



DRAFT FOR PUBLIC REVIEW

Replies to comments by Cowspiracy

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Comments from Cowspiracy, facts ^{1, 2}	Replies by the LEAP Technical Advisory Group on Large Ruminants
<p>“There are many other factors to consider in terms of level of concern we should have regarding the role of food choice in climate change, global depletion in general, and certain applicable time lines as represented (or misrepresented) by the United Nations or any other governing or research institution. In particular:</p> <p>1 does not represent the entire life cycle analysis (LCA) or supply chain of livestock products, notably omitting carbon dioxide production in respiration (on average 4.8 tons CO₂ e/year/cow, 2.3 CO₂ e/year/pig, etc.), provides no consideration for increased indirect radiative effects of methane on atmospheric aerosols and particulate capture related to smog (Shindell et al. 2009), and manages land use changes (LUC) with admitted “uncertainty” and under-counting/reporting</p>	<p>Inclusion of respiration in the LCA accounting of GWP is due to the biogenic nature of this emission – the carbon being respired originated from the photosynthesis of plants not from fossil sources and therefore does not contribute to GWP. A full accounting of biogenic carbon would also require, for example, including sequestration of carbon in leather. The Shindell article states clearly that there is no difference at the 95% confidence level whether or not these effects are included.</p> <p>What is the specific critique of the way in which LUC is accounted? It is clearly uncertain.</p>
<p>2 ultimately defers to a separate category for reporting of greenhouse gas emissions related to “deforestation” (20% of global GHG emissions per UN-REDD), of which livestock and feed crops play a significant role, needing to be added to direct emissions (80% of Amazonian rainforest deforestation and degradation, and destruction of Cerrado savanna since 1970 has been due to expansion for cattle, with another 10% loss due to planting crops to feed them and other livestock)</p>	<p>The Brazilian Roundtable on Sustainable Livestock – GTPS has launched a Whitepaper in December 2015 in preparation to the Paris Agreement at UNFCCC COP 21. The past decade marked a significant change in the Amazon deforestation annual rates, with a reduction of 70% from 2005 to 2013 (Nepstad et al. 2014, Science 334:1118-1123). In the last 10 years, the number of animals increased mostly in the North of Brazil, however pasture area is decreasing while cattle productivity is increasing. Livestock intensification, genetics and good practices are key to a continuous improvement of livestock sustainability in Brazil, having the deforestation reduction and pastureland restoration as a basis, assuming the importance of livestock for food security in Brazil and abroad.</p>
<p>3 the global warming potential (GWP) for methane used in this report was from IPCC 2007, which was 21 at 100 years.</p>	<p>This is incorrect. The GWP-100 of methane was 21 in the 1996 IPCC report; it is 25 in the 2007 report. It is true that the GWP-20 of methane is significantly higher than the GWP-100; this is due to the way in</p>

¹ <http://www.cowspiracy.com/facts/> [accessed on 31/03/2016]

² This list only includes those comments by Cowspiracy that relate to LEAP work programme 2012-2015 themes.

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However, the GWP of methane is actually 86 GWP at 20 years	which radiative forcing is calculated – as the integration, over time, of the RF compared to carbon dioxide. Because methane degrades to CO ₂ over time, the longer the integration time (100 yr vs. 20 yr.) the lower relative GWP.
4 the report gave no consideration to carbon sequestration potential lost on land now used for livestock and feed production, which should have been considered as emissions (45% of the land mass on Earth now used by livestock and crops to feed them–International Livestock Research Institute)	Lost potential sequestration is not an emission. One might argue that previous land conversion should be included in the GHG accounting as recommended by IPCC and PAS 2050 standard. These accounting standards suggest a 20 year amortization period (thus conversion occurring more than 20 years ago is not included in the accounting). This is of course subject to debate and criticism; however we are not aware of accounting protocols which include as emissions the absence of sequestration.
[ii] Although there are Cornell studies citing the water consumption of the US livestock industry at over 66 trillion gallons every year, we decided to go with a much more conservative figure of 34 trillion gallons based off the 2005 USGS figures putting the US total consumptive water use at 76 trillion gallons annually (non-consumptive is for thermoelectric and hydroelectric use that is typically returned directly back to its source immediately). The USDA says that agriculture is responsible for 80-90 percent of US water consumption and growing the feed crops for livestock consumes 56% of that water, bringing the total water consumption of the livestock industry to 34 trillion gallons.	It is always helpful to put numbers in context. Livestock feed production is a major water use step in livestock supply chain. According to the USGS report: Estimated Use of Water in the United States in 2010, available at http://pubs.usgs.gov/circ/1405/ , the US total irrigation water use is 115billion gallon/day, livestock water use is 0.2 billion gallon/day, total US water withdrawal excluding thermoelectric water use is 161 billion gallon/day, therefore, the total of irrigation and livestock water use is around 60% of total US water withdrawal excluding thermoelectric water use. According to the life cycle assessment study conducted by University of Michigan (2013), US dairy water withdrawal is ~5.1% of total US water withdrawal, dairy feed consumed ~94% of dairy consumptive water use. http://www.usdairy.com/~media/usd/public/dairyse nvironmentalfingerprint.pdf.pdf
[xv] An important distinction must be made between water "use" and "consumption". Hydroelectric power is one of the largest "users" of water in the US, but actually consumes very little water. The water is used to power turbines or for cooling and is almost always returned to the source immediately. Agriculture is the largest "consumer" of water because it pulls water from the source and locks it up in products, not returning it to the source immediately, if ever."	Most irrigation water is evapotranspired, not stored in the product itself. It is thus returned to the atmosphere and eventually will return as precipitation, though, as stated, not necessarily to the same location it was withdrawn from. Drinking water for livestock is a very small fraction of the water used for irrigation.

