Global Fishing Watch

A monitoring platform for commercial fishing in the oceans

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Summary

Billions of people depend on the ocean for livelihood or food. Unfortunately, increased overexploitation of fishing stocks and environmental disasters such as oil spills have made it unsustainable for people to rely on the ocean for food or livelihood. One in five fish globally are caught illegally, causing certain fish stocks to plummet by 90 per cent. Global Fishing Watch (GFW) was established through a partnership between Oceana, SkyTruth and Google in 2017 to combat illegal, unreported and unregulated fishing in the ocean and advocate for better ocean governance through increased transparency of human activity at sea.

Global Fishing Watch is a data collaboration where data from the publicly available automatic identification system (AIS) and information acquired through vessel monitoring systems operated by partner governments are pooled to provide a comprehensive picture of commercial activities in the oceans. Global Fishing Watch aims to transform the management of our oceans through its open-access online tool, which visualises and analyses vessel-based human activity at sea. Anyone with an internet connection can access and use the Global Fishing Watch map to monitor global fishing activity. It has data from 2012 to 72 hours ago , covering activities for industrial fishing vessels responsible for most of the worldwide seafood catch. The Global Fishing Watch platform provides near real-time datasets. Governments have used it to monitor vessel activities, journalists to report on maritime ecological concerns, and researchers to produce impactful science.

"These are exciting times when it comes to open, accessible data that anyone can use for free to understand and advocate for the fragile marine areas they care about most."

Source: Global Fishing Watch

Facts and figures

Founded: 2017
Sector: Environment
Typology by use: Monitoring and Response Awareness
Geography: Global

Governance Structure: Data Collaborative
Number of Data Exchange Partnerships:11countries
Partnerships with Research Organisations: 40
Number of Vessels Monitored: ~65,000 fishing vessels
Ownership: An independent non-profit organisation set up through a partnership between Oceana, SkyTruth and Google

Key Challenge(s) that the initiative was trying to solve

- Pool data from multiple public and private sources on an open access platform to provide a comprehensive picture of global fishing activity.
- Use cutting-edge technology to turn big data into actionable information to assist enforcement agencies in their operations and fisheries management.
- Use data to inform ocean advocacy efforts and improve ocean governance by garnering the attention of the national governments towards the most harmful illegal activities.

How are they solving the problem?

"Our mission is to make data on oceans more transparent, accessible and useful for different audiences."

Most industrial vessels are fitted with an Automatic Identification System (AIS) to broadcast their location at sea and avoid collisions. Many others use a Vessel Monitoring System (VMS) required by flag countries. These systems also act as a monitoring tool for the enforcement agencies to track the movement patterns of the vessel and regulate their activities. Global Fishing Watch aims to use this information on fishing vessels in the world to make ocean governance more transparent and effective.

To that effect, Global Fishing Watch combines publicly available AIS data with regionally controlled VMS data; it secures

VMS data through data exchange partnerships. Further, it matches the AIS and VMS data against vessel registries to develop a comprehensive database of vessel information such as ship name, call sign, IMO number, size, length, tonnage, engine power, authorisation status and ownership. However, AIS and VMS data only apply to the ships voluntarily broadcasting their location. Vessels engaging in illicit activities tend to switch off these systems to make them untraceable, making it difficult for the enforcement agencies to regulate their activities. These vessels are called 'Dark Fleet' and are responsible for most illegal fishing activities and hurting the maritime ecological balance. Global Fishing Watch integrates satellite radar imagery data with the prevalent datasets to identify this 'Dark Fleet' and present a comprehensive picture and scale of global fishing activity.

"Open data is recognised as an increasingly valuable tool to help improve the governance and security of our global ocean. It improves understanding of what is happening on the water and increases the efficiency of patrols."

Global Fishing Watch's primary value add is integrating data from multiple sources and completing the fragmented monitoring of this transnational activity. It makes government datasets an important piece of the entire puzzle. Global Fishing Watch has consistently worked with governments to establish data exchange partnerships to get access to their secure datasets and provide the analysis they might need. Through these data exchange partnerships, Global Fishing Watch has also assisted the governments in standardising their datasets and highlighting errors such as missing data fields or incorrect time zones in their datasets. Continuous engagement has led to the building of trust between the organisation and governments. Since government bodies are the primary enforcement actors, this engagement and trust have been crucial in turning the Global Fishing Watch's insights into impactful interventions. It has allowed Global Fishing Watch to provide reliable data to enforcement agencies to investigate suspicious activity and inform policy. Lastly, the tools developed in partnership with the governments act as a proof-of-concept which Global Fishing Watch later releases for the public.

"Abuses occur when perpetrators consider themselves immune from being discovered; their sense of impunity is reinforced as their illegal behaviours are neither prevented nor punished"

What were the key considerations in designing the initiative?

