List of Potential Environmental Impacts from Major Oil and Gas Projects

Source: Tim Van Hinte, Thomas I. Gunton & J. C. Day (2007). Evaluation of the assessment process for major projects: a case study of oil and gas pipelines in Canada, Impact Assessment and Project Appraisal, 25:2, 123-137, DOI: 10.3152/146155107X204491.
Downloaded from: https://doi.org/10.3152/146155107X204491

Table 2. Potential environmental impacts of pipeline, port, and tanker projects

Project component	Impact category	Potential impacts
Pipeline construction and operation	Physiography and soils	- Loss of soil capability - Soil compaction, pulverization, rutting, and reduced percolation rate - Erosion and increased sediment load - Decreased terrain stability - Direct topsoil and subsoil loss
	Surface and groundwater	- Changes in groundwater recharge and discharge rates and flow obstruction - Decreased water quality and quantity - Contamination from solid, industrial, and liquid wastes
	Air quality	- Increased emissions resulting from burning of slash and debris, construction and operation of pump stations, and vehicle use - Increased dust from construction and maintenance vehicles
	Noise	- Negative effects on nearby residents, hunters, recreational users, and indigenous wildlife
	Vegetation	- Direct loss and alteration of vegetation - Changes to physical site conditions because of introduction of nonnative and invasive species - Disturbance of rare plants and traditional collecting sites
	Wildlife	- Direct habitat loss, alteration, or fragmentation leading to species loss - Disturbances on feeding, nesting, denning, or breeding patterns - Alteration of seasonal and daily movements of wildlife - Increased mortality because of greater human access to wildlife areas
	Fish and fish habitat	- Direct species loss resulting from increased sedimentation, turbidity, flow disruption, trenching, or dredging in watercourses - Indirect species loss resulting from increased water use and access to fishing areas
	Oil spills and accidents	- Detrimental impacts on soils, water, and vegetation - Destruction of bird nests and feather contamination in waterfowl - Direct loss of wildlife resulting from contaminated food intake, reduced respiratory functions, or ingestion of oily water - Direct loss of water birds, livestock, fish, fish eggs, and larvae
Port construction and operation	Air pollution	- Negative human health effects - Destruction of upper-atmosphere ozone - Generation of acid rain - Increased global warming - Destruction of agricultural resources, forest, and plant communities
	Water and contaminant discharges	- Direct and indirect loss of marine biodiversity and fishery resources - Ocean floor contamination and loss of benthic organisms
	Dredged material and contaminated sediment disposal	- Negative effects on plant and animal communities - Decreased water quality - Contamination of ocean sediments leading to species loss - Disturbance of existing contaminated sediments in harbors can make contaminants bioavailable
	Ship- and port-generated solid waste	- Direct loss of marine mammals, sea turtles, seabirds, and fish resulting from entanglement or ingestion of marine debris - Reduced capacity of animals to forage, digest food, and absorb nutrients
	Oil spills and accidents	- Direct loss of vegetation communities, bird and mammal populations, threatened and endangered species, fish populations, and benthic communities
Tanker operations	Air pollution	- Detrimental human health effects - Destruction of upper-atmosphere ozone - Increased acid rain - Increased global warming - Destruction of agricultural resources, forest, and plant communities
	Ballast water discharge	- Introduction of alien species - Increase mortality in marine birds - Generation of beach tar
	Accidents and oil-spill risks	- Direct loss of marine and terrestrial mammals, birds, and other species - Direct loss and/or decreased survival capacity in fish and fish larvae - Decreased water quality by chronic toxicity levels - Contamination of shorelines - Other negative effects due to oil-spill clean-up techniques

Source: Aboriginal Pipeline Group et al (2004); AAPA (1998; 2000); Bailey and Solomon (2004); BC Gas Utility Ltd (1998); Canada (1978); Canada NEB (1996; 1998; 2003a); Encana Ekwan Pipeline Inc (2003); Environment Canada and US EPA (2004); Foothills Pipe Lines (South Yukon) Ltd (1979); OOGRG (2004); Salmo Consulting Inc (1999); Taggart and McCracken (2002); Thompson (1978); US DOI (1972; 2002); WCEL (2003); Westwater Research Centre (1977).