

# **Food Miles – A Critical Evaluation**

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## Food Miles- A Critical Evaluation<sup>1</sup>

"Food miles" is a term commonly used to measure the transport distance travelled by food products between production and consumption. The development and application of this term has been motivated by two primary concerns:

1. *An environmental concern* – namely an argument that the further that a food product(s) travels from where they are produced to where they are consumed, the greater the consumption of energy, and hence the greater the emissions of Greenhouse Gases (GHGs).
2. *A regional development concern* – an argument that sourcing food close to where it is produced can generate important benefits to the local economy and stimulate 'regional development'.

Both of these concerns are highlighted in the following quote:

"Locally-produced fresh food is often the best environmental choice, and also helps to support local farming communities.... Generally speaking, the greater the distance food has traveled, from paddock to plate, the greater the transport pollution, and the greater the impact on the health of people, the land and the global climate - a concept known as 'food miles.'<sup>2</sup>

A recent Food Miles study in a Victorian context<sup>3</sup> revealed the following examples:

- Domestically produced oranges travelled 567 km, compared to a distance of 12,878 km for oranges imported from California, USA.
- Domestically produced basmati rice travelled 381 km, compared to a distance of 12,840 for basmati rice sourced from Karachi, India.

'Food miles' is an inadequate and potentially misleading measure of the environmental and economic impact of food. Distance travelled is not necessarily a good indicator for transport emissions, and fails to consider other environmental impacts (including other greenhouse gas emissions) associated with food production. Further, there may be negative impacts on economic development by effectively penalising non-locally produced food.

This analysis briefly summarises the limitations of 'food miles' below.

### 1. Food Miles as a transport emissions indicator

#### 1.1. Complex link between distances travelled and transport emissions

It is misleading to claim the kilometres travelled by food are an accurate indicator of the transport emissions attributed to that food product. For example, consider a case where a food commodity may be transported along with cargo. It would not seem accurate to attribute all the 'miles' (and therefore emissions) to the food. Indeed, in some cases, a food product may simply be a marginal addition to other non-food cargo that would have been transported in any case, in which case it may be accurate to attribute only a very low level of 'miles' to the particular food. In other

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<sup>1</sup> Bob Douglas, Bill Fisher and Arthur Ha provided helpful comments and input to this paper.

<sup>2</sup> Australian Conservation Foundation, 'Cut Back on 'Food Miles'', 3 August 2005, accessed at <http://www.acfonline.org.au> on 30 October 2007.

<sup>3</sup> Gaballa, S, and Abraham, A.B, *Food Miles in Australia: A preliminary study of Melbourne, Victoria* CERES Community Environment Park, July 2007.

cases it may be appropriate to attribute all the 'miles' to the food. Since 'food miles' does not take account of such complexity, the use of 'food miles' may lead to perverse results due to inaccurate ranking of the energy/emissions impact of foods.

### **1.2. Does not take account of different modes of transport**

Consider two food products that have been transported an equivalent distance, but by alternative modes of transport - one by sea, the other by air. As a result, they may be associated with very different levels of energy/emissions.<sup>4</sup> The application of a 'food miles' measure will not recognise these different transport modes, and will incorrectly rank the two products as equal in their energy/emissions impact as they both travelled the same distance.

### **1.3. Does not take account of different energy/fuel use**

Consider two food products that have been transported an equivalent distance by an equivalent mode of transport (say, road), but powered by alternative fuels (one by petrol, the other by diesel). As a result, they may have different levels of energy/emissions. The application of a simple 'food miles' measure will not recognise differing fuel use, and will incorrectly rank the two products as equal in their energy/emissions impact as they both travelled the same distance.

