

PUSHING BOUNDARIES: INNOVATIONS FOR THE GLOBAL FOOD SYSTEM

Panel Moderator: *Dr. Lawrence Haddad*

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Introduction

Purvi Mehta

Member, Council of Advisors, World Food Prize Foundation

Hi. I'm Purvi Mehta. I work with the Gates Foundation, and I'm also part of the Council of Advisors, and I'm here to introduce the panel. But before I do that, Ken, once again we'd like to really, really extend our great gratitude and thanks to you for bringing this to where it is right now and making it a much-celebrated event.

I think one of the other things that needs to be really celebrated about this Prize is the way it has extended its boundary over the years from not just talking about food but bringing in food systems, not just talking about agriculture as a source of food and source of livelihood but also source of nutrition and therefore a source of health. So thank you very much for doing this and setting this platform for all of us to come and work. So thank you, thank you very much.

This panel actually manifests that shift that World Food Prize brought a couple of years ago, that it started talking about the systems and not just the food, and how it sort of crossed the boundaries, extended the boundaries and started thinking out of the box. The title of this panel actually manifests that shift. And I'd like to introduce the distinguished panel here. Jessica Adelman, the Group Vice President, Corporate Affairs, of Kroger Company. Marie Haga, the Execution Director of Global Crop Diversity Trust. Dr. Gunhild Stordalen, Founder and Executive Chair of EAT, the Initiative of Food System Transformation Platform. And also I was listening to the previous panel that it was talking about gender equality, and here is an example of that, so congratulations for that also, World Food Prize, for bringing an outlier in this panel with us, truly an outlier, ladies and gentleman, Lawrence Haddad, Executive Director of GAIN and the 2018 World Food Prize Laureate. So I'll leave it to the panel now, and thank you all for being here.

Panel Members

Ms. Jessica Adelman	Group Vice President & Chief Corporate Affairs Officer, The Kroger Co.
Ms. Marie Haga	Executive Director, Global Crop Diversity Trust
Ms. Sara Menker	CEO, Gro Intelligence
Dr. Gunhild Stordalen	Founder & Executive Chair, EAT

Panel Moderator

Dr. Lawrence Haddad

2018 World Food Prize Laureate - Executive Director, GAIN

Thank you for that great introduction. Well, folks, we have a really interesting panel for you today and a dynamo set of panelists. Frankly, I'm terrified. I don't like having panelists that are smarter than me, and they're all smarter than me, so it's great. The title is *Innovation in Global Food Systems*. And one of my favorite quotes that I heard here and I hear everywhere is that *The future is here – it's just unevenly distributed*. And I think you're going to see that on this panel today.

Now, the food system has a reputation, I think somewhat unfair, for being not as innovative and disruptive and not being as disrupted as some other systems and sectors. And I think the four panelists today will disabuse you of that notion. They will give you some really great examples of how things can be disrupted and better things can take their place to advance health, environmental wellbeing and to reduce and to mitigate climate change. So I think we've got a dynamic panel. Enough from me. Over to you, Gunhild.

Gunhild Stordalen

Thank you. So, well, let me start by saying that I'm not a foodie, I'm not a farmer, but I'm a medical doctor; and I work with food because I really believe it's of the greatest opportunity to save and improve lives, and not only the 800 million people that are starving, but also the more than two billion people who are now overweight and obese and also another two billion suffering from micronutrient deficiencies.

And we now have the evidence to say that food can be our most powerful medicine for both people and planets. But to make food be that, we need innovations way beyond technology. We also need innovation in the way we approach the transformation itself.

So we are here for a discussion – How do we grow enough food to feed our ever-growing population without destroying the planet? But what we are eating today is also destroying us. Both here in the U.S. and globally, poor diets are now a bigger threat to human health than alcohol, tobacco, drugs and unsafe sex combined. And obesity has become really a global plague. Every country now face some form of malnutrition, and more and more countries, particularly in Global South, are even facing a double burden with both under- and over-nutrition and even within the same household.

So the question is really – Is it possible to grow enough healthy food for all within our planetary boundaries? And the good news is that scientists say yes. This January we launched the Eat-Lancet Commission on Food Planet Health, and it's the first global assessment combining both dietary needs on the one hand environmental limits on the other. And the Commission concludes that getting it right on food is a prerequisite if we are to tackle climate change and protect vital ecosystems. And it is possible. It turns out it is possible to feed ten billion people by 2050 within planetary boundaries. And on top of that, we can also save 11 million lives a year and improve hundreds, a million more. So it's huge opportunities.

But obviously to get there, we need a radical transformation of our current food system. We need improvements in the way we produce food. We need to shift to more regenerative

agriculture, much more diversity. We need massive waste reduction. And last but not least, we need to change what we eat.

