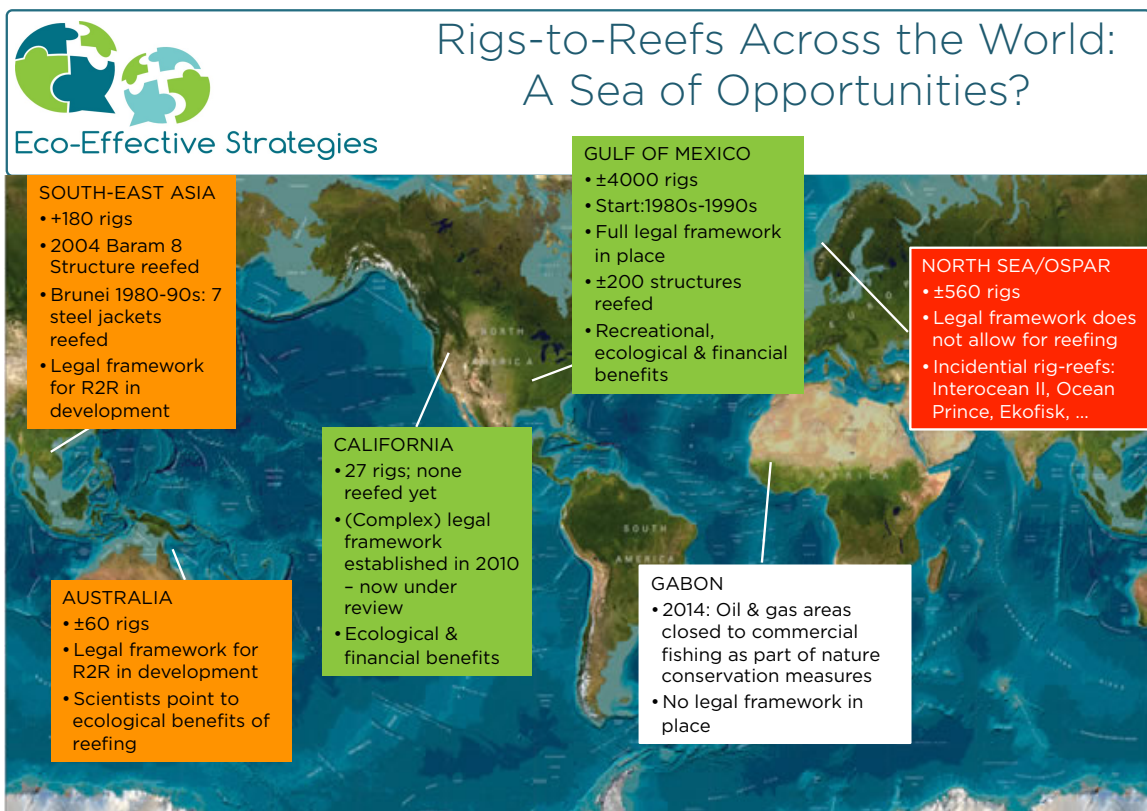


The Living North Sea Initiative - What have we learned so far?

