

Audiences Questions and Speakers answers

from the symposium Eating to protect our Health and our Planet. Held on Tuesday, June 2nd, 2020, during the annual conference Nutrition 2020.

JANET RANGANATHAN – USA

Question: *“How does food format affect the environmental life cycle assessment of a food product? For example, if one has the choice between different formats of the same food, such as canned fruits and vegetables versus fresh fruits and vegetables, does the fresh food or processed food have a smaller environmental footprint throughout the food's life cycle. Fresh foods result in more waste, but processed shelf-stable foods require more manufacturing inputs.”*

Answer: WRI has not studied this specific question. I would think generally it would not make too much difference. Most of the food sector's lifecycle emissions (2/3rds or more) result from the agriculture production stage of the lifecycle. It's an interesting question on whether the additional processing related emissions are bigger or smaller than any savings from reduced food waste related to the fresh food format. Given that food loss and waste account for a quarter of all global food produced on a calorie basis, this is worth looking at. In other words, is canned fruit a food loss and waste reduction strategy? We should also assess whether there are any trade-offs in terms of the nutritional quality of processed versus fresh food.

Question: *“Are fish grown in aquaculture less nutritious than wild-caught fish? If so, how will this discrepancy affect the demand for fish in the future?”*

Answer: I am not a nutritional expert, but in case it is of help, here is an extract from chapter 23 of our [Creating a Sustainable Food Future report](#):
“Farmed fish are generally as lean and protein-rich as chicken, but one concern of aquaculture is that farmed fish as a whole tend to have lower levels of long-chain omega-3 fatty acids than wild fish. Nutrient composition of fish depends on a number of factors including the species, whether the fish is wild or farmed, and the feeding methods. If fish are to continue to meet this valuable nutritional need, they will require an enhanced, alternative supply of complex oils.”

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Question: “You showed ways in which plant-based foods can be made to sound more appealing. Are there ways in which animal-based foods, particularly beef, can be made to be less appealing?”

Answer: Probably! But WRI has not worked on this. We have focused on making plant-based choices more attractive and with quite positive results in some cases. Here are some relevant publications that may be of interest from WRI’s Better Buying Lab:

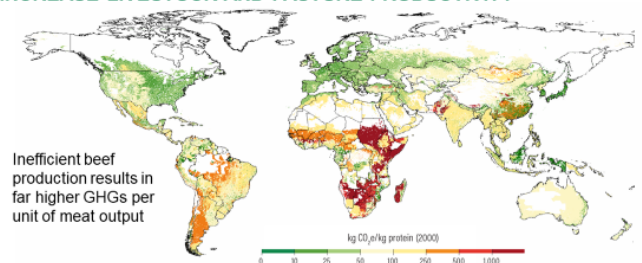
- <https://www.wri.org/publication/playbook-guiding-diners-toward-plant-rich-dishes-food-service>
- <https://www.wri.org/publication/encouraging-sustainable-food-consumption-using-more-appetizing-language>
- <https://www.wri.org/news/its-all-name-how-boost-sales-plant-based-menu-items>

My one stab at directly answering your question is to say that I would like to see governments ensure that the full cost of externalities (GHG, Nitrogen pollution costs for example) are built into the cost of food. I think price may have some impact. That said, we need to be careful that a GHG tax on, for example, is not regressive and hurt the pocketbooks of the poorest in society who are probably consuming the least already.

Question: What is the impact of importing animal foods from places with low GHG production to places with high emissions to limit the gains in GHG reductions?

Answer: One always needs to look at the details/context for a given food type. But for very GHG intensive foods like ruminant meat, the GHG production efficiencies in one place can be orders of magnitude greater than another (see visual below from my talk). In this case importing say beef from efficient countries to inefficient countries can reduce overall GHG impacts. Also, note that only 6% of food GHGs are transport related, whereas 80% come from ag and land use change. Overall, we want to increase productivity in all places and moreover shift consumption away from GHG-intensive foods like beef to less GHG intensive plant-based protein sources.

