

The suitability of using FAO's Tool for Agroecological Performance Evaluation (TAPE) in a Norwegian context

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BACKGROUND

The present agri-food system in Norway, and globally, is facing severe challenges when it comes to ecological, economic, and social sustainability. There is a strong need for knowledge and evidence of how different agricultural production systems contribute to sustainability. However, assessing the sustainability of farming and food systems is a challenging and complex task. Methods intending to do so need to be carefully evaluated.

In this study, FAO's Tool for Agroecological Performance Evaluation (FAO, 2019) was implemented and evaluated for its suitability in a single farm case. The study constituted the first author's thesis for completion of the MSc in Agroecology at the Norwegian University of Life Sciences (Hansdotter, 2022).

THE CASE-FARM

The farm assessed in this study is an organic dairy farm with 25 dairy cattle and 36 ha of productive land in Midwest Norway (Fig 1). The main product is milk for sale. Calves are sold for meat production. The crop produced today is a clover-grass ley, used for pasture and silage on the farm. One farmer is working there, with some occasional extra help. The conversion from conventional to organic started in 1987.



Figure 1: A single case study was conducted on an organic dairy farm in Møre og Romsdal County (red area).

MATERIAL AND METHODS

The multicriteria assessment tool TAPE - Evaluation Steps 0 to 3 in accordance to FAO (2019):

- **Step 0: Description of agricultural production systems and context.**
- **Step 1: Characterization of agroecological transition.** This step characterizes the system by assessing it against principles within agroecological approaches.
- **Step 2: Criteria of performance.** This step evaluates the system's performance against criteria considered relevant for achieving the Sustainable Development Goals (SDGs).
- **Step 3: Participatory interpretation of results with stakeholders.**

After steps 0-3 had been carried out, the adequacy of the results and the suitability of the method was reviewed in a focus group discussion encompassing the authors, the farmer and selected agricultural researchers and advisors (Fig. 2).



Figure 2: The evaluation of using TAPE in a Norwegian context was conducted through a focus group discussion including the farmer, two advisors and two researchers from the Norwegian Center of Organic Farming (NORSØK).

RESULTS

Findings from Step 1 – Characterization of agroecological transition:

The selected farm obtained reasonably high scores on most indicators except Diversity, Recycling and Circular and Solidarity Economy (Fig. 3.) The explanations for the lower scores were, respectively, the dominance of grassland and dairy cattle, absence of water-sparing measures and delivery of meat and milk through mainstream value chains. The adequacy of the lower scores may be questioned, as the clover-grass leys are inherently quite diverse, the climate is wet and the dairy and meat wholesaler companies are organized as farmers' cooperatives.

Findings from Step 2 –Criteria of performance relevant for the sustainable development goals:

The farm performed best in dimensions regarding economy and efficiency and poorest in dimensions concerned with farm- and biodiversity. This was interpreted to be a consequence of farm-external socioeconomic and political circumstances fostering specialization on animal husbandry in the region. The findings suggest that, provided full utilization of stakeholder participation (in Step 3) and consideration of site-specificity not accounted for in the TAPE guidelines, the framework can be an appropriate tool for identifying and interpreting characteristics and performance of agricultural production systems.

