



Feeding the World Sustainably?

- analysis of Irish and EU food nutrition trade balances

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Challenges for Agriculture

The need to feed a growing world population has been used to justify an expansionary Irish agricultural policy. However, any such scaling up of production needs to be assessed with respect to food security benefits, and implications for greenhouse gas (GHG) emissions.

Food Trade Energy Analysis

Food energy analysis is a useful technique for exploring the sustainability of agriculture. By converting all products to their food energy equivalent one can determine if a country is a net food energy exporter, or importer, and the result can be directly expressed in terms of population dietary supply (million people equivalent).

Trends in Net Food Energy Trade

In the 1960s Ireland was a net importer of food energy. During the 1980s and 1990s, there were net exports. Since 2000 Ireland has become a net importer again. While significant food energy is exported, mainly in the form of dairy and beef, these products contain less food energy than imports of cereals, sugar and vegetable oils. For the EU-28 there has historically been a significant net food energy importation. Export of cereal and animal food energy is exceeded by imported food energy in sugar and vegetable oils. Increasing output within the existing agricultural models would lead to increased food energy imports, due to diversion of cereals from the human food supply towards animal feed.

GHG Intensity

Food energy analysis provides an unambiguous measure of GHG emissions intensity, in terms of tonnes of GHG per million Calories. Products such as beef, butter, cream and milk can be aggregated to determine the emissions intensity of the entire cattle herd. Ireland has a higher bovine food GHG emissions intensity than the EU average. This is due to the higher proportion of non-dairy cattle (83%) in the Irish herd compared with the EU herd (73%). The average emission for beef production in the EU-28 is 8.5 tonnes GHG/million Calories, compared with 0.9 tonnes/million Calories for dairy products. From a GHG and food energy perspective, dairy production is nine times more efficient than beef production.

Biofuels

Biofuels from food crops will exacerbate food energy trade imbalances. The EU stipulates that no more than 7% of transport energy consumption may be derived from food crops in 2020. This would still represent the food energy supply for at least 175 million people.

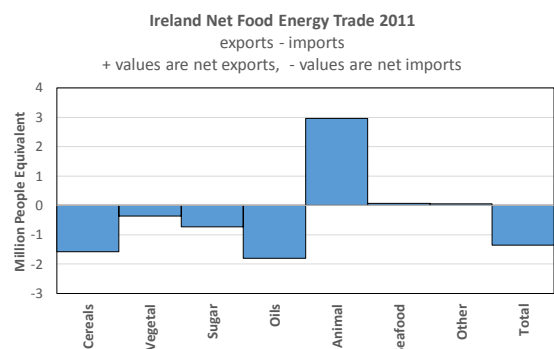
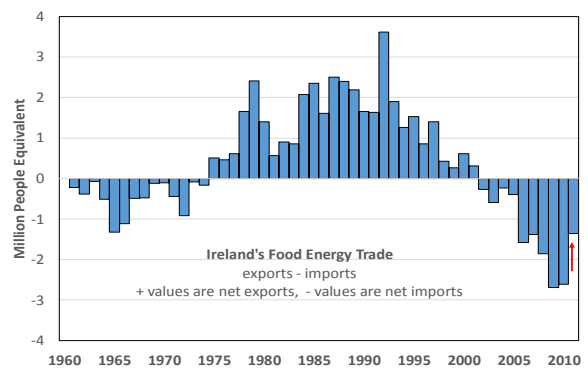
Lessons from Food Energy Analysis: Pathways to Sustainability

Ireland and the EU can contribute to a sustainable global food supply by increasing cereal, oil crop and vegetal production, reducing beef production, and moving away from biofuels.

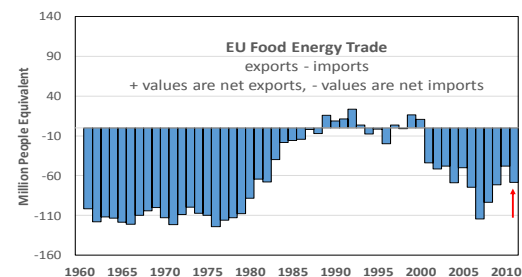
Data sources and notes:

Food trade and nutrition data 1961 to 2011: Food Balance Sheets, Food and Agriculture Organisation of the UN [Available at <http://faostat3.fao.org/download/FB/FBS/E> - most recent year available is 2011]
GHG emissions: enteric and manure methane only, from UNFCCC national inventory submissions in 2015, 2011 data, GWP = 25 http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/8812.php
Biofuels: Max 7% from food crops as per Directive 2015/1513. Renewable transport energy of 30 Mtoe in 2020 (Commission Report no. COM(2015) 293 final), which represents 10% of transport fuel consumption.

Ireland's net food imports could feed 1.4 million people



Net food imports to EU-28 could feed 70 million people



Ireland's bovine GHG intensity exceeds EU average

