



Sustainable Productivity Growth in Agriculture: Trends and Policy Performance

Highlights

- Agricultural productivity is growing strongly worldwide, although levels and pace differ across countries, regions and commodity sectors.
- Sustainability performance has improved on average in OECD countries. The observed Total Factor Productivity (TFP) growth has been achieved with lower environmental impact per tonne produced, for example.
- Unsustainable agricultural practices persist, potentially constraining long-term sustainable productivity growth. These challenges are likely to be further increased by climate change.
- Policies should create conditions that encourage innovation and investment in agriculture. This can be achieved via a mix of approaches to ensure sustainable resource use and address challenges created by climate change.

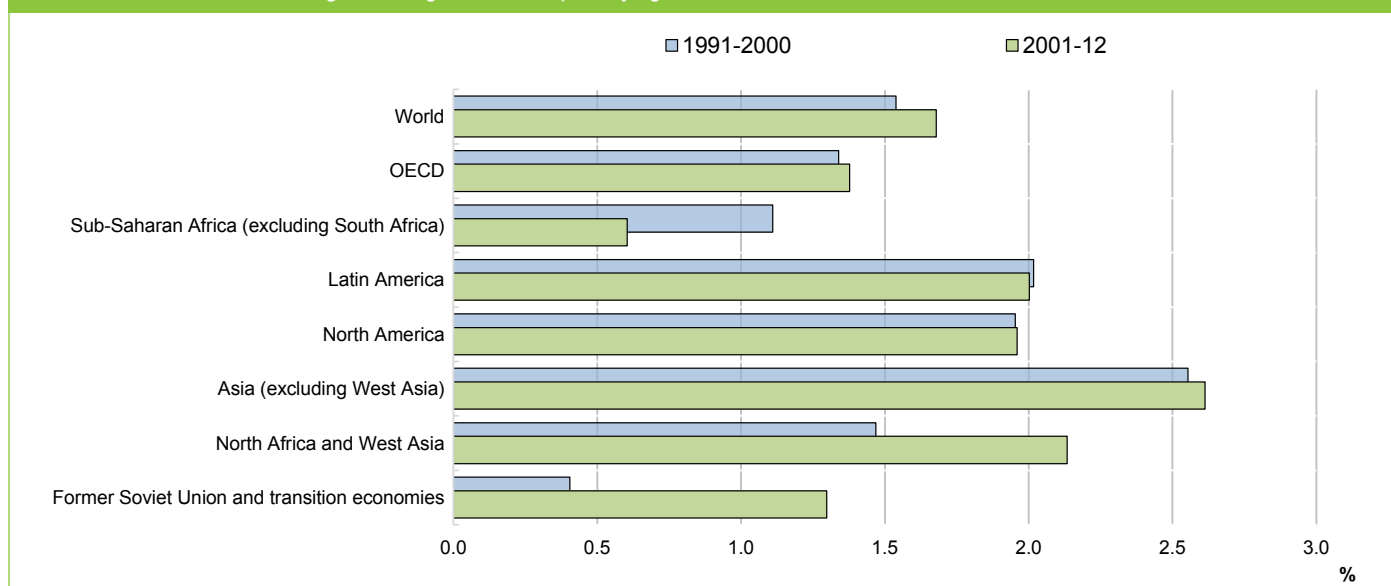


What's the issue?

In agriculture, productivity growth – as measured by Total Factor Productivity (TFP) growth – reflects improvements in the efficiency with which farmers combine inputs to produce outputs. Productivity improvements have driven considerable growth in agricultural production in recent decades, enabling farmers to produce affordable food, feed, fuel and fibre for a rapidly-growing global population. At the same time, higher productivity has raised farm household incomes, improved competitiveness and contributed to national growth.

At the global level – although estimates differ somewhat – agricultural productivity seems to be growing strongly. Global agricultural TFP growth has accelerated since 1990, averaging 1.7% per annum over the last decade of available data (Figure 1). Meanwhile, several OECD agri-environmental indicators suggest that the sustainability performance of OECD countries has improved on average, reflecting more efficient nutrient and water use and a reduction in greenhouse gas (GHG) and ammonia emissions (Figure 2). These past trends are encouraging.

