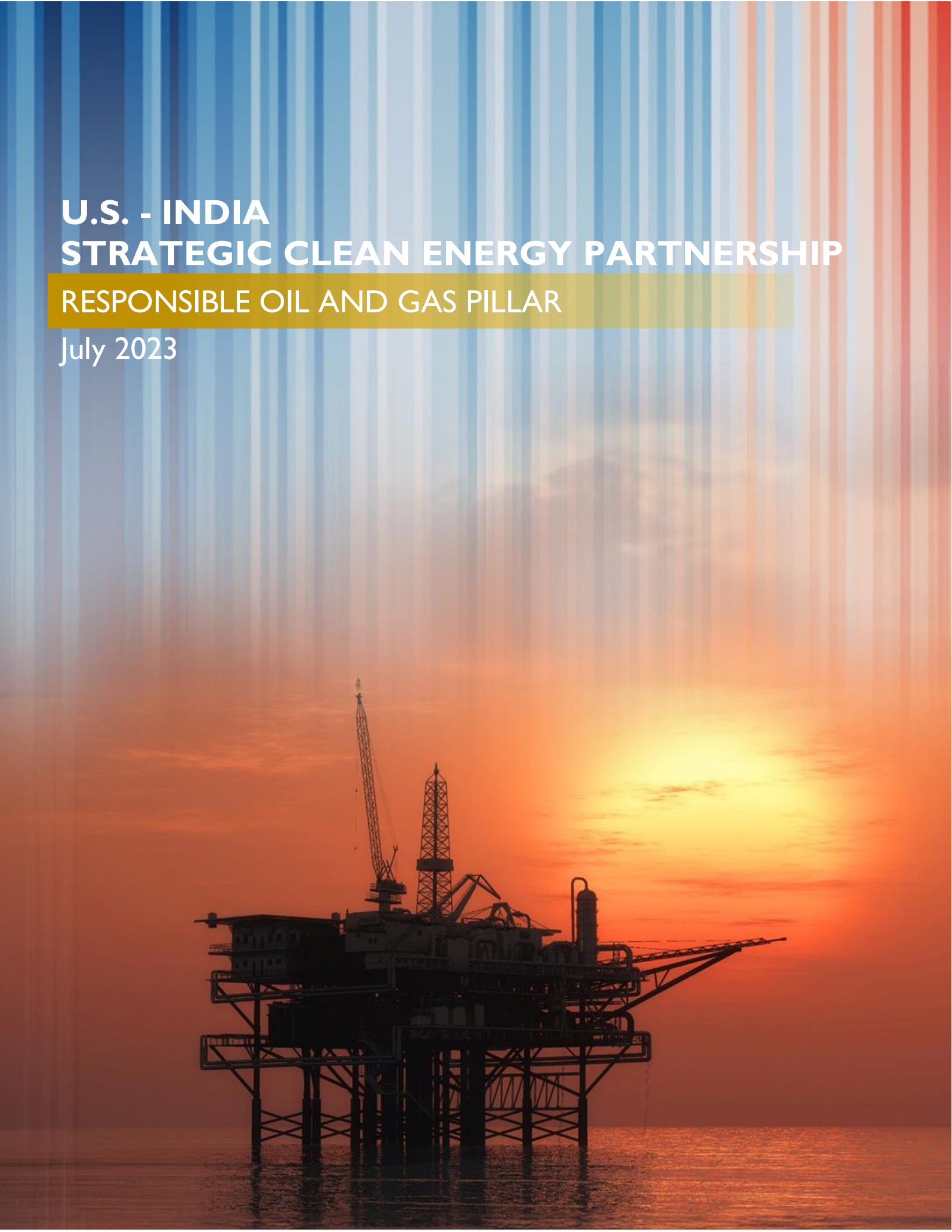
U.S. - INDIA
STRATEGIC CLEAN ENERGY PARTNERSHIP

RESPONSIBLE OIL AND GAS PILLAR

July 2023



पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय
MINISTRY OF PETROLEUM AND NATURAL GAS
Government of India