**COURSE 2: INCREASE FOOD PRODUCTION WITHOUT EXPANDING AGRICULTURAL LAND:
INCREASE LIVESTOCK AND PASTURE PRODUCTIVITY**



Source: Herrero et al. (2013).
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Question: “What about our use of monoculture, and how that has negatively impacted our food production systems? What about the use of clover, which produces nitrogen on its own, to reduce our reliance on N rich fertilizers? What about the use of more localized food systems to reduce resource and food lost/waste?”

Answer: As with most things in life, all choices have trade-offs. Monocultures can create efficiencies particularly in terms of land use – high yields spare land and globally that helps reduce the expansion of agricultural land into the remaining ecosystems, which in turn reduces land use related GHGs and biodiversity loss. And with a land gap of roughly X2 the size of India and 56% food gap in 2050 – land sparing and thus maintaining and increasing productivity must be part of the solution. So our challenge is to achieve both high productivity and reduce chemical, nutrient and other externalities associated with high production farms.

Our report [Creating a Sustainable Food Future](#) discussed some of the ways we can do this. And yes, integrating clover and other legumes is a great way to help reduce synthetic nitrogen use and potentially help stabilize soil carbon. The local part of your question is interesting, and the answer needs to be context specific. I would just note a few things to consider in the “go local” question:

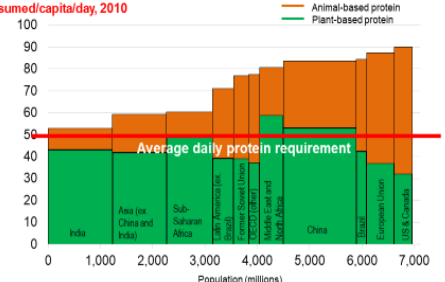
- Does local sourcing reduce yields/productivity? If yes, then overall, we will need more land to produce food. That has a big GHG and biodiversity cost.
- The food transport related GHG globally are only around 6% of total global food related GHGs whereas the production GHGs are 2/3rd+ of food GHGs
- Sourcing locally will likely reduce the choice of foods the people have access to. Are consumers willing to accept that?

Like most things, it is neither one or the other. We need a food system that combines both local and longer supply chains. What we need to do is get the balance right given our objectives.

Question: “The comment that we are over consuming protein, how would that line change if we accounted for protein quality and/or optimal protein intake, as elderly need more protein?”

Answer: Alas, I do not have the answer. It’s a researchable question. Off the top of my head (caveat intended!) I would think that it might not make too much difference. What I think would make a big difference is to segregate per capita consumption by urban and rural people, especially in developing/emerging economies. I think this would fir that in cities the average per capita consumption of protein is significantly higher than people in rural area We relied on FAO data for the analysis below that I presented. Unfortunately, it was not possible to separate the data by rural and urban areas.

AVERAGE PROTEIN CONSUMPTION EXCEEDS AVERAGE ESTIMATED DAILY REQUIREMENTS IN ALL REGIONS
g consumed/capita/day, 2010



Source: Global protein intake with sources from FAO (2017a) and FAO (2016). 100% of intake is proportional to each region's population. Average daily protein requirement: 0.75 g/kg body weight for an average adult body weight of 65 kg (Shapiro, et al. 2012) and recommended protein intake 0.75 g/kg body weight/day (Pawl 1988). Intake/requirement energy requirements vary depending on age, sex, height, weight, physical activity, and level of physical activity. WORLD RESOURCES INSTITUTE

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Question: *“There are a lot of meat substitutes that are becoming available for consumers (like the beyond burgers, the idea of lab grown meat seems like it may be an option in the future). Do you think consumers should aim to reduce meat intake in general, or would it still be sustainable if they replace all of their meat or beef consumption with these alternatives?”*

Answer: The development of inexpensive, plant-based products that mimic the taste, texture, and experience of consuming beef or milk is a welcome innovation. The private sector is making significant investments in various plant-based substitutes, including imitation beef using heme that appears to bleed like real meat, and synthetic milk generated from proteins produced by yeasts. There are still questions to be answered around the nutritional/health impacts. Personally, I don't think it's realistic to expect that we could replace all meat consumption with these alternatives. WRI's research is also quite clear that it's not necessary or feasible for people to give up all meat. Rather we need to see a reduction in per capita meat consumption in high consuming countries, especially for ruminant meat. This will also help create the planetary space for low meat consuming countries to eat a little more.

