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How Effective is Petroleum to the Human Activities

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Editorial

Petroleum products are processed from crude oil and other liquids derived from fossil fuels. They are used for a variety of applications. Biofuels are also employed as petroleum products, primarily in gasoline and diesel fuel blends. Petroleum has traditionally been the most important source of energy for total yearly energy consumption in the United States. Petroleum products are used to power cars, heat buildings and generate energy. The petrochemical business utilises petroleum as a raw resource (a feedstock) to create plastics, polyurethane, solvents and hundreds of other intermediate and end-user commodities in the industrial sector. During the extraction, processing and transportation of oil and gas, large amounts of toxic and non-toxic waste are produced. When incorrectly managed, some industry by-products, such as volatile organic compounds, nitrogen and sulphur compounds and spilled oil, can contaminate air, water and soil to dangerous levels. Global changes such as climate change, ocean acidification and sea level rise are exacerbated by industry emissions of greenhouse gases such as carbon dioxide (CO_2) and methane, as well as micro particulate aerosols such as black carbon.

Fossil fuel extraction is the most significant contributor to the continual accumulation of carbon in the earth's biosphere of all human activities. According to the International Energy Agency and others, oil and gas consumption accounted for almost 55 percent (18 billion tonnes) of the total 32.8 billion tonnes (BT) of CO_2 emitted into the atmosphere in 2017. Deep sea industrialisation is spreading over the planet. Environmental management has become more difficult as oil and gas development operations have increased in the absence of adequate baseline data in deep-sea ecosystems. We examine the types of activities associated with global offshore oil and gas development in water depths greater than 200 metres, the typical impacts of these activities, some of the more severe impacts of accidental oil and gas releases and the current state of management in the major offshore industrial activity regions, which include 18 exclusive economic zones.

Direct consequences of infrastructure installation on the seabed, such as sediment resuspension and burial by seafloor anchors and pipes, are normally limited to a radius of 100 metres. Discharges of water-based and low-toxicity oil-based drilling muds and generated water can travel over 2 kilometres, however the biological consequences on the seabed at the population and community level are typically 200–300 metres away. These effects might last for many years in the deep sea and possibly even longer for its more vulnerable ecosystems, such as cold-water corals. During each of the primary phases of exploration, production and decommissioning, routine oil and gas activities can have negative environmental consequences. Indirect (sound and traffic) and direct physical (anchor chains, drill cuttings and drilling fluids) disturbances might have an influence during the exploratory phase. In the production phase, when pipelines are installed and the amount of discharged generated water grows, further direct physical consequences arise. Finally, decommissioning can have a number of direct effects on the seafloor, as well as the potential to reintroduce toxins into the ecosystem. When creating management plans for offshore oil and gas activities, whether local or regional, it is vital to account for all possible implications of everyday operations.

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