

Sustainability in the food supply chain

The big issues:

- Globally we use 3 times the energy in producing food compared to the energy derived. Much of this energy is from fossil fuel sources
- Circa 30% of food is wasted by both mature and emerging economies. In emerging economies most wastage is of food not reaching a market place whilst most wastage in mature economies occurs at the retail consumption phase

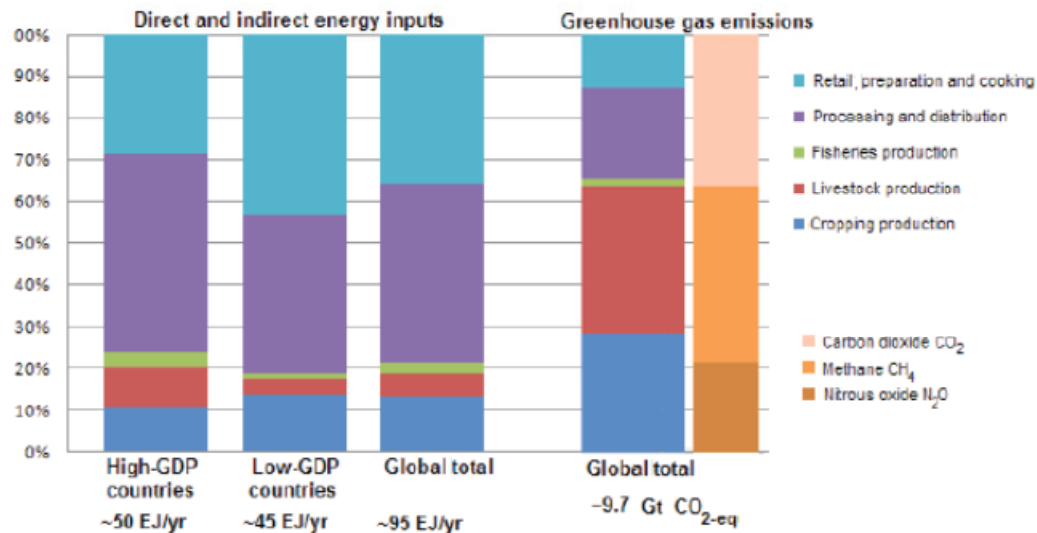


Figure ES 1. Indicative shares of final energy consumption for high- and low-GDP countries, the global total and total associated global GHG emissions for the food sector

The drivers for sustainability are inextricably linked to improving the energy performance of the sector. This could be seen as encompassing the whole food chain including issues such as GM, bio-fuels and economies of scale upwards and downwards, the removal of linear systems at the production end and subscribing to the UN's FAO "Energy Smart Food Chain¹ concepts.

There is a specific assumption that this is not solely about the development and application of technological fixes but also requires "innovative multi-stakeholder institutional arrangements".

It is a truism that the one resource that "they aren't making any more of" is land and especially that capable of food production". Britain is heavily urbanised and solutions that address sustainability *and* aspects of food security require a level of innovation that will be seen by some as "disruptive".

¹ Energy Smart Food for People and Climate, Issue Paper FAO 2011

Closing the loop

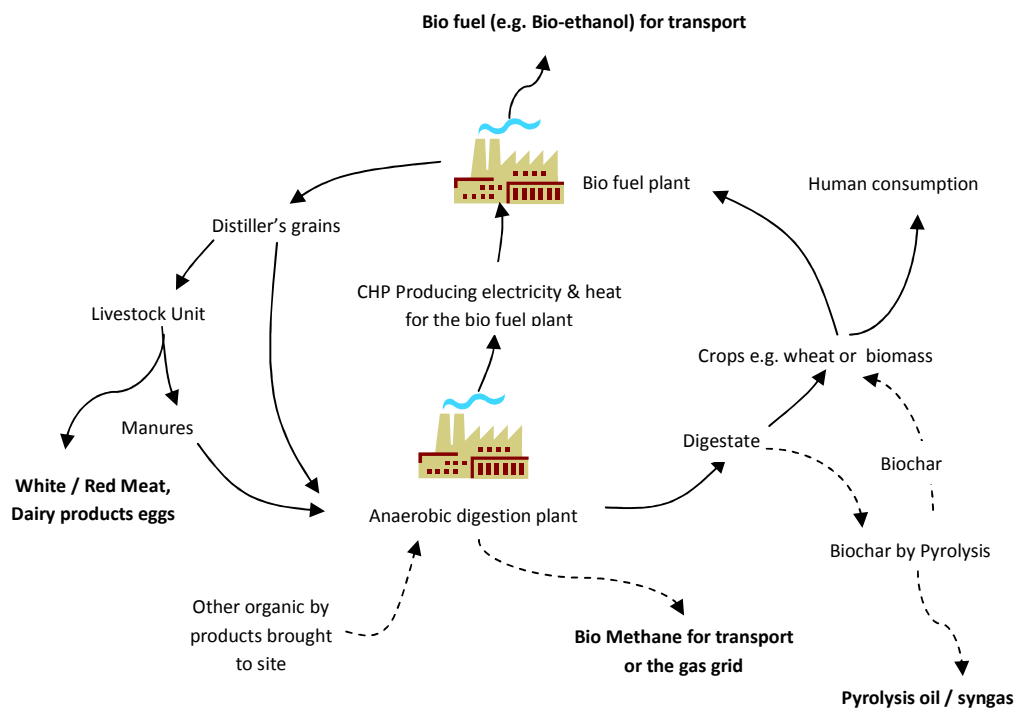
The essential outputs of farming could be listed as:

- Food production
- Production of renewable energy
- The production of 'public goods' through the delivery of a bio-diverse and attractive landscape

And, potentially,

- The provision of ecosystem services such as the management of sustainable unpolluted water supplies and the sequestration of carbon etc.

