Tapping Freshwaters for Methane and Energy

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Energy supply limits development through fuel constraints and climatic effects. Production of renewable energy is a central pillar of sustainability but will need to play an increasingly important role in energy generation in order to mitigate fossil-fuel based greenhouse-gas emissions. Global freshwaters represent a vast reservoir of biomass and biogenic CH4. Here we demonstrate the great potential for the optimized use of this nonfossil carbon as a source of energy that is replenishable within a human lifetime. The feasibility of up-scaled adsorption-driven technologies to capture and refine aqueous CH4 still awaits verification, yet recent estimates of global freshwater CH4 production imply that the worldwide energy demand could be satisfied by using the ”biofuel” building up in lakes and wetlands. Biogenic CH4 is mostly generated from biomass produced through atmospheric CO2 uptake. Its exploitation in freshwaters can thus secure large amounts of carbon-neutral energy, helping to sustain the planetary equilibrium.
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