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The Silent Risk in Bangladesh's Gas Sector: Losing Gas Underground Forever

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Bangladesh's energy debate usually centers on declining reserves, rising LNG imports, and rising electricity and fuel oil costs. While these concerns are real, another critical issue receives far less public attention: the permanent loss of natural gas underground due to inadequate and inefficient reservoir management.

Most people think gas is only "lost" when it is burned, flared, or leaked from pipelines and surface facilities. Instead, it happens silently within gas reservoirs when fields are produced without proper long-term engineering planning. When reservoirs are not properly managed or technical challenges are not addressed in time, significant volumes of gas can become technically unrecoverable, remaining underground forever.

For a country heavily dependent on natural gas for domestic, infrastructural, and industrial needs, this is not merely a technical matter; it is a question of national energy security and economic protection.

The Silent Loss of Gas Beneath the Ground

The discovery of gas is only the first step. Efficient gas recovery from the field requires strong engineering management throughout the field's life.

A portion of the discovered gas can remain unrecoverable if reservoirs are not managed carefully. This can

happen for several reasons:

- Poorly placed wells or improper well design may leave parts of the gas reservoir untouched.
- Advancing underground water can trap pockets of gas if it is not properly monitored and managed.
- Delayed installation of compression facilities can cause production to decline too early, reducing the amount of gas that can ultimately be recovered.

Over time, these problems can leave large volumes of gas permanently trapped underground, with serious long-term consequences.

A simple example shows how gas can be lost underground. Consider a gas field with 200 billion cubic feet (BCF) of gas. With proper management, about 90 percent of this gas, which is around 180 BCF, can be produced.

But if the field is poorly managed — such as allowing sand or water to enter the well, ignoring unexplained drops in production, delaying use of compression, or improper monitoring — the recovery may fall to about 50 percent of recoverable reserves or even less. In that case, only about 100 BCF of gas would be produced, and nearly 80 BCF could remain trapped underground forever.

Losing such volumes of gas from multiple fields due to poor reservoir management would lead to significant

economic loss for the country.

Preventing such losses is precisely what petroleum engineers are trained to do. One of their key roles is to anticipate potential problems before they become critical. Through reservoir monitoring, modeling, and production analysis, petroleum engineers can identify early warning signs and take timely action by adjusting production strategies, improving design, or installing necessary facilities to ensure that the maximum amount of gas is ultimately recovered from the reservoir.

The Oil & Gas Sector is Entering a Sensitive and Challenging Stage

Bangladesh's gas sector is no longer in the stage of easy production. Many major fields are now mature and face increasing challenges, mostly of a technical nature. At this stage, even small mistakes, negligence, or wrong decisions can have large consequences. In mature fields, careful engineering management becomes more important than ever.

Globally, new oil and gas discoveries are becoming increasingly complex. Future reservoirs are often deeper, smaller, and technically more challenging to develop and extract. Developing such resources requires careful planning, risk assessment, economic evaluation, and continuous monitoring - precisely these are areas where petroleum engineers provide essential expertise.

Companies such as Saudi Aramco, Abu Dhabi National Oil Company, and Qatar Energy have achieved high recovery rates through advanced reservoir monitoring, detailed field modeling, and careful long-term reservoir management. Their heavy investment in petroleum engineering expertise demonstrates that maximizing recovery depends on strong and continuous petroleum engineering oversight.

Petroleum Engineers Protect Both Resources and Revenue

Petroleum engineers are not only technical specialists; they are also trained to evaluate the economic implications of engineering decisions.

Every gas development involves a series of critical decisions that rely heavily

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on petroleum engineering analysis -from exploration to production. These decisions require balancing technical performance and long-term economic assessment. Petroleum engineers evaluate reservoir behavior, production potential, and development feasibility to guide key choices in different phases of the whole process, such as:

- Exploration stage: Assessing reservoir potential, drilling risks, and estimating recoverable resources to determine whether a discovery can be commercially viable.
- Field development planning: Determining when and how a newly discovered field should be developed, based on engineering calculations of reservoir performance, production forecasts, and economic feasibility.
- Production strategy: Deciding whether production should be accelerated or moderated to protect long-term recovery.
- Facility planning: Determining the appropriate timing for installing a compressor or other surface facilities.
- Well management: Evaluating whether new wells should be drilled or existing wells optimized.
- Resource management: Deciding whether to prioritize developing smaller new fields or maximizing recovery from existing ones.

Without rigorous engineering evaluation, such decisions can lead

to lower recovery, higher costs, and reduced long-term value of national gas resources.

Strategic Decisions Can No Longer Wait

The involvement of petroleum engineers in Bangladesh's gas sector remains extremely limited compared to global standards. One major reason is that, for many years, local universities in the country did not produce petroleum engineers. However, a positive change has recently begun -over the past few years, several of Bangladesh's own universities have started producing petroleum engineering graduates.

To ensure the country's energy security, several strategic measures must now be taken:


First, petroleum engineers must be given an active and institutional role in decision-making, planning, and management of gas fields.

Second, regular reservoir monitoring and scientific analysis must be strengthened in every gas field.

Third, production management must be strengthened through the timely development and modernization of essential technical infrastructure.

Fourth, skilled and talented petroleum engineering graduates from local universities should be effectively placed and utilized in the gas sector without any bias.

Bangladesh's energy future will not depend solely on new gas discoveries or LNG imports. Rather, true energy security will depend on how efficiently existing gas fields and related resources are managed. With proper reservoir management, it is possible to recover up to 80-90 percent of the gas underground.

Therefore, utilizing petroleum engineering expertise at the center of planning and management in the gas sector is no longer optional - it is an essential strategic decision for ensuring Bangladesh's long-term energy security and economic stability. 

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