



Assessing agroecological transitions in Madagascar with the Tool for Agroecology Performance Evaluation (TAPE)

Context

The Measuring Agroecology and its Performance (MAP) project is a collaborative initiative of the Agroecology TPP aimed at fostering agroecological transitions by generating evidence of agroecology’s contribution to societal goals. The MAP project is funded by the German Federal Ministry for Economic Cooperation and Development (BMZ), co-funded by the European Union (EU) and supported by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. The Tool for Agroecology Performance Evaluation (TAPE) was applied in 2024 in four municipalities (Belobaka, Katsepy, Manerinerina and Tsaramandroso) in the Boeny Region of Madagascar in the context of the Global Programme “Soil Protection and Rehabilitation for Food Security” (ProSoil). To characterize farmers’ transition to agroecology and assess the correlation between agroecological integration and multidimensional performance, TAPE was applied with 200 households in the intervention area of ProSoil.

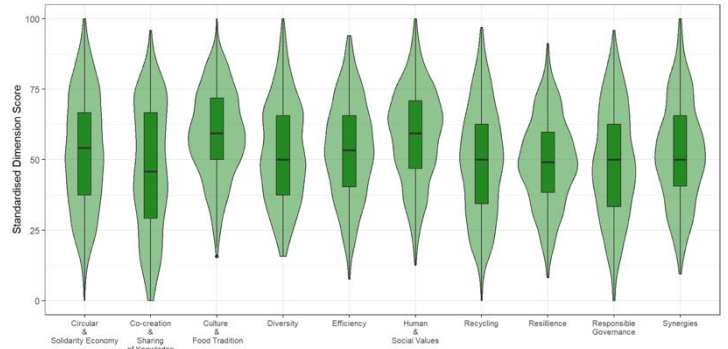
Step 0: Enabling environment

Near-natural ecosystems make up nearly 90 percent of the Boeny Region and only 12 percent of the land is cultivated, over half of which is dedicated to rice production. Vegetables and fruit trees are commonly grown for subsistence in home gardens and commercially around urbanized areas. Different legumes are grown commercially and for subsistence, particularly in the temporarily flooded fertile lowlands. Farmacyard manure production is limited, and mineral fertilizer is applied scarcely. Thus, soil fertility management is mainly based on natural processes during floods in lowlands and soil mining is very common in the uplands. Unregulated pesticide use is common, particularly in maize and legume cultivation. In proximity to the regional capital, organic farming inputs are commercially available. The savannah ecosystem prevailing in the region is suitable for cattle farming and the livelihoods of the local Sakalava people largely depend on cattle rearing. The 630 km coastline as well as several freshwater bodies result in fishery, aquaculture and rice-fish farming playing a major role in the local economy. While population densities are low, the region is characterized by high levels of rural migration from other parts of the country. Road infrastructure is poor, resulting in very limited market access and fields are often only accessible by foot. The enabling environment for agroecological transition in the Boeny Region is supported by ProSoil activities and other GIZ-implemented projects on land tenure, reforestation and protected areas. These aim to counteract environmental degradation, informal contract farming, and uncontrolled pesticide use as well as to support the establishment or strengthening of farmers’ organizations.

Step 1: Characterization of the agroecological transition (CAET)

The results from 200 household assessments show a considerable variation among assessed households (Figure 1). While the average total CAET score of 52 implies that most farmers are at an incipient stage of transition, a considerable proportion of farms are yet to transition to agroecology and others have already integrated the 10 Elements of Agroecology to an advanced degree. The average CAET scores are highest for the elements culture & food traditions and human & social values. This indicates that in the study locations, local knowledge, traditions and culture are critical aspects of agroecological transitions that need to be conserved and strengthened. The agronomic and economic dimensions of agroecology seem less developed in the Boeny Region.

Figure 1: Results of TAPE Step 1 (CAET). The average CAET scores with standard deviations are shown for each of the 10 Elements of Agroecology.



Step 2: Performance of the systems

Economic performance: The results show a positive correlation between the degree of agroecological integration (CAET score) and economic performance. Thus, on average, more agroecological households have a significantly higher overall farm productivity (Figure 2). Additionally, the results show a significantly positive correlation between CAET scores and household income yet no significant correlation between agroecological integration and value addition (graphs not shown). This indicates that agroecology can be an effective approach to reduce economic poverty in rural Madagascar.

