LINGO
Leave it in the Ground Initiative

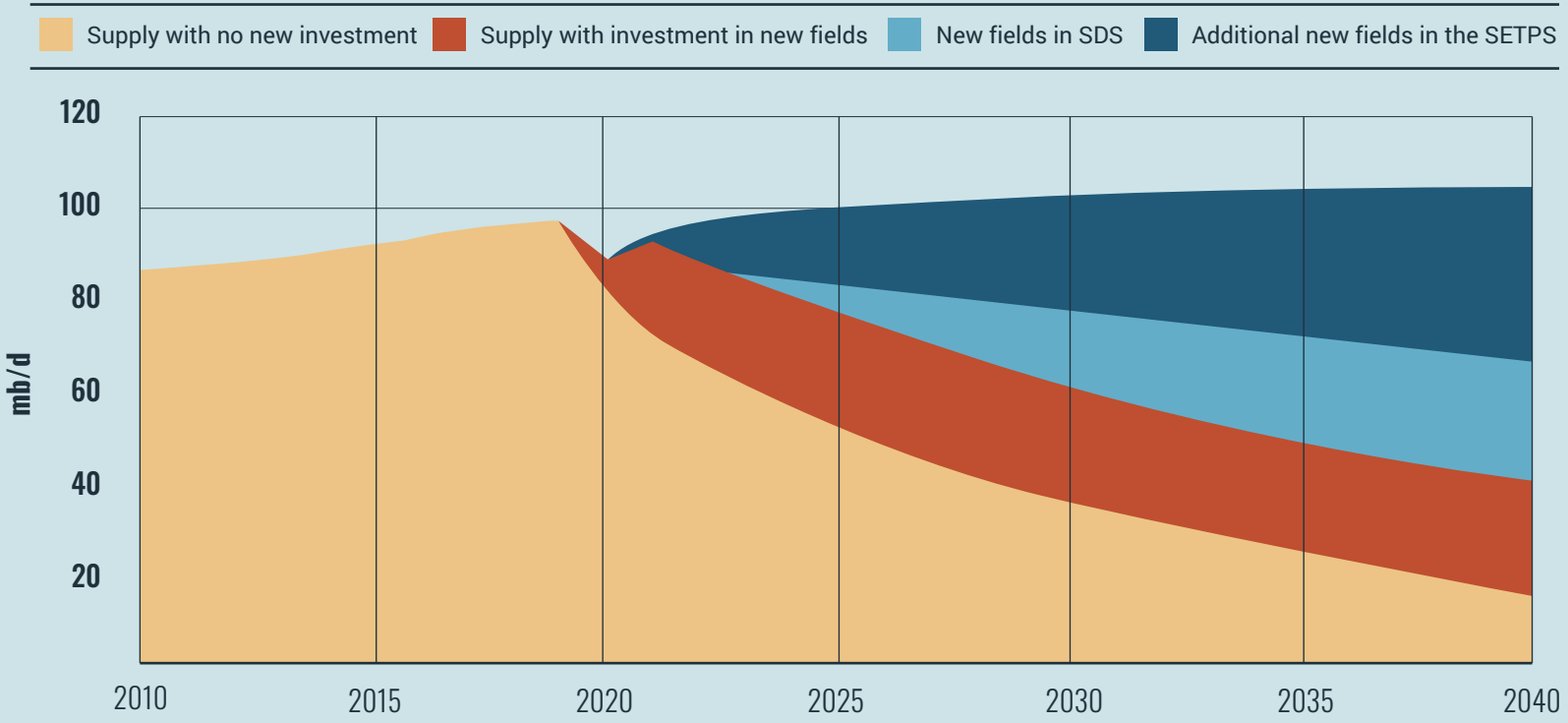
HARVEST MODE

KJELL KÜHNE

BRIEF NOVEMBER 2024

When oil prices go very low, oil companies have been known to shift into a mode that avoids new investments and conserves cash flow: “harvest mode.” While extraction continues from existing infrastructure, “harvesting” fossil fuel, no capital is spent on new infrastructure such as additional wells or exploration. This mode makes financial sense, because it conserves money that would otherwise be invested in bets on an uncertain future, and it makes climate sense, because it brings the fossil fuel industry in line with a Paris-compatible pathway.

Figure 1 Global oil demand by scenario and declines in supply from 2019



Oil demand flattens (in STEPS) or declines (in SDS), but continued upstream investment is still to offset declines from existing fields

Note: mb/d= million barrels per day

The International Energy Agency has projected what harvest mode would look like for oil and gas in its 2020 World Energy Outlook

Finances & harvest mode

Harvest mode allows existing extraction to continue, generating a bigger cash flow than a business as usual approach in the fossil fuel industry, because no capital is lost through new investments. Such new investments are increasingly risky in an era of climate emergency and an accelerating energy transition away from fossil fuels. The specter of stranded assets hangs over the sector ever more clearly[1] and avoiding bets on future fossil fuel revenue is a safer strategy than continuing to invest more. Avoiding stranded assets is not the only benefit of harvest mode, it also means that more money is available in the short term: the net present value of the operation rises. This perspective is interesting not only for investors with an interest in climate alignment, but also for those with a short time horizon, e.g. governments with state-owned companies in countries with election cycles.

Transition planning is made easy by harvest mode: it happens by default. Whether money is spent on new exploration or extraction can be verified from financial accounts, and has benefits over other transition methodologies that rely on relatively complex emissions accounting, which has invited green washing efforts through explaining away the problem by looking at a limited scope only, or "netting" emissions with inherently questionable offsets.

