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# USAID CENTRAL ASIA REGIONAL ENERGY PROGRAM

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Methane Emissions Abatement as an Enabler for Regional  
Economic Development

11/06/2023

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# Regional Development Objective:

Regional Connectivity Strengthened and  
Regional Energy Modernization Increased



# COP27

## SHARM EL-SHEIKH EGYPT 2022



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# USAID CENTRAL ASIA ENERGY VISION FOR 2033

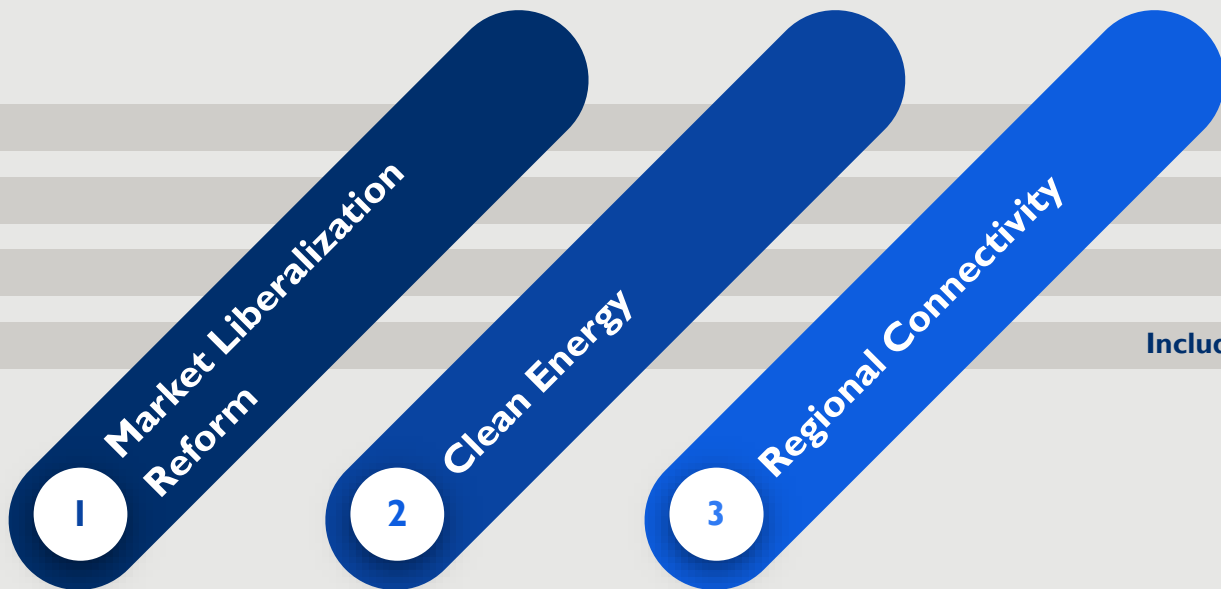


2023

- Government owned energy companies
- Geopolitical power derived from oil and gas
- Over-reliance on foreign, state-owned entities
- Vulnerable to climate change
- Limited regional energy trade
- Limited regional cooperation
- Lack of coordinated use of energy and water resources
- Limited participation of disenfranchised groups

2033

- Market-oriented and transparent, with private sector participation
- Highly-diverse energy sources utilized
- Diverse national and international investors
- Climate conscious with lower greenhouse gas emissions
- Regional power market operational
- Knowledge sharing and cross-border exchange
- Energy-water nexus integrated into decision making
- Inclusive of women, marginalized groups, and youth



## CROSS CUTTING PRIORITIES

Train, Educate, and Build Capacity

Facilitate Private Sector Investment

Utilize Local Partners

Include Women, Girls, and Marginalized Groups

# STRATEGIC PRIORITIES

# WHY METHANE MATTERS

## Methane Emissions

- Second most abundant greenhouse gas after carbon dioxide (CO<sub>2</sub>).
- Responsible for one-third of warming from GHGs.
- Traps 28 times more heat than carbon dioxide.
- Contributes to ground-level ozone pollution.
- Creates industrial safety hazards.

## Methane Mitigation

- Methane reduction delivers more immediate benefits combating climate change than CO<sub>2</sub> reduction alone.
- Most effective strategy to limit warming to 1.5°C.
- Methane has commercial value and reductions will result in economic development.

## Positive Outcomes of Capturing and Using Methane



- ✓ Better air quality
- ✓ Improved human health
- ✓ Increased worker safety
- ✓ Enhanced energy security
- ✓ Economic growth

# GLOBAL METHANE PLEDGE

- Launched at COP 26 in 2021 in Glasgow
- Goal of limiting warming to 1.5 degrees Celsius.
- Voluntarily reduce methane emissions by at least 30% from 2020 levels by 2030.
- 30% reduction is a global, not a national, target.
- Commit to using the highest tier IPCC inventory methodologies (Tier 3).
- Aim to improve accuracy, transparency, consistency, and completeness of GHG inventory reporting.
- No risks associated with joining GMP.



