Risks in Shale Gas Extraction

What is the issue?

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- Fracking is the technique used for extracting hydrocarbon resources from ‘shale reservoirs’ by drilling deep horizontal wells.
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- But there is considerable evidence to suggest that this method is detrimental to the environment, and governments need to exercise restraint.
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What are shale reservoirs?

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- Apprehensions that fossil fuels will be depleted by 2050 have been challenged by some experts who’ve argued that there are still vast unexplored reserves.
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- Among the reserves that count for augmenting energy supplies is ‘shale gas’ and ‘shale oil’ both of which are estimated to be abundant underground.
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- Hydrocarbons are conventionally found at about 1,500 m depth, but shale gas and oil are usually found at depths of about 2,500-5,000 m.
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- They are classified as an unconventional hydrocarbon source and their extraction requires deep vertical drilling followed by horizontal drilling.
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- **Pioneers -** In the U.S., shale gas has been commercially exploited for two decades, and which has caused their fuel costs to drop considerably.
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- Shale discovery has also benefitted the US politically, as it effectively destroyed the clout of “Organisation of the Petroleum Exporting Countries” (OPEC).

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- Similarly, if India commercially exploits shale deposits, it could meet its ever-increasing energy demand, and decrease its fuel import bills.
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What is fracking?

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- Unlike conventional reservoirs, porosity of shale is very less – which therefore gives out little flow output after merely perforating (opening) the well.
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- Hence, to increase the porosity of the reservoir and facilitate flows, the reservoir rock is fractured by using 'hydraulic fracturing' (fracking).
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- In this method, high volumes of water mixed with certain chemicals are pushed down the well, to break the rocks and release the trapped resource.
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- Fracking has proved to be an economically viable tool in extracting shale gas.
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- **India's case -** The government introduced a policy on shale gas and oil in 2013, permitting national oil companies to engage in fracking.
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- Under the first phase, shale gas blocks were identified in Andhra Pradesh, Arunachal Pradesh, Assam, Gujarat, Rajasthan and Tamil Nadu.
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- However, environmental groups have strongly criticised this move, which they say will have adverse environmental impacts.
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- Notably, countries like Germany and France and subnational governments like Scotland have banned fracking.
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What are the environmental risks of fracking?

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- Fracking consumes large amounts of water (about 1.5 crore lts/well) and is bound to impact irrigation and other local requirements.
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- Additionally, this water is mixed with as much as 260 chemicals and pumped into the reservoir at high pressure to create cracks in the rocks.
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- The US experience shows that as many as 260 chemicals were used, of which 83 have been identified to pose a risk to human life and environment.
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- The disposal of the water used for fracking is another big challenge as such vast quantities has to be reprocessed before draining them out.
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- Further, about 25-90% of the fluid that is pumped in is lost within the reservoir and is not retrieved back.
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- This unrecoverable volume hence puts the nearby underground water sources at a high risk of contamination – some cases have already been documented.
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- Fracking also has other impacts such as increased air emissions (including greenhouse gases) and seismic activity – as recognized by some EU studies.
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- While some do contest the risks of fracking, the evidence currently seems to be pointing otherwise, which hence calls for a rethink.
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Source: The Hindu

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