Climate change & harvest mode

Harvest mode is an essential ingredient, maybe even a shortcut, to aligning oil and gas extraction companies with the Paris Agreement. The IEA's "Net Zero Emissions by 2050 Scenario" clearly states that there is no need for new investment in fossil fuels, which means no new oil and gas expansions or fields approved for development and no new coal mines or mine extensions.[2] This scenario is aligned with the 1.5°C goal of the Paris Agreement. Harvest mode can help align company plans with climate goals and support companies' energy transition. While it will be one ingredient of the fossil fuel endgame, it will not be enough. When looking at the global picture, besides applying harvest mode to most of existing extraction, many sites also need to close prematurely to stay within the 1.5°C budget.[3] Deciding which sites should be closed and which should apply harvest mode should be based on financial, economic, and climate justice principles.

No New Fossil Principle

Harvest mode is also characterized by following the "no new fossil" principle, which has been identified as an important guiding principle for the 2020s,[4] as a fossil-fuel dependent society gets to terms with the climate emergency and embraces an accelerating energy transition.[5] It also applies to fossil-fuel

1 Fulton et al. (2023). Avoiding Stranded Assets: risk aversion in oil development. Carbon Tracker Blog. September 2023.
2 IEA (2021), Net Zero by 2050, International Energy Agency, Paris.
3 Kelly Trout et al. (2022), Existing fossil fuel extraction would warm the world beyond 1.5 °C. Environmental Research Letters.
4 Muttitt (2024) No New Fossil Fuel Projects: The logical first step in a transition to clean energy. IISD Insight, June 11, 2024
5 Green et al. (2024), No new fossil fuel projects: The norm we need. Science.

consuming infrastructure[6] which is beyond the scope of harvest mode. Climate science leaves no doubt that it is necessary.[7] Governments should follow this principle out of coherence of their own energy policies with the climate goals enshrined in the Paris Agreement. Energy companies should follow it out of moral reasons, for financial reasons, and to align with the energy transition. For civil society and the climate movement, this principle can be an important one to rally around for defending a liveable climate.

Harvest mode in practice

From the start of extraction, every oil and gas well is a declining asset: it depletes naturally.[8] During extraction, declining reservoir pressure is the main characteristic of natural depletion.[9] When not drilling new wells, harvest mode results in a smooth decline in extraction. For fracked wells, this decline is much faster than for conventional wells. On a global level, it results in a roughly 8% annual decline of oil and gas extraction[10] - similar to what is found in Paris-aligned scenarios.

Harvest mode - to a degree - is already happening in the oil and gas industry. As Carbon Tracker has pointed out, in a high-price environment, private oil companies have started buying back shares and paying dividends, rather than investing in new extraction projects.[11]

For Indonesian coal company Harum Energy, harvest mode is being applied already.[12]

For the highly indebted Mexican National Oil Company PEMEX, applying harvest mode would result in an immediate reduction of annual spending by about 20 billion USD, making these resources available for urgent matters.[13]

A good plan on how to spend the additional money available via harvest mode is necessary to make the best use of the one-time

6 Smith, et al. (2019), Current fossil fuel infrastructure does not yet commit us to 1.5 °C warming. Nature Communications.
7 Welsby et al. (2021), Unextractable fossil fuels in a 1.5 °C world. Nature.
8 Oil and Gas Decline Curves, Rock River Minerals, April 12, 2019.
9 Hagoort (1988) ed., Natural Depletion. In: Developments in Petroleum Science, Volume 23, 1988, Pages 233-261.
10 International Energy Agency (2020) World Energy Outlook 2020, page 259, Figure 7.3.
11 Benham (2023), Stranded Strategies. Carbon Tracker Blog, September 2023.
12 Lakshmi et al. (2024), Indonesia's coal producers diversify as money for mining dries up. Financial Times, October 5, 2024.
13 CIEP (2023), La importancia fiscal de Pemex: Hacia la era post-petróleo. Centro de Investigación Económica y Presupuestaria. Septiembre 2023.

opportunity.[14] Examples of useful ways for private companies are: giving it back to shareholders, investing in renewables, energy efficiency, or diversifying away from the energy sector altogether. For state-owned companies, it depends on whether the company is primarily contributing revenue. In that case, the harvest should be reinvested in other revenue-generating sectors. If the main purpose of the company is to provide energy, it makes sense to accompany harvest mode with measures of demand-destruction (e.g. choice editing or high taxes on non-essential use), cross-subsidizing basic energy needs that can be met with renewables.

Conclusion

The decline in fossil fuel extraction is an inevitable component of an extractive industry (although its reality is often hidden behind a smoke screen of continued growth projections). This natural decline gets steeper through harvest mode. Rather than creating upheaval, the additional revenue from the harvest should be channeled into smarter and more just societies that persist beyond extractivism.

Since nowadays much of the hydrocarbon heritage of countries is being burned shortly after extraction, and this is not a wise use of this precious resource, entering harvest mode also ensures that the remaining part of the reserve endowment is set aside for future, more intelligent uses that do not include causing climate change and pollution.

14 In reality, all extractive business is a one-time opportunity, even though it may not be commonly framed as such.

LINGO
Leave it in the Ground Initiative

HARVEST MODE

BRIEF NOVEMBER 2024