

EBRD Gas Flaring Study

The Future of Natural Gas in Egypt Executive Roundtable
23 February 2016, Four Seasons Nile Plaza, Cairo



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Objectives

1. Assessing the extent of Gas Flaring in Egypt
2. Demonstrating the business case for Associated Petroleum Gas (APG) recovery
3. Achieving Zero Flaring

Key partners

- Memorandum of Understanding with EGPC, EGAS and GANOPE in March 2015

Project Consultant



Partners



Project Management



- Case studies were made with three operators

Case studies

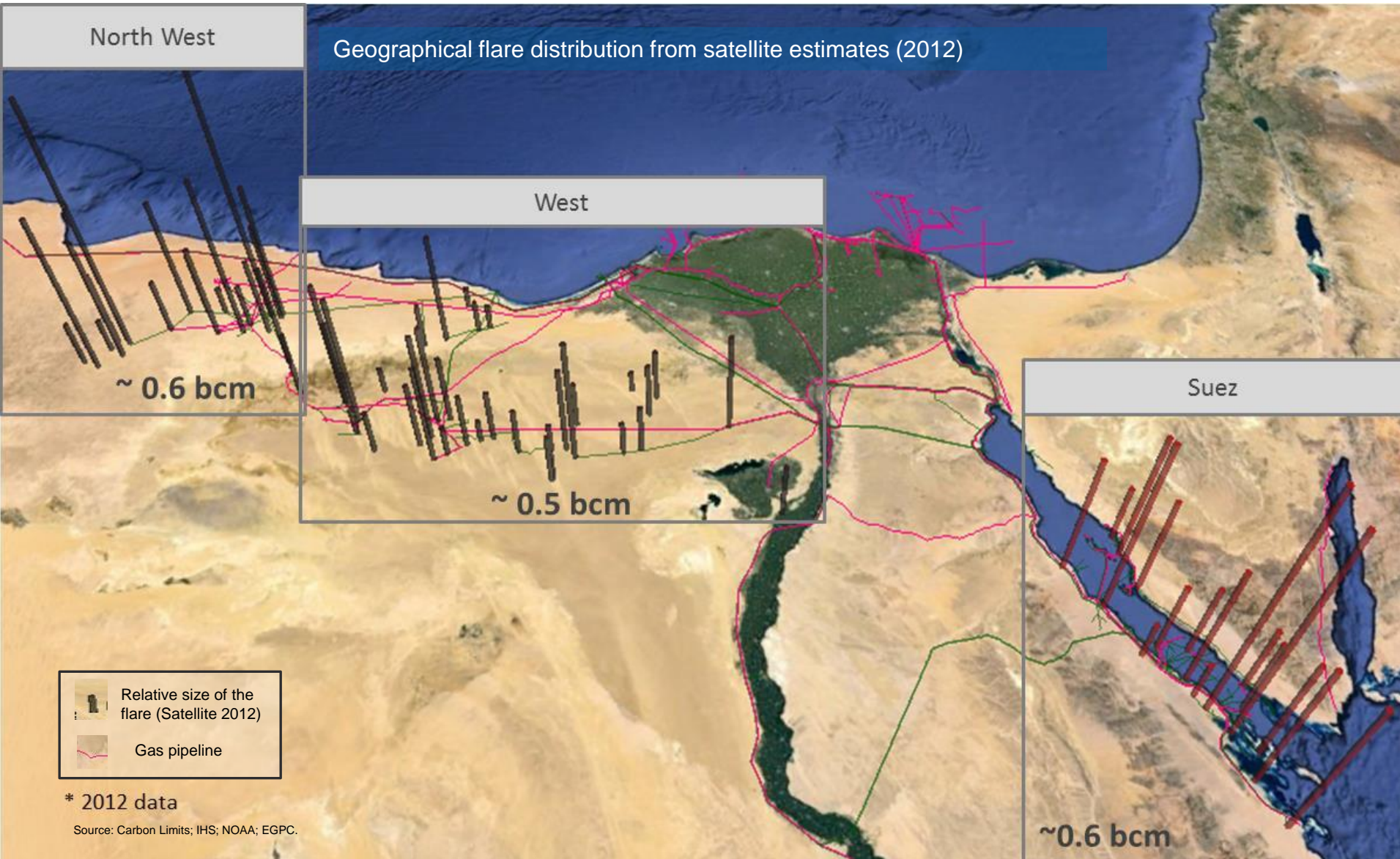


1. Assessing the extent of Gas Flaring in Egypt

Egypt currently flares 1.7 bcm p.a. from oil fields



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1. Assessing the extent of Gas Flaring in Egypt

