year.

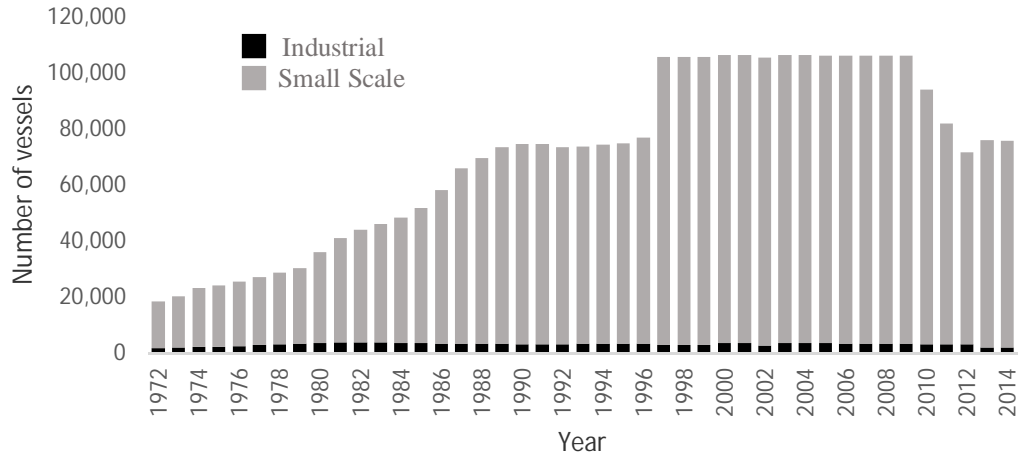


Source: Based on data from Conapesca (1980, 1990, 2000, 2010 and 2014), Anuario Estadístico de Pesca.

Despite landings being stable, the number of vessels increased threefold in 20 years but did not yield an increase in overall production. The increase in vessels from 1980 to 2000 came primarily from additional small-scale vessels (less than 30 ft. long). In 1980 there were 32,500 small-scale vessels, which increased to nearly 103,000 by 1997 and remained at that level until 2010. The most rapid increase in the number of industrial vessels (more than 30 ft. long) was in the 1970s. By 1980

there were 3,500 industrial vessels. In 2010, the total number of vessels, or at least the ones reported, started to decrease.

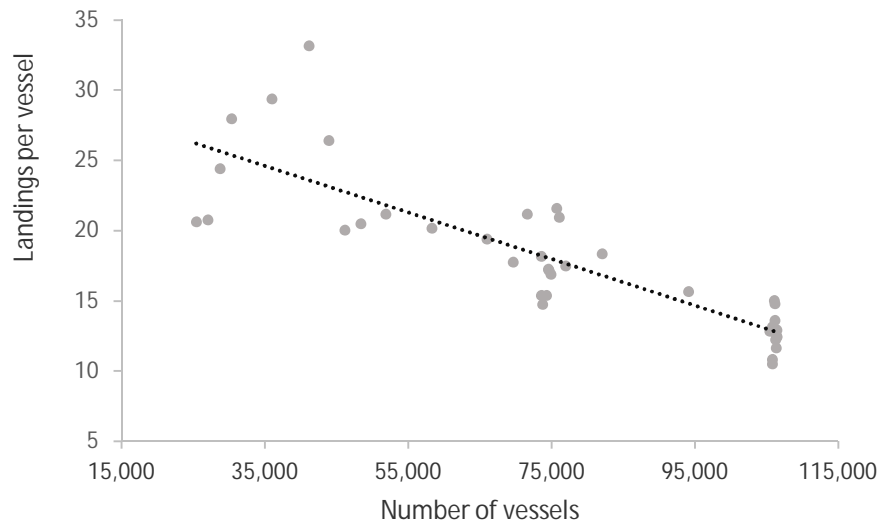
Figure 4. Number of vessels 1972-2014



Source: Based on data from Conapesca (1980, 1990, 2000, 2010 and 2014), Anuario Estadístico de Pesca.

The continuous growth in the number of vessels without an increase in landings directly implies a reduction in the productivity of each vessel, measured as the catch per vessel. In Figure 5 the relationship between number of vessels and productivity clearly shows a reduction in productivity as a consequence of the increase in the number of vessels.