## **2. Food Miles as an environmental indicator**

### **2.1. Ignores other GHG emissions**

'Food miles' is only a partial indicator of the GHG emissions associated with food, as it does not consider energy/emissions associated with food production, packaging, or disposal.<sup>5</sup> As a result, the use of 'food miles' may lead to highly perverse outcomes in terms of GHG emissions. Consider the following example:<sup>6</sup>

- Tomatoes are being consumed in Britain, and can be sourced either from Spain or Mexico.
- Due to climatic conditions, Spanish tomatoes are grown in heated glass-houses, requiring the consumption of electricity.
- On the basis of 'food miles', Spanish tomatoes may appear to be associated with lower levels of GHG emissions than Mexican tomatoes as they travel a shorter distance from farm-to-plate.
- However, if both production and transport emissions are considered, the Mexican tomatoes may be associated with lower overall emissions, as the growing of tomatoes in greenhouses may be highly energy/emissions intensive.

Accordingly, the ranking of the energy/emissions impact of food based on 'food miles' may generate misleading results and bring about negative GHG consequences.

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<sup>4</sup> Smith, A., Watkiss, P., et al, *The validity of food miles as an indicator of sustainable development: final report*. AEA Technology Environment. Report for Department of the Environment, Food and Rural Affairs (UK) July 2005.

<sup>5</sup> Saunders, C. Barber, A. and Taylor, G. *Food Miles – Comparative Energy/Emissions Performance of New Zealand's Agriculture Industry*, Lincoln University, Research Report No. 285, July 2006, pvii.

<sup>6</sup> Drawn from Iles, A. 'Learning in Sustainable Agriculture: Food Miles and Missing Objects', *Environmental Values* 14 (2005), pp163-183.

Recent studies have successfully articulated this limitation by comparing energy use and CO<sub>2</sub> emissions associated with farm production and transport of goods produced in New Zealand and exported to the UK with the same product when produced in the UK. The results found that even though NZ products travelled much further to their point of consumption, NZ products compare favourably with lower energy and emissions per tonne of product delivered to the UK when compared to other UK sources. For instance, UK dairy produces 34 per cent more greenhouse gas emissions than NZ per kg of milk solids, and 30 per cent more per hectare.<sup>7</sup>

## **2.2. Partial indicator of overall environmental impact**

Even if a measure existed to include all of the greenhouse gas emissions associated with food production, packaging and disposal, it would remain a partial indicator of the environmental impacts associated with food.<sup>8</sup> For example, food production can be associated with different levels of pesticide and fertiliser use, and can also have impacts in other important areas including water, salinity, biodiversity, and erosion. Consider the following hypothetical example:

- Two competing food products, rice and potatoes, are grown and transported to their point of consumption, and potatoes have a marginally higher 'food miles' count than the rice.
- However, the rice involves the use of significantly greater levels of water than potatoes. This rice is grown in an area where water is significantly under-priced, and where the use of this water may generate significant environmental harm.
- On the basis of 'food miles', rice may appear to be 'preferred' as it produces a marginally lower level of GHG emissions.
- However, if broader environmental impacts are taken into account, the potatoes may be associated with a lower overall level of environmental impact.

From this analysis, it should be clear that even judging a product's environmental credentials just on its measured greenhouse gas emissions is not very meaningful. Environmental impact takes into a range of other considerations, not only the greenhouse gases emitted in production and transport.

Further, consumers choose to buy food because it possesses a bundle of attributes they value – beyond merely environmental impact. These attributes can include taste, appearance, variety, shelf life, environmental impact, and animal welfare considerations. Consumers will 'trade-off' these attributes against each other. Accurate information concerning all these attributes will assist consumers in making decisions, however the use of 'food miles' may make such tradeoffs more difficult for consumers as it provides a misleading picture of the environmental attributes associated with food.<sup>9</sup>

Figure 1 provides a diagrammatic depiction of food miles as an indicator.

