

LIFE CYCLE THINKING AND THE AGRI- FOOD SYSTEM



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Motivation



Fuente: <http://globalfoodforthought.typepad.com/.a/6a0120a66ea5b5970b019b017b4b15970b-pi>

Motivation

Table 1 Estimates of the relative contributions of different stages of the food chain to global greenhouse gas emissions

Stage of food chain ^a		Emissions (MtCO ₂ e) ^b	Year of estimate	References
Preproduction	Fertilizer manufacture	282–575	2007	24
	Energy use in animal feed production	60	2005	25
	Pesticide production	3–140	2007	24
Production	Direct emissions from agriculture	5,120–6,116	2005	26
	Indirect emissions from agriculture	2,198–6,567	2008	Emissions from the supplementary material for Reference 23 combined with proportion due to agriculture from Reference 28
Postproduction ^c	Primary and secondary processing	192	2007	Calculated from Reference 29
	Storage, packaging, and transport	396	2007	Calculated from Reference 29
	Refrigeration	490	2004	30
	Retail activities	224	2007	Calculated from Reference 29
	Catering and domestic food management	160	2007	Calculated from Reference 29
	Waste disposal	72	2007	Calculated from Reference 29

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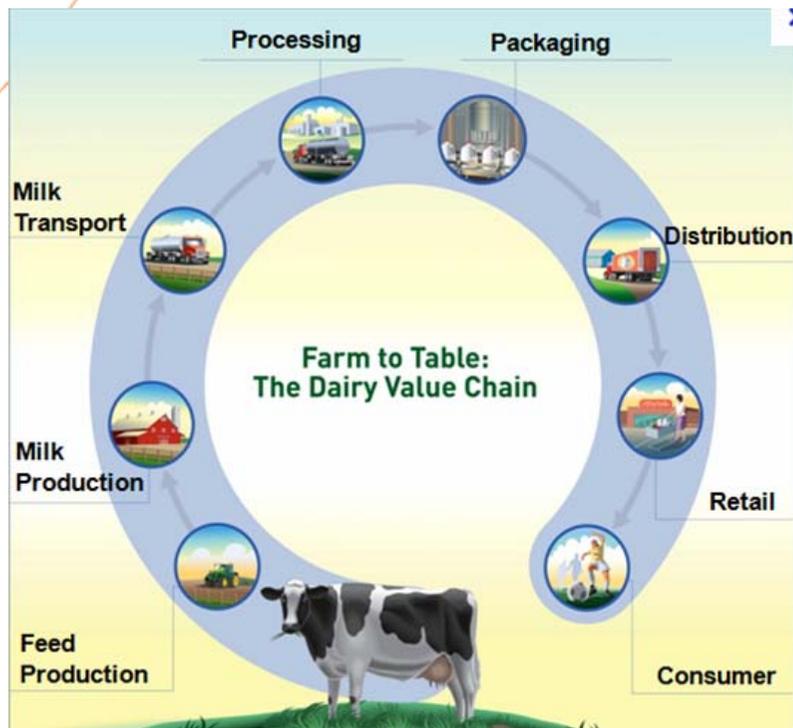
Source: Vermeulen et al. 2012. Climate Change and Food Systems. Annu. Rev. Environ. Resour. 37: 195-222

Opportunities

Conventional agricultural systems need to evolve to incorporate better technologies in order to:

- Increase resource efficiency (precision agriculture).
- Develop and use Best Management Techniques, Good Agricultural Practices, etc.
- Work under voluntary production schemes like as, for example, LEAF (Linking Environment and Farming).
- Establish a systemic approach through integrated agriculture.
- Move more decidedly to complementary and alternative production systems, such as, conservation agriculture, organic agriculture, or regenerative agriculture.

Opportunities



Source: Innovation Center for US Dairy

Life Cycle Analysis (LCA) is a methodology that offers a rigorous and standardized framework for the quantification of several environmentally - relevant material and energetic flows of a product or a process.

In addition to identifying the impacts and potential improvements options of a product, LCA can inform product development and design, aid in the selection of relevant indicators of environmental performance, and contribute meaningfully to environmental marketing endeavours.

Challenges and Barriers

- Identifying the difficulties to incorporate management or technology innovations in agricultural systems.
- Harmonized compensation systems to support adoption of new agricultural systems.
- Measuring the environmental benefits of the Good Agricultural Practices.
- Determining the reduction in GHG emissions coming from adoption of new agricultural practices.

Challenges and Barriers

How do we incorporate the most appropriate farming practices to the agricultural systems in the Basque Country?

How do we support those measures that have a higher cost for taking care of the “land responsibility” and that conflict with the economic goals of the farms?

Proposals

The key aspect to understand and manage the transformation of the agrifood production systems toward sustainability lies in the adequate selection of the most cost efficient measures to decrease GHG emissions to the atmosphere while increasing carbon sequestration in soils.

According to a recent study conducted in France, there are four key ways agriculture can be a part of the solution of reducing GHG emissions:

- Lower emissions of nitrous oxide (N₂O, a powerful GHG released during fertiliser processing or manure spreading) and methane (CH₄, a GHG that comes mostly from livestock).
- Increase carbon sequestration in soil and biomass.
- Reduce energy use and produce energy from biomass (agrofuels or biogas, which lowers emissions as substitutes for fossil fuels).
- Produce materials from biomass.

Source: Pellerin S., Bamière L., Angers D., Bèline F., Benoît M., Butault J.P., Chenu C., Colnenne-David C., De Cara S., Delame N., Doreau M., Dupraz P., Faverdin P., Garcia-Launay F., Hassouna M., Hénault C., Jeuffroy M.H., Klumpp K., Metay A., Moran D., Recous S., Samson E., Savini I., Pardon L., 2013. Quelle contribution de l'agriculture française à la réduction des émissions de gaz à effet de serre? Potentiel d'atténuation et coût de dix techniques. Synthèse du rapport d'étude, INRA (France), 92 p.

Proposals

- There is already a good amount of knowledge developed aimed toward agrifood systems sustainability.
- At research, development and innovation institutions a good deal of work has been done following these ideas.
- So, the main point for the immediate future should be to establish a consensus on which are the guidelines and measures that need to be adopted at the Basque Country.
- Once they are established funding coming from the Common Agricultural Policy (CAP) should be provided to support the established measures.
- Application of the LCA concept and associated environmental indicators to evaluate the environmental impacts and benefits of the programs.



THANK YOU FOR YOUR ATTENTION