 Albania	 Dominican Republic	 Liechtenstein	 Samoa	 Chile	 Indonesia	 Niue	 Trinidad and Tobago
 Andorra	 Ecuador	 Luxembourg	 San Marino	 Colombia	 Iraq	 North Macedonia	 Tunisia
 Antigua and Barbuda	 Egypt	 Malawi	 São Tomé and Príncipe	 Comoros	 Ireland	 Norway	 Tuvalu
 Argentina	 El Salvador	 Malaysia	 Saudi Arabia	 Congo, Democratic Republic of the	 Israel	 Oman	 Ukraine
 Armenia	 Equatorial Guinea	 Mali	 Senegal	 Congo, Republic of the	 Italy	 Pakistan	 United Arab Emirates
 Australia	 Estonia	 Malta	 Serbia	 Cook Islands	 Jamaica	 Palau	 United Kingdom
 Austria	 Eswatini	 Marshall Islands	 Seychelles	 Costa Rica	 Japan	 Panama	 United States of America
 Bahrain	 Ethiopia	 Mauritania	 Sierra Leone	 Cote d'Ivoire	 Jordan	 Papua New Guinea	 Uruguay
 Bangladesh	 European Union	 Mexico	 Singapore	 Croatia	 Kosovo	 Peru	 Uzbekistan
 Barbados	 Fiji	 Micronesia, Federated States of	 Slovakia	 Cuba	 Kuwait	 Philippines	 Vanuatu
 Belgium	 Finland	 Moldova	 Slovenia	 Cyprus	 Kyrgyzstan	 Portugal	 Vietnam
 Belize	 France	 Monaco	 Solomon Islands	 Czech Republic	 Lebanon	 Qatar	 Yemen
 Benin	 Gabon	 Mongolia	 Somalia	 Denmark	 Lesotho	 Rwanda	 Zambia
 Bosnia and Herzegovina	 Gambia	 Montenegro	 South Korea	 Djibouti	 Liberia	 Saint Kitts and Nevis	
 Brazil	 Georgia	 Morocco	 Spain	 Dominica	 Libya	 Saint Lucia	
 Bulgaria	 Germany	 Mozambique	 Sri Lanka				
 Burkina Faso	 Ghana	 Namibia	 Sudan				
 Cabo Verde	 Greece	 Nauru	 Suriname				
 Cambodia	 Grenada	 Nepal	 Sweden				
 Cameroon	 Guatemala	 Netherlands	 Switzerland				
 Canada	 Guyana	 New Zealand	 Timor-Leste				
 Central African Republic	 Honduras	 Niger	 Togo				
 Chad	 Iceland	 Nigeria	 Tonga				

# GLOBAL METHANE PLEDGE

Over 150 countries have joined the Pledge



# TREND SETTERS

- **U.S.:** reduce methane emissions by 87% below 2005 levels in 2030.
- **Canada:** reduce emissions by at least 75% below 2012 levels in 2030.
- **Nigeria:** first African country to regulate methane, institutes a sweeping mandate to take swift action.
- **Colombia:** first South American country to regulate methane.
- **Mexico:** petroleum company PEMEX is developing a plan for methane and flaring reduction activities.



# METHANE ABATEMENT FOR ECONOMIC DEVELOPMENT

- A platform for increased collaboration with international companies and donors.
- An avenue for technology transfer and training.
- Conserves natural gas and boosts revenue.
- Improves overall operational efficiencies.
- Access to loans and grants from IFIs for project development.
- Increases ESG score; improves flexible loan terms, better interest rates, and increase company valuation.
- Improves investment attractiveness and investor relations.
- Creates a safer workplace.
- Boosts local job growth; small businesses can provide good-paying jobs in implementing abatement technologies.



JOB CREATION



# METHANE ABATEMENT FOR ECONOMIC DEVELOPMENT

A tightening regulatory environment presents major financial risks to countries and companies that are slow to adapt.