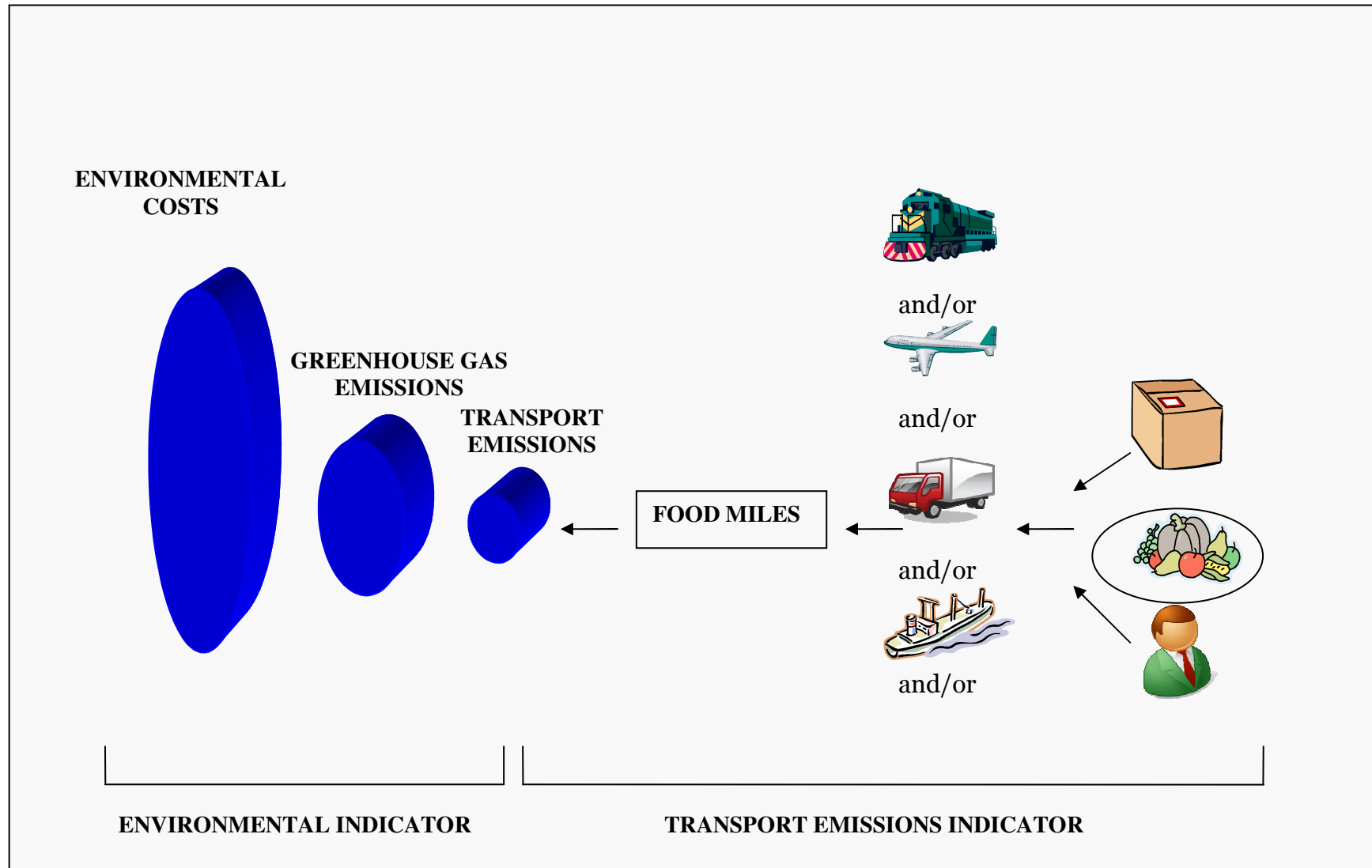
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<sup>7</sup> Saunders, C. Barber, A. and Taylor, G. *Food Miles – Comparative Energy/Emissions Performance of New Zealand's Agriculture Industry*, Lincoln University, Research Report No. 285, July 2006, pvii.