Question: *“I'm an intern at an alternative protein company where we're seeking to replicate traditional animal-made proteins from modified yeast organisms to build products like cheese. I think companies like ours can play a big part in building a satisfying, ethical and economical food system - but I recognize that it represents something evolving and potentially intimidating to certain groups. I got the impression you have a very pragmatic mindset when it comes to building a healthy and sustainable food system but didn't get a chance to hear your thoughts on how bioengineered proteins can help feed the 10 billion (are there downsides too?), and also whether you think nutrition itself is something that the industry should focus on (which I've felt an absence of so far). Also curious about the best ways you see to link up companies, health experts and public bodies in developing the industry. I think a lack of coordination, in particular with public health experts, represents a missed opportunity given the difficulty in changing systems and habits ex post.”*

Answer: Given the magnitude of the challenge of feeding a growing population I think all potential solutions must be on the table, that includes bioengineered protein sources. There is no silver bullet for the food challenge. These new sources of food need to be carefully developed to ensure co-benefits with environment and nutritional health. So yes, nutritional quality has absolutely got to be part of the criteria for assessing their potential. And yes, we need much more collaboration among business, government and health experts. I would also like to take this opportunity to give a shout out to recommendation number 2 on page 63 in this paper I co-authored on [Shifting Diets for a Sustainable food Future](#). The recommendation calls for ensuring government policies are aligned with promoting sustainable food choices.

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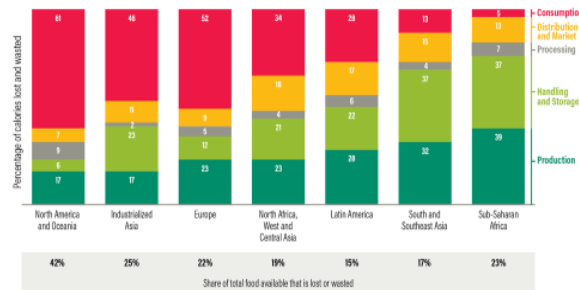
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Question: “Please provide some insights on the amount of food waste at consumption level in developed countries like US and Europe. I was wondering if that waste is enough to feed the significant population in third world countries.”

Answer: You may have missed the slide below from my presentation. Admittedly, I did go through it superfast! Here is another WRI resource that may be helpful:
https://files.wri.org/s3fs-public/reducing-food-loss-and-waste-ten-interventions-scale-impact_1.pdf

Given that food loss and waste is roughly a quarter of calories it could potentially feed a significant part of the population. But of course, we can’t divert all that waste to poor countries to eat! What we need to do is reduce it as per. As I said in my presentation, wasted food is wasted water, GHGs, Land, nutrients, and money!

FOOD LOSS & WASTE OCCURS CLOSER TO THE CONSUMER IN DEVELOPED REGIONS AND TO THE FARM IN DEVELOPING COUNTRIES



Source: WRI analysis based on FAO (2010).

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JESS HAINES – CANADA

Question: *“As an RD, I often deal with fear-based marketing. Do you ever worry that you are capitalizing on this strategy when you push sustainability over health marketing, especially to young people that are often vulnerable to misinformation?”*

Answer: Interesting question. Fear-based marketing can be problematic-especially if it is isn't paired with clear guidance and support for actions that people can take to reduce the risk of the outcome in question. The approach we have used is to focus providing families with clear guidance and supports that focus on the small changes with regards to food procurement, storage and preparation that they can make to reduce food waste – thus, we see our interventions as providing people with action steps to address the issue of food waste. However, I think it would be interesting and important to measure whether our interventions could have the unintended consequence of making people feel hopeless or overwhelmed by the challenges associated with sustainability. Thanks for helping me consider this issue.

Question: *“Achieving sustainable healthy eating habits among growing children is it better through behavioral Nutrition intervention programmes in schools or through empowering women with practical use of some Nutrition tools (e.g. MyPyramid) at the household level? Thank you for all the presentations so far.”*

Answer: I think engaging children through schools and parents through the homes are both important. Schools have the great opportunity to engage a large number of children; however, we know that if behaviour change is not also supported within the home it has less chance of being sustained.

