How to better assess carbon balance of pastoral and agropastoral systems in the Sahel region?

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In the Sahel region, assessing the carbon balance of pastoral and agropastoral ecosystems requires considering the main characteristics of these systems, including animal productivity, resources seasonality, and herd mobility in time and space. Integrating GHG emissions and carbon storage resulting from land management and livestock activities is also important as it is an integral part of these ecosystems. Sahelian countries face great challenges to assess their climate commitments in the livestock sector, mainly related to mitigation measures. These include the absence of a clear carbon balance methodology taking into account these specificities, and a scarcity of local reference data (baseline data and specific emission factors). In the present work, we have proposed *(i)* to improve the carbon balance mechanism of pastoral and agropastoral systems at national and territorial levels considering these specificities, and according to international methodologies and recommendations in terms of GHG emissions estimates and estimation of carbon storage; *(ii)* to make available an improved and updated model, GLEAM-*i*, which will take into account these Sahelian specificities. The work consisted in updating the GLEAM-*i* model by integrating GHG emissions and carbon storage of land management related to the livestock sector in the Sahel, and by enhancing the specific reference data (baseline) and emission factors produced by the CaSSECS project (Carbon Sequestration and greenhouse gas emissions in (agro) Sylvopastoral Ecosystems in the Sahelian CILSS States).

Key words : Carbone balance, Pastoral, Agropastoral, GLIEAM-i, Sahel