Perspectives on Stranded Gas Success Stories: Lessons Learned

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Major Barriers in Flare Reduction Projects

- Significant barriers impede progress in bringing flared natural gas to more effective use, including:
  - Distance to markets
  - Lack of local infrastructure
  - Gas ownership
  - Local security issues
  - Availability of capital, regional resources and skilled manpower

- The key to addressing gas flaring is the identification of project activities that can successfully bring the gas to more productive use

- Cooperation among governments and operators to address the flaring of natural gas is critical
Chevron Successes Part of Long-Term Integrated Flare Reduction Plan

- In 2005, Chevron and other major IOC’s, NOC’s and governments sign GGFR Global Flare Reduction Standard
- Chevron has fully incorporated GGFR Associated Gas Recovery Planning processes
- Nine years of repeated annual planning, execution and review
- Strong integration with commercial major capital project activities of business units
- Strong cooperation with government programs and development of regional infrastructure
- Almost 50% overall global reductions achieved from 2008-2014
- Major lessons learned from successes and challenges
Chevron adoption of GGFR Standard, led to creation of internal Environmental Performance Standard on Flaring and Venting (EPS F&V)

CVX EPS F&V delineate annual process to identify and execute Associated Gas Reduction Plan (AGRP)

It aligns with the guidelines of the World Bank’s Global Gas Flaring Reduction (GGFR) public-private partnership and its voluntary standard
Effective Flare Management Plan

- Flare Management Plan is a multi-step iterative process designed to identify opportunities to reduce flaring, and track and support the activities that deliver real and lasting emissions reductions from these opportunities.

Ref: Preparing Effective Flare Management Plan, IPIECA, OGP, GGFR document
Since 2000:
- 250% oil and gas production increase
- 94% reduction in flaring
- 99.2% gas utilization (2013)

In 2009, the 4-year, $258 million Gas Utilization Project to eliminate routine gas flaring was completed.

- Kazakhstani content equaled $129MM
- 900 Kazakhstani specialists contributed to the work
- Kazakhstani companies completed more than 50% of construction

Environmental investments, including the Gas Utilization Project, exceed $2.3 billion since 2000.

Project success is the result of sincere, transparent commitment to cooperation from TCO, our partners, and the Kazakhstani government.
Routine Flaring Elimination Journey in Tengizchevroil (TCO)
A Success Story
Angola LNG:  
*Key Insights from an Associated Gas LNG Project*

**Early Development Phase**
1. Opportunity Identification (resource, land and marine access)
2. Clear Project Vision
3. Government Support and Stakeholder Alignment
4. Aligned Upstream and Midstream Objectives
5. Market solution

**Later Development Phases**
6. Effective Project Planning and Execution
7. Environmental Mitigations
8. Host Community Acceptance
Project Scope

- Anchored by Associated Gas supply
  - Future Non-Associated Gas
- Gathering from multiple gas sources
- Single train 5.2 mmtpa LNG plant
- LNG and LPG loading facilities
- 7 dedicated LNG ships
- Employee housing and infrastructure
- Construction team of ~7,000
  - ~50% Angolan
- Multiple Community Projects
Concluding Remarks

- **Flaring reduction is challenging**
  Many obstacles impede the utilization of associated gas, particularly in situations where the gas is produced in areas remote from markets that can’t productively utilize the gas.

- **Focus needs to be on projects**
  Successful flare reduction requires the planning and execution of gas utilization projects that can gather, process, transport and distribute the produced gas at prices that are competitive with other available fuels.

- **Cooperation is essential**
  Amongst producers, buyers, with governments, financial institutions and other stakeholders is essential in enabling success of gas utilization projects. Facilitation of this cooperation through the efforts such as the Global Gas Flaring Reduction Partnership greatly contribute to the success of flare reduction project activities.

- **Considerable success has been accomplished**
  From 2008 to 2013, Chevron has reduced flaring from its operations by roughly 50% worldwide through a series of carefully planned and executed gas utilization projects.

- **Addressing remaining flares will require even greater efforts and greater cooperation**
  The most difficult situations are those that remain where the gas is particularly remote from markets, widely distributed, local markets poorly developed, gas values are low, or other circumstances impede progress. These challenging situations will call for unprecedented efforts of all parties along with further collaboration and cooperation beyond those developed to date.