USAID FROM THE AMERICAN PEOPLE

U.S. DEPARTMENT OF ENERGY

USTDA U.S. TRADE AND DEVELOPMENT AGENCY

DFC U.S. International Development Finance Corporation

EXIM EXPORT-IMPORT BANK OF THE UNITED STATES

OUTLINE

During the April 2021 Leaders Climate Summit, President Biden and Prime Minister Modi announced a new high-level U.S.-India Climate and Clean Energy Agenda 2030 Partnership, to accelerate progress toward shared climate and clean energy goals. The Agenda 2030 Partnership includes two tracks of engagement: 1) the Strategic Clean Energy Partnership (SCEP), and 2) the Climate Action and Finance Mobilization Dialogue. The U.S.-India SCEP builds upon a longstanding bilateral energy dialogue focused on energy security and innovation. The revitalized SCEP will continue to advance energy security and innovation with greater emphasis on electrification and decarbonization of processes and end uses; scaling up emerging clean energy technologies; finding solutions for hard-to-decarbonize sectors; and deploying technical solutions. Engagement with the private sector and other stakeholders remains a priority to facilitate rapid technology deployment and create economic opportunities for both countries. The U.S. Department of Energy and India's Ministry of Petroleum and Natural Gas lead overall engagement under the SCEP with robust interagency engagement on both sides.

STRATEGIC CLEAN ENERGY PARTNERSHIP PILLARS

- **Renewable Energy Pillar**
- **Sustainable Growth Pillar**
- **Power and Energy Efficiency Pillar**
- **Responsible Oil and Gas Pillar**
- **Emerging Fuel & Technology Pillar**

THE JOURNEY SO FAR

2005
Initiated the U.S.-India Energy Dialogue

November 2009
Launched Partnership to Advance Clean Energy (PACE)

June 2017
U.S. and India agreed to elevate the bilateral energy cooperation

April 2018
U.S.-India Strategic Energy Partnership (SEP) launched

January 2019
Four Technical Pillars established under SEP

February 2020
President Trump and Prime Minister Modi recognized SEP in their joint statement

April 2021
Clean Energy Agenda 2030 Partnership launched

September 2021
- SCEP officially launched
- SCEP Ministerial meeting held

Feb-April and Sept-Oct 2022
SCEP Pillar Co-chair meetings

Oct 2022
SCEP Ministerial meeting held

June-July 2023
SCEP Pillar Co-chair meetings

July 2023
SCEP Ministerial meeting

2005 · 2009 · 2017 · 2018 · 2019 · 2020 · 2021 · 2022 · 2023

Responsible Oil and Gas Pillar Priorities

The Responsible Oil and Gas Pillar is co-chaired by the U.S. Department of Energy's Deputy Assistant Secretary for Resource Sustainability and India's Ministry of Petroleum and Natural Gas Joint Secretary for International Cooperation.

Through consultations, the two sides have agreed on high-level priorities to guide the work of the pillar, noting that additional priorities can be added as needed. The priorities for the Responsible Oil and Gas Pillar are:

- Explore joint cooperation to facilitate reducing the consumption of high-polluting fuels, reducing greenhouse gas emissions, and minimizing impacts to the climate.
- Explore joint cooperation to move towards the goal of maximally abated natural gas as a cleaner alternative to coal and other fossil-based fuels for use in the industrial, transportation, and residential sectors.
- Encourage and promote investment, trade, and collaboration opportunities in the form of technology tie-ups, R&D, procurements, etc. between the companies and departments from both sides across the entire value chain.
- Explore cooperation to facilitate achieving climate goals by deploying in India carbon capture, utilization, and storage (CCUS) technology and advancing alternative fuels such as hydrogen and biofuels for transport and industry; and
- Exchange best practices for the development of India's Strategic Petroleum Reserves.

U.S.-India SCEP Ministerial Chairs

Jennifer M. Granholm

Secretary
U.S. Department of Energy

Hardeep Singh Puri

Minister of Petroleum and Natural Gas & Minister of Housing and Urban Affairs
Government of India

Responsible Oil and Gas Pillar Co-Chairs

Esha Srivastava

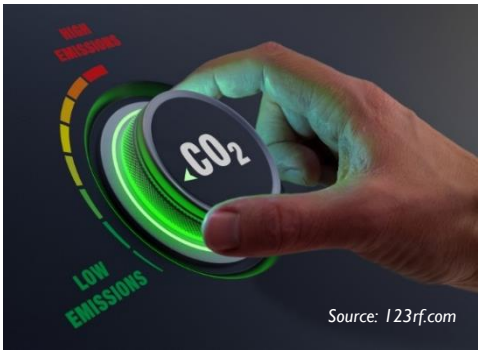
Joint Secretary,
International Cooperation
Ministry of Petroleum and Natural Gas

Ryan Peay

Deputy Assistant Secretary for Resource Sustainability
U.S. Department of Energy

Coal Mine Methane Feasibility Study

The U.S. Trade and Development Agency (USTDA) intends to fund a feasibility study to determine coal mine methane (CMM) availability in India's Jharia coalfield as well as design the drainage system, identify use of the captured gas, and potential project financing sources. The project would extract, gather, compress, and process CMM within Block – I of the coalfield. The gas produced would be delivered to nearby steel plants and/or alternative off-takers or inserted into commercial pipelines. If implemented, the project could capture about 900 billion cubic feet of methane over a 20-year period that would otherwise have been vented to the atmosphere.