One conclusion might be that to successfully achieve many of these outcomes will require the creation of cycles such as the one below. This will almost certainly require a rethink on the scale of operational relationships between agriculture, food and renewable energy production. The implication may be that larger units will be required at all stages of the process if a balanced cycle is to be achieved consistent with the levels of investment required by the bio fuel and the anaerobic digestion sectors. This will have a proportionately greater impact on agricultural practices and philosophies than the other elements of the cycle.

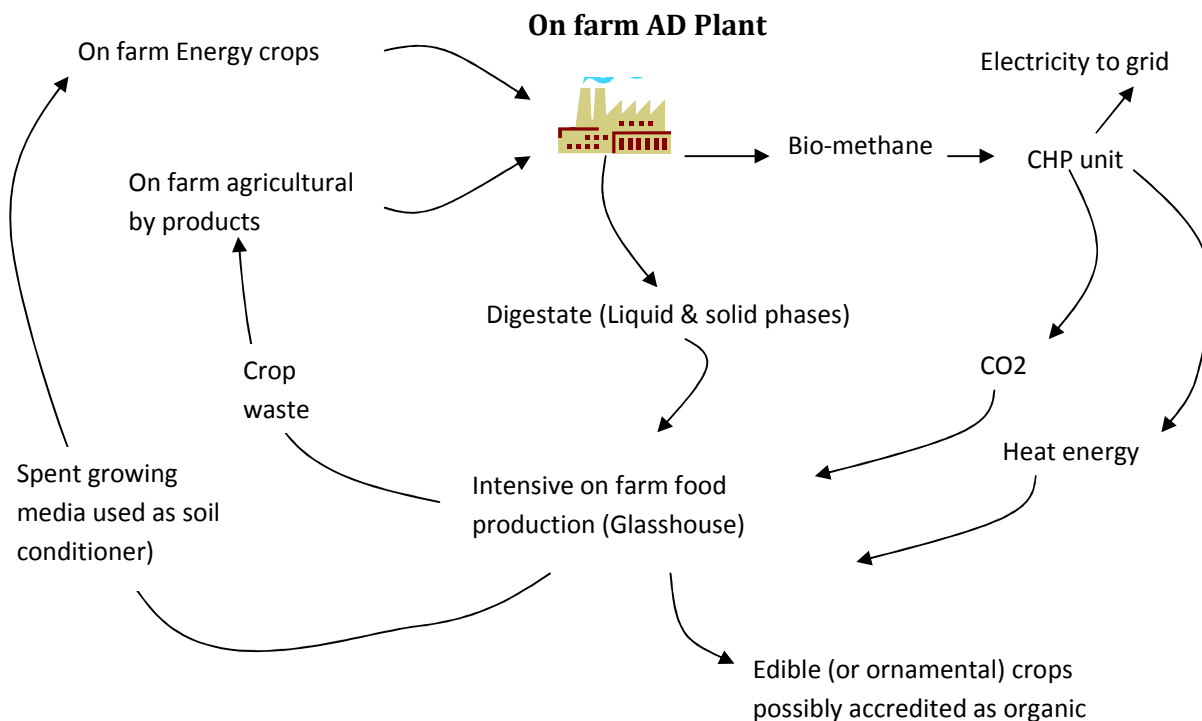


Recent experience of an attempt to establish a “mega dairy” at Nocton in Lincolnshire illustrated the potential level of public resistance to such large scale concepts. The GM debate is another example. The challenges around communicating and educating on the sustainability benefits of such concepts in a rural situation are clearly very significant.

There is however also the possibility that a different cycle could be envisaged where much of this could take place at a smaller scale consistent with current farm practices and public perceptions of what farming should be.

On Farm Renewable Energy Production from Anaerobic Digesters could also form a closed loop system beyond just the recycling of the biomass feedstock within the farm.

A possible cycle might be:



At the other end of the scale – urban farming

One of the challenges in some western economies is the conceptual distance that there is between the origins of food and those consuming it. The view of our food chain is seriously influenced by the media and can result in severe responses to proposed innovations (See the GM debate and the national response to the Nocton Farm Dairy proposal).

Modern urban development is also contributing to this disconnection as increasing living density to reduce the consumption of irreplaceable land is removing the opportunity for people to produce their own food. Recent statistics show the opposite motivation however. Sales of vegetable seeds

now exceed those for ornamental and waiting lists for local council allotments are lengthening. The Landshare project's website www.landshare.net has over 50,000 subscribers seeking or offering urban land for sharing.

In some developing countries urban farming makes a significant contribution to feeding the population. Could this be a model that would make some contribution to the sustainability of the UK's food supply and, perhaps more critically, increase the reconnection of an urban population with its food and environment?

From the farming landowners point of view could this provide a new form of diversification? Could farm based allotments fit alongside farm shops, PYO and other forms of rural leisure activity?

Scanning the considerable variation in current rents a 100 m² allotment might, on average attract a rent of £80 – 100 per annum. If 1 ha of land were to be converted to allotments the annual rent might be £8,000 - £10,000 per annum for full occupancy. Given an initial investment for provision of water, some hard standing for vehicle and perimeter fencing this would make a significant rental income.