Enough food is simply not enough – that’s the headline. And we need to close the gap between what we actually should eat and what we are actually producing. This year in the U.S. only 1% of the Farm Bill goes to so-called specialty crops, fruits and vegetables. So you are not even producing close to enough to let all Americans eat the recommended five a day, which is striking. And globally, according to the EAT-Lancet Commission, we will need to halve production of meats and sugar, and we will need to double production of healthy food such as nuts, legumes, fruits and vegetables and whole grains. And obviously technology alone won’t fix this. We need innovations in regulations, in policy; we need innovation in finance. We need to really rethink trade and value chains and even entire business models.

But most importantly, I would say we need to shift how we approach our food-related challenges. We really need to go from more to talk about better. We need to go from Band-Aid to start talking about how we address the root causes. And last but not least, we need to start shifting from single solutions, piecemeal solutions to systematic change. How do we get there?

And there is one key word for us to succeed on this, and that is collaboration – collaboration across sectors, across disciplines, across borders, and of course from global to local levels. And I’m very excited to be here, because Borlaug Dialogue is really a key arena, gathering a diverse set of stakeholders, which you show, and for this session, Lawrence, I hope that we can discuss not only what innovations we need but also how we approach our challenges and who we partner with.

So if I am to highlight one area where we need innovation, is how we create a more truly inclusive arena for stakeholders, for all the stakeholders of the food system to come together, align on common goals, and find solutions for how we create better food for better lives and obviously a better future for humanity and planet earth.

Lawrence Haddad

Thank you. Thank you, Gunhild. And the EAT-Lancet report, if any of you haven’t read it yet. You really should, because it’s really a landmark report. And I think I’m really happy that you’ve highlighted the idea that innovation is not just about technology, it’s also about the way in which we interact with each other, and with dialogue you find out what the priorities are, what the trade-offs are, what the synergies are, and what the possibilities are. And that’s the only way to do it. And some of the work that EAT has been supporting through my colleague David Nabarro and the food systems dialogue, she will tell us a bit more about that later on. But it’s truly inspiring.

So I don't know who put this panel together, but it was brilliantly done. I don't know. It can't be you, but it must be someone else who's done a brilliant job of bringing this panel together, because we've got this really big picture introduction. And then, you know, the EAT-Lancet said we can achieve the planetary goals and these human health goals. We can do it, but we need several things to happen. We need dietary shifts. We need a more efficient food system, and we need a more resilient food system. And we need dietary shifts.

Gunhild

And waste production.

Lawrence Haddad

And waste production – did I not mention that? I think our next three panelists in one or another will touch on some of these issues. So we're going to go from seeds all the way through to retailing, and we'll start with Marie.

Marie Haga

Thank you. Absolutely great to be here. The Green Revolution led by Norman Borlaug, Swaminathan and others has certainly served us extremely well. But we are at the crossroads. We know that we need to feed more people in the future, roughly 7.2 billion of us now, another billion in 2030. And we not only need to produce more food for these billions people, we need to produce, as Gunhild has said, much more nutritional food. And it's a huge challenge that two billion people don't get enough vitamins and micronutrients every day.

And we don't only need to produce more water, more food, more nutritious food, we need to produce this more nutritious food on less land, with less water, with less fertilizer, with less pesticides. And this is just a tremendous challenge. It's huge, because we do need to produce more nutritious food, but we need to do it in such a way that we don't compromise our environment. And we are about to do that. We have degraded 30% our soil and in addition to this, we are wasting at least 30% of the food that we produce. I mean, so this is just a tremendously huge challenge. And I don't really think politicians or decision-makers very often think about how big this really is.

Now, there is no quick fix. That's very clear. But there is one resource that nature has given us and that we do not use to the extent possible at all. And that is the diversity of crops that is actually seed. You know, everything starts with a seed, like it or not. And we have this amazing diversity of seeds out there, this amazing diversity of crops. And if we look at some of the things we normally eat. Well, here in Iowa you eat your corn. You know, there are 35,000 varieties of corn globally. There are 125,000 varieties of wheat, a thousand varieties of bananas, 3,000 varieties of coconut, almost 200,000 varieties of rice.

And one can of course ask – Why is important to safeguard the 125,000 varieties of wheat that we still have left? Well, that is because this diversity is the raw material that we need when we breed new plants. So within those 125,000 varieties of wheat, you would have varieties that can stand higher temperature, that can higher salinity in the soil, that can fight a new pest or a new disease, and that has higher nutritional value, that is better for bread, that is better for pasta. We speak about these as varieties, because they have different traits.

And we have shown that we can make use of this diversity, these seeds, as the miracle that they really are. You know, I think we have people from the International Potato Institute in the room. We have developed sweet potatoes with higher vitamin A content. We have developed rice that is drought-tolerant, at least more drought-tolerant than many other rice. We have developed beans with higher content of iron. You know, it's amazing what we can do if we just make use of this natural diversity that is out there.