**EU Carbon Border Adjustment Mechanism (CBAM)** will have a global impact:

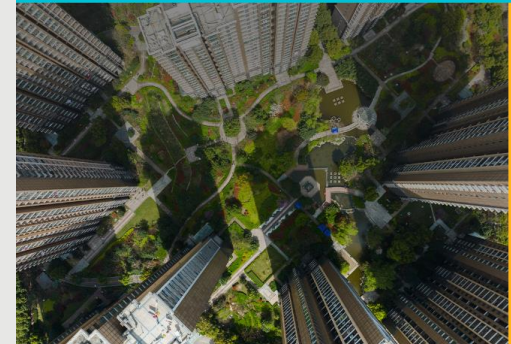
- Designed to mitigate the risks of “carbon leakage” and will include methane in 2026.
- Central Asian iron and steel, cement, aluminum, fertilizer, hydrogen, and electricity sectors seeking access to EU markets will be levied if methane emissions are left unchecked.

**Insurance companies are gaining climate consciousness:**

- Chubb, the world’s largest property insurer, announced in 2023 it would from now on provide coverage for oil and gas extraction projects only to clients that proved they had plans to reduce methane emissions.



Climate progress needs protecting.



CHUBB  
Climate+

# CONTACT

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# Methane Reduction Opportunities and Potential in Oil and Gas Sector of Kazakhstan and Turkmenistan

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USAID POWER CENTRAL ASIA ACTIVITY

Andriy Mitskan

November 6, 2023

# BENEFITS OF METHANE REDUCTION



## Financial benefits

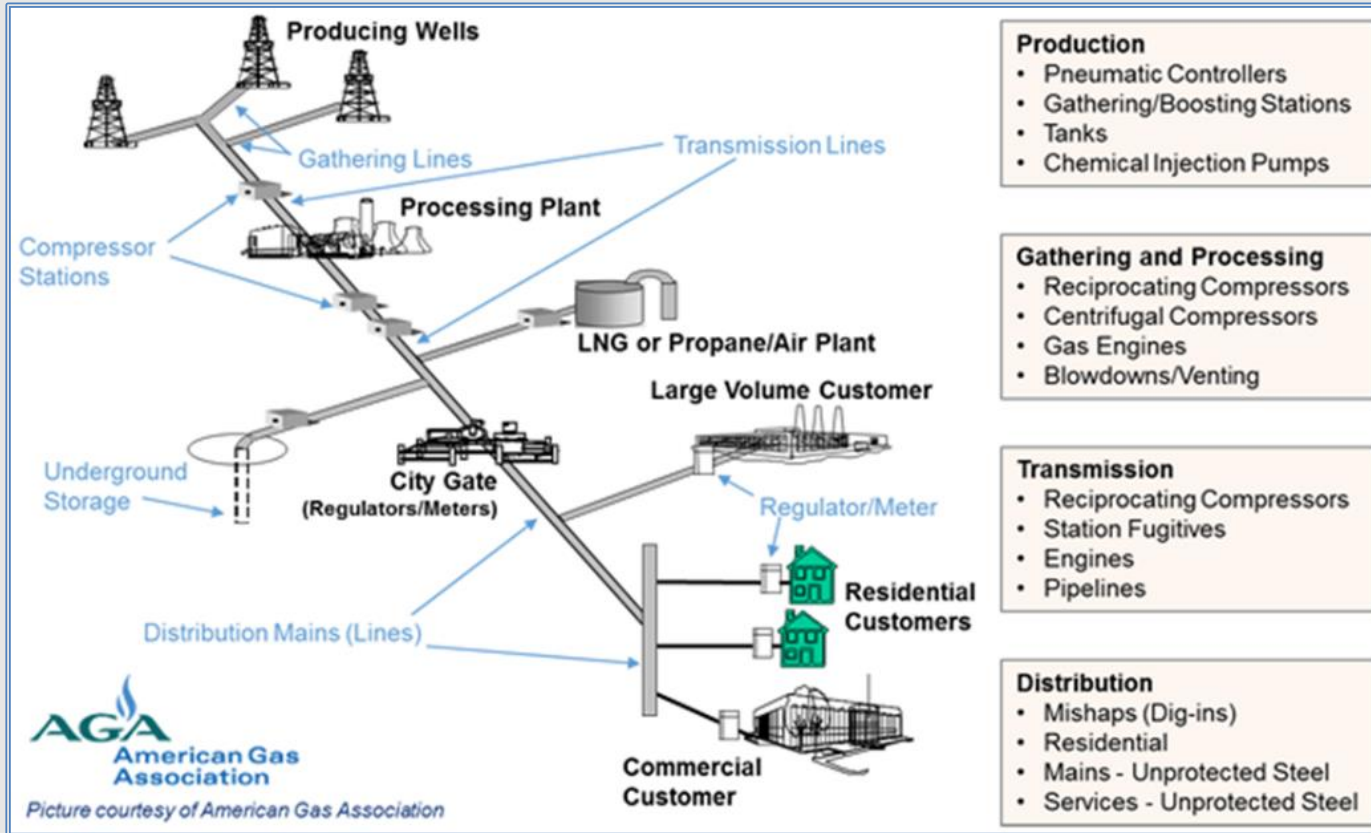
- Marketable commodity
- Avoidance of import penalties
- Avoidance of additional carbon tax
- Access to international financing



