MARINE SPATIAL PLANNING UNDER A CHANGING CLIMATE: A CASE STUDY IN MALLORCA, BALEARIC ISLANDS

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STUDY LOCATION: MALLORCA (BALEARIC ISLANDS, SPAIN)

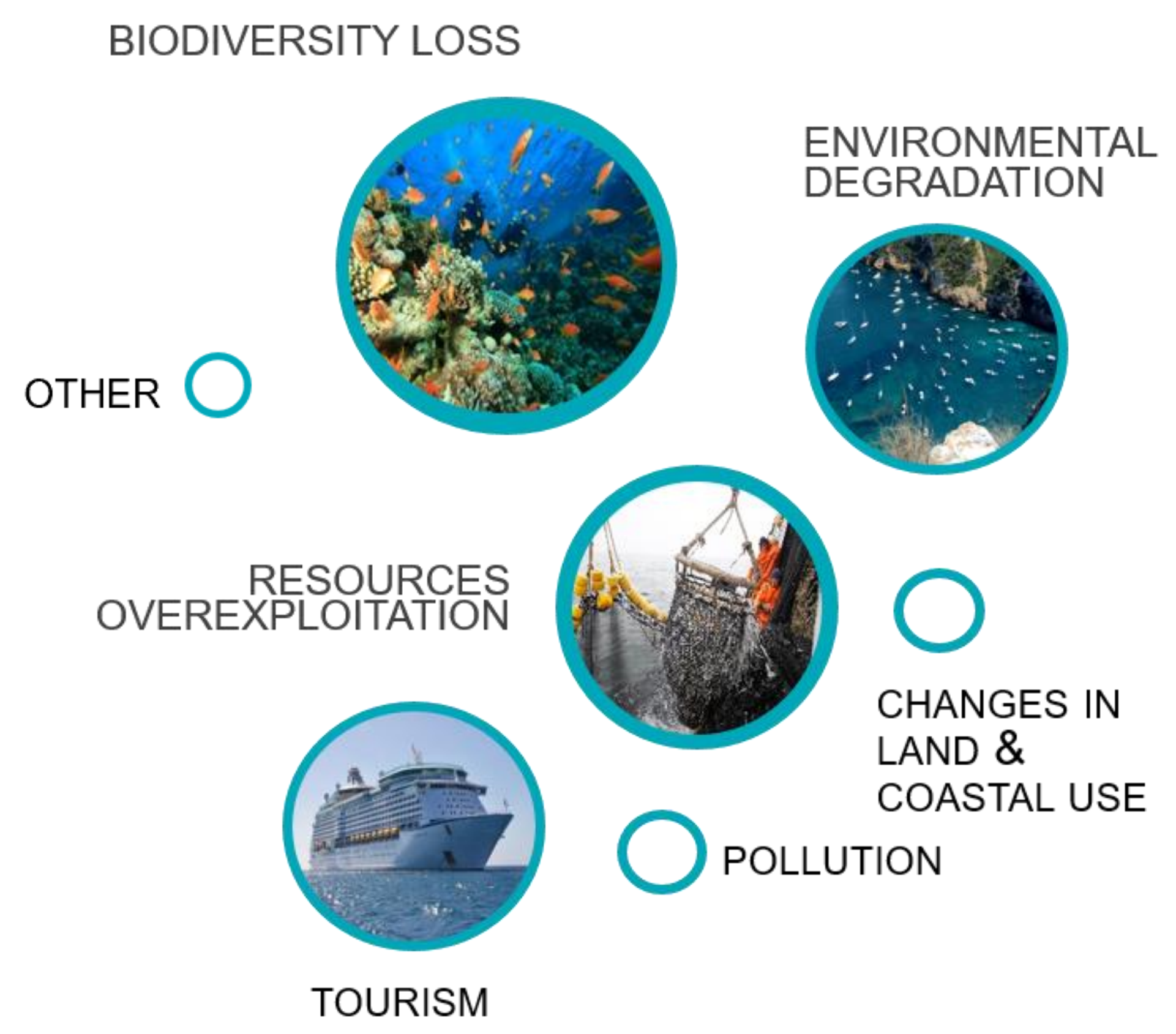
1. Located at the (West) Mediterranean ecoregion