And I think it's fair to say that the biggest challenge to the food system is that the environment now changes faster than these plants that feed us are actually able to adapt. Crops have always

adapted, but now the change goes so fast, so the crops are not able to follow. So we need to give them a bit of help, and we can do this with absolute and natural breeding. If we don't want to go down the GM route that many don't want to do. But we cross these varieties with various traits that we're looking for with good-yielding varieties, and then we get the plant that we are looking for.

This has historically taken a long time to do these breeding process. Now new technology helps us so we can speed up these processes tremendously, and we desperately need to do that. But in order to have this raw material available, we've got to be sensible enough to safeguard what we have left of diversity –because we have lost a tremendous amount. In the U.S. you have lost 90% of the fruits and vegetable varieties that you had in the early 1900s. In China today they use 10% of the rice varieties that they used to use in the 1950s. But there is still a wonderful source out there. We just now need to be sensible enough to safeguard what is left. Because for each variety we lose, we lose options for the future.

We certainly know how to safeguard this diversity, and this is not rocket science. I'm not saying it's easy, but we basically know how to do it. It takes a bit of money, additional to what we have –but this can be done. So maybe, Lawrence, I'm not speaking about a new innovation. I'm actually speaking about making use of the tools that nature has given us. We've just got to be sensible enough to make use of it and make sure that we safeguard what is left of this tremendous tool.

So, ladies and gentlemen, what I want to say is – Well, we can do it. This can be done. We can transform our food system. And it takes lots of things, but it definitely takes to go back to nature and go back to the building blocks of agriculture. Without doing that, I think we're up to a big, big struggle. But let's just do it. This can be done. Thank you.

Lawrence Haddad

Thank you. Thanks, Marie, and I always love the imagery you generate in your talks. And I've heard talks where you've said – "Imagine the world without seeds". And it's hard to imagine, because it affects pretty much everything we eat and a lot of the things we wear and all sorts of things. And I also think of the kinds of work that you're doing is preserving the palate that we paint from, you know, and we paint pictures and paint the world that we want to see. And you are safeguarding all the different colors that are out there. And some of those colors are just disappearing right off the palate. And in a world where there's less and less certainty, we need more and more diversity. So thank you for the work you're doing. We'll come back. I've got some questions around – what's the incentive for us to preserve this, the commercial incentive. I'm interested in that. The public incentive is there, it seems, but...

Sara, how nice to... Really have you. I haven't met you before. It's really nice to meet you. Sara is the CEO of Gro Intelligence, and she's a... I hesitate to say this, Sara, so apologies if I'm insulting you –but she's a data geek like I am. So, and she's going to tell us all about how we need to use data to help us inform action and priorities. Sara, over to you.

Sara Menker

Well, thank you for having me here. So I am going to break the rules. I need three volunteers. Can three people just raise your hands? I promise you it's a very easy exercise I'm going to have

you do. Okay, there's one person there. Just go up to the mic. Another person there, and you over there.

Lawrence Haddad

Some people are volunteering before they know what they're doing.

Sara Menker

Yeah, that's the way to get them. All right. Oh, I hope you have a mobile phone with you. Sorry. All right, okay, so go to Google and Google "Soybean demand in China." Oh, it's not going to work here. All right. What's the answers? What do you see? What's the list of things that you see, or what's the first article that pops up?

Answer

The first thing is a news story from Reuters, "China's September Soybean Imports Ease on Falling Animal Feed Demand."

Sara Menker

Okay. Does that give you an answer to the question I just asked?

Answer

No. I have no idea what that even means.

Sara Menker

Second question, second person. Google "Corn production in Kenya."

Answer

"The Dataset Maize, Total Production Quantity for Kenya Contains Data from the Year 1961 to 2000." Not a very helpful article, in other words.

Sara Menker

All right, third person, Google "Rainfall in Bureau County, Illinois."

Answer

It's getting me weather.

Sara Menker

Oh, okay, the weather. So, you know, thank you for your help. You were just guinea pigs. I didn't have my phone on me, and I needed to make a point. But, you know, all the questions I just posed are questions that are entirely relevant to understanding our global food and agricultural systems. They're also all connected. Finding the data and the information that we need today in global agriculture is just too difficult. Taking that data, connecting the dots into

some form of knowledge and then using that knowledge to then deepen our insights and build layers of intelligence is even more complex.

And so what I want to talk about is – If we are starting to think about the new future we want to see, we want to design this future – right? We want a more biodiverse environment, we want diverse diets, we want healthier diets. We need to start to understand our planet as a whole system. We need to understand each individual component.