## Environmental agenda

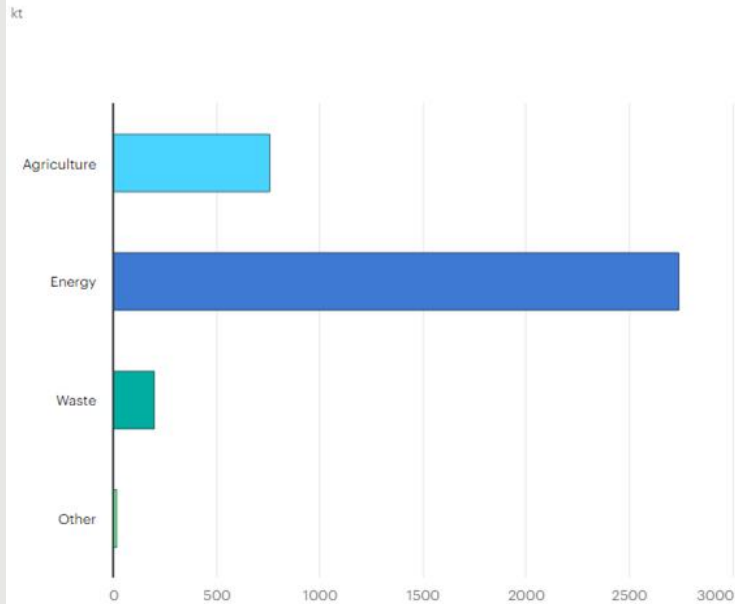
- Better air quality, human health
- Improved worker safety
- Enhanced image on global arena
- Effective in combating climate change

# METHANE EMISSIONS IN THE OIL & GAS SECTOR

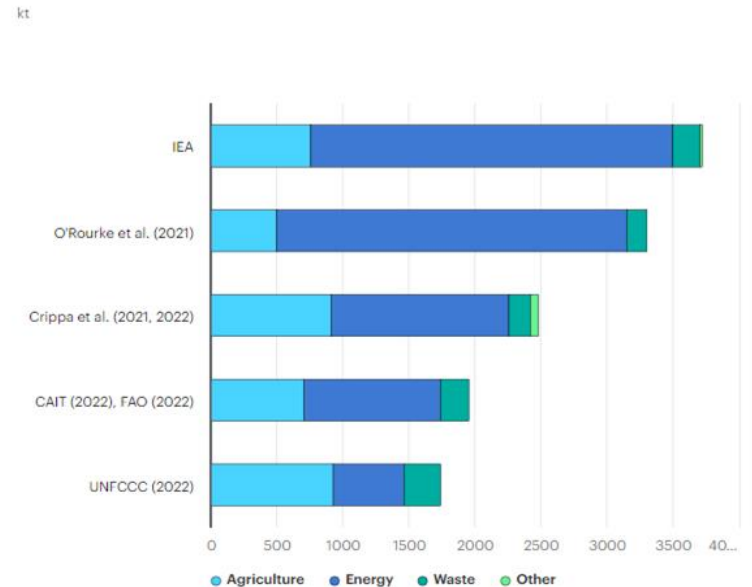


# DIFFERENT EVALUATION OF METHANE EMISSIONS (KT) IN KAZAKHSTAN

Kazakhstan methane emissions from all sources, IEA estimate from available datasets