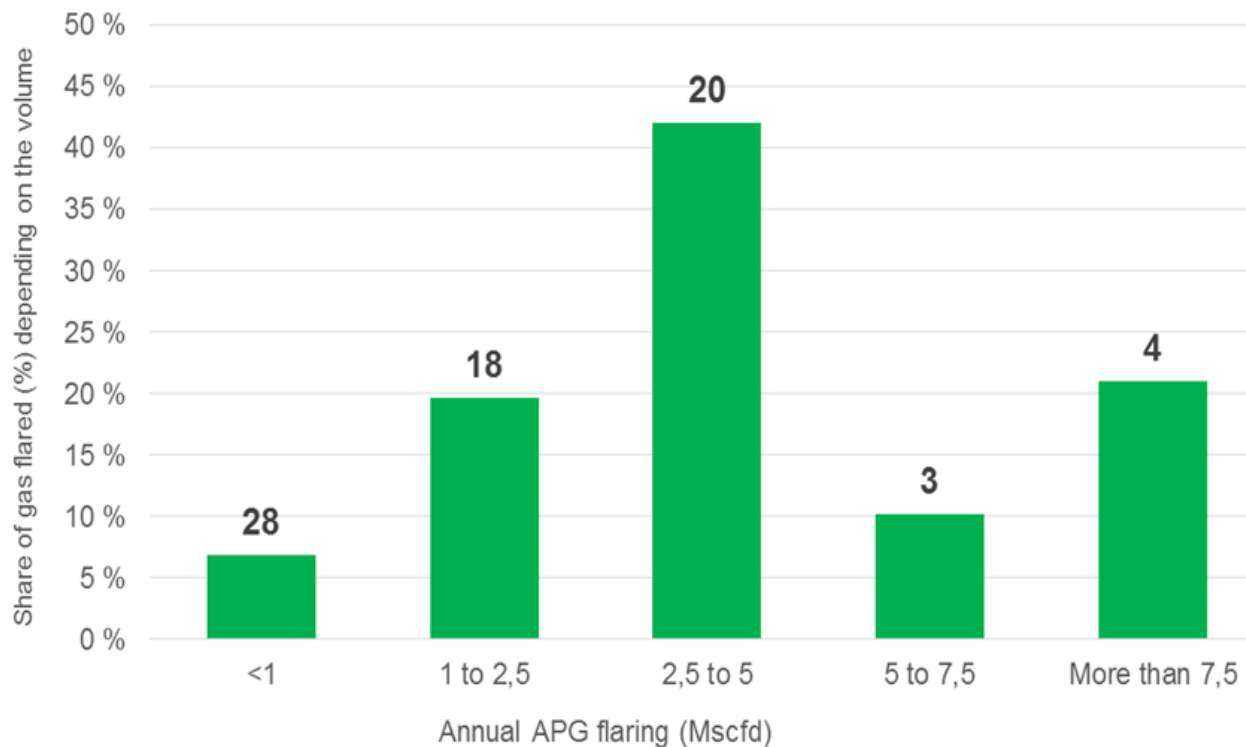
73 sites identified, many small and far from market



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- 7 fields flare 1/3 of total
- 2/3 of flaring from small fields (<5MMscfd)

Size distribution of flares and number of flares in each category (2012)



Source: Carbon Limits analysis based on satellite data (DMSP, 2012)