So whether it's getting a simple answer to – What's the demand of soybeans in China? – to, if I want to look at Bureau County rainfall, I need to be able to see in a simple line chart how much it rained over some period of time. But how does that then link to actual maize production in Kenya – which, it is connected, because what Illinois produces drives global corn prices, which then determines what farmers plant in Kenya and what price they receive for their crop. There's this very deep interconnected system that we live in, one that's been around since the Neolithic Revolution. And we're only now starting to understand it. We're only now starting to map it.

And really doing that will allow us, and starts to allow us, to finally start to drive change that's very data-driven and very data-centric, because you now start to work off of facts that everybody (a) has a baseline understanding of. Because the problem is, with a tool like Google that has really revolutionized our ability to find information, it helped us find general information. The next wave of AI is about domain-specific knowledge. Right? It's about domain-specific discovery. So it's not just about giving the answer – it's about the quality of the answer. How do we start to rank the sources of data that are out there? What's the right information? The more we're able to do that, the more we are able to actually then start to functionally work towards a world that we want to see. Right?

For a long time we've been struggling with verbalizing what that world even looks like. I think there's now a lot more increased consensus around what that is, but the how requires every single person across the value chain from seed producers to crop protection to fertilizer to banks who finance it to those who then trade these commodities, those who buy and process it into some consumer good or sell fresh produce on the shelf. Everybody has to start actually working off of the same data and also the same basis of knowledge to start driving that change. We can no longer afford to actually have siloed information. We can no longer afford to live in a world of information asymmetry of the have's and have-not's – because as long as we have that, we'll continue to have a dysfunctional system.

So to me it's kind of like, let's just take a step back and understand it. We know where we want to get to. Now let's use that data and that information that we do have access to and the tools that we now have built to do this. So I'm not talking a future that doesn't exist, I'm talking about, in our case, a product we've actually built and made free to the world to use, is, let's use that and let's start to use data as a way of driving the next steps forward and organizations doing that.

Lawrence Haddad

Thank you, Sara, and thank you for reminding us that decisions made in Illinois affect decisions made in Kenya and maybe vice versa as well and that all these things are connected. I mean the big question in my mind and I'll come back to you on it is – How do we get people to use the data where in the Anglo-American world, we're not exactly in sort of a “data is king or queen”

kind of model. And I say that for my own country as well as this country. So how do we incentivize people to use that?

And finally, last but not least, I turn to Jessica Adelman. Jessica is the Chief Corporate Affairs Officer at Kroger. And Kroger is... For those of you outside of the U.S., it's the second-largest retailer for food in the U.S. I saw the statistics. How many stores? Is it 3,000.

Jessica Adelman

About 2,800 stores.

Lawrence Haddad

2,800 stores in 48, 35, 40 states. So a huge potential reach. This is where the consumer comes face to face with the food that he or she will consume. I know you're going to talk about something else to start off with, but we'll come back to that issue. Over to you.

Jessica Adelman

Great, so thank you all so much for the tee-up of the dialogue. And I love the way Lawrence laid it out along the supply chain. You know, really I just want to talk about one word, and the word is "waste." There's food waste, there's plastic waste, which is real a single-use waste. In fact, plastic is what's being demonized today, but what we're really talking about is single-use. And then there's wasted human capital. The first panel today talked a lot about how do we enroll 50% more of the population in agriculture and in food production. How do we stop wasting human capital?

All of these things come together in a way that business is having to fundamentally redefine what is our purpose and why should we be relevant. And why is that? Well, first of all, customers are fussy. They're angry. They want to know what you're doing. Employees care a lot. They want to work for companies where the values match those of their own. And investors are nervous. When there have been big risks out there, they tend not to be the business risks, because those are oftentimes above the board in what you can see. It's what's lurking below the surface on some of these ESG topics that have created some of the biggest mess for boardrooms and for corporate America and for other companies to have to clean up. So investors are nervous.

Gone are the days where we could all just over-produce, over-market in the supermarket space, over-consume in the household, and then over-dispose. People don't want to act that way anymore. And that is a fundamental shift. At Kroger, our purpose is to feed the human spirit, which is great. It is incredibly motivating and very fuzzy if you work at Kroger. But what people want to know is how do you live your purpose every day.

So what we've thought a lot about is our imprint around how we live our purpose every day – which is Zero Hunger | Zero Waste. We've thought a lot about hunger, and one of the big nexuses of the World Food Prize is ending hunger – and that is what most of you are in the audience here today to discuss. The piece of the puzzle that we don't talk about as much is the waste side of things and the fact that waste undermines food security. So one in nine people go to bed hungry every night in the U.S., yet we throw 40% of the food that's produced in this country away. That is an unbelievable paradox – right? It's to your point about the fact that

things are not evenly distributed. And we decided as America's grocer and as one of the largest food retailers in the world, we could really get in the middle of that and set out to end it—which is why we've committed to eliminating all hunger in our communities and eliminating all waste across the company by 2025. So that's how we think about living our purpose.