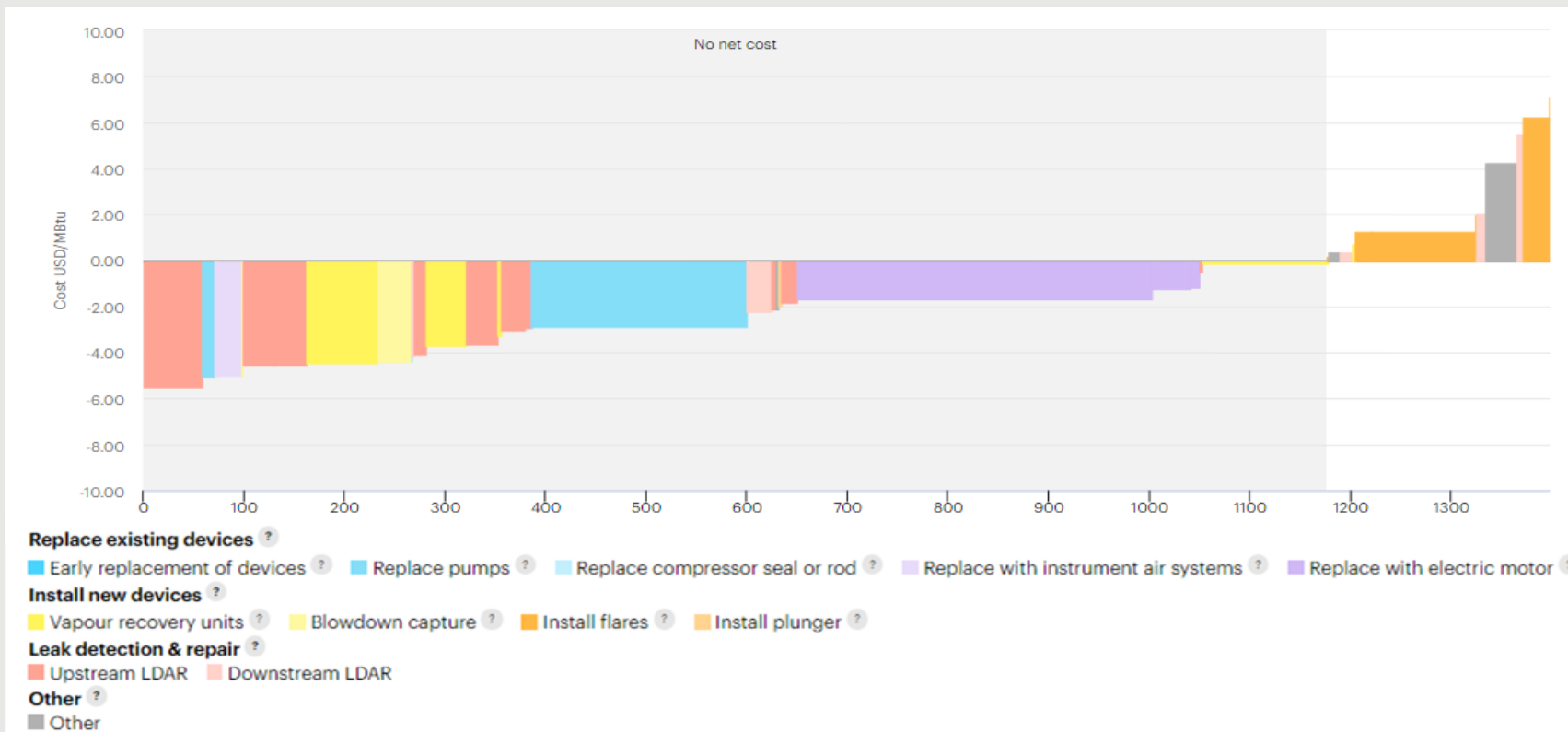


Kazakhstan methane emissions from all sources, comparison with UNFCCC and other estimates