1. Assessing the extent of Gas Flaring in Egypt

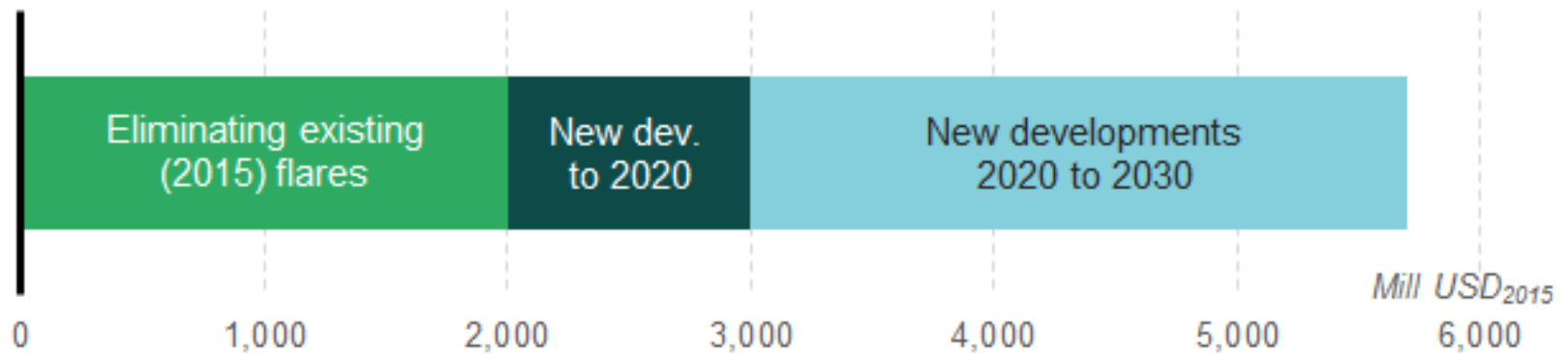
USD 2bn needed to avoid flaring from existing fields



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- 1.5 bcm of gas can be recovered commercially, or 3% of Egypt's annual gas consumption
- Primarily medium and large fields, less progress expected with stranded gas far from markets

Estimated capital requirements to achieve zero routine flaring



Source: Carbon Limits.

2. Demonstrating the business case for APG recovery

Business model can work...



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- EBRD has invested more than USD 200 million in Gas Flaring reduction projects in two years
- Each project demonstrated commercial viability of APG recovery with different methods and areas

EBRD financing of Gas Flaring reduction



Merlon

2015
USD 40 million
Reserve-based loan

Onshore oil & gas
field development



PICO

2015
USD 50 million
Reserve-base loan

Onshore oil & gas
field development



IPR

2014
USD 50 million
Reserve-base loan

Onshore oil & gas
field development



Kuwait Energy

2013
USD 40 million
Reserve-base loan

Onshore oil & gas
field development

2. Demonstrating the business case for APG recovery

... but profitability of small scale can be marginal



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- One case study would be profitable only with a higher gas price (4 \$/MMBtu)

Result of case studies

Gas utilization option	Gathering and pipeline transport to a GPP	NGL recovery and local power production	Compressed Natural Gas (CNG)
Current flaring (MMscfd)	2.2	1.5	2
CAPEX (USD million)	20	4	9
NPV (USD million)	-4.1 ⁽¹⁾ 4.3 ⁽²⁾	7.8	9.1

1 Value at a gas price of 2.65 \$/MMBtu

2 Value at a gas price of 4 \$/MMBtu

Source: Carbon Limits.

Improved regulation could boost investment



Proposed improvements to regulation

- Introduce “gas clauses” in all existing permits
- Define flaring rules in more detail
- Require strict monitoring and reporting on flaring and efforts to reduce flaring
- Provide improved / preferential access to infrastructure

How? Changes could be added to new Gas Law

- Draft law includes plans for price formation based on market principles
- Draft law also mentions third party access for gas infrastructure



Technology: as the outlook points to smaller and remote flaring sites, deploy cost-effective small-scale and modular technologies in Egypt

Proposed action : EBRD Technical workshop will be organised on 15 March 2016

Regulation: provide better incentives to operators to invest in APG recovering

Proposed action: EBRD donor-funded technical assistance to review international best practice and propose improvements in regulation

Financing: a new business model is needed to raise financing and disseminate the best technologies

Proposed action: EBRD can coordinate discussion between EGPC, private operators and financial institutions

Thank you!



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