Figure 5. Number of vessels vs productivity (1976-2014)

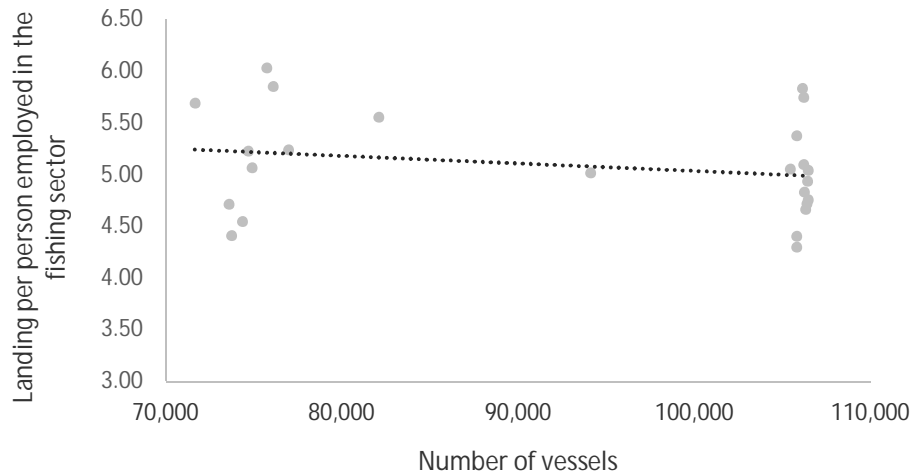


Source: Based on data from Conapesca (1980, 1990, 2000, 2010 and 2014), Anuario Estadístico de Pesca.

This relationship is natural and intuitive—increasing the number of vessels targeting a stagnant stock results in a lower production per vessel. However, economists would also expect that this

huge increase in capital goods (vessels) would increase labor productivity. But this was not the case for the fishing sector in Mexico. In Figure 6, the graph shows that there was no increase in labor productivity even as effort increased.

Figure 6. Effort vs Labor productivity (1990-2014)