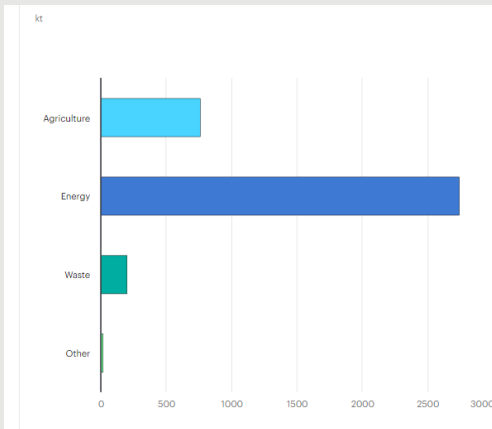




# MARGINAL ABATEMENT COST CURVE FOR KAZAKHSTAN OIL AND GAS SECTOR



# METHANE MITIGATION POTENTIAL FOR KAZAKHSTAN



## Estimates of methane emissions

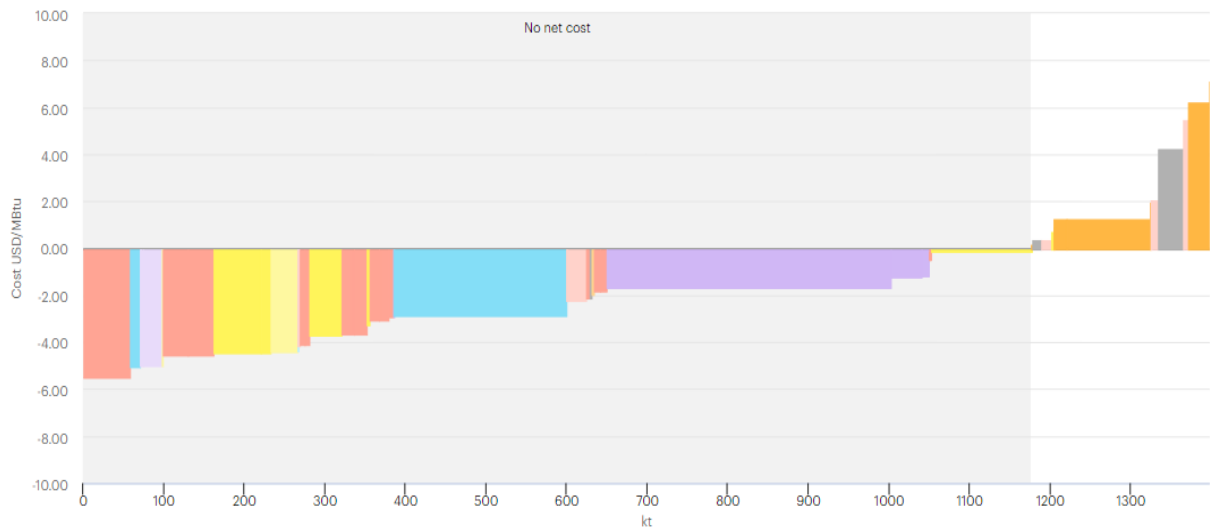
### Kazakhstan

Estimated total emissions  
kt

**3719**

Largest emissions source

**Energy**



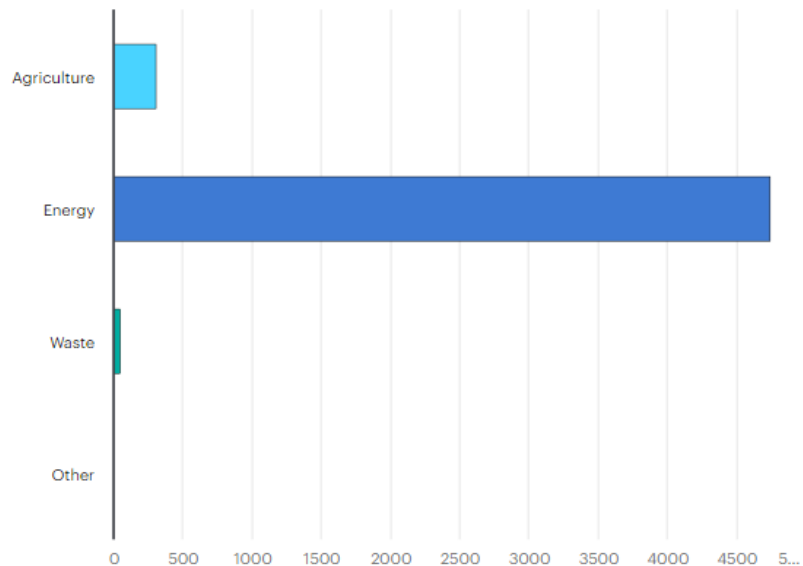
# **METHANE ABATEMENT PROGRAM IN KAZAKHSTAN**

- **Assessment of Methane reduction opportunities and potential in the O&G Sector**
  - Report summarizing the results of the desk study and site visit including the following:
    - Major sources of methane emissions.
    - Estimation of methane emissions from each facility and identification of strategic areas of opportunity for methane mitigation.
    - Techno-economic analysis and potential ranking of opportunities to reduce emissions.
    - Best available national and international methane mitigation technologies and practices to mitigate the priority methane emission source.
- **Assessment of benefits of joining the Global Methane Pledge (GMP)**
  - GMP accession impact on financial, environmental and social indicators of the country
  - Recommendation for the country statement at COP 28

# DIFFERENT EVALUATION OF METHANE EMISSIONS (KT) IN TURKMENISTAN

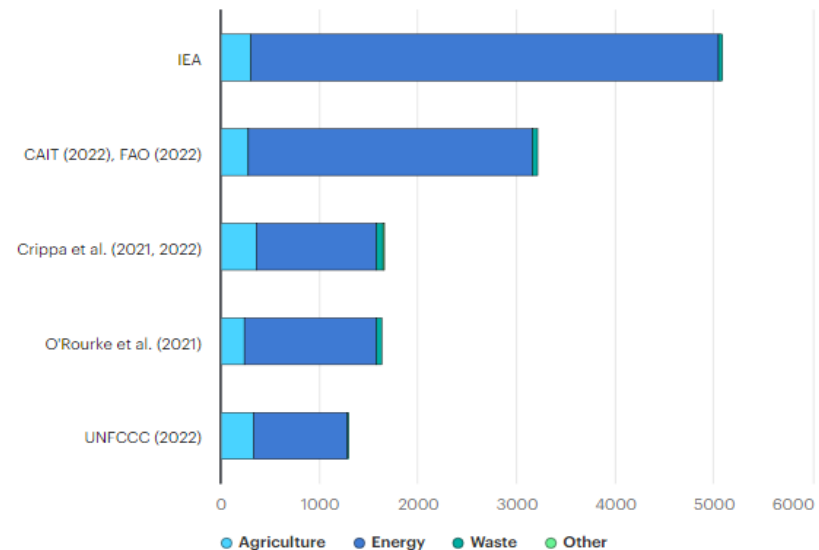
Turkmenistan methane emissions from all sources, IEA estimate from available datasets