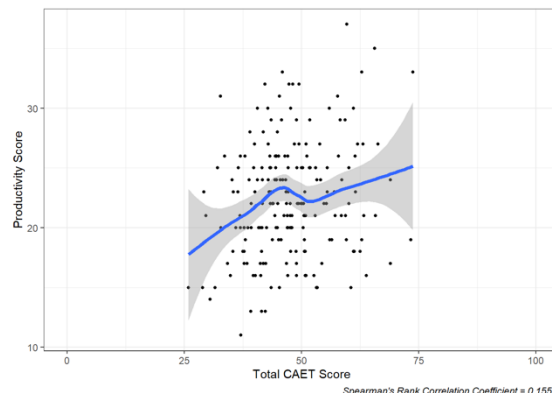


Figure 2: Results of TAPE Step 2 on economic performance. The total CAET scores are correlated with the composite productivity score, combining indicators for crop, livestock and forestry productivity.

Environmental performance: The results show a highly significant positive correlation between CAET scores and agrobiodiversity indicators, as more agroecological farms on average cultivated more crop species and varieties, held more livestock species and breeds, and had a higher Gini-Simpson index of diversity for crops and livestock as well as natural vegetation and pollinators (Figure 3). Further, more agroecological farms on average have significantly higher soil health scores, particularly for the indicators on presence of invertebrates, soil cover and soil compaction (graphs not shown). This demonstrates the value of agroecological approaches for reversing soil and land degradation.

Social performance: There is only a slightly positive correlation between CAET scores and the women empowerment indicators. For youth empowerment indicators there is even a slightly negative correlation with CAET scores (graphs not shown). This highlights the requirement to further strengthen gender equity and youth empowerment efforts in agroecological interventions to increase agroecology's contribution to sustainable development.

Health and nutrition: On average, households with an enhanced integration of the 10 Elements of Agroecology have highly significantly lower perceived levels of food insecurity and improved dietary diversity (Figure 4). Further, more agroecological farmers also had a highly significantly reduced exposure to pesticides (graphs not shown). This suggests that agroecology is a highly effective approach for improving food and nutrition security and health parameters for rural populations in Madagascar.



Figure 3: Results of TAPE Step 2 on environmental performance. The total CAET scores are correlated with the composite agrobiodiversity score, combining indicators for crop, animal and natural vegetation diversity.

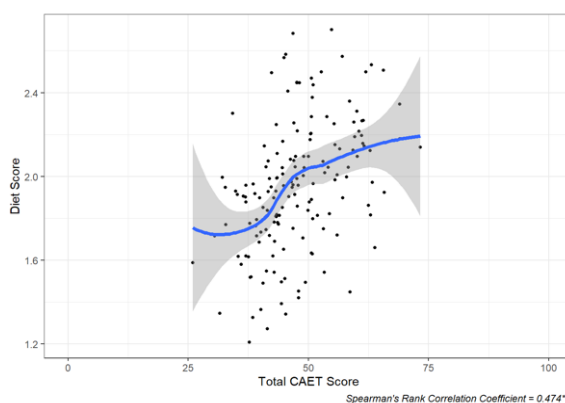


Figure 4: Results of TAPE Step 2 on health and nutrition performance. The total CAET scores are correlated with the composite food security and dietary diversity score.

Step 3: Participative analysis of results

A national workshop was attended by over 70 stakeholders, including farmers, civil society organizations, research and education institutes as well as representatives from governmental agencies and the private sector. Additionally, municipality-level workshops were attended by hundreds of farmers as well as local authorities and NGOs. The farmers and other stakeholders appreciated the evidence linking agroecological transitions with improved performance across economic, environmental, nutritional and health domains. The stakeholders made the following recommendations:

- Prioritize providing promising opportunities for youth to engage in agriculture and ensure sustainable livelihoods.
- Further support farmers to transition to agroecology, as this requires long-term investments to adapt to climate change and combat environmental degradation, which were seen as major threats for agricultural production by the stakeholders.
- Increasingly engage policy makers and investors as well as entrepreneurs in the discussions about agroecology, as scaling agroecology requires an enabling environment and farmers' agency is limited.
- Take a non-dogmatic approach to agroecology, as many farmers considered synthetic pesticides and mineral fertilizers necessary to obtain sufficient yields to ensure food security and economic prosperity. The biopesticides locally available were considered insufficiently effective by many participants.

Links

[Tool for Agroecology Performance Evaluation \(TAPE\)](#) | [Agroecology TPP](#) | [Soil Protection and Rehabilitation for Food Security \(ProSoil\)](#) | [Measuring Agroecology and its Performance \(MAP\) project](#)



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