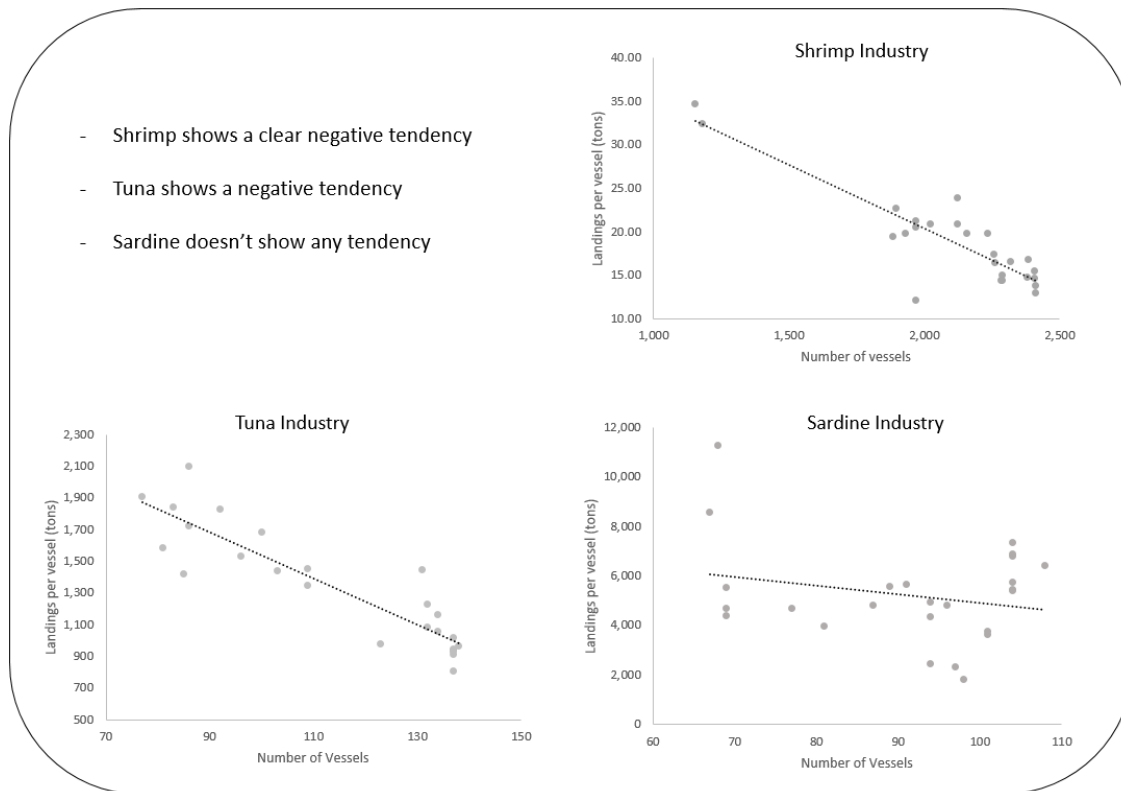


Source: Based on data from Conapesca (1980, 1990, 2000, 2010 and 2014), Anuario Estadístico de Pesca⁸.

These results indicate that after four decades of trying, capacity enhancing subsidies did not help Mexico increase the productivity of its fishing sector. That is consistent with trends of the three main fishing industries in Mexico—tuna, shrimp and sardine—which are plotted in Box 1.

⁸ The industrial fleet forms just a small portion of the fishing sector results found in Figure 6

Box 1. Number of Vessels vs. Productivity for the Three Main Fishing Industries in Mexico (1990 – 2014)



Source: Own elaboration based on data from Conapesca (1980, 1990, 2000, 2010 and 2014), Anuario Estadístico de Pesca.

A closer look at the beneficiaries of fuel and modernization subsidies

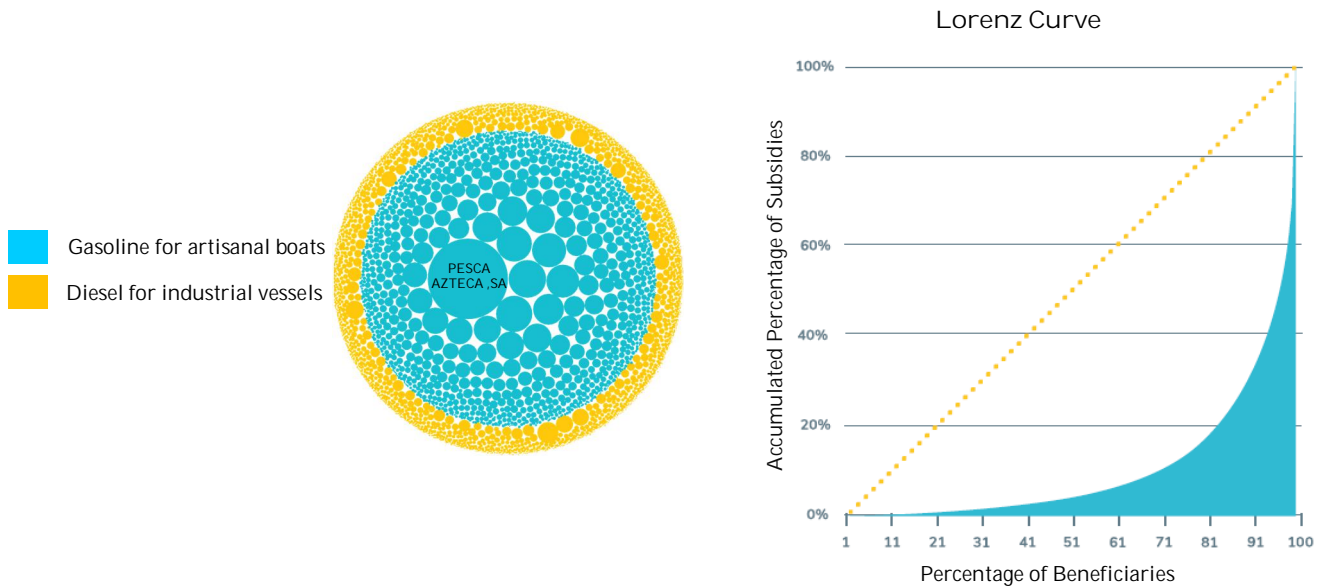
One of the most important arguments of developing countries for continuing to subsidize their fisheries is their responsibility to coastal communities that depend on subsidies to make a living. However, this argument loses validity when the highest amount of fisheries subsidies are given to the wealthier participants instead of the low-income fishers in coastal communities. In order to explain this distribution, a Mexican NGO called Causanatura analyzed the case of fuel and modernization subsidies in Mexican fisheries and found important inequalities.