kt

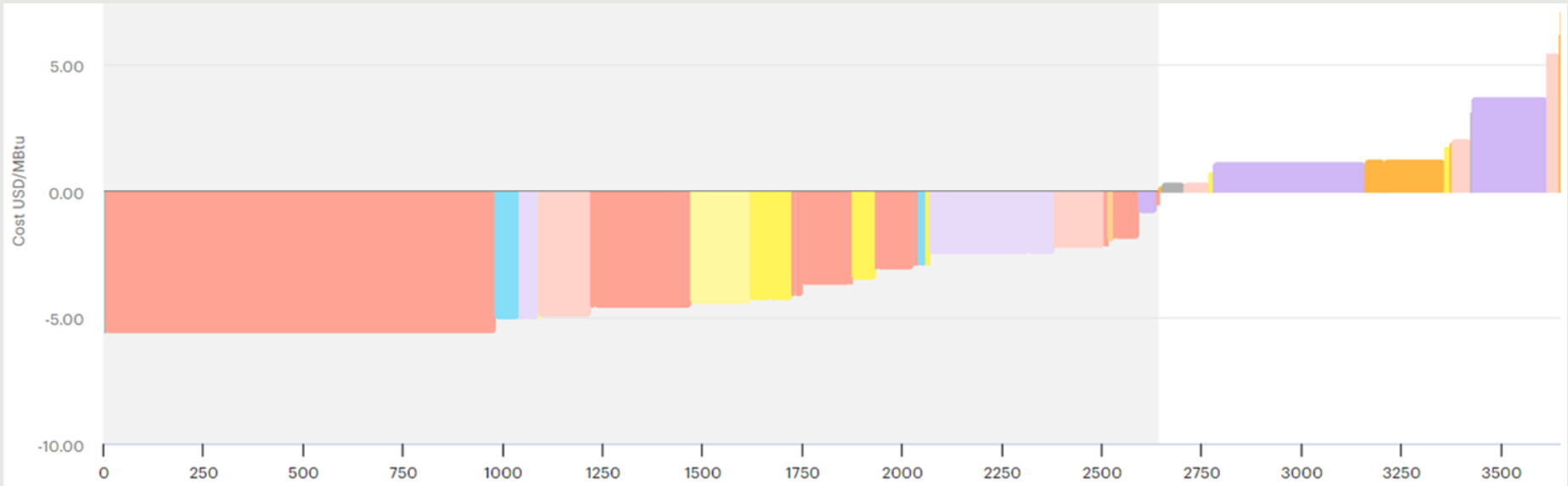


Turkmenistan methane emissions from all sources, comparison with UNFCCC and other estimates

kt



# MARGINAL ABATEMENT COST CURVE FOR TURKMENISTAN OIL AND GAS SECTOR



## Replace existing devices ?

- Early replacement of devices ?
- Replace pumps ?
- Replace compressor seal or rod ?
- Replace with instrument air systems ?
- Replace with electric motor ?

## Install new devices ?

- Vapour recovery units ?
- Blowdown capture ?
- Install flares ?
- Install plunger ?