1. Engaging with the governments and building their capacity was crucial to the Global Fishing Watch mission: In its engagement with governments, Global Fishing Watch works extensively with partner governments to improve their baseline data capacity. At the beginning of any government engagement, the organisation conducts a scoping exercise or a needs assessment. This assessment assists Global Fishing Watch in understanding the data available, rules and regulations, and the challenges faced by the relevant government. This evaluation is a part of the process of having a consistent way of evaluating the needs of the governments. Global Fishing Watch then works with the relevant data officer in the government to streamline, update and clean the data. Additionally, the memorandums of understanding (MoUs) signed with each government are structured to accommodate different regulatory needs, as highlighted in the needs assessment, and public commitment to making their data transparent. This extensive engagement with the government also helps build trust and credibility for Global Fishing Watch.

2. Tiered access restrictions depending on the data type helped ensure data confidentiality, and privacy was maintained: Global Fishing Watch has a three-tiered data access scheme.

i) Global Fishing Watch AIS- derived events and activity data can be accessed through the map, data download portal or application programming interfaces (APIs).

ii) Vessel Monitoring System (VMS) data (e.g., government data that has been made publicly available) is viewable in the platform but is not downloadable.

Each government participating in the transparency program also has access to additional vessel metadata from VMS in their private country portal-- restricted to government use only.

iii) Global Fishing Watch research network partners have an agreement to work with raw AIS and VMS data with permissions from government data manager. Those not participating in the Global Fishing Watch research network can purchase raw AIS data through AIS vendors, Spire or Orbcomm.

3. Security concerns were paramount to Global Fishing Watch, even if this led to a time lag in public disclosure of the data: Vessel tracking data on Global Fishing Watch's public map is delayed by 72 hours, redacted and aggregated to release only the amount of information showing which vessels are compliant with the norms and which need to be investigated. The data delay is due to two reasons; firstly, the cost of getting a real-time data license is higher. Secondly, Global Fishing Watch might incur liability for displaying real-time data if the data is used maliciously. From the outset, Global Fishing Watch's data design was structured to improve data accessibility but to do it in a manner that was secure and legally compliant.

Additionally, patterns of historical activity in some cases can be more valuable than real-time data. Many nations don't have the appropriate resources to respond to illegal activity in progress, this balances the needs for real-time enforcement with the need for effective fisheries management.

Financial Sustainability of the initiative

Global Fishing Watch sustains its operations through financial support from philanthropic donors, charitable contributions, and government grants. In 2020, GFW received donations worth $8.6 million, while its expenses were $7.3 million.

Lessons Learned

• **Alignment of incentives and trust-building are paramount while working in a space where national governments are the primary actors.** Global Fishing Watch invests considerable resources in building and maintaining relationships with its government partners through the co-development of solutions. This begins with a scoping exercise and needs assessment, when Global Fishing Watch first engages in the country. They work continuously with the partner government to improve their data capacity, identify any errors and analyse data patterns. In addition, if data analysis identifies patterns of illegal fishing, Global Fishing Watch notifies the partner government first. This allows the government to take enforcement action and builds the credibility of Global Fishing Watch with the national government. Successful relationships with a few governments act as a testament creating a ripple effect for other governments to partner with Global Fishing Watch.

In some instances, it might take many years before the partnership comes to fruition but building national government partnerships are central to the mission of the organisation.

• **Merely putting out information is insufficient if the actors cannot utilise it.** Global Fishing Watch constantly interacts with the enforcement agencies and policymakers to evaluate their needs and build solutions per their needs and capacity. Similarly, it also has formal agreements with journalists and research organisations to inform them of the insights generated. Global Fishing Watch lays emphasis on ensuring that the data is delivered to the right set of capable actors where it can be used as actionable information which ensures impactful interventions. To that effect, Global Fishing Watch has relied on innovating tools to make the data and its analysis as widely available as possible. For example – it developed a Marine Manager Portal for monitoring and managing marine protected areas. Similarly, it developed Vessel Viewer, a tool with TM-Tracking to assist countries in implementing port state measures agreement in West Africa. Vessel Viewer helps port inspectors more accurately assess risk of illegal fishing allowing for more targeted enforcement action. This consistent innovation by Global Fishing Watch helps improve data accessibility and data analysis and work towards actions and governance that bring equity, accountability and equilibrium to commercial fishing.

• **Different competence and skills of the founders enabled the success of Global Fishing Watch's program.** Global Fishing Watch's mandate ranges from producing actionable insights to advocacy for ocean governance and conservation measures. It can do such wide-ranging activities due to the complementary capacities of its founders. Google provides Global Fishing Watch with the costly digital infrastructure needed to create public value. Google provided the cloud infrastructure and satellite imagery datasets needed for the partnership. This significantly reduced the technical costs and the initial investment needed for Global Fishing Watch. SkyTruth completes the gaps in data through its satellite imagery data, and Oceana uses its advocacy prowess to ensure Global Fishing Watch's insights reach the policymakers. Hence, making the whole greater than the sum of its parts.

Global Fishing Watch is a cross-sector collaboration between three organisations that have come together to fill the data gaps and improve ocean governance. It is an apt example of a data collaboration where the data is pooled to create public value. Global Fishing Watch had set out to bring transparency in the commercial operation at sea. While their work has directly aided the work of law enforcement in curbing illegal fishing, Global Fishing Watch has also highlighted human rights violations such as bonded slavery on the ships engaging in illegal fishing.

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