

Jason (Moderator): Ladies and gentlemen, welcome to the Green Room. We are happy to have you here today. Let's first introduce my guests. Today, we're going to be speaking with Marc Buckley, Mark is a climate activist and a social entrepreneur living an impactful life. He was trained by Al Gore as a climate speaker and his life's work has been teaching people how to get through the climate crisis and move toward a more resilient future. Marc is an Advocate of living an adaptive lifestyle of health and sustainability with planetary boundaries. His advocacy work includes, working with the sustainable development goals as a UN advisor in resilient futurist, a social innovator, working on climate change, agriculture, food and beverage networks and soon. Okay, Mark is also looking at the one of his key objectives is to reform the agriculture, food and beverage Industries around the world. It's an impactful project in a moonshot of many companies that he's been working with. Additionally, Marc teaches and speaks worldwide on climate change and food reform. He teaches entrepreneurs how to build and grow resilient sustainable and profitable businesses. As a serial social entrepreneur, he has been involved in many companies, several international family businesses. He comes from the he is a fifth-generation coming from Germany's largest organic farmers in three generations of European hydroponic agronomist. Marc is also a champion for Global citizen social movements to end extreme poverty. He is the Founder of the organization 'For Everyone Earth', He is a member of the climate change Coalition, a member of a Researchgate and future earth network, the Germany and Australia country manager for Al Gore climate in reality project among other roles.

Marc (Speaker): You can go forever. I'm sure Jason.

Jason: I could have just gonna wind this down in one or two more sentences. You've got an impressive biography and I really think it's necessary to, you know, let the audience know, the type of quality and the caliber of guests that we have on our show. So lastly Mark is a sustainable futurist and he's conducting workshops working with the UN setting the roadmap for desirable futures for the 2050 UNFCCC resilience frontier and resilience lab. Let us welcome Marc Buckley he's a social entrepreneur to speak with us today the title of his speech today is going to be about 'THE FUTURE OF FOOD: Building a Resilient, Sustainable and Innovative Food System in a World of Climate Crisis'. Thank you very much for being here with us today Marc.

Marc: You are so absolutely welcome. I'm going to share my screen with you guys all ready and we'll go get right into it. Thank you for having me at the Green Institute and welcome to 2020 a decade of action. We're almost done. Thank goodness. We are almost done with this year because it has been a doozy, the year really started out on a positive note with a big bang and a lot of actions. I was at the World Economic Forum in Davos and I was doing several talks on the road to Davos before the pandemic truly took hold and started to spread around the world and we were seeing tons of ambitions, tons of action, tons of things this year that were extremely positive and moving in the right direction. I want you to know that today is the World Food Day for the United Nations started by the FAO a long long time ago, and it's a beautiful day for World Food Day. It's also been a week of the EU green week as been in many cities climate week and there's a lot of action and activity and international organizations around food and around things that are going on. It's really also interesting to know that were not the pandemic, what we would be seeing is a couple things. We started with the United Nations the UN Food

Systems Summit. The United Nations Food Systems Summit, which is a fabulous thing and it will take it's already taken hold and they've started to do some online events, but we're going to see some fabulous things happening next year. We'll have some live events again, the food industries, the awareness around food and how it impacts human health, now nutrition, problems around the world and especially our environment has all bubbled to the surface and is now taking awareness around the world. Jason, can you just tell me if you see two slides or if you can see my main slide on the screen because I can't see you.

Jason: I see two slides, I see the 2020 slide with an interesting graphic and then I see the next slide 2 of 72.

Marc: Yeah, so I need to change that real quick.

Jason: Okay. So now I'm seeing your entire desktop with a split screen just up on one side.

Marc: And now you see the full slide instead of two?

Jason: No, I don't, I see currently, I see two (2) slides.

Marc: Alright, so I got to fix that. Sorry about that. We'll get it fixed.

Jason: Yes, there's a lot of interesting things going on recently. We just had the news this week or actually last week, the food security has been a major issue and it was an issue that was highlighted when the Nobel Peace Prize was awarded to the World Food Organization in recent weeks. So you're talking about a lot of activity going on and you know, there are in recognition in addition to a lot of companies and organizations, institutions as well. So I think we've got it Marc. It looks like it's a single slide up there on the screen.

Marc: So, you know in our world we've kind of went in some crazy directions and this year has really been a big year for craziness, but you see milk, somebody drinking milk through a gas mask, you see drinking out of a plastic bottle with more plastic and at that you see a polar bear, but the big burning question of this year of 2020 has really been WTF. Now a lot of you might be thinking, oh my goodness Marc starting to swear already and I'm sure many of you have sworn this year saying what the WTF but actually what it means is WTF means 'what's the future' and that is really something that we need to think about, we need to realize, that we need to understand. What is the current model that were operating on, going or leaving us in the future. We need to ask ourselves. What is the future we can expect if we continue on this path? I want to give you an analogy a little story. If you're driving down the freeway down the highway, if you slow down or reduce your speed while driving on the highway in the wrong direction, you are only going slower in the wrong direction. And the reason I tell you this is a lot of Corporations, a lot of countries, a lot of cities, lot of organizations that come out with annual reports and they say this year we're going to reduce our carbon emissions by 60%, by 70%, by 80%, by 2025 we're going to go plastic free or they say by 2030 we're going to be carbon neutral. What are these companies, these organizations, cities and countries, what are they telling us when they tell us that. I want you to know, they're telling us that they're only going slower in the wrong direction. They're basically telling us nothing. They're saying that they're still doing harm, they're still polluting our planet, they're still creating emissions, they're still creating plastic

