



RESERVOIR METHANE CAPTURE MECHANISM

SECTOR: ENERGY, RENEWABLE ENERGY, WATER

REGION: BRAZIL

INVESTMENT TYPE: GRANTS, CONCESSIONAL CAPITAL, COMMERCIAL DEBT

PROPONENT: BLUEMETHANE AND OPEN HYDRO

Methane is responsible for nearly half of net global warming to date. However, finance for methane emissions reduction accounts for less than 2% of international climate finance. A ten-fold increase is necessary to meet the more than USD 110 billion needed to reduce methane emissions on a global scale.

Fifty-one billion tons of greenhouse gases reach the atmosphere annually, of which three billion come from methane escaping from water, including hydropower reservoirs. Although water-based methane capture technologies are available, the lack of proper financing mechanisms prevents them from scaling. Considering the climate crisis and the urge to transition to cleaner energies, a financial solution that tackles methane abatement amidst an increase in hydropower generation is vital.

Reservoir Methane Capture Mechanism is the first of its kind “methane-as-a-service” structure with blended funding to unlock investments into emerging methane capture technology in hydropower reservoirs to produce cleaner energy.

INNOVATION

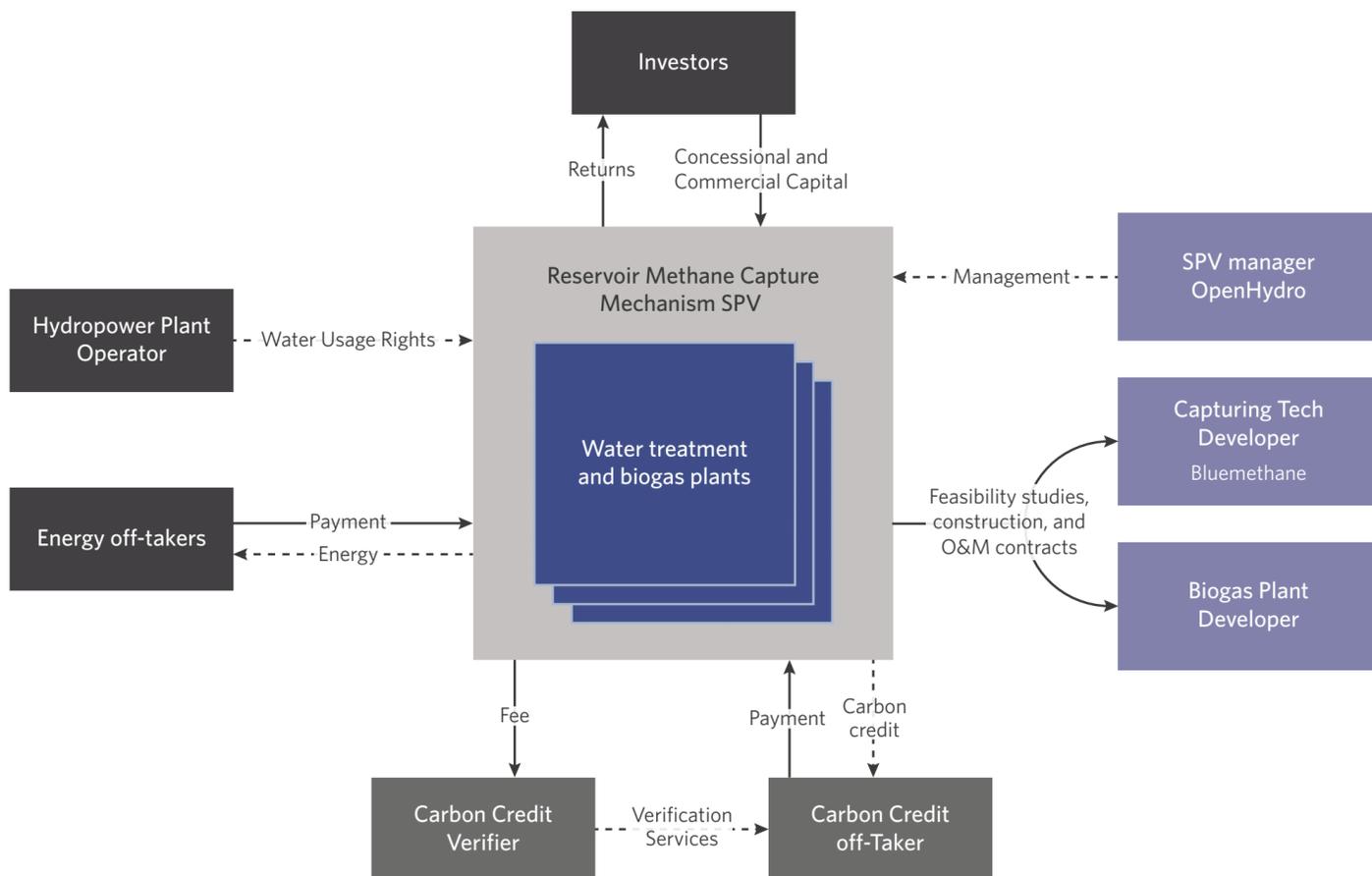
Reservoir Methane Capture Mechanism is the first structure to mainstream and commercialize methane capture technologies on hydropower plants. The mechanism proposes a methane-capture-as-a-service approach, enabling hydropower operators to adopt the systems without incurring the risks associated with new technology outside their business scope. The instrument provides short-term, stable, and tangible revenues using methane captured from hydropower reservoirs to generate carbon credits and fuel biogas generators. As a result, it reduces emissions from a previously unaddressed carbon source while increasing electricity production.

IMPACT

Hydropower in Brazil is the primary source of electricity. Although regarded as clean energy with low-carbon emissions per unit of electricity generated, hydropower reservoirs emit methane that can now be captured and utilized. The mechanism helps companies become even more sustainable and meet their emissions targets while increasing electricity production. The pilot will be comprised of five sets of methane and biogas plants. At scale in Brazil, the instrument will mobilize USD 3 billion in capital, avoiding 6.8 million tons of CO₂e emissions per year, equivalent to 1.5 million automobiles or 3.7 million cattle heads.

DESIGN

The instrument is centered around a special purpose vehicle (SPV), managed by Open Hydro, which operates both infrastructure plants to capture the methane and the biogas generator and absorbs potential risks. Bluemethane will measure the methane concentrations and design the capture plant, while a local developer will be responsible for the biogas plant. The hydropower plant operator will provide water usage rights.



TEAM



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First, the plant located at the turbines discharge, diverts water through a closed-circuit hydro cyclone-like tank that captures methane. This methane is then fed into a biogas plant. The energy generated will be sold in the Brazilian market under the distributed energy framework. Revenues based on carbon credits sales will rely on the proper measurement and monitoring of the methane abatement by a third-party verifier.

INVESTMENT OPPORTUNITIES

TYPE	ROLE OF CAPITAL	AMOUNT
GRANT	Proof-of-Concept	USD 6.5M
CONCESSIONAL CAPITAL	Pilot	USD 27M
COMMERCIAL DEBT	Pilot	USD 27M

The Global Innovation Lab for Climate Finance identifies, develops, and launches innovative finance instruments that can drive billions in private investment to action on climate change and sustainable development. The Lab's 2022 programs have been funded by the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV), the German Federal Ministry for Economic Cooperation and Development (BMZ), the Swedish International Development Cooperation Agency (SIDA), US Department of State, and the UK Department for Business, Energy & Industrial Strategy (BEIS). Climate Policy Initiative (CPI) serves as Secretariat and analytical provider.