Call for proposal – experiences with efficiency of mechanical recovery during oil spill events

The client wishes to carry out a literature study of recovery numbers to assess the effectiveness of mechanical recovery of oil in the marine environment from historic oil spill events. The goal of this study is to obtain reliable figures for mechanical recovery based on documented experiences drawn from historic events. The supplier will in collaboration with the client select oil spill events that provides the most accurate representation of the efficiently where mechanical recovery were used as response strategy. Therefore, it is crucial to identify and select cases that are well documented and where the necessary key figures can be estimated to the greatest possible extent.

The selected cases can include oil spills from both ship incidents and from petroleum activities, in coastal and offshore waters. The study can include events that have occurred both in Norwegian and international waters, solely focusing on mechanical recovery from the water surface (not recovery of stranded oil). If multiple strategies (*in situ* burning and/or dispersant) were used in the selected cases, it is a requirement that the recovered volume and efficiency of mechanical methods can be separated from the other response strategies.

The supplier shall take a holistic approach to the study, looking at limitations to the system as a whole (at the level of OSR-systems and *barriers*/zones; see NOFO, Preparedness – Barriers), not at the efficiency of single pieces of equipment (i.e. the oil recovery rates of a single type of skimmer).

Which spill events and the factors related to the event must be chosen in such a way that it gives the most reliable and accurate estimations of effectiveness of mechanical recovery. It is therefore of importance that the client has a close dialogue with the supplier when defining the scope of the study.

Relevant external factors (environmental and oil behaviour) that should be considered are:

- Oil type
- Estimated release volumes
- Evaporation, biodegradation, oil in water dispersions and emulsion
- Oil spreading, and size of the affected area
- Recoverable emulsion volumes
- Duration of the spill event
- Area of release (coastal or offshore)
- Wave hight (start, during and after the spill)
- Ocean currents
- Weather conditions (temperature, wind, precipitation, visibility)
- Other relevant external factors

Relevant operational factors that are important for the effectiveness of mechanical recovery and should be considered:

- Prioritizations taken during the response operation – e.g. protection of sensitive environmental resources vs. areas with large amounts of recoverable oil
- Were other response strategies used (*in situ* burning, efforts to disperse the oil)?
- What types of mechanical recovery systems were used?
- How many systems were available and used?

- Who handled the equipment (affiliation/qualifications)?
- Notification, mobilization and response time
- What role did remote sensing (monitoring and detection) play?
- System and crew endurance
- HSE challenges (toxic gasses and risk of explosion)
- The hassle-factor
- Storage tank capacity, disposal of oil and emulsion
- Oil-water separation and local decanting rules
- Other relevant operational factors

The uncertainties related to the available data on both external and operational factors need to be addressed in the report. Based on the documentation of the limiting factors, the report shall provide an overall assessment of what is important to obtain an effective mechanical oil spill response operation.

Some of the selected cases shall be reported in a way that aims to communicate the lessons learned about preparedness and operational issues during the operation, with a goal of disseminating knowledge that can be used for a more efficient oil spill recovery operation in the future. The course of the spill event and recovery actions must be described and narrated in a descriptive way. The description shall include specific challenges related to the efficiency of the response operation, also those that cannot be quantified. These must be described qualitatively. Last, to what extent experience-based, traditional and local knowledge had an impact on the effectiveness of the action, has to be assessed.

The report shall be written in English and include references.

Delivery deadline for the report: **6.8.2021.**