## Leak detection & repair ?

- Upstream LDAR
- Downstream LDAR

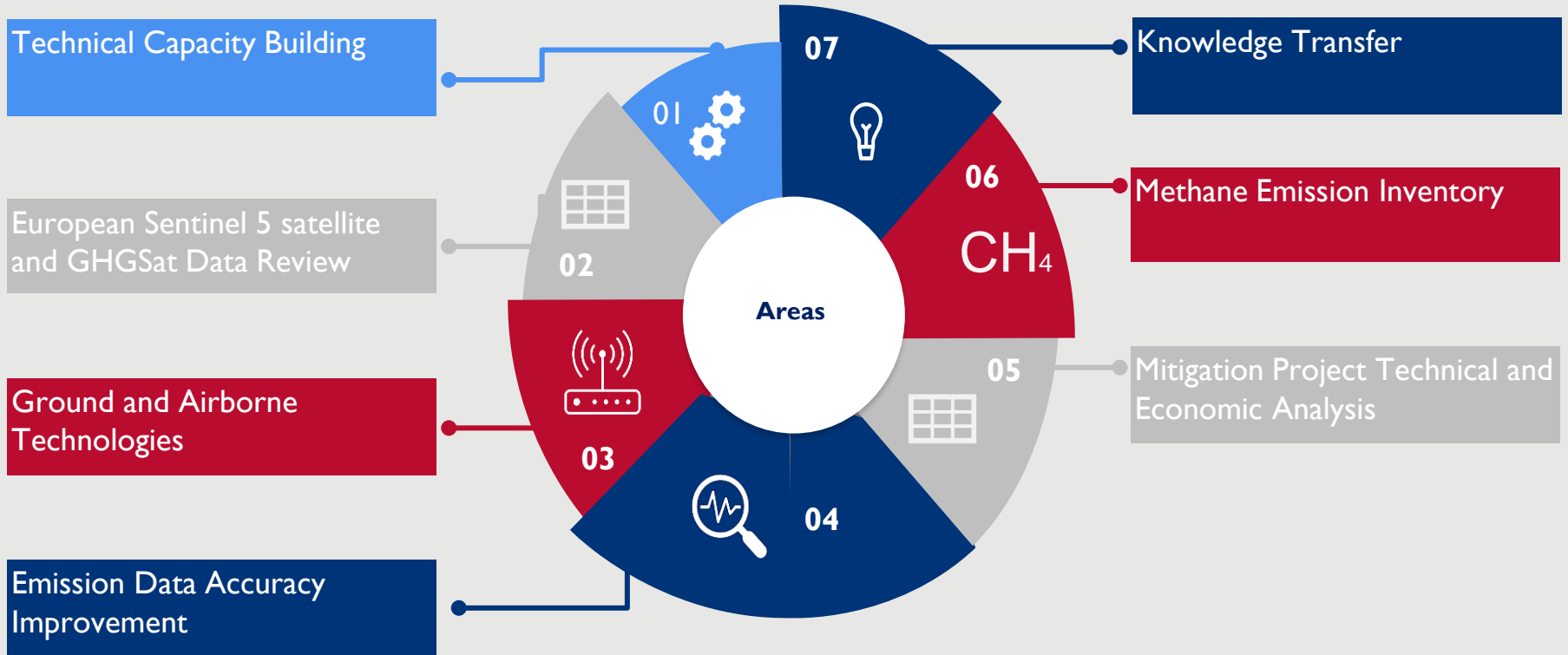
## Other ?

- Other

# **METHANE ABATEMENT PROGRAM IN TURKMENISTAN**

- **Assessment of Methane reduction opportunities and potential in the O&G Sector**
  - The desk study and field measurement campaign results including the following:
    - Set of specific recommendations, measures, and implementation roadmap for methane emissions reduction in oil and gas sector
    - Estimation of methane emissions from each facility and identification of strategic areas of opportunity for methane mitigation.
    - Techno-economic analysis and potential ranking of opportunities to reduce emissions.
    - Best available methane reduction technologies and practices to address the major methane emission source.
- **Assessment of benefits of joining the Global Methane Pledge (GMP)**
  - GMP accession impact on financial, environmental and social indicators of the country
  - Recommendation for the country statement at COP 28

# USAID TEAM'S CAPABILITIES



# USAID TEAM'S GLOBAL EXPERIENCE IN METHANE REDUCTION

Egypt

**Pilot measurement campaigns** with innovative technologies

**MRV templates**

**Methane Reduction Roadmap**

**Capacity-building**

Uzbekistan

**Emissions reduction investment plan** across PEMEX's onshore O&G operations.

Numerous field measurement studies, training, and technical assessments for methane mitigation efforts

Colombia

Supported the MoE and the National Hydrocarbon Agency to develop a **baseline methane inventory in the O&G sector**

Indonesia

Assisted Indonesia's Directorate General of Oil and Gas and MoE to refine their **strategy to reduce methane emissions from the O&G sector.**

**Updated Indonesia's GHG emission inventory**

Kazakhstan

**Emissions detection and measurement studies** and recommendations on mitigation at various O&G facilities.

**Study on the beneficial use of stranded associated gas**

**Pre-feasibility studies** of CH<sub>4</sub> capture and use from wastewater treatment plants in Astana and Taldykorgan.

India

**Equipment-level methane emissions inventory.**

**Field measurement campaigns** at O&G facilities.

**Techno-economic analysis** to identify and prioritize emission reduction opportunities.

O&G methane partnership asset surveys



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## USAID Power Central Asia Activity

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