Just one percent of beneficiaries obtain close to one third of all fisheries fuel subsidies. The circle in Figure 7 represents fisheries fuel subsidies for the period 2011-2016 and each dot represents one beneficiary, which could be a single fisher, a cooperative, or even a large firm. Dots in the outer circle are the subsidies given for gasoline to the artisanal fleet, which is 28% of the total amount, while the inner part represent industrial fishing entities that receive 72% of the total amount. The size of each dot represents the amount of subsidy received by each beneficiary.

Another way to represent inequality is using a Lorenz Curve. This curve lists beneficiaries that receive less (at the left) to beneficiaries that receive more of the subsidy (at the right). The vertical axis represents the total percentage of subsidies delivered. A 45-degree line starting at the origin

represents the perfect equality of distribution. The Lorenz curve in Figure 7 shows that one quarter of the beneficiaries receive 80% of fisheries fuel subsidies.

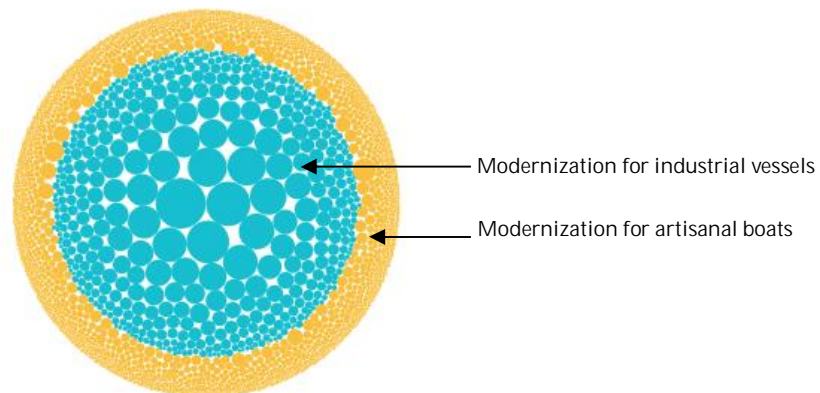
Figure 7. Distribution of fuel fisheries subsidies in Mexico



Source: Cota-Leal and Rolón-Sánchez (2018). "Pescando Datos: Análisis del ejercicio de los subsidios para combustibles y modernización de la flota pesquera en México." Pescando Datos.

There are distribution inequalities for modernization fisheries subsidies as well. Industrial fishing entities receive 70% of modernization subsidies with the remainder 30% allocated to the artisanal fleet. Out of the 30% of subsidies allocated to the artisanal fleet, 75% are designated to replacing engines, 22% to exchanging old boats for new ones, 1% for the installation of refrigeration systems, and only 2% are used for onboard tracking systems that could increase safety at sea and make enforcement easier.

Figure 8. Distribution of modernization fisheries subsidies in Mexico



Source: Cota-Leal and Rolón-Sánchez (2018). "Pescando Datos: Análisis del ejercicio de los subsidios para combustibles y modernización de la flota pesquera en México." Pescando Datos.

While evidence indicates that small-scale fisheries receive a relatively small share of (global) subsidies, this should not be reason to allow for broad exemptions for providing capacity- or effort-enhancing subsidies – small-scale fisheries are far from immune to overfishing or other harmful effects of subsidies. Rather, it suggests the need for subsidy reform at a national level that enables the development of healthy and profitable fisheries (e.g. through improved fisheries management, surveillance and enforcement) and/or the establishment of alternative livelihoods, coordinating government expenditures with sustainable resource management and economic and social development strategies.

Opportunity for domestic reforms

Current government expenditures on fisheries in Mexico are leading to decreasing fisheries productivity and hindering the country's ability to supply a growing national demand for fish. If there is no reform in Mexican fisheries expenditure, national fisheries will continue to decline in productivity and competitiveness. A decrease in the productivity of fisheries also threatens coastal communities that depend on fishing for their livelihood.