Emissions Reduction Reverse Trade Mission and Workshop

Under the U.S.-India Climate Technologies Action Group (CTAG), a partnership between USTDA and the U.S. – India Strategic Partnership Forum (USISPF), USTDA aims to fund a late 2023 or early 2024 Reverse Trade Mission (RTM). It will be focused on emissions reduction in the Indian energy sector including methane abatement, carbon capture and storage, and net-zero hydrogen infrastructure. The RTM would include up to 15 delegates from public and private oil and gas entities for a 2-week trip to the United States to meet with U.S. technology providers, decision makers, and other stakeholders in the aforementioned sectors. The RTM would be followed by a workshop for up to 100 participants in India to identify specific emission reduction projects for development.

National Natural Gas Grid Study

USTDA continues funding a comprehensive technical assistance for India's Petroleum and Natural Gas Resources Board (PNGRB) to develop an economic basis for building out India's National Natural Gas Grid. The project directly supports the Prime Minister's efforts to increase the natural gas portion of India's energy mix from 6.5% to 15% while promoting U.S. exports of natural gas technology, engineering services, and LNG.

U.S. – India Low Emission Gas Task Force (LEGTF)

The U.S.-India Low Emission Gas Task Force facilitates India's vision to reduce its consumption of high polluting fuels. It does this by increasing the use of natural gas for transportation, industrial, and residential purposes by supporting short-term and long-term clean energy transition and climate action goals. The Task Force focuses on addressing India's natural gas policy, technology, and regulatory barriers by promoting efficient and market-driven solutions to meet India's growing energy demand and greenhouse gas (GHG) emissions reduction targets through its subcommittees' targeted work on GHG Emissions Abatement Technologies, Carbon Capture and Storage (CCS), Markets and Regulation, Cleaner Fuels for Industry, Cleaner Fuels for Transport, and Bio-energy, Hydrogen, and Renewable Fuels as they intersect with India's natural gas sector. Current and ongoing LEGTF work includes the following.

Grid Strengthening Subcommittee

The LEGTF's Grid Strengthening Subcommittee is developing a pilot project for subsidiaries of GAIL in Maharashtra and Madhya Pradesh for methane leak detection and repair (LDAR) for city gas distribution networks.

Markets and Regulation Subcommittee

The LEGTF's Markets and Regulation Subcommittee is drafting a report on best practices for safety standards on blending hydrogen in natural gas pipelines.

Gas for Lower Emissions Subcommittee

The LEGTF's Gas for Lower Emissions Subcommittee identified potential locations for LNG highway fueling station installations and is working on a pilot project for mining operations in Assam to use LNG as fuel for dump trucks. The first of these vehicles are currently undergoing conversion.

DOE Visiting Delegation and Indian Counterparts from ISPRL (Photo Credit: DOE)

U.S.-India Technical Exchanges on Strategic Petroleum Reserves (SPR)

The Department of Energy (DOE), Ministry of Petroleum and Natural Gas (MoPNG), and the Indian Strategic Petroleum Reserves Limited (ISPRL) continued expert exchanges on the strategic petroleum reserves in both countries. A DOE delegation visited India's first SPR site in the southern district of Visakhapatnam in November 2022 to discuss operations, maintenance, and emergency response at the site, as well as further plans for India's SPR. Future site visits to the United States were discussed to further this collaboration.

Methane Hydrates

DOE, its National Energy Technology Laboratory (NETL), other DOE National Labs, and the U.S. Geological Survey intend to continue providing technical support for the Natural Gas Hydrate Program of India's methane hydrate exploration drilling and field production testing in India's offshore. This includes potential cooperative efforts to conduct a Life Cycle Analysis (LCA) of the economic and environmental impact of methane production from hydrates in several of India's larger known methane hydrate accumulations.

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