pollution, and they are just doing it a lot slower. And so now, I want you to imagine that somebody is stabbing you with a knife and they say that's okay. I'm just going to do a 70 percent slower. They're still stabbing you they're still doing harm and all of us really, we must stop and reverse our direction when it comes to human health and climate action and impact on our environment. We have to stop and reverse our direction, but I want you to know that, even if the entire world today were to stop and reverse our direction and go in the right direction and not make any more emissions or have any more plastic pollution. It would not be enough and the reason I'm going to tell you why it would not be enough because just because the entire world stops emitting plastic or greenhouse gas emissions or polluting. It doesn't mean that all of this disappears, Now Sue said it best, If you do not change direction you may end up where you are heading. This does not disappear just because you stopped, it just doesn't go poof and say, oh they stopped and it just disappears it remains here. And so this year we had these aliens visit us, the virus and all the plastics and all the pollution we've done in the holding manufacturing industry that we have dumped into our oceans and waterways. It just does not disappear when we stop. Somebody is left to clean that up. If you remember at the beginning of this year Australia and New Zealand were burning and on fire. If you remember that, what you might not know is that in the time that they were burning they ignore it 900 million metric tons of greenhouse gases that have emissions through those fires, and that's the same amount that they admit in one entire year just from their industry alone. So there's this COVID-19 where we are saying, please, be sure to wash your hands and all will be well, but I want you to know that there's a couple waves coming behind that, the recession, climate change and obviously the biggest one is our diversity could collapse and loss. Now, we've heard a lot about plastic, we know a lot about the plastic emissions, all the plastic that we've ever produced is still here on this planet is still here on Earth except for less than 1% that's not here anymore. It is not here because we burned it and we turned it into a greenhouse gas emission by burning and so is still warming our planet. The aliens are among us and how these viruses shape our world, create us to wear masks. I want you to know this is in Shanghai, but it was well before the pandemic and the reason that they are wearing masks is not because of the coal bed or the pandemic, is because their air pollution is so bad. I was in Shanghai for three weeks and didn't see the sun once, because the air pollution is so bad, all their emissions, all the pollution that we have remains here. So if we all stopped, someone is left with the cleanup governments, countries, cities, communities and who doesn't rattle we're going to argue or fight a battle at who does that. We are talking about food today and food waste is now 40% globally everything that is produced and agriculture, seafood, food and beverage industry is wasted 40%. Most people don't understand, what that 40% food waste means and how we links those things, but I want to explain that to you. That 40% is not only the transportation and logistics. It is the water, the sunshine, the labor, the marketing, the planning, the packaging, the transport, the logistics and those finite resources as well as the greenhouse gas emissions that are used to produce those products, that go to waste but there are three top ways that we dispose of our food waste and the top way is we bury it with dirt and a landfill or somewhere else. The second way is we burn it and the third way is we dump it in our waterways, in our ocean. Well, that first way is the most used globally by burying it or putting it in landfills. And that one's coming back to bite us the hardest because when we bury something it aggregates that ferments whether it's in the packaging or not, and that turns into methane and methane is 80 times more

effective at creating heat and trapping heat and is a greenhouse gas and it is 8 times more effective than CO2 at producing heat and the short-term effect. So now it's not just the 40 percent waste, it's an exponential waste. So, what makes you to think that when you throw something away think that there is no way. Well on this great beautiful spaceship earth when we throw something away remains here for us to deal with and if we don't deal with it, it comes back to bite us like you can see in the slides that I showed you prior. I'd like to move away more from shocker, the dystopian of things that and into the positive as a climate speaker and activists, as a global food reformer, I showed this image quite a bit and a lot of other climate and environmentalist show up as well. Al Gore shows that this is the second catalog image of our earth that's called the Blue Marble. It was taken in 1972 on December 7th by the Apollo 17 mission. And I want you to know that I showed this to you for two reasons not the typical ones. Most people show you this to say we're all on spaceship earth moving in the same direction. There are no nations and borders and divisions and we're all on the same planet and why are we dividing ourselves? We need to protect our home. Those are good reasons, but I show it to you for two reasons. The first one is I want you to connect yourself to our planet as an integral part of a symbiotic earth and I want you to know that whatever you do is not small at all. It has an impact in an influence on our earth and on and on our future and so that is why I show you this because I want you to connect yourself with the whole bigger and understand that you might be a speck on this earth, but you have a big influence on what the future of our planet and our earth looks like but the real reason I show you as the second reason and I'm going to frame it more in a question and then explain to you. What is this image? What do you think this image is Jason? Or how do we have it? How do we have it?

Jason: We have this image because of Technology

Marc: Exactly, this image is sheer Innovation. Its emerging technologies, have we not use the latest computing power, emerging technologies, six satellites and shuttles into space and found our first catalog image of earth by mistake we would not have this. This is sheer Innovation, foresight, emerging technologies, computer, power, and its Innovation. Now, I really want you to know that this is so vital, we up to the second real time live. We have a data or heartbeat, a pulse of what is going on on our planet blue marble data, the biosphere data, soil moisture data, we can know what is going on? What's coming? What to prepare for precipitation, cloud movement. There are well over 1,200 different live geospatial data sources every second of the day on our planet telling us what's going on for agriculture, for farming, for water, for soil, for sea, for all the vital data we need on our planet to tell us and the only way we have that is by going to the moon, moonshot thinking, with innovation and emerging technology. Have we not had all these things? We probably would be way behind on understanding the big picture, the overview of factor the cosmic perspective of what's going on on our planet when we sent men to the moon when we sent that satellite to outer space, what happened is an environmental movement started we started joining the Clean Air Act, the environmental protection act and the soil act and all sorts of things to watch out for one and only home. We have been led to believe that the oil, coal and gas industry and the automotive industry, that the mining industry, that the internet and telecom industries were the biggest or the airline in the streets were the biggest cause of human suffering and greenhouse gas emissions. I want you to know that, we have been living in lie, that's wrong. It's absolutely not true. If you look at any of these industries, this is a true cost