According to Cisneros et al (2016) there are different ways and strategies towards a reform of fisheries subsidies in México. Briefly described below, these strategies are also applicable in the context of other countries:

Elimination of subsidies – At current funding levels, eliminating all fisheries subsidies will automatically save over \$100 million a year that the Mexican Government could allocate to other policies such as social policy, education or health programs. However, this option requires significant research and planning given the potential social and political implications of ending direct fisheries subsidies. Social and economic impacts from fisheries subsidies reforms are to some degree unpredictable and some recipients as well as other sectors might be negatively affected in the short run. For example, in 2014 sudden and significant reductions in Mexican fisheries fuel subsidies led to economic losses when the shrimp fleet stopped their business in Mazatlán, the most important commercial port in the Mexican Pacific. At the same time, subsidy reforms may reduce participants in overexploited fisheries, allowing stocks to recover and thus increase productivity per fishing vessel, which can enhance the wellbeing of coastal communities and empower them to sustainably manage their resources. Reasonable transitional periods may be needed to address socio-economic impacts on affected parts of the industry.

Decoupling subsidies from fishing effort - A decoupled subsidy is a transfer of income to subsidy beneficiaries without any conditions or specific uses, the key point being that payments do not incentivize nor are directly linked to increases in fishing effort. In practical terms, decoupled subsidies can be granted as a yearly lump-sum payment to participants in a fishery (or other industry). This can aid in poverty alleviation without directly contributing to increased effort or production (Cisneros et al, 2016).

In the case of Mexico, Propesca/Bienpesca is an attempt to start decoupling subsidies in a quite successful way. Fishers receive up to \$412 a year for attending training courses on improving business skills or best fishing management practices. Attending training courses is an ideal condition for disbursing subsidies because it improves fisher's business operations without promoting overfishing. However, as Cisneros et al (2016) argue, it is important for any program that grants financial assistance to fishers to integrate measures for limiting the entry of additional participants. Otherwise programs like Propesca might, by making the activity more profitable, encourage entry of additional participants and thus counterproductively increase effort.

Reorienting subsidies to management improvements - A fishery operating closer to biological optimum levels causes less environmental impacts and would likely result in higher economic benefits, reducing the need for further subsidies (Sumaila, 2012 and Cisneros et al, 2016). In some cases the industry itself, as in the case of FEDECOOP, is arguing for reforms to stop giving direct fisheries subsidies (like fuel and engines), and instead provide subsidies for strengthening the organization of cooperatives and supporting community enforcement to secure compliance of regulations. Again, reorienting subsidies in this manner could negatively affect some individual firms in the short run. Therefore, integrating transitional and social equity components to any fisheries subsidies reform is key.

Conclusion

Capacity enhancing subsidies in Mexico are not accomplishing the two objectives stated by supporters: increasing fisheries productivity and supporting livelihoods of vulnerable coastal communities. Instead, capacity and effort enhancing subsidies seem to be decreasing fisheries productivity, encouraging overfishing, and threatening livelihoods in coastal communities. Reform is needed to prevent capacity enhancing subsidies from continuing to decrease fisheries' productivity and competitiveness.

The flexibility of Mexico's fisheries funding regime allows for the incorporation of programs directed at improved fisheries management, thus reducing amounts going to harmful subsidies. In addition, adapted rules can ensure that subsidies truly benefit vulnerable communities that most depend on fisheries for their livelihoods. Some of these reform ideas have been around for several years but without adequate funding or political interest.

In a way, Mexico is moving in the right direction by reducing both the general and specific fuel subsidies while incorporating new subsidy concepts that help improve management or are decoupled from fishing effort. However, these programs currently amount to just a fraction of the subsidies budget. Subsidies spent on areas such as modernization are still largely used for measures that are most likely to have harmful effects on the health of fish stocks. Nearly all of these funds allocated in Mexico are used for programs that increase capacity, such as new engines or boats, and only one percent of the modernization subsidies are actually used in programs that could improve management, control, and safety of fishing operations.

As the case of Mexico suggests, domestic fisheries subsidies reforms are an opportunity to increase fisheries productivity and enhance livelihoods of coastal communities by improving fish stock health. To achieve these goals, a focus on sustainable fisheries management is essential. Ending the distortions caused by harmful subsidies is a crucial component- or prerequisite – to effective fisheries management.

There are different approaches to reforming fisheries subsidies in a country like Mexico — reorienting subsidies to improved fisheries management, eliminating harmful subsidies, or decoupling subsidies from fishing effort — and, if well-crafted, these types of reforms can achieve better productivity and support coastal communities, ameliorate short term losses of individual actors, and ensure all fisheries participants benefit from long term environmental, social, and economic gains.

If countries are able to fulfil their commitment and reach an agreement at the WTO to adopt disciplines on harmful fisheries subsidies it would create the global framework for governments to bring about much needed domestic reforms.

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