O&G offshore activities and Economic Impact Assessment on fishery sector

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INTRODUCTION- Scope

• The present presentation describes the methodology used to conduct the Economic Impact Assessment (EcIA) of O&G offshore activities on fishery sector. This approach has been applied to various offshore projects.

• The possible impacts of offshore activities may include the reduction of fishing area, with economic impact on the sector.
INTRODUCTION- Methodological Approach

**PROJECT EVALUATION**
- Definition of the project
- Project Area
- Duration of the project

**FISH AND MARINE SECTOR**
- Fishing sector
- Fleet and fishing methods
- Fishery resources
- Economic value of the fishery sector
- *Ante-operam* Monitoring

**ESTIMATION AND ASSESSMENT OF IMPACTS**
- Evaluations of the Environmental and social-economic sensitivities potentially affected
- Environmental and Economic Impact Assessment
- Environmental and Economic monitoring (*post operam*)
Evaluation of the project in all its main aspects, with particular regard to:

- Project scope
- Area concerned by the project
- Time of implementation
- Economic sectors potentially impacted by the project (areas excluded or limited to fishing activities)

- Energean signed an exploration and production Concession Contract covering the Montenegro offshore blocks nos. 26 and 30
- Energean planned to carry out a 3D geophysical seismic survey
- 3D geophysical survey will be performed within the blocks involving an area of 338 km²
- 30 days for the survey execution
FISH AND MARINE SECTOR

Sector of interest:

- Aquaculture
- Underwater sport fishing
- Fishing

Data analysis:

- Economic value of the local fish sector
- Characteristic of the fishing fleet
  (dimensions, tonnage, power, age)
- Types of fishery and catch
- Real economic value of the catch

• RETRIEVAL OF BIBLIOGRAPHIC DATA
• DESKTOP ANALYSIS
• ANTE – OPERAM MONITORING
• STAKEHOLDER CONSULTATION
ESTIMATION AND ASSESSMENT OF IMPACTS

Evaluations of the Environmental and social-economic sensitivities potentially affected:

- Fauna and Flora (fishes, corals, economically important species in fisheries, seagrasses and phytobenthos, mäerl beds, phytoplankton, etc..)
- Water resources and sea water conditions, Air quality and climate
- Sensitive habitats, Protected areas and Proposed Marine Protected Areas
- Existing infrastructures, business entities, maritime traffic and undersea cables
- Fisheries and aquaculture
- Existing noise level
- Cultural heritage sites, Tourism

ENERGEAN – BIODIVERSITY MONITORING
- Common bottlenose dolphin (Verified presence during the Aug-Sept 2018)
- Loggerhead turtle (Verified presence during the Aug-Sept 2018)
ESTIMATION AND ASSESSMENT OF IMPACTS

Assessment of the main impacts that could be generated on the fisheries sector in relation to the impacted areas:

- Suspension and dispersion of sediments
- Noise pollution at project stage
- Light pollution during project implementation
- Maritime traffic in relation to the increase generated by activities

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<thead>
<tr>
<th>Category</th>
<th>Affected environmental components</th>
<th>Mob/DeMob phase</th>
<th>Acquisition phase</th>
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<td>Air and Sea</td>
<td>Air quality and climate</td>
<td>Low</td>
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<td>Seawater quality</td>
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<td>Socio-economic context</td>
<td>Human health</td>
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<td>Tourism</td>
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<td>Maritime traffic</td>
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<tr>
<td></td>
<td>Fishery</td>
<td>Moderate</td>
<td>High</td>
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<td></td>
<td>Aquaculture</td>
<td>No impact</td>
<td>No impact</td>
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<td>Biodiversity and Ecosystems</td>
<td>Seagrasses, seagrass beds and Benthos</td>
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<td>Low</td>
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<td>Marine invertebrates</td>
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<td>Moderate</td>
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<td>Plankton</td>
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<td>Marine mammals</td>
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<td>Marine reptiles</td>
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<td>Fishes and invertebrates</td>
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<td>Seabirds</td>
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<td>Sensitive habitats</td>
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<td>Moderate</td>
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<td>Protected areas</td>
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<td>Low</td>
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ESTIMATION AND ASSESSMENT OF IMPACTS

Determination of compensation ($C_{tot}$)

$$C_{TOT} = (Id \times R_{SubArea} \times D_{SubArea})$$

- **Id** = total daily income or revenue deriving from fisheries sale determined as first sale or landing stage price
- **R_{SubArea}** = index of relevance of the fishing activity (catch) of the defined SubArea on the total fishing activity
- **D_{SubArea}** = number of days of project activities in the defined SubArea

**PROJECT INPUT:**

- **Id** = Deriving from fisheries sale in Montenegro determined as first sale or landing stage price
- **R_{SubArea}** = Total surface of fishing area of Montenegro within 25 NM (17.6%) = 4,211 km$^2$
- Total surface of the Fishing Potentially Impacted Area = 740 km$^2$
- **D_{SubArea}** = approximately 21 days
ESTIMATION AND ASSESSMENT OF IMPACTS

Assessment of possible mitigation measures to reduce impacts

- Definition of the best intervention period to limit impacts
- Advanced notice of activities to avoid possible conflicts with shipping and fishing operations (communication of timing, area of intervention)
- Fisheries observer will be boarded on the vessel to help avoiding conflict with and impacts to the fishing industry
- Mitigation measures provided for fishes will indirectly act as mitigation measures for fisheries too
- Fisheries Compensation Approach to determine the ‘disturbance allowance’ on fisheries deriving from project activities within the exclusion zone

PROJECT MITIGATION MEASURES

- Least sensitive period (winter season) for marine species
- Avoid unnecessary strong energy sources
- Advanced notice of geophysical activities
- Ensure communication with fisheries and Fisheries observer will be boarded on the vessel
- Fisheries Compensation Approach
- Appropriate signals to warn other vessels of the exclusion zone

After the adoption of the adequate mitigation measures the impact induced on fisheries will be reduced as much as possible to Moderate/Low
ESTIMATION AND ASSESSMENT OF IMPACTS

MARINE ENVIRONMENT MONITORING ACTIVITIES BEFORE AND AFTER THE PROJECT ACTIVITIES

The following monitoring activities concerning the most impacted receptors/indicators have been planned:

- Fishery landing survey
- Ichthyoplankton sampling survey
- Marine Mammals survey

This approach permitted to investigate the existing conditions before and after the project and to confirm the absence/presence of residual impacts after the closure of the project.

This approach permitted to investigate the existing conditions before (QIV 2018) and after (QIV 2019) the geophysical survey, demonstrating the absence of project generated significant variations and fluctuations on the status of selected receptors.
Let’s continue the conversation!

Post questions and comments via chat in the IAIA21 platform.

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