report and it's done by KPMG and what they did is, they went through all the industries in our world and they took the total environmental cost as percentage of 'EBITDA'. EBITDA means earnings before interest, taxes, depreciation and amortization and on the black lines, you can see what those EBITDA is and billions of US dollars for those companies and in the red you can see what the total environmental costs as percentage of EBITDA. If you look at the oil, coal and gas industry, it's only 23%. You look at the internet and telecommunications only 2.5. If you look at the automotive industry, it's only 22 percent. But if you look at the food production, the beverage in the agriculture area, 225% out of balance and out of whack. We're not paying the total environmental costs. Some even on those Industries and that is an oddly balance. What you using the finite resources of our planet, we're using more resources than we have available. And so I want you to know that if you were to go to Tesla and say hey you guys just came out with this tool cyber truck. We want you to throw 40% of them away right now, and then you can start selling them or if you go to the oil, coal and gas industry and said you just pulled all this coal and gas oil out of the ground, throw 40% of it away and then start just tell or store your product. It's a boy, that's a bad business model. Why would we do that? And that's right. We wouldn't do it is a bad business model but in agriculture, food and beverage Industries. I want you to know we've been doing it for a long time wasting water and more resources than we have and we've been using them very inefficiently on a world that is really well connected with emerging technologies. The reason why going to space and those emerging technologies is so interesting. It's not because we want to live on mars or on the moon or in outer space. It's because to do that you're very efficient to use mobile your energy and resources that you absolutely need and you do not waste one little bit and you also don't use any chemicals that can harm or hurt you in a closed environment because you realize if you but pesticides on food and things going on. Put things in the product of your spaceship that create emissions, it could kill you in space because you're in a closed environment and of course environment on earth. It's just a lot bigger and it takes a little bit longer to come back and bite us but it's starting to do that in the house for many years. I want you to know in that in 2008, we had a big financial crisis worldwide and there was this massive relocation during this time of financial capitals in the billions of US dollars to anything related to food systems today. It is still considered the most lucrative investment and has increased continually by a minimum of one trillion US dollars every single year the entire agriculture, seafood, food and beverage industry is now a 20 trillion US dollar industry worldwide and a have a shadow economy of three trillion US dollars. That means those countries and China and turkey or India or Asia where they eat outside of the home three times a day, at a street vendor or a cart they pay cash and carry. They don't pay with credit cards. They don't pay taxes and they those people aren't reporting those food businesses. So now these financial prices turn a food into a commodity. It's run by people with a financial background what but without basic knowledge of the food system. And this is how food became a commodity. What that means is that no one knows where the food is produced and how or where they comes from. It's only important that makes a profit and that is a big problem because it's what we've done is we've cheapened food. When you cheapened food you cheapened life. Now, it's going to show a video to you guys, but I can't do that because there's no audio so I don't think you guys were able to share that audio. So I'm going to skip that video. Maybe we'll show it to you later if we can figure out how to download any dish with two audio but want you to know that I'm a United Nations sustainable development goal average at then when you were presented with the sustainable development goals in 2015. This is what we saw in that little town we were presented with them. 17 shining colorful goals presented in a very linear lateral fashion from 1 to

17. I want you to know that most people that I talked to about them don't even know, have never heard of it. They don't know who they're for what they're for. How they don't understand them. Are they for cities? Are they for countries? Are they for governments? Are they for corporations? Who are they for? And how are they supposed to understand them? And then if I do find people who understand about the sustainable development goals, the interesting thing is they'll say oh yeah. I like number one. It's red. My favorite color. No poverty. That's the one I work on. I would say fabulous. That's so wonderful. I'm glad you know about them, but I want all of you, on this call, on this recording to absolutely know that, it is virtually impossible to work on one sustainable development goal and not touch on all the others for many of the others because they are all tied together as a system intrinsically tied together as a system. So let's take for example, though the example I gave here. Let's say we just want to work on number one (1) no poverty. I guarantee you're going to touch on number two (2) zero hunger, number three (3) good health and well-being, number (6) clean water and sanitation, number 12 responsible consumption and production, number 13 climate action, number 14 Life below water, number 15 life on land, 17 partnership for the goals and many others because all of these, it's impossible to just work on one. So I have to apologize to you guys that they will present it to us in the wrong way, but I want to set that straight. Right here today. I'm sorry. It is five years later, but I want to explain how we should view and look at the goals how you can understand them and how we can apply them in the Food Systems. Because all 17 are intrinsically are tied to agriculture, seafood, food and beverages and 11 of them are tied intrinsically to agriculture Seafood food and beverages.

For the United Nations, I wrote the SDG Manifesto, the Sustainable Development Goal Manifesto, and I'm going to read that to you now, but the reason I'm going to read it to you is because I want to give you a vision of what it will feel like in December 2030. If we reach all these goals, what that world will feel like, what it will look like and kind of give you a sense through this Manifesto so that you can get a bigger picture. I'm going to read it to you. So I would like you to pay close attention. You can close your eyes but while I'm reading I want you to envision what it would feel like what I'm reading to you, what you would feel like in December 2030 to have a world like this.

