

عنوان مقاله:

Strategies for greenhouse gases mitigation in hydro-electrical water reservoir

محل انتشار:

چهارمین کنفرانس بین‌المللی رفتار بلندمدت و فن‌آوری‌های نوسازی سازگار با محیط زیست سدها (سال: 1396)

تعداد صفحات اصل مقاله: 7

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خلاصه مقاله:

There are many uncertainties for greenhouse gases (GHG) emission in hydro-electrical water reservoirs. GHG sources and sink are different than ponds and lakes and they should be addressed specifically to understand the processes affecting GHG emissions. In many studies, only limited sources and sinks are included in models and it leads to production of unreal GHG budget for water reservoirs. In this study, we discussed different sources and sinks in water reservoirs for calculation of GHG net fluxes. Among the sources, water-level drawdown and turbine degassing effects are specifically for hydro-electrical water reservoirs and molecular diffusion, ebullition, plant-mediated transport and woody material decomposition might happen in ponds or lakes. The water-level drawdown magnitude and timing has a huge effect on ebullition events and it might be the reason for wide variation of GHG fluxes in different studies. Regarding the sinks, proper methods should be selected to measure carbon burial in sediments, net primary production in aqueous environment, vegetation in landscape of coast and CH₄ oxidation in landscape of coast precisely. Methanotrophic activity in the soils around the reservoir induced by alteration in hydrological regimes and land use changes after creation of the reservoir is not included in GHG prediction models yet. Reservoir management, improving green carbon capture in shore lines and afforestation around the reservoir are main strategies for GHG mitigation in water reservoirs

کلمات کلیدی:

greenhouse gas, reservoir, sources, sinks

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