If we go back to the topics of waste, though, the three ideas that I laid out. Food waste. Just today looking at the U.N. FAO, \$400 billion of waste in the U.S. before it even hits a store. The U.S. will have statistics like if food waste was its own country, the greenhouse emissions of food waste as the nation would be larger, would be the third-largest behind China and the U.S. We use the land mass of Canada and India every year to produce the food that we throw away. We think about these staggering statistics, and what are we really going to do about it?

When we think about it at Kroger, we have a couple different ideas. I mean just yesterday we announced that we are harmonizing date labels, simplifying date labels. A lot of the confusion on the retail end and on the consumer end has been—is it safe? Should I throw it out? So many questions. We've just made it very, very simple on our brand products. And by the end of 2020, it's all going to be crystal clear. If it is a safety question, it's "used by." If it's a quality question, it's, "best if used by." That's it, very clear cut, so that we can help America to not throw away as much food.

Another big evolution, and we mentioned the fresh vegetables and fruits. If you've heard about "ugly fruits," well, we don't want to call them that, because we think all fruits and vegetables are gorgeous and beautiful. But we have our peculiar picks. And if you don't want that waxy version of the snow-white apple and you are okay with fruit that might be slightly imperfect, you can go to our Zero Hunger | Zero Waste, "peculiar pick" section. And we have a whole team of people working about that to help us find the supply and demand.

Another area is using technology. We have a great partnership with Appeal Sciences. The team over there has a biological coating that you can put over the produce so it lasts longer. It looks better, it stays fresher, it lasts longer.

So these are three big ways that we're thinking about food waste.

If you think about plastic waste, Kroger is responsible for 6 billion single-use plastic bags out of the 100 billion plastic bags that are used in America. I mean that is not a statistic that I am proud to sit up here and talk about—6 billion of the 100 billion plastic bags, single-use plastic bags that are used in the U.S. But what I am really proud to talk about is the fact that we have committed to getting completely out of single-use plastic bags as part of Zero Hunger | Zero Waste. Now, for America's grocer to stand up and say we're getting rid of the single-use plastic grocery bag, that was a bit of a record scratch moment a year ago. But let me tell you—we got people's attention, and we already have a single division that's been through that, and we're about to announce another one. So big ideas that we can get underneath this waste idea and single use.

I got to go to the World Economic Forum in New York to announce the U.S. launch of Loop, the TerraCycle platform. Think about the milkman model of days of old where the packaging was delivered to your door, you consumed it, and then you sent it back to be cleaned and washed, and then you could reuse it. So instead of single-use shampoo bottles or other packaging, it could be reusable containers that we will serve as a reverse logistics point for you. And we can have our brands on the platform as well, where you can take the shampoo, use it, put the bottle back or drop it off in one of our stores. It goes back and gets cleaned through the system and

comes back with more shampoo. Those are things that are really exciting and can help us get to this renewable economy.

And finally, when I think about human capital... And Zero Hunger | Zero Waste really gets at hunger. It really gets at zero waste across the company. But I also think of zero waste as zero wasted human capital. And we have 460,000 people who work at Kroger. A lot of the technological disruption that's happening in a labor-intensive industry is necessary. I mean we have really labor-intensive stores. Running a grocery store is an incredibly complicated and hard-working business. We have introduced a lot of technology to be able to make that experience better, whether it's the checkout experience. I've got a robotic car, an autonomous vehicle, delivering groceries into markets today. It's called Neuro. It's really cool. You should check it out online, this adorable little robot car driving around and delivering groceries. But what do you do about the 460,000 people that you want to keep educated, you want to keep employed?

And what we've decided to do as part of the tax reform dollars here in the States is we set up a program called "Feed Your Future" where full- and part-time associates can get \$3500 a year for any kind of education. It could be professional development, it could be to finish your GED. It could go to become a doctor like Dr. Gunhild – you know, in your spare time we can all become doctors. But the idea there is to help retrain people and move them up the scales and experience ladder so that we don't have any wasted human capital.

So it's an incredibly exciting time to think through all of these things. You know, I loved, Sara, your challenge about Google and using the data. That's something we spend a lot of time thinking about. If you want to Google Kroger and hunger, you'll see all yellow – Zero Hunger | Zero Waste yellow. And the reason we chose yellow is because it's the color of hunger action. Of course, green is the color of sustainability. But I think about a world where we could have zero hunger and zero waste and also redistribute things in a way that will lead to a more productive society. So thanks.

Lawrence Haddad

Thank you. And thanks, Jessica. If you haven't had a chance to look at Loop, it is very cool. When I was growing up, we used to have milkmen bringing milk in glass bottles, and it's really a throwback to that, but it's a 21st century twist on that. It's really interesting.

