





**HULT PRIZE 2021 CHALLENGE** 

## FOODFOR GOOG

Transforming food into a vehicle for change.

Creating Jobs, **stimulating economies,** reimagining supply chains and improving outcomes **for 10,000,000 people by 2030.** 



















Food defines the human experience. Family dinners, religious feasts, quick snacks eaten during breaks at work, and our many other relationships with food combine to shape our bodies, our minds, our communities, and the world we call home.

Food is the ultimate equalizer. Yet increasingly over recent decades, food systems have become machines of extraction that reduce our well-being, weaken communities, and impoverish the world around us. Store aisles are filled with arsenals of cheap, addictive products that attack the soul through the hollowness of manufactured consumption. Parents wage a daily battle to nourish and nurture their children, while food supply chains funnel massive profits to corporations and billionaires.

We are challenging you to transform food from a bare necessity for survival into a vehicle for human wellbeing and prosperity. In order to do this, you will have to understand how our existing food systems work, and why they are failing humanity on a global scale.

You will have many examples from which you can draw inspirations—a veritable army of pioneers who are rethinking food for a better world. Your work may draw upon these inspirations or set out in entirely new directions to build viable companies transforming food and food systems in the next decade and beyond.

Together, the Hult Prize global community will reclaim the potential and power of the most basic and fundamental resource required to fuel humanity for the century to come.

I. RETHINK EVERYTHING ABOUT FOOD AND ITS PRODUCTION, DISTRIBUTION, AND CONSUMPTION

The opportunity is enormous. Agriculture alone accounts for one-third of the value of economic output globally. Food services are expected to reach a value of US\$ 4.2 Trillion by 2024.

The food system is ripe for change. The health of people and the planet is threatened by labor exploitation and myopic extraction of resources.

Diet: For more than three billion people in the world, healthy daily meals are an out-of-reach luxury. Millions of people are either not satisfying their nutritional requirements or eating the wrong types of food. The consequence is malnutrition, which often leads to health crises. Nearly nine percent of the global population-roughly 700 million people—is hungry, a total number that has risen by 60 million in the past five years. Equally alarming: A comparable number suffers from obesity.1 Poor diets are a leading cause of death worldwide.

Opportunity: Transform food production, sale, and service so that nutritious food is accessible to every person globally on a daily basis.

**Climate:** Agriculture today accounts for 20 percent of greenhouse gas emissions and 70 percent of water use.

Opportunity: Reinvent agricultural practices for long-term sustainability and planet health.

Food waste: A third of all food produced globally is wasted and never consumed.

Opportunity: Identify and correct ood waste.



dead zones are growing in our bodies

of water around the world, mostly as

a consequence of agricultural runoff

Mexico is experiencing unprecedented

Opportunity: Transform agricultural

that damage aquatic ecosystems.

oractices, reducing the use of chemical

ertilizers and other agricultural inputs

and exacerbated by rising ocean temperatures. For example, the Gulf of

plankton blooms and fish kills.

kilogram of beef requires 15,000 liters

the top contributor to water pollution,

desertification. On top of this, the Food

deforestation, land degradation and

and Agriculture Organisation of the

United Nations (FAO) has estimated

70% by 2050.

that demand for meat will increase by

Opportunity: Shift consumption away

from animal-based meats.

of water!2 Livestock farming is also



# II. ASK WHY OUR FOOD SYSTEM IS FAILING HUMANITY ON A GLOBAL SCALE



Food isn't just grown and consumed. It's also bought and sold on a massive scale. So changing food systems isn't just about altering tastes and behavior—persuading people to enjoy kale instead of cupcakes, or to use recycled containers. Changing food systems are also about transforming food supply chains with new business models.

For that reason, as you get started, you need to understand the food system in its evolutionary essence.

When our earliest human ancestors were roaming the African savannah hundreds of thousands of years ago, sweets were rare. When we came across berries or the sugary sap from a tree, we took in what energy we could. A taste for sweets got hardwired into our genetics. For other evolutionary reasons, so were our tastes for fat and for salt. The problem is, we no longer run 20 or more kilometers a day patiently tracking large game for our survival.

Our nutritional needs have changed, but our genetically encoded desires have not.

Fast forward to the present. Decades of competition among food manufacturers have led to a food system that is structured by market incentives to make products that are (1) cheap to produce and (2) appeal to our hard-wired tastes for sugar, fat, and salt.

"Until the modern age, our food was produced and prepared for us by someone who had our best interests at heart: our mothers. Our moms would never dream of adding something to our food to make us eat more or to save on the cost if there were serious doubts about the effect on our well-being.