- In the North Sea there are currently ± 540 oil & gas production platforms (excluding sub-sea structures), of which 502 fixed steel structures. Over the next 30-50 years, these will have to be decommissioned as production stops.
- Around each structure, there is a 500m safety zone, which functions as a fisheries exclusion zone. If all structures, incl. their safety zones were put together, these would be the size of the island Texel in the Wadden Sea ($\pm 400\text{km}^2$ in total).
- According to current regulations (OSPAR Decision 98/3), all disused offshore structures need to be fully removed to shore for proper waste handling. Exceptions are possible for concrete gravity based structures and steel jackets with a weight of more than 10,000 tonnes in air. Conditions for exceptions relate to technical feasibility, safety, environmental risks and costs. Structures that may serve a new legitimate purpose are not considered 'disused'. The new user/owner of a repurposed structure takes over the responsibility for future decommissioning.
- LiNSI has been looking into the potential risks and benefits of partial removal as compared to full removal. The LINSI vision assumes that proper plugging and abandonment of the well and removal of the top side of facilities is a given and that possibly also the top 25m or 55m of a steel jacket would be removed. Work done until now suggests that environmental benefits of partial removal could be significant, whereas environmental risks are very limited if the structure in case is clean. Also net safety benefits could be achieved by reducing the amount of dangerous work that has to be done to remove steel jackets, provided that any structures left offshore would on the long term remain surrounded by a safety zone and provided with proper navigation aids.
- The total cost of full removal of all fixed steel jackets in the North Sea (the Netherlands, UK, Germany, Denmark & Norway) under the current regulations (assuming that the footings of all concrete gravity-based structures and steel structures weighing more than 10,000 tons) is estimated to be in the range of €5.8 – 12.4 billion. These costs will have to be made over a period of several decades.
- Decommissioning costs are not exclusively borne by oil and gas companies. Governments pay directly (through state participation in production) and indirectly (tax rebates) for the decommissioning of oil and gas (and other offshore) infrastructure. It has been estimated that governments of the North Sea countries will directly and indirectly cover 50-85% of the costs. Hence, any cost-savings realised by taking a different approach to decommissioning would benefit society and governments in the first place and oil & gas companies in the second place.
- The LiNSI Vision is that in order to maximize benefits for the North Sea ecosystem, a portion of these savings could be invested in ecosystem conservation and restoration and the transition to sustainable use of the North Sea, e.g. via a North Sea Fund.
- In the Gulf of Mexico (US) ± 350 clean steel jackets have now been reefed instead of being removed to shore. Scientific evidence suggests that these artificial reefs contribute positively to biodiversity and biomass of the area, if fisheries around them are properly managed. Since only the cleaned jackets (the part under water) are reefed, no pollution incidents have been reported. See [BSEE](#) for further information
- Also elsewhere – e.g. California and South-East Asia – there is a growing interest in Rigs-to-Reef programmes as a way to protect and enhance biodiversity and biomass of marine ecosystems. See e.g. [The Economist](#).
- In the North Sea, as compared to the US, relatively little is known widely and generally about the ecosystems on these structures. What we do know is that:

- More than 30 unique species have been found on and around producing oil & gas structures of which more than 20 are mentioned as endangered species in the EU Habitats Directive and/or on various 'Red Lists' (IUCN Red list, German Red list). Among these species are soft and hard coral species, sponges, anemones, crabs and lobsters, various types of native mussels and oysters, cod and harbour porpoise.
- Sunken rigs like Interocean II and Ocean Prince have – like other wrecks in the North Sea – developed into rich local ecosystems and havens for various species under pressure. See e.g. [Duik de Noordzee Schoon/Expeditie Doggersbank](#)
- Until now, only very few exotic species have been found on these structures as compared to other near identical structures e.g. offshore wind turbines.
- Once the structure is removed, also the 500m safety zone will again be opened up for fisheries, incl. bottom trawling, with the result that any ecosystems that have developed there will be destroyed.



- The role of man-made structures in the North Sea ecosystem is currently being researched in more detail by the [INSITE Programme](#), which is expected to deliver the first results in 2018-19.
- The process of removing a steel jacket to shore itself is dangerous work, associated with various safety and environmental impacts such as:
 - Exposure of demolition workers and divers required to the prepare the removal.
 - Inherent risks of lifting and hoisting heavy equipment and constructions.
 - CO₂, NO_x & SO_x -emissions from transportation and cutting of the structure.
 - Disturbance of the seabed, incl. drill cutting piles, which may contain toxic substances.
- There is a lack of knowledge about decommissioning and the ecology of offshore structures among wide groups of stakeholders. This makes it difficult for many non-technical stakeholders to play a role as well-informed, critical dialogue partners to the oil and gas industry though this topic is of growing importance to society.