Imagine a world where there is no poverty and zero hunger, we have good health and well-being, quality education and full gender equality everywhere. There is clean water and sanitation for everyone, affordable and clean energy has created decent work and sustainable economic growth. Our prosperity is fueled by investments in resilient Industry, Innovation and Infrastructure, and that has reduced inequalities. We live in sustainable cities and communities and responsible consumption and production has healed our planet. Climate action is stopped and reverse the warming of our planet and we have flourishing Life below water and abundant diverse lives on land, where joy peace and justice through strong institutions and have built long-term partnerships for the goals. Now, I don't know about you, that is the future that I want to live in and that sounds like not quite utopia, but I want to work towards achieving it, because when I take the current models of some countries, and some nations, and some governments and push those out for the future. I'm pretty darn worried because it's not a very resilient desirable future to live in. It seems like is getting worse. I want you to know, there are something so important about the sustainable development goals, it is the world's first ever local longshot. I want you to think about 197 countries came together for the first time ever and agreed upon a road map to get us safely to December 2030 and create a better sustainable infrastructure for all. I want you to know that that's a historical precedence, think about 197 countries. If you

know anything about delegates, governments, countries, it's hard enough for two countries to decide where they're going to go eat lunch together, let alone on a road map for a better future and because of that I want you to know that this is how we should view the sustainable development goals. As a pie or wedding cake tied together all as a system with the bottom of that system being our biosphere. The reason we put the biosphere of the bottom is because any products in our world, anything that we produce whether it's a car whether it's a cell phone whether its food comes from that biosphere that's where we get the oils, the minerals, the nutrients to produce those products and if our biosphere collapses or is destroyed, then, we can't produce anything. Once that's doing well that we can go on and produce and do things for our society to improve the quality of life of our society. And once society is doing well, then economy thrives and prospers and then we have this partnership for the goals. And this is truly how we should view The Summit in sustainable development goals. And like I said, they're all tied to agriculture, seafood, food and beverages there is another chart or pie or graph or pyramid that you might have seen before that might seem similar to this one and that is Maslow's hierarchy of needs, Humanities physiological needs, Humanities hierarchy of needs, these physiological needs the bottom two layers of this pyramid are breathing, food, water. The next one the red one safety, security of body, security of resources, security of family, health and property. That is what this is. It's for us. The sustainable development goals are for each and every one of us to create a better future. These are the basic needs for humanity and those are the basic needs for humanity as well.

I want you to know this is a temperature timeline. It shows from 800,000 years to present and if you see on the top right or left on your screen where the temperature stabilized at the top we get these high scores there that's about 12 thousand years where they start to begin to stabilize, but it's also at the point in time when we began stop hunting and other, like moving around and started farming. Farming is one of our oldest practices in our world. It's been around for at least 12,000 years and efficiently the last 5,000 years and even more efficient and mechanized for the last Industrial Age for about 200 years, but it's the precursor of the Industrial Revolution and they call it the Agricultural Revolution.

We've been doing it for a long time. But what most people don't know agriculture is the world's oldest economy not only is a 12,000 years old when it's called an agrarian society. It's the most successful largest longest running world's economy that the world ever seen. It's how cities, cultures, nations grew and/or formed. We build up our cities and communities first around what we grew, food a lot of people think that we domesticated food, but I want you to know it domesticated us agriculture domesticated us and kept us put in a home or in a farm or in an apartment based around it so that we can continue to nurture and work and sow the seed not the other way round because we're stuck inside buildings and put whereas the agrarian society is pretty much outside and as a farm and not so I didn't update this slide, but I told you it's 20 trillion US dollars a year the shadow economy of three trillion dollars a year, but did you know that agriculture, seafood and beverage industry is also the least digitized industry in the world, the least educated, the largest employer of the world, the largest employer of women and girls in the world, the lowest wages, the biggest exponential waste, which I already explained and also the most greenhouse gas environmental issues in our world. It's not about the end products or the brands or the food tribes or future foods, like our talk is titled today. It's really about how we produce food in the future that is the most important. And the way that's most important is through Innovated clean Technologies, regenerative practices that have the biggest exponential impacts to draw down our environmental problems, but also to heal human health, to stop

malnutrition and obesity, diabetes, asthma, health problem, as well as our environmental impacts as well. The United Nations Food and Agriculture Organization came out in 2015 and said we have 60 harvest left with traditional, industrial, agriculture. I want you to know that today in 2020. It's only 45 whole that's our national and some people are saying only 40 we need to listen. We need to understand that we're ruining our soils and these are a big part of capturing carbon about healing the biome of the earth. But also healing the biome of our own garden in our own have our own house to get us living healthy, and I'm going to skip over some slides because we really don't have that much time, but I want you to know that if you apply the sustainable development goals into your business model into your farming practices into your food practices that it's a huge business opportunity. It is about 4.5 trillion dollars a year in some cases just specifically for the food industry, but I'm actually seeing a lot higher numbers from some others. This is from Unilever, for every dollar that they stand in nutrition towards the sustainable development goals in their products. They're seeing a sixteen dollar return in the long run that is a huge return and a better business model. Also the Unilever said by embracing the global goals you could generate 12 trillion of new business value a year that's equivalent to ten percent of the global GDP forecast. There are some food models out there and you see the food pyramid off to the left and we're kind of used to in some respects. But this is a new level double pyramid that have the environmental impact on the other side and it comes from the Barilla Center for food and nutrition.

