

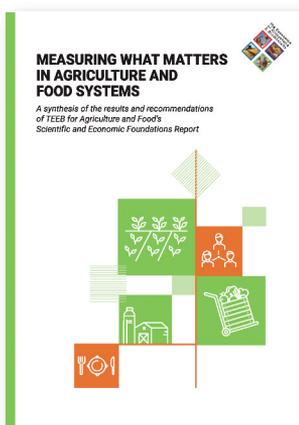
Alexander Müller & Nadine Azzu

## “It’s the economy, stupid!”

### TEEBAgriFood, a new framework to measure and value the success and failure of food systems

In 2018, The Economics of Ecosystems and Biodiversity (TEEB) published a report entitled “Measuring what matters in agriculture and food systems”<sup>1</sup> that developed a comprehensive framework for analysing food systems. The report references the value of the contribution of the natural resource base to agricultural production, the positive or negative impacts of production on nature, its interaction with society, and its impact on human health. In doing so this report provides an overview of the true cost of food.

A quick internet search for the quote “our food system is broken” provides over 46,000 results within 0.35 seconds. Clearly, a new narrative is emerging that tries to explain the problems of the world’s food system. This narrative, “the food system is broken”, is increasingly heard at many conferences from speakers with different professional backgrounds, and has become a catch phrase. It is surprising to see that people who have worked for many years on improving the efficiency of food production can now agree on this narrative.



“Fixing a broken food system” without considering the underlying reasons for its failure will fall short of finding a solution. We think that the “broken food system” narrative is hiding a much bigger problem. The economy driving the whole system is broken! This is the core of the problem. And what is at the core of the problem should also be at the core of our attention. Otherwise, a wrong narrative diverts attention away from the necessity to develop a new solution.<sup>2</sup>

The list of unsolved problems in the global food system is long. No one can contest the fact that over 800 million people are hungry and two billion are malnourished – yet obesity is growing and not only in developed countries. No one can contest the negative impact of farming on natural resources or its contribution to climate change. The scientific evidence is over-

# 2018 TEEBAgriFood Report

whelming. The same is valid in relation to the fact that small scale farmers and workers in the food chain are often underpaid and many are poor; conglomeration of food businesses continue at a global scale, industrial production of seeds and fertilizers is moving towards oligopolies, and major global food brands can be found all over the world; six out of ten global health risks for humans are caused by food; and one third of all food, annually, is wasted.

These considerations beg the following questions: (i) how can we tell if the food system is not working, and is broken – i.e. what are the characteristics or indicators of a functioning food system?; and (ii) based on these characteristics, what metrics should be used to measure the performance of the food system?

To date, the “success” of a food system is predominantly measured with simple economic metrics: productivity (output per unit of input), and yields per hectare. In recent decades the increases in yields are impressive both in terms of per hectare productivity (in some parts of the world), and in the amount of food produced globally. According to FAO the world is currently producing enough calories for there to be enough for everybody. No one should go to bed hungry. So why are there so many hungry people? Measured against these two predominant success indicators positive results are shown. According to these indicators we are producing enough food, so everyone should be fed. But this is not the case. Therefore, currently productivity is not the problem, but rather access to food. People are hungry because they are poor.

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Let us approach the question “is the food system broken?” from a different, environmental perspective. The impact of agricultural production has been analysed in several studies<sup>3</sup> and the results are – again – pretty clear: the agriculture sector is to a large extent responsible for the degradation of natural resources and is one of the main emitters of greenhouse gases. As a nature-based industry, agriculture is therefore undermining its own foundation. From this perspective, there is a contradiction. Additionally, the agriculture sector is responsible for a massive loss of biodiversity (e.g. insects for pollination) while at the same time it is dependent on genetic resources.

Therefore, the question is, are we measuring the success or failure of the food system against the right indicators, or do we need new metrics for measuring and valuing the performance of food systems accurately. We are proposing to reflect all capital (produced, natural, human and social) and associated costs (externalities, both positive and negative) in the valuation of food systems.

The Economics of Ecosystems and Biodiversity for Agriculture and Food (TEEB-AgriFood) was designed to illustrate how best to capture the complex reality of “eco-agri-food” systems in a holistic manner. The aim was to move beyond

the risks and limitations inherent in simplistic metrics such as “per hectare productivity” and to develop a metric that covers the whole system and not only parts of it.

