

World congress on CLIMATE CHANGE AND ECOSYSTEM

October 10, 2022 | Webinar

Electric truck hydropower

Julian David Hunt

International Institute for Applied Systems Analysis (IIASA), Austria

The world is undergoing a transition to a more sustainable energy sector dominated by renewable energy sources. This paper proposes an innovative solution that consists of catching water from streams at high altitudes to fill storage containers and transport them down a mountain, converting the potential energy of water into electricity with the regenerative braking systems of electric trucks and storing it in the truck's battery. The energy stored in the electric truck can be sold to the grid or used by the truck to transport other goods. Results show that the levelized cost of the electricity truck hydropower is 30–100 USD/MWh, which is cheap when compared with conventional hydropower 50–200 USD/MWh. The electricity generation world potential for the technology is estimated to be 1.2 PWh per year, which is equivalent to around 4% of the global energy consumption in 2019. Apart from being a low cost and impact electricity generation technology, electric truck hydropower can operate in combination with solar and wind resources and provide energy storage services to the grid.

Biography

Julian David Hunt currently works at the Energy and Water Programs at the International Institute for Applied Systems Analysis (IIASA) Austria. Dr. Hunt's research focuses mainly in Energy Storage, Hydropower, Renewable Energies, Water Management and Climate Change.