To look at different ways of the food pyramid, the food sector, now climate-smart agriculture and sustainable development goals go hand-in-hand and I want you to know that there is an opportunity to generate huge value if we fix these industries, there's tons of reports and information for your country, for your city, for your community, of what you can do in the multi-faceted systemic way to fix our food system. And so I'm just kind of going really quickly go over some of these because we don't have the time but there are so much information out there worldwide and I want to give you one example, that's really important. So during this time all those who are on the call from the United Kingdom can get with me later and we can speak about the controversies of the brexit. So we know before the pandemic yet that there was the black sun and the whole world kind of didn't understand and couldn't believe it but it was really based around race and worries about jobs in the United Kingdom that immigrant, agriculture, food and beverage workers who were working in grocery stores and gastronomy on the farms in the upwards amount of 200,000 to 600,000 immigrant workers out of a year living or going to the United Kingdom to produce food. That's why the brexit happen and they didn't want people taking those jobs. The problem was is the political decision had a ripple effect, especially during the pandemic because now during the pandemic there were also some products in the United Kingdom that needed to be Harvest and all those people that voted for the brexit didn't jump into those 200,000 plus jobs to harvest that food and that food got tilt back in into the ground and mass graves for the most part because there weren't workers there to produce the food, to harvest the food, or to the sell at the grocery stores and we were in the middle of the pandemic lockdown. This is the current size of hectares used in the United Kingdom to produce certain amount of food, but I want you to know that there are global footprint is much bigger. So they didn't want the immigrant workers coming in to harvest or produce the food but did you know that the United Kingdom this is their full trip around the world. Where they introduce food that have been feel and used in the United Kingdom. So I want us to know that before we made political decision before, we make global decisions that affect us all we really need to think about the ripple effects of these great big ways that have consequences all over the world

because food is a global citizen. It does not recognize nation, borders, walls, or divisions. Food is transported all over the world, even though human beings might not be and so we need biodiversity and regeneration and our products and we need to really expand how we do things and I'm going to wrap this up and skip through these I want to leave you with this last a little video before we get into questions with it Jason. Can you guys hear that?

Jason: No volume nothing yet. No.

Marc: So you can't hear it. So we'll just stop and skip that because it won't be getting any sense. If you can't hear well, thank you very much. And I appreciate you letting me steal a little bit more of your time. I wanted to going into some depth in the bigger picture of things. But food is a very complex thing and that's why we need of world food day, but that's also why we need to have some deep dive dialogues and longer discussions about things.

Jason: Right? Thank you very much. Marc Buckley. That was a really interesting talk and so interesting that I'm actually going to forego getting the conversation started and we going to go right to the audience because there is quite a few people who are knocking on our door and like to ask you a few questions, so I'll ask my questions later on. Can we please begin with some questions, please from our audience. Here we have **had Tim. Hi Tim.** Would you like to address Mr. Mark Buckley, please?

Commented [G1]: Check name

Audience 1: Thank you so much Mr. Marc Buckley for the interesting, informative session although I came late, but I had this question in my mind. I want to ask you about the how we strike a balance between the food production and biodiversity.

Marc: It's really important that we start using regenerative practices in our food production so that we get away from monoculture, we get away from pesticides and harmful fertilizers and chemicals and are our products to get that biodiversity back and what I mean by biodiversity is not only in the types of food we grow but in the soil health that it's very biodiverse, that's rich with not only those pollinators around it, but also the worms and microbes in the soil. I want you to know that in farming practices, it doesn't matter what you grow. Those soils have nutrients, minerals and vitamins that go into the plant, into the product that we're growing and that has been reduced decade after decade has gotten worse because of the way we're treating the soils but also because we're doing a lot of monoculture and that's coming back that we're getting products and food that doesn't have the nutrition in the vitamins and at that is should. The way we can change that is through biodiverse permaculture regenerative, agriculture regenerative ranching regenerative, agroecology, agroforestry. And the way we do that and the other thing is the cycle of farming has been broken. So when I mentioned in my presentation is that farms were the start of communities and cities because we built those cities in those communities around the farm. But today the cities don't have any farms and many more of this farms are way outside and we're shipping the food into the cities and that's broken that nutrient cycle of our soils because the nutrients that go from the soils into the food then we ship it to the cities. And so I say cities are a place that food goes to die because before when we consume the food close to the Farms we can put that waste in the composting in those peelings and those things that are good for the

soil health that the microbes and the bugs and the worms in it that go back into the soil which goes back into the food we can put that back. We're not doing that anymore. There's no cities taken for being there are some around the world but not at the scale we need that are taking those nutrients of the waste of that food that we eat, the peelings, whatever and getting that back to our soils. And so that's why we use chemicals and fertilizer, pesticides and all those things.

Jason: I think our next question is going to be fielded from Bucky Fabunmi. Oh, I'm sorry Miss Bucky Fabunmi. Hello.

Bucky Fabunmi: Hello.

Jason: Good evening.

Bucky Fabunmi: Good evening. Good evening, Jason. Good evening Marc. Thanks for the presentation. Thank you so much. I think I have a question and then a contribution to make. Like for the waste that are generated. For example, you know, they're just disposed into the environment indiscriminately which runs into the waterways into the water bodies causing eutrophication and all that and at times causing flood and disease outbreak. So those who waste can be converted into useful products? Like I've been working on conversion of agricultural waste into useful products such as enzymes, poultry feeds and biogas. So if those are examples of products that you can convert this risk into and in by so doing try to clean our environment now, we already know that the environment is messed up already. So our burning, our burying of these wastes has caused us a lot. And so these are products that can be generated from these things. And again these things cannot be done by just one person there has to be a collaboration between researchers in order to be able to achieve these and by so doing cleaning our environment and being able to achieve one or two of the sustainable development our goals and my question now to you Buckley is that now we know that genetically modified foods kind of helped us to improve food production. Right, but then these genetically modified foods also have their own side effects. So as a food researcher, will you vote for the production of genetically modified food or you vote against it. Telling us the advantage and disadvantage, telling us your viewpoint.