<sup>8</sup> Saunders, C. Barber, A. and Taylor, G. *Food Miles – Comparative Energy/Emissions Performance of New Zealand's Agriculture Industry*, Lincoln University, Research Report No. 285, July 2006, p15.

<sup>9</sup> For another example of the risks associated with using a partial carbon indicator see Bennett, J. *Beware a Carbon Theory of Value*, at [www.agrifood.info/connections](http://www.agrifood.info/connections), accessed 17 March 2008

FIGURE 1: - FOOD MILES AS AN INDICATOR – A CRITICAL EVALUATION OF LIMITATIONS



### **3. Economic development limitations**

An additional argument for promoting produce with less 'food miles' is the estimated boost it provides to regional development. This view suggests that if consumer demand for goods and services with lower 'food miles' increased in Australia, it would be more profitable for producers to sell to local consumers, and this would stimulate local production and employment in food production. In theory, the sentiment of a 'food miles' campaign echoes the sentiment of a 'buy local' campaign. The limitations of this argument are examined below.

#### **3.1 Ambiguous impacts for regional development**

Local consumers already choose to buy traded food because it possesses more of the attributes they value in comparison to other goods. One important attribute for many consumers is the price of food. Any switch in food consumption towards products with lower 'food miles' would inevitably mean consumers would be foregoing consumption away from other goods and services, including imported food. Many imported foods are consumed because they are cheaper when compared to locally produced substitutes. Switching consumption towards more expensive locally produced food could increase the share spent on food in the family budget, meaning consumers may forego spending on other goods and services. The expected impact on regional economies is ambiguous.

#### **3.2. Negative impact on exports**

Already, 'food miles' appears to have gained some prominence with consumers in Europe, particularly in the United Kingdom. If demand for goods and services with lower 'food miles' increased outside of Australia, exports of food produce may decline as Australian exporters of primary products face a significant disadvantage (relative to many international competitors) in terms of distance to market. Australian exporters would find it more difficult to compete.

#### **3.3. Biased against developing countries**

Many citizens of developing countries rely on agricultural export earnings to make a living. Shifts in developed countries towards consumption of products with lower 'food miles' may place farmers in developing countries at a significant disadvantage. Poverty in developing countries is already a major challenge, and not helped by explicit trade barriers facing agricultural exporters in these countries. A bias against 'food miles' would only make it more difficult for many poorer nations to improve their economic prospects.

### **4. Conclusion**

'Food miles' is a measure of the transport distance travelled by food products between production and consumption. This is motivated by both environmental and regional development concerns.

However, 'food miles' is subject to both conceptual and measurement-related limitations that affect its ability to successfully indicate transport emissions or environmental impact.

'Food miles' is a poor indicator for transport emissions because of the difficulty in attributing particular 'miles' to particular foods, and difficulty in taking account of different transport modes and different energy/fuel sources.

In any case, transport emissions are only a partial indicator for total GHG, which is only a partial indicator of environmental impact.

Further, 'food miles' may unnecessarily mislead consumers as they trade-off environmental attributes against other valuable characteristics.

While it is recognised that measures are required to reduce greenhouse gas emissions including from the transport sector, any policy or consumer response based on 'food miles' will be inappropriate and inaccurate, even as a partial measure for addressing this goal.

Further, 'food miles' does not take into account the wider economic benefits that trade provides to consumers. For instance, it is difficult to predict how changes in preferences by Australian food consumers would affect regional development. Stronger consumer preferences towards food products with lower 'food miles' is also potentially harmful to Australian food exporters, as well as those in developing countries. In summary, 'food miles' does not appear to serve any useful purpose at all.

## References

Australian Conservation Foundation, 'Cut Back on 'Food Miles'', 3 August 2005, accessed at <http://www.acfonline.org.au> on 30 October 2007.

Bennett, J. *Beware a Carbon Theory of Value*, at [www.agrifood.info/connections](http://www.agrifood.info/connections), accessed 17 March 2008.

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