Plan ahead to protect the environment

Lebanon's progress to cultivate wealth from its offshore oil and gas resources has left us with more questions than answers. While the country will not extract any resources for at least five years, the agreements being negotiated in the next 12 months will determine whether Lebanon gets a good deal or not.

Over the course of five days, seven leading thinkers will discuss different aspects of the resources — from avoiding environmental destruction to how to spend the new wealth — each with the aim of helping provoke awareness about what is going on in this crucial period.

For our fourth segment, Ricardo Khoury argues early planning can protect Lebanon from environment catastophe.

See also: Lebanon's Petroleum Administration makes a positive start

Avoiding a regional war over hydrocarbons

The launching of the prequalification process for Lebanon's first oil and gas licensing round is a significant step towards the development of hydrocarbon resources in the country. But while many topics are being discussed related to the offshore finds, little is being spoken about the potential environmental impacts of the sector.

A lack of planning could lead to severe environmental and social impacts. While most people are concerned with the risks of major oil spills that could have devastating impacts on our shorelines — although our neighbors are probably more at risk than we are because currents will mostly drive spills towards the north — there are many other issues to be dealt with and that are more certain to occur in the event of major hydrocarbon finds.

So far although a strategic environmental assessment (SEA) study has been prepared, as required in Lebanon's Offshore Petroleum Law as an environmental planning instrument, it has not yet been disclosed to the public. Not much is known about the results of the study and whether it has provided strategic inputs to guide environmental decisions early on in the sector's development process.

The SEA could help, for example, to guide the Petroleum Administration in designing the licensing bid and providing guidance to developing sound environmental policies for the sector. Environmental criteria could, for example, be used when deciding on the number and the geographical location of the blocks under the first licensing round.

The scale and significance of environmental impacts associated with the exploration and production of petroleum resources in Lebanon are intrinsically related to outcomes of the exploration phase of the first awarded block(s). For instance while the impacts associated with exploration activities — which may include some additional seismic surveys, drilling of exploratory wells, and establishment of on-shore support facilities — may not be significant, impacts in the case of multiple production areas (in which exploration activities revealed commercial findings of gas) could cause significant pressure on the Lebanese environment. The potential for routine and accidental damage are even higher if both gas and crude oil commercial findings are revealed.

Not quite so offshore

If commercial findings are made, the infrastructure required to transport, process, store and offload hydrocarbon finds range from ultra-deep water subsea installations and pipelines to relatively large on-shore supply bases which support the offshore installations. What some people may not realize is that while the production facilities are off-shore, most of the significant impacts may actually occur on-shore or near-shore.

Relatively large areas (possibly in the order of hundreds of thousands of square meters) will be required for

hydrocarbons processing, storage and further delivery for use. This will undoubtedly impact on land-use (in an already densely populated coastal area), air emissions (mainly associated with flaring and further increasing Lebanon's carbon footprint), noise, pressure on transportation infrastructure, and waste generation.

Furthermore in the case of gas, once processed, it would need to be transported to the local power plants (if priority is first given to domestic use). Current plans are to convey gas along an on-shore coastal pipeline running across the entire coastline.

The environmental impacts of such a plan need to be more carefully studied bearing in mind the various crossing of the pipeline with surface water bodies and other land-uses. Such detailed studies would be needed to ascertain that safety zones can be secured along the densely populated littoral. This is where not only environmental, but a more holistic health, safety and environmental assessment of such projects become instrumental planning tools to be used by regulators and planners.

Furthermore, while economic analyses may indicate that an onshore pipeline is more cost-effective than an offshore one, if resettlement of those people living in affected areas is required to meet safety standards then associated costs would rise significantly.

The recently established Petroleum Administration (PA) has the challenging job of understanding the potentially significant negative environmental impacts early on in the process and designing mitigation strategies and policies that will avoid them.

Early planning will lead to savings in the long term, both financially and environmentally. For example given the very limited availability of space onshore, the PA may encourage the adoption of off-shore floating solutions such as FPSO (floating, production, storage and offloading vessel). Such an option, although expensive, would not only relieve the coastal area from significant pressure, but may also protect marine habitats as lengthy pipelines bringing hydrocarbons onshore would not be needed. Such solutions also provide flexibility in the long-term, as they can be moved to another location once fields are exhausted, and do not require the decommissioning of extensive areas onshore.

There are other areas where the PA should provide policy directions as early as possible, such as in the areas of flaring (by promoting the adoption of zero-flaring philosophies in design) and waste management (will drill cuttings be allowed to be disposed in the sea or need to be sent for treatment and disposal offsite?).

Given the limited waste infrastructure, the PA could promote treatment of wastes in common offshore facilities to be established (introducing the concept of shared off-shore infrastructure facilities among the different fields and operators) or even promote transboundary cooperation (notably with Cyprus).

These are just a few of the myriad issues to be considered if Lebanon is to successfully extract oil and gas without causing irrevocable damage to the environment. They can only be dealt with if the government and the PA take a proactive approach to addressing a lack of health and safety legislation related to oil and gas, the lack of a national contingency plan (current plan considers only the case of natural disasters and foreign invasion, but not the case of large scale oil spills), data deficiency, and a lack of waste management infrastructure.

Development of the Lebanese hydrocarbon resources will not come without environmental impacts, however these can surely be controlled with sound environmental planning. The earlier such planning is integrated in the government's activities, the better it will be for our environment's and people's welfare.

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