

# *les dossiers* **d'AGROPOLIS** INTERNATIONAL

*Expertise of the scientific community*

Special Partnership Issue



## **Agroecological transformation for sustainable food systems**

Insight on France-CGIAR research

Number 26  
September 2021

# Wasteborne nutrient recycling

## A missing link in territorial food systems

**A**lthough recycling of organic waste products (OWPs) in agriculture is an age-old practice on a plot scale, this strategy is largely overlooked today despite the large volumes of OWPs of multiple origins (manure, slurry, compost, sewage plant sludge, industrial effluents) accumulating in congested areas. The current agroecological trend calls for its reintroduction, but implementing this strategy in highly complex territories and agroecosystems requires the organization of real recycling chains underpinned by concerted efforts between multiple stakeholders. **Our studies—based on applied analytical territory-specific research—are geared towards the design of tailored recycling scenarios endorsed by all.**

An original and generic approach has been applied in western Réunion\*. In addition to increased OWP volumes and limited spreading possibilities, difficulties in organizing and managing OWP recycling networks on a territorial scale are due to inadequate interactions between OWP producers and end-users, and not to

structural constraints. The implementation of a participatory approach with three coordination levels (Figure) covering several years has given rise to several scenarios, including: a 'minimal' scenario whereby co-compost based on livestock manure and green waste is produced; and an 'optimal' scenario that expands on the first scenario with the emergence of a second sector involving organic and organomineral fertilizer production. Yet the use of concentrated fertilizers dictated by the numerous territorial constraints would limit the potential *in situ* agroecological benefits. Implementation of the optimal scenario would nevertheless eventually reduce the reliance on imported fertilizers in the study area by at least half, if not more. Research is ongoing to enhance this approach. It is being tailored for implementation in several food systems and urban-rural focal areas in sub-Saharan Africa and South America. The systems targeted for the study areas will be defined on the basis of a functional rather than geographical spatial concept (as is the case in the island situation of Réunion).

### Contacts

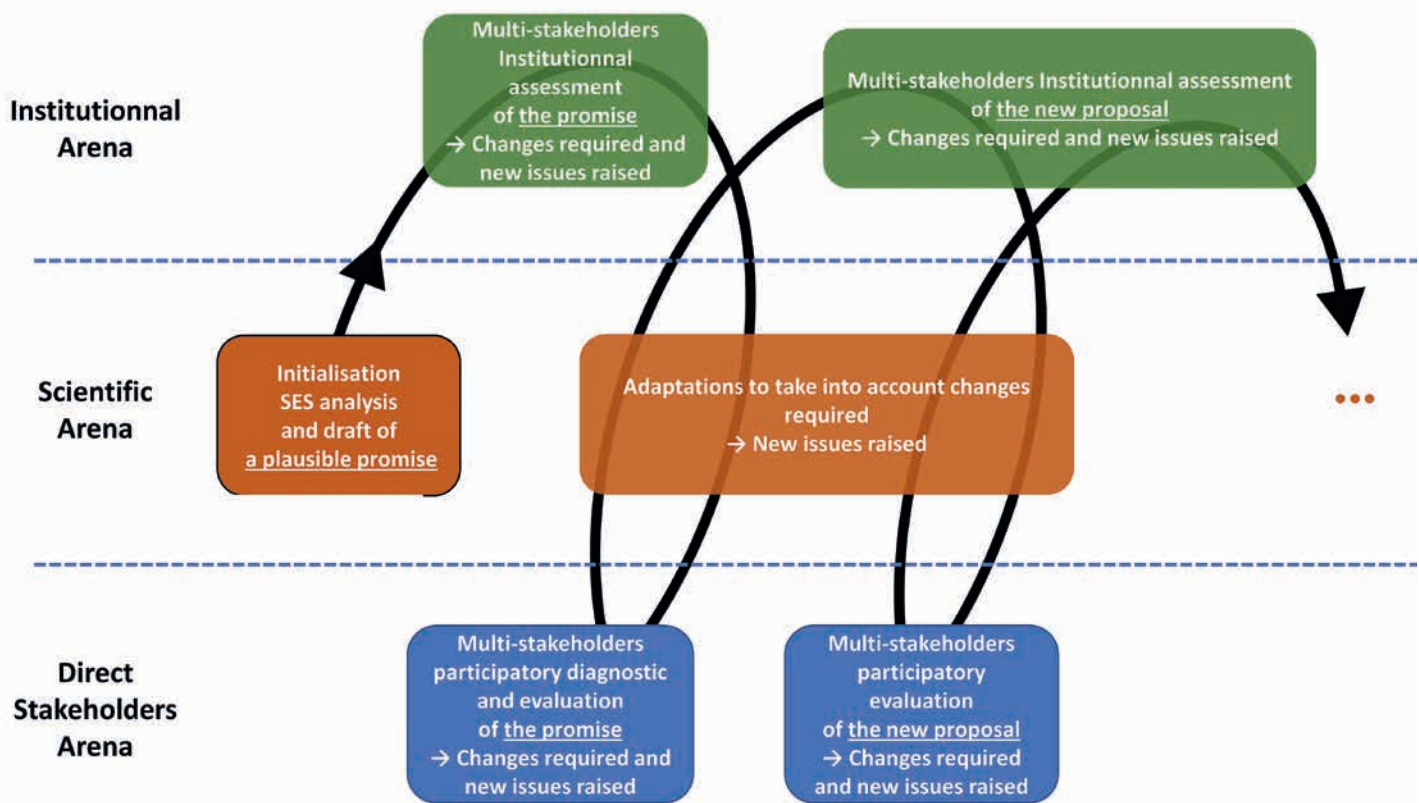
Tom Wassenaar (Recycling and Risk, CIRAD, France), [tom.wassenaar@cirad.fr](mailto:tom.wassenaar@cirad.fr)

Frédéric Feder (Recycling and Risk, CIRAD, France), [frederic.feder@cirad.fr](mailto:frederic.feder@cirad.fr)

### For further information

- Queste, J., Wassenaar, T., 2019. A practical dialogue protocol for sustainability science to contribute to regional resources management: its implementation in Réunion. *Natural Resources Forum*, 43(1): 3-16.
- Wassenaar T., Queste, J., Paillat, J.-M., 2016. Le recyclage agricole des résidus organiques : une ressource naturelle pour en préserver d'autres. *Agronomie, Environnement & Société*, 6(1): e12.

\* GIROVAR Project: Integrated management of organic residues by agricultural recycling in Réunion.



▲ Iterative codesign process. Adapted from Queste & Wassenaar (2019)