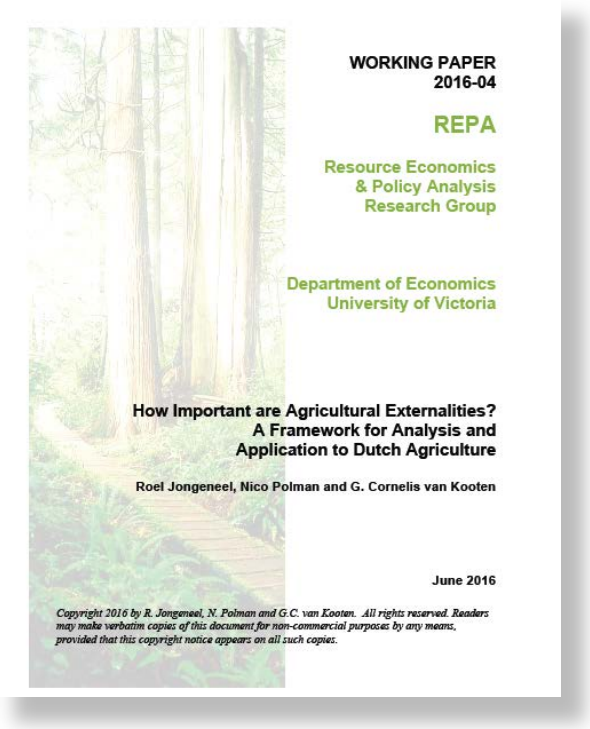
How Important are Agricultural Externalities?
A Framework for Analysis and Application to Dutch Agriculture

A summary of the environmental impacts of agriculture in the Netherlands



Part of an occasional series of summaries of academic research of interest to the Canadian Agri-Food Policy Institute (CAPI)

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How Important are Agricultural Externalities?
A Framework for Analysis and Application to Dutch Agriculture

By Roel Jongeneel, Nico Polman and G. Cornelis van Kooten

When people think of the economics associated with agriculture, they generally consider the cost of inputs, and the price paid for the end commodity. However, in recent years, more attention has been paid to the indirect costs and benefits associated with agricultural production.

Those costs and benefits can be thought of as the ripple effects of an industry on the environment, stakeholders and society that are not directly involved in the business. These costs and benefits are above and beyond the internal cost of production paid by the farmer. As such, they are called externalities, and they can be positive (benefits) or negative (costs).

> *"… the external costs (the negative externalities) of agriculture in the Netherlands add up to €1,868 million annually for the period of 2005-2012. This translates into a cost of €988.40 per hectare … reflecting the intensive methods of production in the Netherlands."*

Agriculture is a unique industry because of its direct connections to soils, landscapes, water and air. As a result, it can have unintended impacts – positive or negative – on environmental and human health. The agriculture industry's environmental performance is under increased public scrutiny as consumers and regulators demand certain standards be upheld. This has created an urgency to evaluate the positive and negative externalities associated with agricultural production in order to assign a dollar value to them. A recent study, "*How Important are Agricultural Externalities? A Framework of Analysis and Application to Dutch Agriculture,"* examined the sources and magnitude of positive and negative externalities for Dutch agriculture.

Despite its small size, the Netherlands is second only to the United States as an agricultural exporter. This is accomplished through intensive production practices, and that contributes significantly to its externalities. The industry generates an average of €10,341 million annually, which makes it an important part of the Dutch economy. However, the analysis of the industry's external costs and benefits revealed a much more complicated picture. G. Cornelis van Kooten is a professor of economics at the University of Victoria, and one of the study's three authors. They estimated the external costs (the negative externalities) of agriculture in the Netherlands add up to €1,868 million annually for the period of 2005-2012. This translates into a cost of €988.40 per hectare — considerably higher than €423/ha in the UK, and €19.74–64.14 in the U.S., reflecting the intensive methods of production in the Netherlands.

In order to ascertain the negative externalities resulting from Dutch agriculture, the researchers evaluated the industry's effect on soils, water and air. In those three categories, different aspects were measured such as soil erosion, greenhouse gases, and nitrogen, phosphate and pesticide content in water bodies. The biggest contributor to negative externalities is estimated to be atmospheric pollutants and greenhouse gases with €1,248 million of the total of €1,868 million.

While the negative externalities have been identified and explored for years, the measurement of positive benefits over and above the value of production is still in its infancy. In the Dutch study, researchers identified and determined the value of positive externalities such as the contribution of agricultural production to biodiversity and landscape provisions and agro-tourism. Biodiversity and landscape services include benefits from tree planting, wildlife habitat provision, wetlands preservation and grazing services. The estimated value of the external benefits is only €263 million annually, which is way below the external costs. What does that mean? Directly, Dutch agriculture generates significant revenue that contributes to the country's GDP. But indirectly, the external costs exceed the external benefits it generates, resulting in a decline in the sector's net contribution.

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The authors conclude that while their estimates are a first attempt, and some of the results may be open to discussion, the environmental impacts of Dutch agriculture are substantial, which is the result of intensive land use. They further conclude that there might be some room to scale back the intensity, which is gradually occurring due to the "greening" of Common Agricultural Policies in the EU.

Negative and positive externalities are the nuts and bolts that connect agricultural production practices to environmental outcomes and to social licence to operate. Determining the actual magnitude of externalities provides a framework for policy makers as well as a tool by which the agricultural industry can measure its net contribution to the society and to the economy, and can show to its customers how it is improving its environmental performance.

To read a copy of *How Important are Agricultural Externalities? A Framework of Analysis and Application to Dutch Agriculture*, please visit http://web.uvic.ca/~repa/publications.htm