2. Biodiversity hotspot:
- Different habitats (e.g., seagrass, coralligenous communities, Maërl…)
- Species richness (e.g., *Physeter macrocephalus, Tursiops truncatus, Pinna nobilis, Caretta caretta*…)

3. Highly vulnerable to climate change:
- Ocean warming
- Marine heatwaves
- Deoxygenation
- Sea level rise
- Frequency of extreme events
- Ocean acidification

4. Multi-use area:
- Marine Protected Areas
- Artisanal and traditional fishing
- Industrial fishing
- Recreative fishing
- Aquaculture
- Tourism
- Other

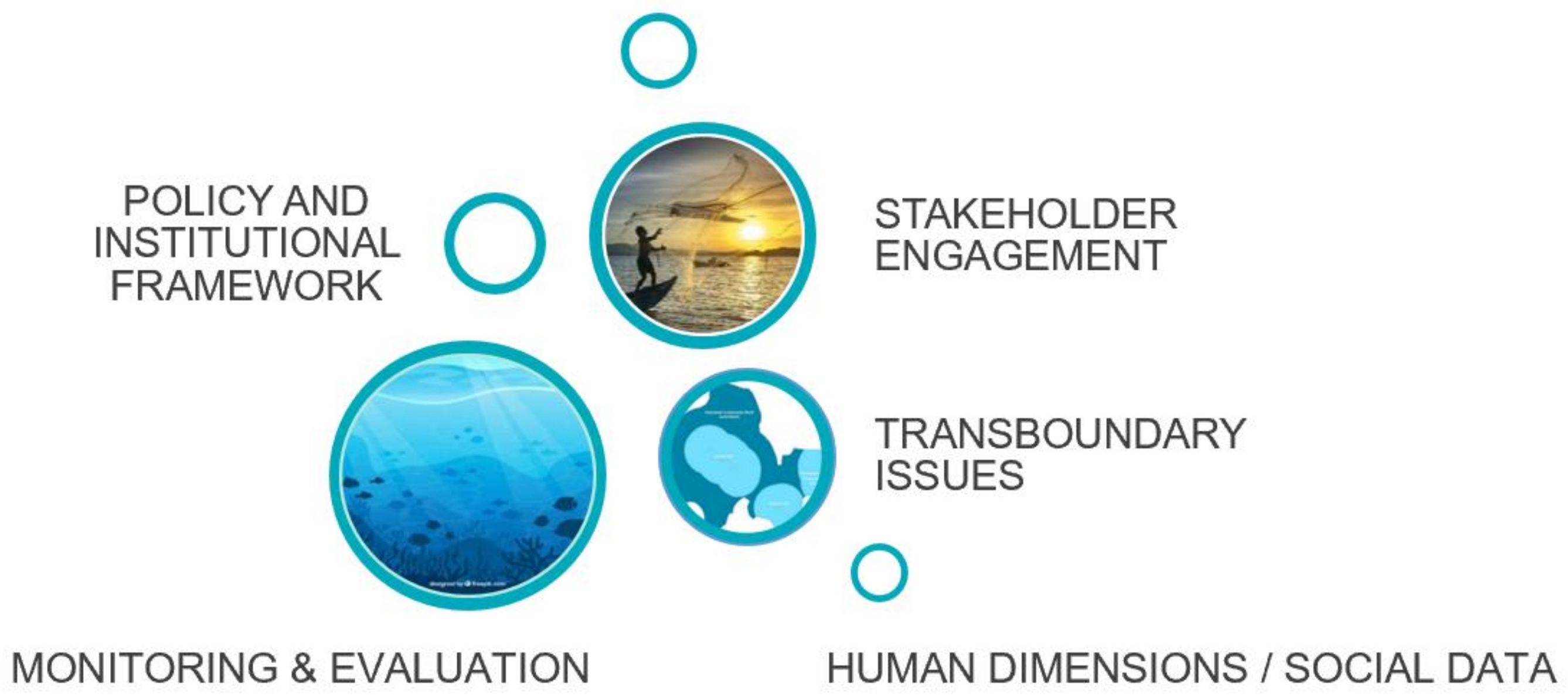
EFFECTS OF CUMULATIVE IMPACTS



CLIMATE CHANGE

1. Vulnerability amplifier
2. Changes in the structure and function of marine ecosystems (ecosystem health)
3. Impacts on human communities:
   - Loss and changes in Nature's Contributions to People (NCPs; IPBES) / Ecosystem Services (ES)
   - Affecting human well-being

THREATS TO MARINE SPATIAL PLANNING EFFICACY

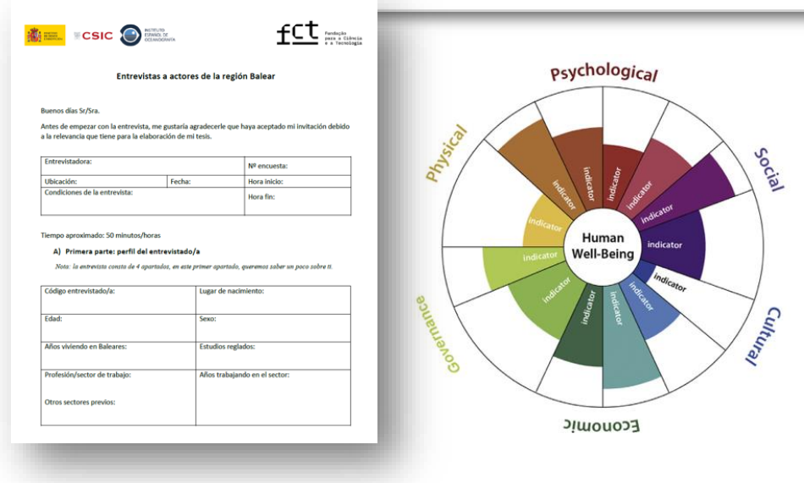


RESEARCH QUESTION: How Marine Spatial Planning (MSP) can be adapted to climate change in marine socio-ecological systems?

METHODOLOGY & FUTURE ANALYSES

1. Characterization of the study area and test how Marine Protected spaces influence human well-being

1. **Determine key social-ecological variables** through literature and in-person interviews:
   - Obtaining knowledge about the ecosystem health of the Balearic Sea.
   - Identifying and quantifying the main cultural ecosystem services (CES) in the region.
   - Obtaining people's opinions on how these CES relate to their well-being.
   - Evaluate people's perceptions of how MPAs in Mallorca can influence these CES: i.e., people's well-being.
2. **Mixed analysis.**



2. Marine Spatial Planning under a changing climate: adaptation pathways

1. **Identify main use conflicts** in the marine and coastal space of the region.
2. **Identify stakeholders' knowledge** regarding climate change actions, initiatives, or policies in the marine arena.
3. **Identify and analyze existing adaptation strategies** and initiatives in MSP plans & instruments in the study area through scientific literature, technical reports, local and national policies, etc.
4. **Identify enabling conditions** to support climate adaptation under the IPBES framework.

3. Crosscutting Analysis

1. **Analysis of climate readiness** in the area through the climate-smart MSP key components framework.
2. **Identify main challenges and limitations** to climate adaptation, both from the scientific and technical literature and interviews.
3. **Analysis of policy coherence.** Critical discussion on social & political consequences, including how ecosystem management decisions affect climate change adaptation and human well-being.