

Peer Review

# Review of: "What Counts as Green AI? Mapping Efficiency, Sustainability, and Critical-Ecological Strands in a Fragmented Discourse"

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The author addresses in his article the problem that the assessment of the sustainability of *Green AI* is fragmented and terminologically inconsistent. He proposes a unified approach that integrates multiple perspectives into the evaluation. This is particularly relevant in the context of sustainability assessment, which—according to international definitions—requires the consideration of multiple systems or “capitals,” namely environmental, economic, and social dimensions.

Regarding his approach, I mainly have two points of criticism:

## Inaccurate and inconsistent terminology

The terminology used by the author is imprecise. For example, a sustainability assessment (as defined by the UN) involves the evaluation of several capitals (environmental, economic, social, etc.). However, he uses the term *sustainability* to refer solely to environmental impact assessment. This is an incorrect use of the concept. The term *sustainability* would be more appropriately applied to what he describes in Strand 3.

A similar issue appears in Strand 1: *Efficiency*. When discussing the limitations of efficiency assessments, he repeatedly claims that trade-offs are not captured when evaluating CO<sub>2</sub> equivalents. Yet carbon footprinting is standardized in ISO 14067 (for products) and ISO 14064 (for organizations), both of which explicitly require that all relevant trade-offs be considered through a holistic assessment. If, in Strand 1, he intends to refer to simplified or partial carbon footprint calculations, this should be clearly explained—especially how such simplified approaches differ from the standardized methods.

### **Environmental assessment must be holistic by definition**

In my view, contemporary environmental assessment cannot be carried out without a holistic, trade-off-sensitive approach. This is inherent to the entire ISO 14000 series, which mandates life cycle thinking. Therefore, I do not agree with the author that improvements are needed in this regard; the methodological requirement is already well established. An environmental assessment that does not include trade-offs is simply executed incorrectly.

In my view, the real challenge in assessing AI lies elsewhere—namely in quantifying the *benefits* of AI. The tasks avoided or replaced through the use of AI are extremely difficult to quantify, making a comparison with conventional, non-AI methods problematic.

### **Final remarks**

The integration of environmental, economic, and social assessments is highly relevant, but should more appropriately be framed under the concept of **systems modelling** rather than under the umbrella of sustainability alone.

The author's restriction to *Green Colonialism* is understandable but, in my view, too narrow for a truly holistic assessment. A more general framework that considers all forms of social trade-offs would be more appropriate. For example, the use of AI can have significant social consequences not only in the Global South but also in the Global North, where a substantial share of conventional jobs may be replaced by AI systems.

### **Declarations**

**Potential competing interests:** No potential competing interests to declare.