In the modern world, however, food largely comes from people who care about themselves first and about us second:

the food industry.

- Joon, Jeremy, and Conrad Yun, Interdependent Capitalism

We're not just talking about bags of potato chips and cans of soda. Baby formula, "healthy" energy bars, and hundreds of other products are engineered to appeal to our ancient cravings for sugar, fat, and salt. Even the fresh produce you see on grocery shelves is the outcome of what our friends at the Yun Family Foundation have called "race-to-the-bottom-line" capitalist competition, with even fruit and vegetable varieties bred for appearance, transportability, and, taste-but not, necessarily, nutritional content.

It's simple: Creating and selling food offerings that are truly nourishing has become a revolutionary act.

### THE DISCREDITED USDA FOOD PYRAMID

"In 1954, the president of the Sugar Research Foundation in the U.S. gave a speech describing a great business opportunity. If Americans could be persuaded to eat a lower-fat diet — for the sake of their health — they would need to replace that fat with something else. America's per capita sugar consumption could go up by a third."

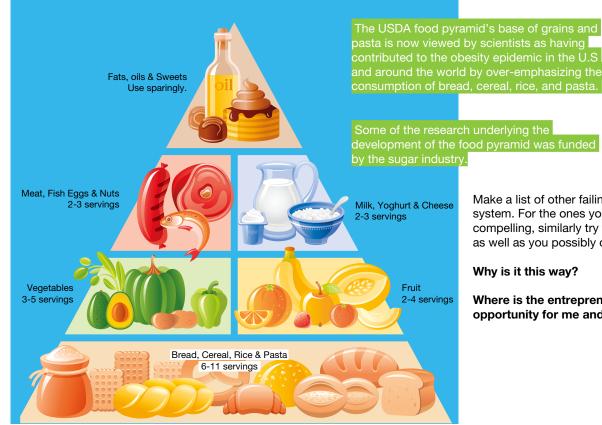
National Public Radio, "50 Years Ago, Sugar Industry Quietly Paid Scientists To Point Blame September 13, 2016

The story doesn't end there. Standard processes of market competition don't standstill. They continually select "winners" who then work hard to preserve their edge against competitors. One way they have done this over time is through industry associations that lobby for regulations to help their industry survive. Another way is by funding biased research that is in fact a mechanism for shaping public tastes. For example, the U.S. sugar industry long ago was heavily involved in supporting research that was aimed at emphasizing the dangers of fat in the diet. One of the outcomes of that work was the U.S. Department of Agriculture "food pyramid" that was taught to children for multiple generations. (See figure)

To disrupt the food system, you don't just need to compete successfully against other companies. You need to battle these market dynamicsunderstanding how corporations have hijacked for profit the very same tastes that our evolutionary experience identified long ago as essential for survival.

Of course, as noted above, we need to transform the food system in other ways as well.

Why is it that food often travels 3000 miles to reach your supermarket? Seasonality obviously provides an answer in many cases. Grapes from the southern hemisphere may be the only option for consumers in the northern hemisphere when out of season (and vice versa). But in other cases the reason is the absence of entrepreneurial initiative to create high-quality, locally sourced options. Wherever a local dependency on food imports exists, you will find that there is a potential entrepreneurial opportunity.



Make a list of other failings in the food system. For the ones you find most compelling, similarly try to understand as well as you possibly can:

Why is it this way?

Where is the entrepreneurial opportunity for me and my team?

### IS BUYING LOCAL ALWAYS MORE CLIMATE FRIENDLY THAN BUYING GLOBAL?

If an agricultural product is produced in exactly the same way in two places, then, sure, producing and buying that product locally is better for the environment! But that is rarely the case.

More often, considerable differences exist among places in the fundamentals of agricultural production. The carbon cost of transportation for most traded foods is minimal when compared to other carbon costs of agricultural production—including those of manufacturing fertilizers, irrigating fields, and running farming equipment.

Therefore, the most effective way to reduce carbon footprint is not necessarily by buying local, but rather by eliminating or reducing the consumption of high-emissions foods—among which animal products are very high on the list.<sup>3</sup>





# THE HULT PRIZE (INVERTED) PYRAMID OF FOOD IMPACT

"The competition we're focused on is not any other plant-based meat producer, but the animal-based meat production system. That's a very high bar. That's what keeps us innovating.

Between Impossible Foods and Beyond Meat, we share less than 1% of the U.S. market for ground beef. The other 99% is still out there and it would be crazy for us to focus on Beyond Meat as the competition. We're focused on the other 99%."

