

Reducing Side Effects of Oil and Gas Extraction

United Nations Environment Programme

Oil and Gas Extraction

Natural gas and natural oil both are so called fossil fuels. The formation process took place millions of years ago. As regarded worldwide, oil and gas are still the most important energy sources these days. About half of the global energy demand is covered by these two fossil fuels.

When it comes to conventional extraction of oil and gas, there are three different stages of recovery:

1 Primary Recovery

The natural underground pressure which drives fluids or gases to the surface is utilized. Oil and gas are moving "automatically" to the surface. It often reaches only 10 percent of the oil in a deposit.

2 Secondary Recovery

When the natural underground pressure decreases and no more oil reaches the surface, it is time to move on to this stage: water or gas is squeezed into the earth, where oil or gas is stored. In order to do so, additional holes must be drilled in most cases. By squeezing in fluids, such as water, underground pressure is increased again, and the fossil fuels move up. Such methods can reach 35 percent or even up to 60 percent of the oil or gas stored in the deposit.

3 Tertiary Recovery

Tertiary recovery is used to increase the amount of oil extracted additionally. Like at the second stage fluid or gas is squeezed into the deposit, i.e. nitrogen or carbon dioxide.

When the conventional method cannot be used owing to the soil composition, another procedure called fracking is utilised. It is a technique to recover oil and gas from shale rock. During the process a mixture of water, sand and chemicals is injected into the rock at high pressure through a formerly made drilling. This allows the gas or oil to flow up to the surface. The term fracking refers to how the rock is fractured apart by the high-pressure mixture.

As a huge part of the global oil deposits are located under the bottom of the sea, offshore drilling becomes more and more popular. Recovery from these deposits is likely to cause difficulties, as floating oil platforms must be constructed and under water pipelines need to be built.

The three countries, which have been extracting most oil and gas in 2018 have been the USA, Russia and Saudi-Arabia.

Side Effects

Natural oil and gas extraction have many devastating side effects. It is likely to be forgotten but not only extraction itself causes harmful by-effects:

DAMAGE OF THE SENSITIVE LOCAL ECOSYSTEM AND CONNECTED HABITATS OF ANIMALS

- by building access roads, facilities, accommodations for workforce and pipelines and doing seismic tests.
- Seismic tests can especially harm fish populations at the current place, since it involves sending out certain sound frequencies which confuse or even kill animals.

DEFORESTATION TO PROVIDE THE SPACE NEEDED

- In the wood there is stored carbon dioxide, a greenhouse gas, which then is released into the atmosphere.

FLARING

- During recovery of oil and gas another fuel gas is automatically released. Since this gas is of no value to the gas companies, they simply burn it.
- The products of this process are carbon dioxide, sulphur dioxide, nitric oxides and cancer-causing soot. All these gases are polluting the atmosphere massively and cause further damage of the environment.

ENVIRONMENTAL POLLUTION CAUSED BY DRAIN WATER

- into lakes or rivers near the drilling site.
- Leaks in pipelines or accidents at recovery facilities cause immense and irrevocable environmental damage, since one drop of oil can pollute 600 to 1000 liters of water, depending on what kind of oil leaked out.

FRACKING

- Side effects, which have not been fully investigated yet.
- A possible by-effect can be one or several earthquakes, as the earth is fractured apart by great force.
- Potentially carcinogenic chemicals used in the drilling process may escape and contaminate groundwater. Additionally, fracking requires a huge amount of water, which must be transported to the drilling site at significant environmental costs.

Possible Solutions

Monitoring of Natural Gases

In order to restrain the aftermaths of the drilling and extraction process, decommissioned drilling stations must be monitored by the companies as well as by independent organisations. They are officially considered sealed but can still release thousands of tons of methane. Changing operational practices during maintenance and repair to reduce the volume of natural gas vented to the atmosphere when components are taken offline for maintenance or replacement and implementing inspection and maintenance programs can eliminate as much as 80% of fugitive methane emissions from leaks.

Purification of Fracking Water

Another point is pumping the water, which is contaminated with various chemicals, back into the shafts used for fracking. This contaminated water poses a too great risk to the vital groundwater.