Marc: I wish I really wish it was that easy because, I personally don't like genetically modified foods that are on a strict lab base, but I want you to know that we farming is a science. It's not natural. It's never been a natural process. So the minute we began 12,000 years ago or 10,000 or began farming. What we did is we started cutting down trees, moving rocks and tilling the soil which began putting emissions into our atmosphere and having effect on our soils and our planet and those apples from ten thousand or five thousand or two hundred years ago or not the apples that we eat today, but they're not that way because of genetic modification and in the true sense of what we think about it in a laboratory setting this genetic modification that has evolved naturally over time through grafting, spicing, mixing different types of apples together. If you look at the original banana or some of the original banana species, they're very small. They had big huge black seeds in them. They didn't taste very sweet. If you know, they were different and there is there's hundreds of different species of bananas. But the ones that we in the grocery store

today or the ones that we use to cook, cook with plantains or whatever they are. They're much different than that original but that they weren't done in a lab. They weren't done by some mad scientist doing it in the laboratory. They were just done in a different type of evolution of crossbreeding, splicing grafting different trees and different things and using the seeds in a different way that have evolved that way. Now, there's genetic modification that is done in a lab by a Barbaric, Monsanto other chemical companies that you certain prize. I think those are definitely very harmful for our world and so we need to make that distinction. A lot of people think that agriculture is a natural process. I come like Jason mention I come from six generations of Germany's largest organic farmers. And in my opinion, I think organic farming is great. It's what we should have worldwide. But I also think that European Union or standard for organic farming has set the bar about as low as they can possibly set it. It's the minimum and I think the bar needs to be raised globally not only on organics but on agriculture in general, how that we look at it as a closed system with circular economy principles, regenerative practices, for the much longer game in so in that respect organics are never genetically modified their never in those respect when you look at the laboratory way. But we have to make that clear. I think genetically modified foods and some respect our seeds are good or one are one tool for the toolbox to help us, but they're not the answer. They're not the long-term solution to get to regenerative or to healthy planet. So I don't know if that answered I could probably talk a little bit more and explain like for example, if you were to fly over Spain over I think it's called Alamia this one of the biggest organic farm areas in Spain if you were to fly over there in a helicopter or a plane or drone. If you hadn't been there before people would say oh my goodness. What are all these refugees doing up in Spain? Well, how did they get here how and local would say those aren't refugee camps. That's the European Union standard for organic farming. That is the worst and poorest conditions. Not fair wages Not Fair Labor not fair housing not sanitary conditions, and they're producing food as cheaply and as quickly as possible and abhorrent conditions matter of fact, if you look at the United Nations refugee camp or World Food Program Camp. They have a much better standards than the organic farms in Spain because it's there's no clean water, there's no sanitation, those people who are working are those a working in a poor conditions and in my opinion that's criminal because like I said if you cheap and food you cheap a life. If we produce it cheaper, we producer with chemicals in the long run, it comes back to really hurt us. It's a bad model because like I said, the FAO said we have 45 matters left in food and the reason why is because of the soils aren't getting time to regenerate and recover and there's no nutrients and minerals in there. And so when we do no-till practices and regenerative practices, we can heal that soil and get a backup so that we can produce the types of crops. And things that we want the other thing is a seat banking. So if you don't want genetically modified crops, I want you I want to encourage you to start your own seed bank to gather organic seeds as much as possible and we keep them alive because we're losing species all over the world of plants and fruits and vegetables all the time because they're just being died out. Nobody's taking care of it.

Jason: Would you like to talk about how your work connects to this topic?

Bucky Fabunmi: Yes, please. Thank you very much. My work connects to this topic in the part of the waste generation from food production. So I've been working on kola nut husk is a waste Nigeria is known for the production of kola nuts. And so like 7% of Kola nut is being produced in Nigeria. So we generate a lot of this waste and this waste is known to be very nutritious when

his post on the farm site, you know the nutrient in it attract microorganisms and also the nutrients when it's been washed into the water. It causes Eutrophication and blocking the water reducing the lives of microorganisms and other creatures in the water bodies. So I looked at how this waste, agriculture waste can be converted into useful products. And so I worked on converting it into using it as a substrate for enzyme production. So I used it and then I used it to produce biogas used it. In different ratio with cattle porch waste. I also used it in composition with Maize and other products other components to make poultry feed. For the poultry feed at a ratio of 30% it was too high, it does not enhance the growth of the poultry birds but then at 10% with maize and other component required for poultry feed it enhance their growth. Another thing is that, it is advantageous in having it in poultry feed because, it has fiber and so it reduces the quantity of feed the birds eat. And so it reduces your cost so you gain more by so doing. So although I recommend that 10% is the maximum that can be used in poultry feed but I think in lesser quantity will be more beneficial in having a good quality meat poultry meats. And then for the bio gas also it was able to produce methane over about 50 percent, but then it wasn't combustible and that was because I did not have the necessary gadget or equipment to carry out the other analysis that I needed to do. So I had to stop at a level. But then from the experiment it's good because it was concluded that the kola nut husk when blended or mixed in a ratio of 1 to 3 or 3 to 1 with cattle porch waste, it can generate bio gas that can be used. And then for the enzyme production also, I worked on five different enzymes xylanase, protease, pectinase, amylase, cellulase. So those five enzymes, I used this waste, the kola nut husk, the grinded one, I used it as substrate and then checked their productivity Okay, what the microorganisms that grow on it whether it will to produce this enzymes of interest and they were able to produce xylanase and pectinase at least sufficient. But then further work is still required, you know, I was able to just do the work to the level where I had the funding up to and so I stopped it but some other people are carrying on the work.

Jason: That's beautiful.

Bucky Fabunmi: At least. Yeah. So for now at least that's the way I am, you know contributing to my environment by trying to gather the waste from the environment clean the environment of some of these waste, at least agricultural waste, definitely you can clean up all the waste. Then, another project I want to embark on now is, conversion of plastic waste into useful products such as interlocking tiles, roof tiles and so and those ones are, alternative measures or means by which this waste can be converted to useful product and then clean environment.