-Pat Brown, CEO, Impossible Foods

Wellbeing

**Accessibility** 

**Nutrition** 

Sustainability

**Wellbeing** of people everywhere

Healthy and widely accessible eating options

**Nutritious** food from diverse sources

**Sustainably** managed land, water and air on which we all depend

"We simply are not giving our kids in [U.S.] schools the same level of quality and safety as you get when you go to many fast-food restaurants."

 —J. Glenn Morris, professor of medicine and director of the Emerging Pathogens Institute at the University of Florida.<sup>4</sup>

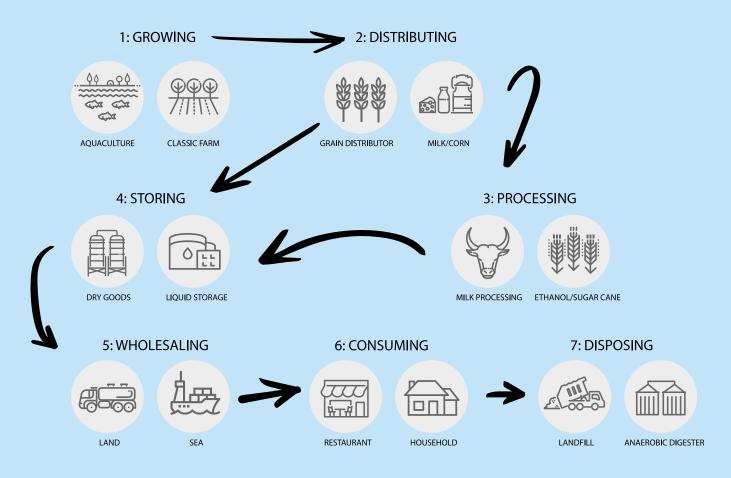
On the other side of the world, Japanese lunches are known for a different quality, "Shokuiku," meaning food and nutrition education.

#### Reimagine:



- What we eat
- How we eat
- Why we eat
- How food is grown
- How food is sold
- What farmers do
- Natural vs organic
  - Lab vs. FieldPlant vs. Cow
- The stories that we tell

## III. ENVISION THE FUTURE JOURNEY OF FOOD FOR GOOD





Along the food supply chain hundreds, if not thousands, of people are involved in producing and transporting the final food product. Few think about the number of food regulatory agencies that license, monitor, and inspect the process, nor the plethora of scientists, truck drivers, forklift operators, computer specialists and government scientists that help support the system.

Whether it is an apple you buy at the convenience store or the hamburger you purchase at McDonalds, growing and distributing our food is often a long and complicated journey.

#### Growing for Good

Globally, 37% of land is utilized for agricultural purposes.6 Of course, food isn't only grown on land, and producing the things we eat involves fishing and aquaculture as well. Since 1990, there's been a +527% rise in global aquaculture production.7

#### Inputs:

- · Fertilizers and chemicals
- · Seeds and planting materials
- · Machinery and equipment.

Potash is primarily used as a fertilizer (approximately 95%) to support plant growth, increase crop yield and disease resistance, and enhance water preservation. In 2018 Canada, the world's largest producer of potash, produced 22.7 million tonnes of the fertilizer.8

#### Distributing for Good

Selling to distributors has a number of benefits for the farmers growing our food:

- Selling larger volumes of product more efficiently than selling directly to consumers
- Avoiding time and resources spent on marketing directly to consumers is avoided
- A greater variety of markets can be accessed, therefore increasing sales volume.

#### Processing for Good

Seventy percent of the average diet in the U.S. is comprised of foods that have been processed. Keeping food processing lines moving efficiently and production facilities up and running, is critical to avoid food being wasted and spoiling.9 Not all food that is processed is destined for eating, however. There are over 200 ethanol plants in the United States converting corn to an alternative fuel source.10

#### Storing for Good

Warehouses are the vital link between the farmer's fields, processing plants, and the end consumer. The most common types of warehouses include dry storage, refrigerated, and frozen (or cold storage). The focus of such facilities is to protect the stored food by maintaining proper standards of sanitation and food preservation.

#### Wholesaling for Good

Wholesalers deliver food to supermarkets, restaurants, local butchers and more. Detailed logs, including temperature during transit are kept in order to maintain food safety. and ends on the consumer's plate at home or in a restaurant.

#### Consuming for Good

Consumer habits and tastes have a significant effect on what is produced and sold in the food supply chain. Providing accurate and relevant information to consumers about food options—including at the point of sale can contribute significantly to systems change.