The term “eco-agri-food systems” is used to describe the interconnectedness and complexity of all dimensions of sustainability involved in food production, processing, distribution and consumption including human health. It highlights the “eco” (i.e. natural ecosystem) source of important but economically invisible inputs to agricultural production, in particular those provided by ecosystem services. It measures and values the positive or negative impacts of production on the environment which in the standard accounting system remain economically invisible. A key aspect of using this term is the emphasis on thinking in terms of value chains (systems thinking), as opposed to thinking in production silos.<sup>4</sup> System thinking unveils drivers of change as determined and impacted by feedback loops, delays and non-linear relationships, in the context of change along the value chain.

**Ignoring natural, social and human capital keeps people hungry and drives degradation.**

The TEEBAgriFood report<sup>5</sup> developed a comprehensive framework for analysing food systems. In particular, it values the contribution of the natural resource base to agricultural production, as well as the positive or negative impacts of production on nature. It also analyses the value of interaction with society (e.g. employment), the impact on human health (health benefits and costs), and ultimately provides an overview of the true cost of food. In summary, it captures all elements of the food system and how they interact.

More broadly, TEEBAgriFood is part of an ambitious undertaking, aiming at changing the most powerful figure of the world, the Gross Domestic Product (GDP)<sup>6</sup>. The way all economies of the world measure the value of products and services, and how they measure the growth and success of all their economic activities is concentrated in one figure: GDP has become the universal indicator of development. It drives economic and political thinking, and is even one of the key indicators for developing countries in achieving the Sustainable Development Goals. And yet, as an indicator of success, the GDP is riddled with shortcomings: it values short-term growth and ignores medium-term impacts of pollution and degradation of natural resources, and it does not take into account social implications created by growth.

In Minnesota, a study of key externalities of two corn production systems – genetically modified (GM) and organic – was conducted by using the true cost accounting method by following TEEBAgriFood evaluation framework, in terms of stocks and flows of the four capitals (produced, natural, human and social). The study focused on the production side of corn systems only, because of challenges associated with the gathering and assembling of a large amount of data into the framework template. Hence, the assessment was carried out by

a multi-disciplinary team because the analysis focused on quantitative data, but also descriptive information, monetary and non-monetary information. The study revealed higher hidden social, environmental and health related costs associated with GM corn production systems. While there was a positive influence of both systems on produced and social capital, for GM corn production systems, the increasing divide between large and small-scale farmers lead to negative social, health and environmental impacts. For organic production systems, there are positive economic, social, health impacts, with limited environmental impacts. Data limitation for comparison of the two systems showed that the TEEBAgriFood framework was particularly useful in assessing macro level data required for policy analysis; it lent itself to reviewing wider impacts of the entire corn value chain in order to modify policies and practices.<sup>7</sup>

From our perspective, the most important contribution of TEEBAgriFood is that it has changed the way we think about the economy of food systems: TEEBAgriFood demonstrates that the economics of the food system are the problem! Measuring only produced goods and services (produced capital) has created the problem, ignoring natural, social and human capital. This – together with poor governance and inappropriate policies – keeps people hungry and drives degradation. And that is far worse.

To conclude: What is at the core of the problem must now be at the centre of our attention – the findings of TEEBAgriFood call for research, politics and all ongoing multi-stakeholder processes to reassess our hitherto central economic beliefs. Nothing less is required to create a new economic foundation for sustainability. Without this reassessment, more systems will be broken.

#### Endnotes

1 [http://teebweb.org/agrifood/wp-content/uploads/2018/10/Layout\\_synthesis\\_sept.pdf](http://teebweb.org/agrifood/wp-content/uploads/2018/10/Layout_synthesis_sept.pdf)

2 Here we focus solely on the economics of the food system. Questions of access to food, poverty and stability of supply including trade are outside the remit of this essay and will need to be considered additionally. We are however convinced that a new economy for sustainability needs to be in the centre.

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United Nations Convention to Combat Desertification. 2017. The Global Land Outlook, first edition. Bonn, Germany

4 The Economics of Ecosystems and Biodiversity (TEEB). 2018. Measuring what matters in agriculture and food systems: a synthesis of the results and recommendations of TEEB for Agriculture and Food's Scientific and Economic Foundations report. Geneva: UN Environment.

5 <http://teebweb.org/agrifood/reports/> The TEEBAgriFood report was written and reviewed by 150 people from more than 30 countries analyzing all aspects of today's food systems. Its system approach goes beyond the concept "from farm to fork" because it starts with the natural resource base and also takes into account both human and planetary health.

6 <https://www.project-syndicate.org/commentary/why-gdp-by-philipp-lepenies-2016-08?barrier=accesspaylog>.

7 Sandhu, H., Scialabba, N.E., Warner, C. et al. Evaluating the holistic costs and benefits of corn production systems in Minnesota, US. *Sci Rep* 10, 3922 (2020). <https://doi.org/10.1038/s41598-020-60826-5>



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