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Question regarding the second pillar, "Build on the motivation of Consumers": *"I would love to know more about your specific target populations, and how their motivations contrasted with each other. How might this be accounted for in a highly diverse population, e.g., in an urban centre?"*

Answer: Great research is being done to understand the determinants of our food choices and to understand how these determinants differ among different populations groups. See the Determinants of Nutrition and Eating Framework for more detail: <https://www.uni-konstanz.de/DONE/>. To build on this work, I think we need more research to understand how concerns about sustainability influence people's food choice and how this may differ across various population sub-groups.

Question: *"How do you convince someone who's gone through diet many times that the junk food is unhealthy?"*

Answer: Research would suggest that most people know that foods such as fruits and vegetables are healthier than processed snack foods. The challenge is to ensure that healthful foods are available and accessible (i.e., the easier choice) and that individuals are motivated to select the more healthful options.

Question: *"Do you touch on composting in your classes when discussing ways in which to reduce food waste? Is intentional composting excluded from food waste data?"*

Answer: In our food waste studies, we do ask whether households compost and when we are assessing their food waste, we ask them not to compost during our assessment period to help us get an accurate estimate of the amount of food they are purchasing but not consuming. We do not discuss composting in our intervention. The focus of our intervention content is to prevent food from being wasted in the first place.

Question: *"Do you anticipate high school students receiving information on healthy/sustainable diets in a high school setting anytime soon?"*

Answer: I hope that as more countries develop Food-Based Dietary Guidelines that incorporate both nutrition health and sustainability more countries will develop and implement school curriculum that incorporates both aspects of diet. There are some great resources developed by some of colleagues at the University of Guelph that is working toward that end. See: <https://arrellfoodinstitute.ca/food-waste-plans/>

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Question: *“Interventions based on a changing environment and nutritional habits in direction to reduce waste and keep sustainability could last?”*

Answer: I think we need long-term studies to understand whether interventions designed to reduce waste and improve intake of fruits and vegetables could have a sustained impact on the habits of families.

Question: *“Where can I get the cookbook?”*

Answer: It is available free at our website:

<https://guelphfamilyhealthstudy.com/2019/09/19/rock-what-youve-got-recipes-for-reducing-food-waste/>

Question: *“Dr. Haines mentioned that environmental sustainability may be a key motivator of food choices among young adults. Yet, the countries identified were high income countries. Please comment on sustainability in poorer countries.”*

Answer: You are correct; the research I found and presented did focus on youth from high income countries, including New Zealand, Singapore, UK, Finland, Belgium, and Greece. I was not able to find specific studies looking at sustainability as a motivation for food choices among youth in lower income countries, but there are some interesting movements/efforts to engage youth in sustainability efforts in low-income countries. See:

- Narksompong, J. and Limjirakan, S. (2015), Youth Participation in Climate Change for Sustainable Engagement. Rev Euro Comp & Int Env Law, 24: 171-181. doi:[10.1111/reel.12121](https://doi.org/10.1111/reel.12121)
- FAO. 2019. Empowering youth to engage in responsible investment in agriculture and food systems: challenges, opportunities and lessons learned from six African countries (Côte d’Ivoire, Malawi, Mozambique, Namibia, South Africa and Uganda). Rome, FAO.

Question: *“Your data shows 65% of vegetables and fruit waste from households. can you be more specific on the percentage of edible portion of vegetable and fruits. Should non-edible portion of fruits and vegetables be accounted ? Please provide your thoughts. Thank you”*

Answer: The food waste data presented was for edible (or avoidable) food waste. When thinking about household food waste, in particular fruit and vegetables, I think it is important to separate avoidable and unavoidable food waste, as we expect unavoidable food waste to increase when people prepare more food at home (especially fruit and vegetables), which is a behaviour that is associated with increased diet quality. Additional detail can be found here:

<https://www.frontiersin.org/articles/10.3389/fnut.2019.00143/full>