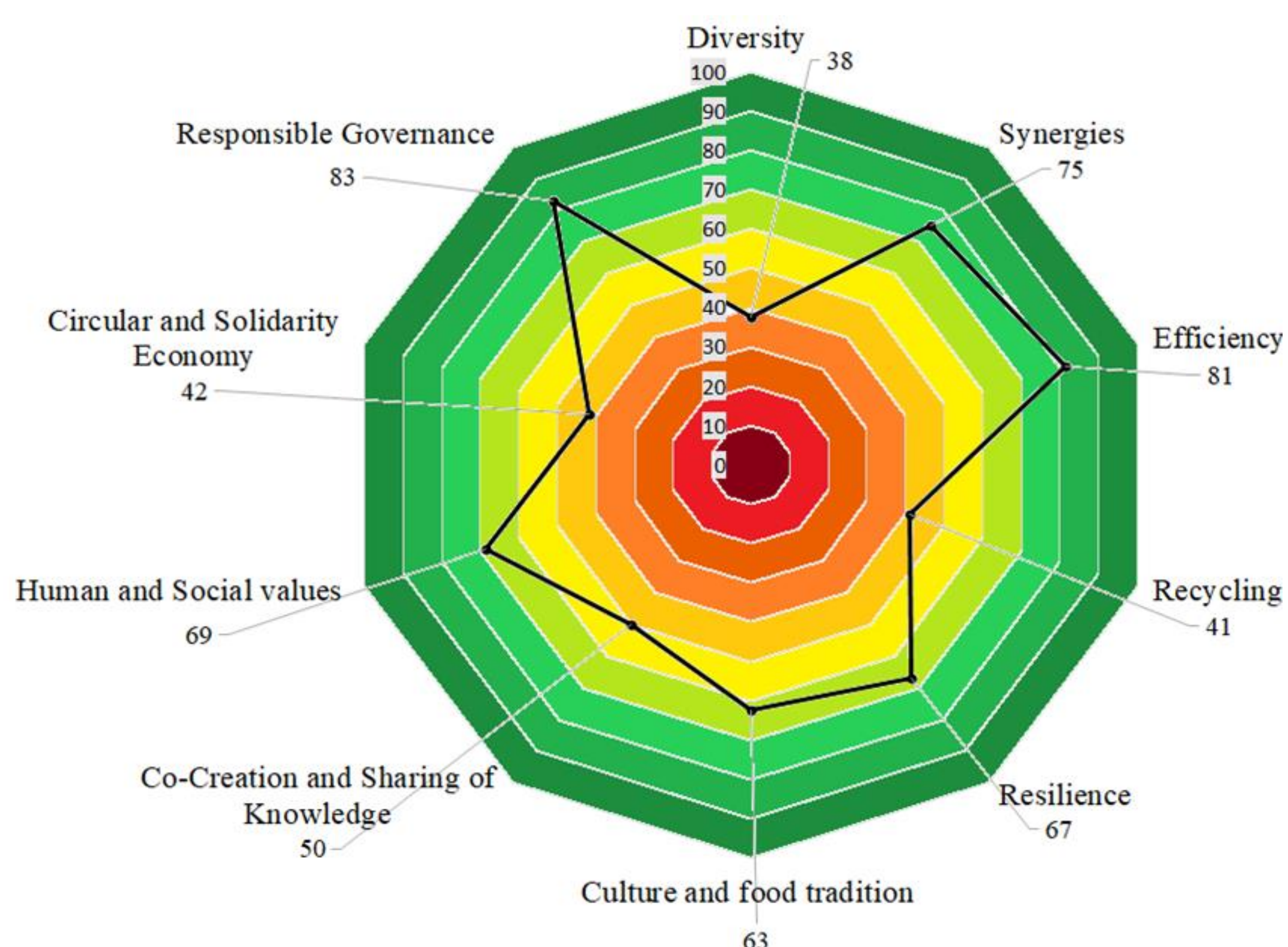


Figure 3: Results from the characterization of agroecological transition on the selected farm (Step 1) as assessed against the "10 Elements of Agroecology" (FAO, 2019). Numbers in percentage of full compliance.

Table 1. Results from Step 2 of TAPE: Criteria of performance relevant for the SDG's. Green = desirable, Yellow = Acceptable, Red = Unsustainable.

Criteria of performance linked to the SDG's	Results
Secure land tenure	The farmer owns the land + has the perception of secure access to it + the right to sell
Productivity	Gross productivity value/ha is higher than the national average
Income	Farm net income is more than the median income in similar agroecosystems
Added value	Gross added value/worker >1.2 x national agricultural GDP/worker
Exposure to pesticides	Pesticides are not used, only other integrated techniques for pest management
Dietary Diversity	Dietary diversity score: 8/10
Womens Empowerment	Score 89%
Youth Employment	Young people do not want to continue in the agricultural activity of their parents but, have other jobs.
Agricultural biodiversity	Gini-Simpson diversity index + "natural vegetation, trees and pollinators index" score 42,3 %
Soil Health	Score of 4.5 out of 5, assessed with 10 indicators.

CONCLUSION

TAPE was found

- quite suitable for the Norwegian context
- poorly adapted to indicators of local ecological, climatic, and socio-cultural conditions

We recommend

- TAPE as a heuristic tool, rather than a rigid, accurate evaluation method, when used in Norway
- Using TAPE as a tool to foster transformative discussions about sustainability with farmers, policymakers, and other stakeholders.

References

FAO (Food and Agriculture Organization of the United Nations). (2019). *TOOL FOR AGROECOLOGY PERFORMANCE EVALUATION: PROCESS OF DEVELOPMENT AND GUIDELINES FOR APPLICATION-Test Version*. Rome. <https://www.fao.org/agroecology/tools-tape/en/>
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