BEYOND ENERGY TRILEMMA:
Natural Gas, as the Vital Component of a Sustainable Energy Future
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International Gas Union
Natural Gas is the Right Tool for Addressing the Global Energy Trilemma

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It will have a Vital Role in the Sustainable Energy Future

IGU Membership represents more than 95% of the global gas industry and covers the full value chain.

Over 160 Members Delivering a Sustainable Future Powered by Gas.
The Size of the **Challenge.**

**World:**
- ~1 billion without Electricity
- Pollution kills 7 million people a year, most are in Asia

**ASEAN:**
- Economy to triple by 2040
- Population growth +20%
- 65 million people without Electricity
- 250 million depend on solid biomass for a cooking
Gas has a Vital **Environmental** Role in the Sustainable Energy Future

**Sustainability**

Switching from Coal to Gas enables immediate reduction in carbon emissions and near-elimination of harmful air pollution.

Gas in Power Generation produces about in 45%-55% less CO2 Emissions than Coal.
Gas has a Vital **Economic** Role in the Sustainable Energy Future

### Affordability

Gas is more affordable than coal, when the full costs associated with anticipated impacts of climate change and pollution are taken into account.

*Source: Shell, HIS Markit*

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### Philippines Power Generation Example (2015, @40% Capacity)

**COAL:** $149 / MWh

**Natural Gas:** $118 / MWh

20% Savings

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#### Key Costs:
- **Fuel Costs**
- **GHG Emissions Associated Costs**
- **Desulphurization Costs**
- **Air Pollution Costs (Health)**

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**Philippines Power Generation Example (2015, @40% Capacity)**

- **Coal**: $149 / MWh
- **Natural Gas**: $118 / MWh
- **20% Savings**
Gas will help Ensure a **Secure** Sustainable Energy Future

**Energy Security**

Abundant global resources, secure and flexible supply options, reliable operation profile make natural gas a vital component for energy security.
Vital Energy **Reliability Roles** in the Sustainable Energy Future

**Gas Provides Specific Advantages for Cities**

- **Air pollution**: nearly zero sulphur dioxide, nitrogen oxide, and no particulate matter emissions
- **GHG emissions**: 40% less than coal and 20% less than oil
- **Heat intensity**: Most heat intensive (and thus highest efficiency) fuel source
- **Scalability**: Ease of adding customers to existing networks once infrastructure is developed

- **Efficient, non-polluting, lower GHG emissions**

**Power Security & Renewables Integration**

**Heating & Cooling Security**

**Industry**

**Transport**

- Light Duty
- Fleets
- Heavy Duty
- Shipping
- Marine Fuel

A Sustainable Future – Powered by Gas
Priority Actions to Ensure Sustainable Gas Future

Mobilising Investment
IEA estimated the cumulative energy investment need for SE Asia to 2040 to be $2.7 trillion in the main scenario, and $2.9 trillion in the sustainable development scenario (energy supply and efficiency).

Expanding Infrastructure & Connecting Markets
Gas market development has been held back by lack of infrastructure
Enhancing interconnectedness of natural gas supply networks and striving to harmonizing policies and regulation towards a flexible and transparent markets will help to enhance energy security and reduce costs in the long run.

Coordinating Policy to Address Pollution & Efficiency
Air pollution has high economic and societal costs, which need to be priced explicitly or through regulation
Efficiency will be an invaluable resource in meeting enormous energy needs, and regional coordination can ensure economically efficient outcomes.
Thank you