I'm going to go in reverse order, so I'm going to end up with you, Gunhild, and start with Jessica. So you mentioned customers, employees, investors, all kind of putting pressure on companies to be more purposeful, and I would add governments, civil society and champions, champions within companies as well. So you've got these six groups. And I can see how in the waste domain, certainly in the plastic and food waste domain there's a really strong commercial imperative to do this. Right? And it's soon becoming, use less national resources, it's less waste, it's cheaper. But tell me a bit about what you're doing on the health side of things, because that... There the commercial... I spend a lot of my time talking to CEOs and leaders in business and trying to make the case that it's the right thing to do but it's the smart thing to do commercially. So tell us a bit about what you're doing. And retailers are so important, because as I said, that's the cold face when it comes to food choices.

Jessica Adelman

Yeah, so we as the end, literally at the top of the food chain – right? – we have a lot of ability to work with our suppliers. And something that we have been able to do to get people's attention and as part of our Zero Hunger | Zero Waste initiative is to donate but to donate more fresh product as well. Gone are the days where we just sent all excess inventory to the food pantry. So we have a one-to-one relationship with every single store and the food pantry in our neighborhood. But we have challenged ourselves as part of 2025 goals to give away not just more product but more nutritious and healthy product. So we can have one conversation. I won't mention the supplier by name, but I will tell you that we have one deli supplier that was responsible for 5% of all the food waste – 10,000 tons of food waste was going to a landfill.

Lawrence Haddad

Health.

Jessica Adelman

Health, yes. Okay. I'm getting to the health. So if you think about what we can do to shift people and donate more healthy food, people can be able to eat healthier all across America. If we think about how do we use the data and the science, we've developed an app that you could check out. It's called "Opt Up." So it's taking a nutritional standard, Opt Up. It's getting embedded in the Kroger app. It takes a nutritional standard of 1 to 100 and it ranks all of the products. Every single product that you buy is ranked in the system, and it's based on the products you buy, not what you wish you bought, not what you think you bought, not what you would like to have bought. It's actually what you purchase, and it's ranked. We use economic nudge theory to get you from a red to a yellow. So you can click on the item, and it suggests a healthier alternative. So we can move you up into the green zone.

You can schedule an appointment with a dietitian straight from the app. And what we can also do is work with the supply chain, getting back to the suppliers, and they can say, "Why did I get a 30? How do I get to 50? How do I become the best-ranking score in the Opt Up app?" – because you can put it right in your cart after that. So we will work with our own brands and with CPGs to say, "Here's what you need to do. Here's how to change the profile of the product and get another score." So the idea is we can gamify health and wellness and help America to eat healthier.

Lawrence Haddad

Before I move on to Sara, would any of the other panelists like to ask Jessica a question on anything she said?

Gunhild Stordalen

I would love to ask you, Jessica, because I mean it's fantastic the responsibility you are taking and everything you are doing. But are you thinking about how you place fruits and vegetables and water in your stores? You said nudge theory. Are you playing around with that and enabling the healthy choice to be the default option?

Marie Haga

Can I add in? Because I'm wondering – okay, and are you making money from this, or are you losing money from being environmentally sound, which I consider you to be.

Jessica Adelman

Well, as you know, the food industry, and especially retail grocery, is known for being a wash with so much cash – that’s kind of a joke. It is effectively a very thin margin business. And if you look at today's business economics, there is a lot. You as an American consumer, if you eat and shop in the U.S., you have never spent less money on your grocery bill. I mean people are in a really robust fight for dominance right now and for traffic. So everybody has access to tons of food at a really good price point in the grocery store.

Lawrence Haddad

So you’re willing to lose a little bit in the short run to gain in the long run, commercially. Are you doing this or not?

Jessica Adelman

Yeah, there are definitely loss leaders in the grocery aisle all the time, but the question is – How do you price the healthy options in a way where people can eat better? So if you use the data... (And this kind of pulls all of this like power chick panel together, which I'm really privileged to be on.) But we use the data to see. We have 15 years of data on over a hundred million households, so we can tell you how America is eating. And we know longitudinally how America has been eating for the past decade. We saw the natural and organic trend in the data, so we decided to act like a CPG and launch our own brand called “Simple Truth,” which is free from 101 items. But we priced it in a way that we weren’t doing those huge margin spreads that the natural and organic price lines are known for. We priced it in a way that everybody could access. No matter what your wallet looked like that day, you too could access healthy, natural and organics in the Simple Truth brand.

Lawrence Adelman

Jessica, what about Gunhild’s question?

