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Abstracts



Empowering a model for improved multi-actor discussions: case study from Dairy production in Sahelian agro-pastoral systems

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Abstract

This work is part of a long-term partnership between CIRAD and Laiterie du Berger (LDB) ; a dairy specialized in collecting milk from pastoral system environment around Richard-Toll, Senegal. The Richard Toll milkshed (area geographically demarcated for the collection of milk or milk products) serves as exemple for a computer simulation to support ecological intensification of milk production and collection in a space mainly dedicated to pastoral cattle farming. This transition need the commitment of various actors for viable solutions.

Our Gama simulation is a co-constructed model with stakeholders involved in the Global Agenda for Sustainable Livestock (GASL). This co-design modeling process took place from 2017 to 2019. Following a first beta-test with local partners in November 2019, the model evolves in a finalized version in april 2021. The objective is to use the model as a discussion support to go beyond the issue of dairy production and explore four dimensions of “multifonctionnalité”: economic, social, environmental and territorial development.

In this work, we propose to follow the process of empowerment/autonomization of the model through the Actor Network Theory (Callon 2013). By documenting the process of evaluating the reliability of the results and the validity of the model (Sim and Arnell, 1993) as we conducted them with the actors, we propose to highlight the transformation of the model from an artifact in favor of a real actor (Latour 2007).

The validation of the internal mechanisms of the model led the participants to formulate questions about the functioning of the model following the abduction process (Peirce), i.e. the ability to generate temporary hypotheses and to test them. This abductive validation phase is intended to empower the model as an actor. The inter-actor validation allowed to go beyond the model. The model having acquired its autonomy (Latour 2007) in the internal validation, the participants summoned the model as an actor in the meeting by summoning simulation results to discuss livestock feeding options with the objective of identifying the margins of maneuvers for agro-ecological intensification.

This work of autonomization of the model is a necessary step in the process of accompanying the exploration (ComExp) of simulation results (Delay et al. 2020). The ComExp process aims to explore the model with robust methods to overcome the problems of storage and understand the diversity of results that are accessible to the model. This diversity of results allows the actors to consider situations that are difficult to envisage for the actors and aims to accompany them in a process of anticipation.

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