

# The ARC-Methodology

by Ove Aigner Haukenes | The Arctic University of Norway - UiT

Abstract ID: 70

Submitted: April 15, 2023

Event: CloudEARTH*i* Conference series - 2023

Topic: Academic Education and its Impact on Entrepreneurship and Sustainability

## A synergy approach to sustainability methodology

We recently completed a feasibility study for an approach to sustainability assessment methodology for technologies addressing the underlying philosophical issues of technological development. Such a methodology is relevant for the scientific, educational and commercial sector for developing, evolving and implementing green technologies in ways that also realise them as *de facto* sustainable.

We are currently raising funds and looking for collaboration partners for a main project of completing the methodology, with support from Arctic Centre for Sustainable Technologies (ARC/UiT).

## The philosophical fundament

Philosophers such as Heidegger and Jaques Ellul have critiqued the engineering approach to technological development for the past century, and shown how it has ignored the tendency of technologies to gradually become means for their own ends, rather than fulfilling the human ends they originally were designed for. This, in turn, made humans lose control over technologies, causing ecological, societal and existential problems.

The critique has later been directed at the ideology of “ecological modernization” underlying the current belief that ecological sustainability can be acquired through market driven technology development. Illustrated by how the technological efforts since 1987 aimed at reducing emissions instead have resulted in a global increase in emissions. It seems that spite massive renewable energy implementation we are incapable of reducing emissions. Why is that?

We coin these reasons as “the fundamental problem of technologies”: when technological solutions to one problem create new problems, and the solutions to these problems spawn their own, and so on. The end result of this eternal regress is that technological solutions tend to shift burdens around instead of fundamentally solving them.

Applied to the case of sustainability, the result is that technological expansion inevitably comes on the expense of ecology - one way or another. For example, by sacrificing biodiversity for climate mitigation, although both IPBES and WWF agree that 80% of the

threat to ecosystems is caused by human activity. Technologies need to be produced, implemented and operated in ways that mitigate *both* climatic and biospheric problems, while simultaneously considering human factors, to be realised as de facto sustainable.

## **The methodology**

We state the need for new success criteria aimed at avoiding the fallacy of 'empty green efficiency'. We suggest an approach that uses *synergy* (towards ecology) as the basic indicator for sustainability. This solves the fundamental technological problem in a philosophical manner by promoting co-efficiency between technology and ecology. In turn, allowing for the maximum degree of prosperity - within planetary boundaries.

Our preliminary approach is based upon an updated version of the I=PAT formula (environmental impact = People x Affluence x Technology), creating operators for the methodology as illustrated in the attached flowchart.

I would like to present our study and the concepts it builds upon with the hope of finding collaborators or investors for further work, while also highlighting the importance of considering the philosophical issues of technology for succeeding with a green transition. It has previously been presented in Tromsø, Harstad, Mo i Rana, Bodø and at Forskningsdagene, with following panel discussions that sparked valuable debate.

The study: [www.synergy.no](http://www.synergy.no)