Jessica Adelman

So we definitely think a lot about the perimeter. I mean the number one reason people come into the grocery store is the produce, and we know that. So number one is produce, number two is location. So how we merchandise the produce and how we give you that fresh experience is so critical to our ability to win the grocery war that it’s so important. And what I think is really interesting is us redefining how we think about what the perfect fruit looks like, and that’s something that’s been a big evolution for us is not pulling product from the shelves so quickly, letting it be repackaged and put into the Zero Hunger | Zero Waste section so that people have access to it for longer and at better price points.

Lawrence Haddad

Okay, thank you. I need to move on, because we won’t get through everyone. Sorry. Sara, can you give us a really good example, a one-tier example for people who are less expert and immersed in this than you are, of how having the data makes a difference to a quality of a decision and therefore the impact on food security. And I'm really interested in why someone would be incentivized to use the data.

Sara Menker

I can't remember who said this, was, *We live in a world that's a lot less certain today*, which means that the range of challenges that the food system and the agricultural system is facing is much broader than it was. You face policy challenges, you face a lot more challenges driven by climate change and rapid shifts in climate and environment, which is also then tied to disease and the spread of disease in crops, which then ties back to food security.

So something simple and recent in terms of how data can be used. Fall armyworms were brought up in the last panel. Well, fall armyworm being detected in China is one thing. Figuring out the path that that worm is going to take and the spread, and you can actually start to model out the likelihood of damage and then start to map out also what then the impact on supply will be. Knowing that months in advance means that you can basically protect for damage long before it happens - Right? So you don't want to see the damage. Success is in a world where you don't see it. But if it is happening and you understand what the spread of that looks like, you also start to manage your supply chain risk more effectively.

Now, fall armyworms continue to ravage crops across Eastern and Southern Africa year after year, and it's becoming increasingly common. That is a major food security issue. It's one that, actually by using the data that we have access to, which is a combination of understanding real-time climate and environmental trends – our soils, the markets – and then scientific studies on fall armyworms and what we actually know about what they do, you can start to model this out.

And as a company, within a week we were actually able to model the risk out for an entire country. You don't have to wait months anymore. You can do things in days, which is kind of what you need, because emergencies are emergencies for a reason. And so not knowing what's going to hit you, it's really about whether it's a trade war or a disease. How do you start to leverage that same pool of data to just answer many different questions?

Lawrence Haddad

Who are the customers? Is it policymakers? Is it the U.N. agencies? Who is it?

Sara Menker

Well, everybody, right, because everybody uses it differently. If you're a lender, you're managing your farmer risk, because those farmers might not pay back. If you are a seed company, you're trying to figure out essentially what does the profile of my product look like and what products should I sell where? If you are a policymaker, you're managing inventory risk, right, for your country.

So it's the same data that's used by different players across the supply chain and actually the same model being used over and over again. It's just applied differently because everybody has different incentives and a different reason why they exist. But when you start to have a system that's harmonized and starts to make decisions based off the same information, you gain a ton of efficiency. And we've seen this happen in energy markets decades ago. And agriculture is really the only market left on earth that hasn't done this.

Lawrence Haddad

I've got a lot of sympathy for the information asymmetry arguments, because you see them everywhere in making markets to improve nutrition, and they're a big issue in agriculture markets. But I guess the thing I'm still struggling a little bit with is the domain specificity of it, and what does that mean exactly? Is that geographic domain, or is it something else you're talking about? And tell us a bit more about where did the data come from.

Sara Menker

Okay, yeah, so for me, domain specific just means the domain of agriculture, which by the way is very broad. Because if you want to understand the supply side, you're looking at climate, environment, soil, all the components that build up before you actually have the crop. And then when you start to tie that out into demand, you're looking at everything from policy and trade to demographics and more macroeconomic trends and ultimately human beings' tastes and preferences. And you have to model that entire system out.

And so as a result, the type of data that you tap into is also very diverse, right? So it could be satellite imagery, weather stations. All the national statistical agencies actually currently generate tons of data and reports, but it's oftentimes in the local language in a PDF report with scanned images on it. So by the time you connect those dots, it's nearly impossible to use.

Data also gets generated by all the different trade associations. For every single crop you get data that gets generated by commodity exchanges. And it's really about weaving all of that together so you have a holistic picture of what the system looks like across crops, across countries at a very deep level, which means at basically, at the pixel level.

Lawrence Haddad

So it's all on the public domain, the data mostly?

Sara Menker

Mostly in the public domain.

Lawrence Haddad

So why wouldn't FAO do this? Why are you doing this?

Sara Menker

Really? We're going there?

Lawrence Haddad

Okay, we can pass if you like.

Sara Menker

No, no. FAO is actually a data source—right? So FAO, as an organization, is one of the many data sources in Gro—right? USDA has hundreds of data sources that end up in Gro. So it's really what's the purpose of each organization and why was it built. I think for us it's about weaving all of this and all starts to speak a common language.