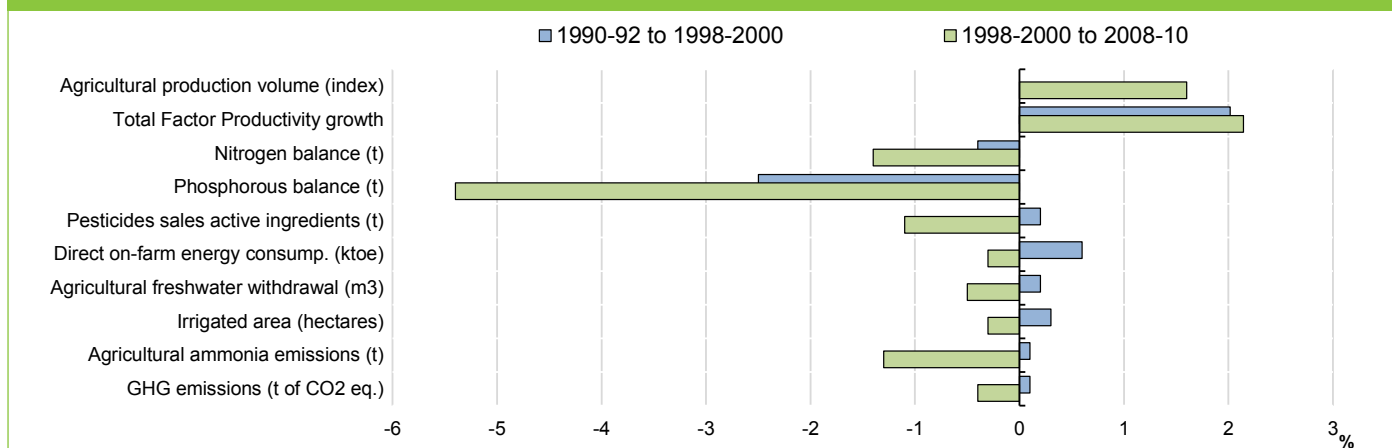
FIGURE 1. TFP GROWTH HAS REMAINED STEADY BOTH GLOBALLY AND ACROSS MANY REGIONS
TFP average annual growth rate in primary agriculture, selected countries, 1991-2000 and 2001-2012



Source: USDA Economic Research Service Agricultural Productivity database.

FIGURE 2. SUSTAINABILITY PERFORMANCE HAS IMPROVED IN OECD COUNTRIES

% annual growth rates 1990-92 to 1998-2000 and 1998-2000 to 2008-10



Source: OECD (2013), *OECD Compendium of Agri-environmental Indicators*, <http://dx.doi.org/10.1787/9789264186217-en>.

However, increased resource pressures and the uncertain impacts of climate change pose new challenges to meeting future food demand in a sustainable way.

Global productivity growth is largely due to better performances in emerging economies, economies of the former Soviet Union, and Eastern Europe. Growth is lagging in some Asian and African countries, however, and has significantly decreased in Sub-Saharan Africa as a whole. At country level, those countries which have experienced the fastest TFP growth in recent years include Indonesia, Turkey and India, while those which have displayed the most marked slow-down include Australia, Korea and Mexico.

Trends in sustainability performance also vary across countries. Agriculture is a major source of water pollution and GHG emissions, and unsustainable agricultural practices are widespread, leading to land degradation, water overuse and biodiversity loss.

Environmental problems may constrain sustainable productivity growth in the long term: climate change is projected to negatively affect agricultural production in many countries and disrupt global agricultural markets in the absence of proper adaptation responses. Agriculture will also be expected to contribute to mitigation efforts.



What should policy makers do?

A significant policy shift is required to enable sustainable productivity growth in the face of the abovementioned challenges. In particular, policy makers should:

- **Ensure that the signals given by sectoral and economy-wide policy frameworks** – including those for investment, credit and innovation – **consistently target sustainable productivity growth.**
- **Move away from measures that create trade and market distortions** and reduce unnecessary regulatory burdens.

- **Encourage measures to minimise food waste.**
- **Maintain quality infrastructure** to facilitate the functioning of input and output markets and reduce post-harvest losses.
- **Assess – and, where possible, make binding commitments to remove – measures that impede structural adjustment** or reduce incentives to innovate, such as high levels of blanket income support.
- **Improve agricultural innovation systems**, including by strengthening education, training and advisory systems, in addition to appropriate funding mechanisms for public and private research and development.
- **Shift away from practice-based to performance-based environmental policies** that use flexible instruments which enable farmers to innovate and select the most cost-effective practices for their situation.
- **Invest in better measurement and analysis of the sector's performance and policy impacts**, in order to guide future policy development.



Further reading

This document is based on the evidence and analysis found in a number of OECD reports and papers published in recent years:

- **Farm Management Practices to Foster Green Growth**
- **Fostering Green Growth in Agriculture: The Role of Training, Advisory Services and Extension Initiatives**
- **Policy Instruments to Support Green Growth in Agriculture**
- **Fostering Productivity and Competitiveness in Agriculture**

A complete list of relevant books and papers can be found at <http://oe.cd/taking-stock> or on the Agriculture Ministerial website at www.oecd.org/agriculture/ministerial.