Minimise Gas Flaring

Each year about 140 billion cubic meters of petroleum associated gases are flared. This corresponds to around 4.2 percent of the global production. Flaring releases carbon dioxide which has a 25 times lower greenhouse effect than methane. While this is more environmentally friendly than simply releasing the gas, flaring releases tons of soot and affects the inhabitants of the affected regions by the poor air quality and the enormous noise pollution in their quality of living. This should rather be minimised. Even if it's not climate-friendly flaring can be a good protective measure for compensating excess pressure though.

Protection of Villages

For the extension and establishment of oil and gas production sites, entire villages are bought up or expropriated. In order to protect the history and culture of people and cities, it is worth preventing companies from buying up entire cities for harvesting raw materials.

In General

As the most effective but also the most radical solution, the complete (and mandatory) phase-out of fossil energy production can of course be considered. Correlating aspects like jobs, energy supply and economic impact should not remain unnoticed.

UN Projects

The United Nations are demanding clean, renewable, affordable, sustainable and modern energy for all people with their 17 sustainable development goals that were adopted by all member states in 2015 and are a part of the Agenda 2030. This goal was reviewed in-depth at the high-level political forum of 2018.

Preamble

Reaffirming the purposes and principles of the Charter of the United Nations and the aims of the 2030 Agenda for Sustainable Development, and in particular SDG 13 and related goals,

Fully aware of the fact that offshore oil sources besides their harm to the environment are not proving to be very effective in oil production, as between 2009 and 2030 only 1% of global oil production has emerged from offshore oil sources,

Alarmed by a history of environmental disasters such as multiple oil spills caused by leakage and accidents on oil-drilling sites,

Deeply disturbed by the lack of action taken to prevent, reduce and recover from environmental pollution by oil and gas extraction,

Emphasising the issue of long lasting destruction of ecosystems and contribution to the acceleration of climate change due to a failure to secure, regulate and maintain drilling sites,

Noting the fact that our planet's resources are only available to a limited extent,

Aware of the special ecological responsibility that goes along with oil extraction and the ability of the oil industry to have a positive impact on the environment,

Recognising that the protection and conservation of the environment is of utmost importance

Key Points: Resolution One

Submitted by: Argentina

Co-submitted by: Burundi, Colombia, Costa Rica, Denmark, Egypt, Finland, France, Germany, India, Morocco, Sri Lanka and Sweden

Encourages the efforts of all UN members to develop national Climate Change Initiatives that may be in charge for means such as but not limited to:

- introducing mandatory methane standards on national, state and federal levels,
- a diligent oversight of wastewater disposal to minimise groundwater contamination,
- overseeing the prevention of marine pollution by illegal dumping of waste and other matter;

Strongly urges all member states to make additional efforts on preventing major oil spills from causing natural disasters by:

- annual safety inspections at drilling sites,
- building or upgrading existing vessels to double-hull standard,
- providing sufficient amounts of safety equipment, fire suppression equipment and clean-up materials;

Urges all member states to realise that in the long term, fossil fuels are not at all a sustainable solution while taking ecological as well as economic and social effects into account by:

- increasing their usage of renewable energy up to at least 3,5% each year until 2025
- entirely stop using fossil fuel as their source of energy by 2050,
- actively reduce disposable products with high amounts of fossil component

Key points: Resolution Two

Submitted by: Russian Federation

Co-submitted by: Australia, Bangladesh, Belgium, Brazil, Canada, Chile, China, Czech Republic, Iran, Iraq, Japan, Kuwait, Malaysia, Mexico, Nigeria, Norway, Pakistan, Poland, Republic of Korea, Saudi Arabia, Somalia, South Africa, Turkey, UAE and US

Suggests member states to increase funding for scientific research on reducing side effects of oil and gas extraction, including topics such as

- the reuse fracking water respectively to purify it,
- development of technologies which enables to economically use the "waste" gas to prevent flaring,
- improvement of technologies to minimise and prevent the release of green-house gases into the atmosphere,

Urges relevant nations to introduce a zero-gas flaring policy, but allow it in unavoidable circumstances by introducing a mandatory report on every major occurrence of gas flaring, which requires the company responsible to state and justify their reason for doing so;

Emphasises the need to ensure the health and safety of workers and citizens by:

- reducing air pollution caused by using affordable and efficient filter technologies
- providing medical care and adequate protective gear/equipment to workers,
- allowing UN-recognized non-governmental Environmental and Human Right Organisations to oversee that these measures are being implemented;