Marc: That is amazing because, I really like what you said because, It's really hard to talk about agriculture on a blanket global generalized way and what you're doing and what you just mentioned and you're talking about indigenous microorganisms for your place where you're at, that are local and that's so important because we need to heal that microbiome of our soil but we need those Imo's (those indigenous microorganisms) that are indigenous to your area, that will work best for their like micro rise is a big thing in agriculture and in growth and the mycelium and the growth of our soils as well as well as Plants, but they're indigenous to each and every different plant species and area of the world. And so that's what I heard out of what you just said. You're going local, you're going very indigenous of what works there and what has been proven and how can you use those tools the most successful innovations that I've ever seen around the

world and that I present to the World Economic Forum are always from people who come up with where they're at, what they're dealing with and how they've solved the problem locally as a crew member on spaceship earth. And so I thank you for doing that. That's fabulous

Jason: And fantastic. Thank you very much. Yes. Thank you Dr. Fabunmi. Excuse me. I apologize great to meet you and I think we have another question coming in. Did we lose our guest here we are. Yes. Hello. How are you doing today?

Chibuike: Hello Marc. Hello. I'm doing great. My name is Chibuike and I want to truly appreciate and comment your presentation. It was it seemed as if I had semester hack under 30 minutes you a very succinct and straight to the point. Actually, I have two questions for you. The first question is, you know, food production today we are commemorating the World Food Day but it seems as if the global leaders have really missed their priority because for me, I would have loved zero hunger to be SDG 1 instead of no poverty because I believe socio-economic development begins when population are well fed, and they have good nutrition. So I'm trying to ask how project the need for improvement of our food system so that the global leaders would understand that this is also it's a high-risk global challenge that also falls in line with terrorism to how to make them see that food production is a necessity for global advancement.

Marc: I totally agree. So another thing that might you guys might know is that the world food program just got the Nobel Peace Prize because the delivering food during the pandemic. Food is for me anyway, and it really is what I'm trying to say and my talk is, the biggest impact on our world and human health, but it's also the biggest silver bullet to solve the problem and drop down our environmental or health or poverty or hunger issues around the world and the sustainable development goals are not an add-on to business as usual. What they are is a brand new global economy, a brand new operating system, when we raised the bar globally and we say we're never going to go below this level again. It's no new equality, a new way of handling food new way of global citizenry, as a new economic model and that all governments, nations bought off and we just need to apply it. I like what you said because I like what you said because what happens is we sometimes wait on these political leaders, governments and regions to deliver the future to us and what we've seen not only in my example of brexit, but we've seen it in Amazon with Jair Bolsonaro and Amazon rainforest burning. We've seen it with the burning in Australia we've seen up with things going on all over the world where certain leaders are doing things in their region that affect us all over the world and we don't have this universal basic inalienable right as human beings that allow us to food resources, certain infrastructure that we're all equal and that really needs to change and we need to make those leaders around the world know that to let the Amazon rainforest burn or to do animal agriculture, to plant palm oil, there that those consequences affect us all around the world. And so we're going to have an influence in those decisions. And so my suggestion to you is the biggest way for you first to be empowered to change the system to create a moment, is to make sure you secure how you produce food, how you can live off the grid, how you can live resiliently and then as you do that you spread it to your family, your community, your city and then show others for your example how to do a different way because if we wait for politicians a lot of the time we're going to be disappointed, a lot of people say, well we need a vote with our dollars or how we buy food or when we vote

some for someone we show that. Well Trump was voted, Jair Bolsonaro was voted in Putin Che they were all voted on. But guess what? They've all come back to hurt us immensely. So all those votes didn't help us. And so now we've just wasted more years and more time. So I want you to be empowered to be resilient yourself to first do those things and you as a human being I hope you're in a situation where you can first take care of those. And set the example for yourself that you have those tools necessary and then spread that example as a ripple effect into the future because I think that's the best biggest way to start. The next way is to join movements like the world food day to join the United Nations to join Friday's For Future or other organizations working on food, working on solving hunger problems can be an innovator be like the Doctor we have before and become an Urban Farmer become someone who can create an innovation that solves one of our global grand challenges and there so many around food, around Refrigeration. I'm going to give you some examples and Uganda we had these refrigerated bicycles. There were bicycles that had these refrigerated compartments where they would deliver food. Like refrigerators that was a solution that we had electricity free refrigerators that we use in Ethiopia and Zanzibar and in Ghana that our refrigerators that don't use any electricity but they still have a cool process and they keep not only insulin and medications cool, but they keep food cool and then, we have had others create these big container to keep food cool. We've also seen ship Containers turned into animal fodder containers or into vertical Farm containers. So there are so many different ways that you can be Innovative and solve the problem and the more you do the better goes for you, the more help you have to help your community and also be a good entrepreneur and kind of progress that movement and show others that there are better ways to do that. There is an example on the United States a wonderful friend of mine. His name is Ron Finley, you might have heard of them before he's called the gangster gardener and he's cut he cut a he's a used to be a fashion designer, but he's a gardener and he's calls himself the gangster gardener and he has a saying that I absolutely love he says growing your own food is like printing your own money. Okay. Absolutely true. If you can get off the grid if you can grow your own food as you can create your own renewable resources. If you can come up with a system to thrive and survive yourself it you're good you're resilient and it's like printing your own money. And so I hope that answers your question a little bit. I don't hold much of too many politicians, but I'm lucky to be in a great country that has Angela Merkel. She does a pretty good job and of protecting humanity and social wealth, but I feel bad because I think everybody's entitled to that right. I think all of us should realize we're distant cousins, we are brothers and sisters and we all should be equal have equal rights and equal economies and equal universal basic rights because of someone in the world is suffering or not having those it's affecting us all eventually.