Lawrence Haddad

And connecting the domains, I guess, is really, really important. And big value add as well. Thank you. Marie, can you see some connections between what Sara's doing and what you're doing?

Marie Haga

Absolutely. I mean we will not be able to make use of the genetic material we have if we don't use data. And the beauty is, as I said before, that we now have a new technology that makes it possible for us to know so much more about seeds than we did before. And so we can much faster go to the results that we want. So I think one thing that makes me optimistic when it comes to food system is that we can base the future on information and big data.

Another thing that makes me very positive is that consumers are getting much more concerned about what they actually eat. And certainly that is happening in many parts of the world. So I think much of the force that is going to change the food system actually is going to come from consumers. And I think I would just encourage everybody to be demanding consumers and request knowledge about what we actually eat. And so that's another thing.

But what I'm a bit concerned when it comes to my own area, it's that it's kind of difficult to make business understand and make the food sector understand that in order to be a viable food producer in the long run, you need to go back to nature to the seeds and safeguard the diversity. One example is that coffee, for example... I mean I think most of you wouldn't survive in the morning if you didn't have coffee. Coffee is actually up for a big struggle, particularly Arabica coffee, which is what gives most of the flavor to coffee. Because of climate change, coffee is really struggling. In Ethiopia people are growing coffee increasingly up in the mountains because of climate change. So you know, things are really happening out there that require that we make use of these resources. And I really hope that also the food sector understands that they are dependent on the food that is being produced from somewhere. And at times I wonder if that is the case. I keep asking Starbucks – "What would you, Starbucks, be without coffee? I mean, what would you ever be without tea? Why don't you contribute to actually safeguarding the foundation for your business?" So I think we still have a way to go to also include business properly in this change that food systems need to undergo.

And finally, this is a great panel, and it shows the diversity that we need to include when we speak about food system. It would have been lovely also to have a farmer here, and because in the long run it's farmers that are going to produce the food that we eat. And the basic question and the fundamental struggle for food systems today is that we have organized it in such a way that farmers do not get a decent income around the world. And that goes for developing countries as well as for developed. I think that's an issue that we really need to address if we want young farmers to produce the food, the nutritious food, that the world needs for the future.

Lawrence Haddad

Thank you, Marie. Thank you. And Gunhild, one of the genius of the EAT Foundation is that it brings public and private together. It brings high and middle income and low income together. It's bringing environment and health together. So you've clearly got this in your genes, this idea

of bringing people together. Just tell us a bit about the food system's dialogues and why you thought it was necessary to do it, and what you hope will come out of it.

Gunhild Stordalen

We all know that the only way to fix the food system is by working together. It will require unprecedented collaboration. So the idea with EAT was really to bring scientists across the different disciplines together, bring policymakers at all levels, bring private sector, civil society, chefs, farmers from around the world. But obviously one platform is not enough, and we need to really broaden this, because although we are talking about global challenges, the solutions are very much local.

So we joined forces with your organization, GAIN, a world economic foreign system like World Business Council for Sustainable Development, to set up many EAT forums around the world, hosted with partners where you can really bring in diverse stakeholders across the board to discuss what are the local challenges and what are the common solutions. How can we align on something? What are the like ten critical transitions that have to happen? And it's just started a couple of years ago. We have been working on it, but now with the Secretary General of the U.N. planning a food system summit two years from now. We see also this as a critical vehicle to really build momentum and a global movement or movements, because it's not one solution, it's not one movement. We need top down and bottom up.

So hopefully this will play a critical role and also being the best available science. Because that is one thing. Back to the data – I mean, we don't know what people are eating, but we have the first set of scientific targets for how to achieve healthy, sustainable diets for all. But obviously this needs to be about equity. It needs to be about rural livelihood and economic prosperity, and how do we bring the world and build consensus around scientific targets such as we have for climate. So that is another question also – Do we need an IPCC for food systems over time?

Lawrence Haddad

Thank you, Gunhild. We have run out of time. I've gone overtime in fact. But I just wanted to say I was in London a couple weeks ago, and I was talking to the head of Public Health England, is Alison Tedstone. She's the person behind the sugar tax in the UK. And she'd just been to a London Food Systems dialogue, and she said, "I went into that meeting very skeptical, thinking blah, blah, blah, talk, talk, talk. And I left, having talked to a commodity trader, and I just kind of, I saw the connections that I'd never seen there before." So these dialogues really make things happen. They're not just talk. They lead to action and connections that are not made. And I think what you've seen across the panel, as the panel has built, is innovation. And so you might think we'd be talking about technology, but actually we've been talking some about technology, but we've been talking about how data and dialogue can really help us make much better decisions to deal with the absolutely urgent need to address hunger and malnutrition as we move towards 2030. I've learned a lot from you guys. I really enjoyed listening to you. Please give everyone a big round of applause.