

## Electronic technologies for fisheries: Systems adapted for small-scale vessels



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The national fishing fleets in the EU are large where most of the vessels are less than 12 metres in length. The information on this fleet segment's fishing activities is limited and insufficient for documentation of the fleet's impact on the environment and for fisheries management and governance in general.

### Main observations

The **small-scale vessel fisheries** are playing an **important** socio-economic and cultural **role** in European waters and coastal communities, but in terms of **monitoring and control** they have generally been **neglected** in Europe by fisheries scientists and fisheries managers at national and European Union (EU) level. In general, the small-scale (SFF) fleet segment can be

characterized as a fisheries fleet segment providing **insufficient information** on its fishing activities for **sustainable management** of the EU fisheries and the marine ecosystem.

Worldwide, **electronic technologies** are increasingly being deployed to improve fisheries **monitoring** in **all types of fisheries**. The use of camera-based Electronic Monitoring (EM) systems including CCTV (closed-circuit television) cameras, gear

sensors and advanced data analysis can provide **full documentation** and accountability for **fishing activities**. The use of EM and other electronic devices generates several benefits, such as **high levels of compliance** and documentation of **fishing practices**. For the small-scale fishing fleet, the **use of tablets and cell phones** for electronic reporting and monitoring has **developed significantly** over the latest years in many parts of the world.

**EM systems** have, within the **EU**, **mainly** been installed on **larger vessels**. However, **EM systems for small scale fisheries** have been developed and are implemented for

large scale use in **Latin America** with more than **600 vessels** being **monitored in 2021**. The systems are fitted specifically for the small vessels in terms of power use, mounting and data upload.

Most Europeans own a smartphone or a tablet nowadays, and these **portable devices** offer an ideal platform to **develop monitoring solutions** for small-scale vessels for which space and power onboard are often limited. The ease of use and versatility of **apps can speed up and facilitate tasks** like reporting the fishing activity to the authorities. Replacing **logbooks** and **landing declarations** using **data recorded semi-automatically** on a smartphone/tablet can be a **strong incentive** for fishers.

When available, **apps can enhance fishing procedures**, without the need of dedicated computer software to run on the vessel which is of **particular interest** on small-scale **artisanal fishing vessels**. A major **advantage of apps** compared to, *e.g.*, fixed or mobile EM systems is that they can be used on literally **any vessel**, regardless of size, provided the fisher carries a smartphone or tablet. For **very small vessels** operating in European waters, the **generalisation of apps** combining fishing activity monitoring, logbook and landings declarations could conveniently **replace pen and paper** in the future, thereby enhancing considerably the **quality of fishery-dependent data**.



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## Conclusions and policy recommendations

**Monitoring and control**, SSF have generally been relatively **neglected in Europe** by fisheries managers and fisheries scientists both at national and EU level. In European waters, SSF often provide **insufficient information** with regards to fishing activities for ensuring a sustainable management of this fleet segment and of the marine ecosystem. Based on the present review, we have come up with a short list of global **policy recommendations**:

- For **monitoring** compliance with the landing obligation, fishing vessels in SSF could be equipped with **video-based EM systems**. It is recommended that video-based EM systems are installed on all the vessels using **mobile gears**, as this is the fleet segment with the **highest risk** of non-compliance with the LO.
- In fisheries with **low discards or bycatch risk**, such as **dredge fisheries** for bivalves or low impact fisheries using *e.g.*, **pots or handlines**, it is recommended to use **EM sensor systems** – or a similar technology to **monitor the spatiotemporal** distribution of the fishing activities.

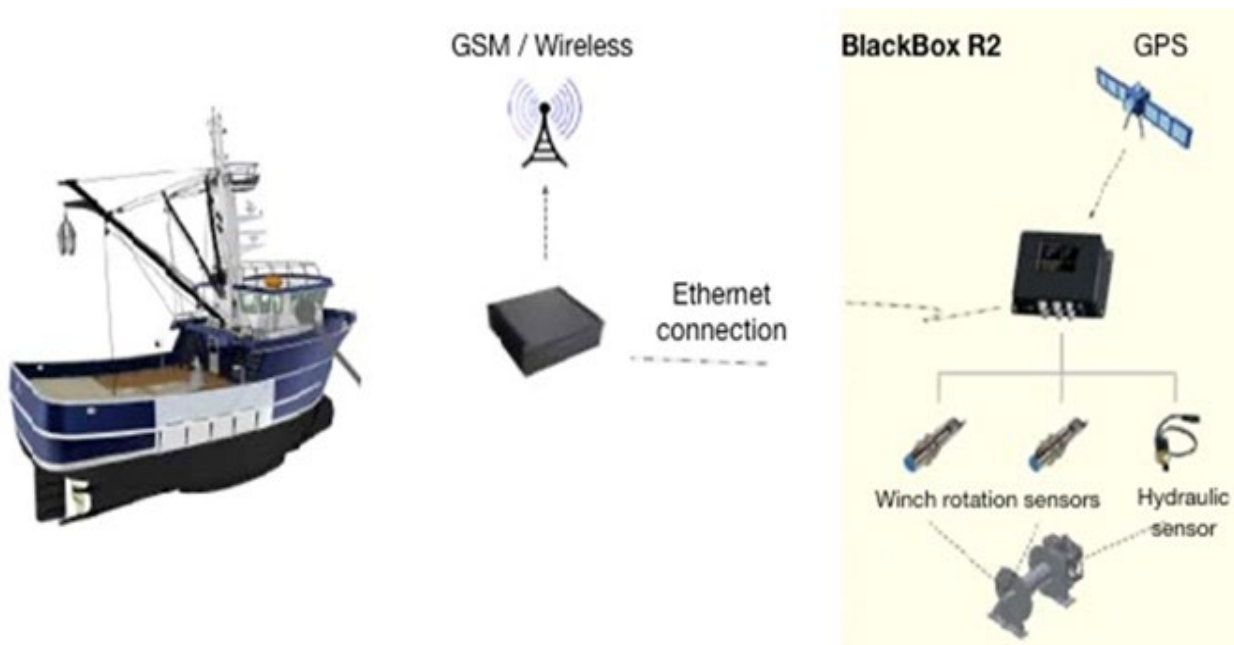
- In fisheries with **high-risk of incidental captures** of protected endangered and threatened (**PET**) species a **representative sample** of the SFF could carry a **video-based EM system**.
- For SFF not carrying an electronic-logbook for **documenting fishing activities** it is recommended to use **tablet or cell phone apps** specifically designed to fulfil the **EU reporting requirements**.

**Data** alone will not result in more sustainable fisheries, but they are a key component of an **effective ecosystem-based management** in EU waters.

### Key areas for EU action

With the use of camera-based Electronic Monitoring (EM) systems, the small scale fleet (SSF) should provide **sufficient information** with regards to fishing activities for ensuring a sustainable management of this fleet segment and of the marine ecosystem.

Figure 1: Non-camera EM sensor systems mounted on all Danish bivalve fishing vessels



Source: Danish Fishery Agency

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