Jason: Good, good, very good question. We really appreciate that. Very interesting hereof. Marc, we actually have that first video. So we're going to show that as they're setting that up in the Green Room control room. I've got a question here from Muhammad Ali Mahdi, and I'm going to paraphrase he's wondering how is global warming affecting the food system.

Marc: Hugely and I'll tell you in a couple ways not only is it creating desertification, is creating droughts, is creating floods, is creating erosion but what happens is global warming is really

interesting because the term in and of itself is very telling it says global warming and that warming sometimes can be misjudge. But what it means, is that our air is a little bit warmer, our air is warmer and has more moisture in our air right. That's why it's warm. But when we have more moisture in our air, it creates stronger super cell storms, that creates a stronger hurricanes and creates more stronger natural catastrophes that occur around the world because there's more moisture in the air and so it has a huge effect that also creates more pests, more bugs, more molds, more fungus that growing on farms because when it's warmer or when it's drought or when the conditions are right those pests, those insects, those rodents they multiply a lot more and there's nothing to naturally to combat them down. So we're fighting against ourselves. But you can also use global warming to solve the problem because it's not only growing exponentially bad. You can use it as a positive to solve the problem. So how would more moisture in the air solve a problem all over the world? We are having issues with water, clean water and sanitation, water for crops. That water is in our air, so if we can do fog nets that harvest water, if we can do ambient water harvesting, if we do rain water recycling if we can capture that air, take that hot air that water out of the air and use it for good. That's a free resource. It's just like the Sun, so in a lot of places in Africa a lot of places around the world are using the solar water harvesters to generate water out of thin air. What they doing is just pulling the water out of the air, which is another form of geoengineering and it could help us not only because we need the water but it could help us because we're also taking a lot more of that moisture out of there trying to get back in a rebalance. Okay. I'm that. That's my question. We can show that video. I think this would be interesting for you guys to see

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Marc: That was basically it on that video, but I just wanted you to know some of those statistics and things add there was there was kind of one last message that I wanted to give everyone is that and I'm going to use Australia as an example, but it can be applied anywhere in the world if you are using your country, your land to produce animal agriculture or certain types of crops that don't remain in your country, but our ship to other places around the world and you are doing what that chart that I showed you at the beginning of my presentation that said the total environmental costs as percentage of EDIDAT. If you aren't charging for that meat or those plants or that food that you're producing in your country but shipping to other countries after it's been produced, if you are not charging the true cost or the total environmental costs of that product. I want you to know what you're doing is you're allowing those other countries to shit on your country because you're not you're left with environmental destruction of your country of your land, of your air, of your soils, because of food that is produced cheaply, that go somewhere else in the example of Australia is they have a huge animal agriculture that they do there and they ship most of those animals to China and to other places in the world, but then all the water all the food that they feed those animals, the transport, the emissions the methane the all the stuff really is hurting Australia and then they're selling it to those countries for cheap. They're not

even getting the total environmental cost. They're not even using the full cattle that they're shipping or whatever the product is. Worldwide first all the agriculture that we produce first goes to create petroleum for cars ethanol through that type of Agriculture, then secondly, it goes to feed animals and then thirdly whatever is produced goes to feed humans. That's a very inefficient model. We need to think about it differently in that video shows a lot. But the main thing is I want to make clear don't let other countries, other people use your country and steal your resources for cheap price charged him the true cost or don't ship it to him in the first place because they don't care about the long-term effects of you or your country and I really want people to understand that I've seen the United States complain about China and the emissions that China does or how many coal plants are going to do and that China needs to do something. But did you know that the United State used to send all their garbage to China and let them dispose of it and have the emissions and the problems of the US garbage to dispose of. That they let all the iPhones and the other products be produced there with emissions being in China in actually in China, but then the US or some other place gets the benefits of the product and then they can later complain that a somebody else's job to take care of our planet when they're actually the ones who are contributing to that problem and I want that to be clear for all of us in our minds because it's so vital that we understand. We're all on the same planet, in the emissions that we're all breathing the same air. We're all drinking the same water and the emissions that are created in Australia or the emissions that are created in in Brazil. They're all going around the world. They just don't stay there. They're global citizens and we're feeling the effect of it. So I want that to be aware in everybody's mind.

Jason: Really appreciate that Marc, you know, you've talked to us about some really interesting things today the importance of the food security, on the sustainable development goals, how food is so key to the development of all the other 17 goals. We talk about these ideas of wicked problems right in the whole idea that we're dealing with these ideas that has multiple thread and are intertwined and link and how do we address them. And I think one of the themes of your talk today is that self-sufficiency, localized food really is the beginning of solving not only the food security issue, but you know many of these other issues that we face in terms of poverty and ed lack of Education, etc. That we see in the SDGs the sustainable development goals. Yes. We're really pleased to have had you on the show today. This has been a great discussion. We've got had some really good feedback from our audience. Great questions from them. We really want to thank them. We want to thank Mr. Marc, I'm sorry Marc Buckley a social entrepreneur in futurist who talk with us today about food security, things that we can do today as we look to our future. Please stick around we have the Green Room every month at this time the third Friday of each month, please stay. Please visit thegreenHQ on Twitter, YouTube and Facebook to see this event, the video of this event as well as other events coming forward in the months to come. Ladies and gentlemen in the audience. Thank you very much for attending today. I want to thank Mr. Marc Buckley for his time and his encouraging presentation about food security in in sustainability and resilience in a climate crisis context thank you very much everybody.

Marc: Thank you all bye bye.

Jason: Thank you.

