Arm yourself for the discussion!

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A Cheat Sheet from the video featuring Dr. Frank Mitloehner

Check out the whole discussion "*Eating less meat won't save the planet*" at:
https://www.youtube.com/watch?v=sGG-A80Tl5g

The **water footprint** that people assign to beef includes the so-called green water (rainwater). Additionally, the water going into cows comes out through urination, back into the Earth.

122 liters used to make a quarter pound of beef is not nothing, but you can't compare that to a quarter pound of **rice** which uses only 90 liters but …**provides only 1/5th the protein and much less vitamins and minerals**

In the world, **84 percent of all livestock, feed across all species, is non-human edible**. Sixteen percent of all feed is human edible, but the vast majority of that goes into poultry and pigs because they are monogastric animals, similar to humans. **Ruminants are upcycling nutrients** and they are making available feed that would normally be wasted.

It doesn't take 25kilograms of grain to make 1 kilogram of beef. A 2017 paper by Anne Mottet from the FAO took into account the fact that we can't eat most of what cows eat so the number becomes just **2.8 kilograms of human edible stuff to make 1 kilogram of beef**. For pork and chicken, it's a little higher at 3.2 kilograms of stuff we can eat per kilogram of meat. In any case, the obesity epidemic is not showing that we need more general calories. Animals take excess grain calories and turn them into a high-quality efficient source of protein. **Animal foods currently provide 48% of our protein, but only 24% of our calories.**

Of all agricultural land in the world, 2/3rds of that agricultural land are what we call marginal - meaning you cannot grow crops there. The reason why you cannot grow crops there is it's too rocky, it's too hilly, the soil is not good enough or there's not enough water…. **The only food producing land use for these 2/3rds of all agricultural lands are ruminant livestock**. Only they can make use of that land because they can eat grass, that grass is high in cellulose, and that cellulose they can digest, and they can convert because they have microbes in their digestive tract that can make that conversion. And so, 1/3rd of all agricultural land in the world, that's the remaining 1/3rd, is the arable land. And the arable land is the land where we can grow crops.

Half of all fertilizers used are animal manure, the other half are chemical fertilizers. And all fertilizers going onto organic crops are animal manure or other animal products.

It is important to highlight that there are **huge regional differences**, and they have to be accounted for because otherwise we're going on a wrong path to solutions… because the world average doesn't matter…. this is not about saying we do things right in the developed world, they do things wrong in the developing world, we're not saying that at all. But, if you now have to come up with a global average number, then that global average number is heavily tilted towards being high because most

countries in the world are developing countries and 80% of all livestock emissions in the world… occur in developing countries.

Yes, methane does warm the earth much more than carbon dioxide, but the amount of methane is of course important. When we measure methane in carbon dioxide equivalent, methane emissions only account for 10% of greenhouse gas emissions in the US. Of that 10%, only 27% is enteric fermentation - that is methane from livestock burps. That's only 2.7% total - and that's from all livestock, not just cows. **Methane from cows and other animals is part of a natural cycle and is much different from the carbon dioxide coming out of cars or airplanes**. Grass takes up carbon from the air by photosynthesis, cows eat the plant and its carbon, in the cow, that carbon is then turned into methane - which is carbon and four hydrogens - CH_4, methane is released into the air when the cow burps. Then in about 10 years it's broken down into water and carbon dioxide. What this means is that the cow not adding new carbon to the atmosphere…. What this cycle means is if you maintain the same amount of cows they won't add additional warming to the earth.

Speaking of methane, plenty of things emit methane. **One big source of methane is organic matter decomposing in landfills. What's in the landfills? Wasted food**. When it comes to food, there is something much more worth talking about than meat. **1/3rd of all food produced in the world ends up wasted.** The FAO says that "If food wastage were a country, it would be the third largest emitting country in the world." Food gets wasted for different reasons - in developed countries, waste happens mostly at the retailer and consumer end. In the United States, 40% of all food does not get eaten. ….. Meat and dairy make up 14% of our food waste. But the non-animal foods make up the majority of our food waste. Fruits and vegetables make up 42%, cereal grains including bread and rice make up 22% and roots and tubers like potatoes make up 18% of our food waste meaning non-animal foods make up 82% of our food waste.

The point is, if we're going to talk about the **environmental impact of our food**, let's be real and acknowledge that instead of meatless Mondays, something like …**no-food-waste Wednesdays** might be a lot more worth our time."

"The main issue on the environmental front is our use of fossil fuels. The main issue on the food side is the enormous food waste we generate."