#### Disposing for Good

Wasted food often ends up in a landfill, but it doesn't just sit there: It creates methane, a greenhouse gas 25 times more potent than carbon dioxide.11 As an alternative, some people create their own compost bins to turn that food waste into fertilizer for their gardens. At a larger scale, some cities and urban eco-districts are turning to chemistry, and anaerobic digesters, to convert that food waste into fuel for producing electricity.12



#### [A] Access:

Increasing access to nutritious, affordable food.

#### [MW] Meaningful Work:

Creating meaningful work by inspiring, educating, and supporting employees, often from at-risk groups.

### [ES] Environmental Stewardship:

Healing the relationship between food systems and the planet.

#### [V] Variety:

Expanding the variety in the food system and increasing culinary options.

#### [LS] Local Sourcing:

Strengthening food self-sufficiency of places and people.

### [SCI] Supply Chain Innovation:

Better ways to transport, track, trade, and dispose of food.

#### [RS] Radical Substitution:

Developing, marketing, and selling alternative foods or agricultural inputs.



# IV. COMMIT TO YOUR PRIORITY DIMENSIONS OF IMPACT

"I started off my career in finance.

After years of working on infrastructure projects and trading government bonds, I went into public service—joining the Nigerian government's Federal Ministry of Agriculture as a senior investment advisor to the Minister. I learned how my country, Nigeria, was spending over \$12 billion dollars importing staple crops like rice and wheat, making us highly food dependent as a country. There was an opportunity to grow these crops right here on our own lands, by our own farmers. And so I dug deeper.

"I could see that our government and development partners were working to get our farmers to produce more. But this wasn't really done with consideration for how they would sell what they produced and what they harvested. So farmers ended up increasing their yields and harvests but not having anyone to sell to, causing food waste and a vicious cycle of poverty.

I learned how my country was spending over \$12 billion dollars importing staple crops making us highly food dependent as



"I learned that the key was in not just improving yields and expanding production but finding ways to add value to this agriculture—to make sure it became a food product demanded by consumers right here in Nigeria. This was the only way we could ensure that farmers would have consistent, sustainable uptake for what they harvested."

—Ada Osakwe, Founder & Chief Executive of Agrolay Ventures and Nuli<sup>13</sup>

#### Why do farmers tend to overproduce?

A surplus is often the goal for farmers. Farmers borrow a lot of money up front and want to be sure that they sell enough to cover their fixed costs of production. Uncertainty remains, however, as agricultural markets are volatile. Given that farmers incur a large share of their costs before a season starts, they can't just reduce their crop when the market is bad, and they certainly can't move their farm to a better geography! Therefore, when prices drop because of overproduction, farmers aren't able to cut back on their production. Instead, they produce more to cover their costs ("farming their way out of debt"). If

market prices go up, farmers often produce more to take advantage of higher prices and to make up for the years they may have lost money. For these reasons, farming often lends itself to overproduction.<sup>14</sup>

"If market prices go up, farmers often produce more to take advantage of higher prices and to make up for the years they may have lost money."

## V. START ON THE PATH TO BECOMING A FOOD FOR GOOD PIONEER

"What's in the store today is the best that we can grow with a 3,000-mile supply chain. But the best that we can grow with a 50-mile supply chain is stunningly better. That's why we're working to ensure that all of our food gets to the store within hours, and not days or weeks."

-Matt Barnard,

CEO and cofounder, Plenty

#### Nuli [A] [MW] [LS] [ES]

Nuli is Nigeria's fastest-growing farmto-table beverage brand and restaurant chain that utilizes only locally grown agriculture produce.

#### Tunart [A] [MW] [LS]

Tunart empowers disconnected youth to become sustainable tuna fishermen across Latin America. Using a decentralized, eco-friendly approach, Tunart aims to knit together the fragmented regional tuna supply chain to create a viable new industry.



#### Aquamou [A] [LS] [ES] [MW] [SCI]

Aquamou is building a system of solar powered tilapia farming in Nigeria to reduce youth unemployment and improve access to fresh seafood.



#### Plenty [ES] [LS]

Plenty's unique vertical farming technique means the company can produce up to 350 times more produce in the same amount of space as conventional farming.<sup>15</sup>



#### SÜPRMARKT [A] [LS]

SÜPERMARKT is a pop-up organic grocery store that offers weekly produce subscription packages to residents in Los Angeles living in so-called food deserts or areas where access to fresh and nutritious food is limited.

#### Mindful Chef [A] [ES] [SCI]

Mindful Chef is working to reduce food waste and support local agriculture through a novel implementation of the subscription-based food delivery business model. Ingredients are locally sourced. Each of its delivered boxes is kept cool through the use of recycled denim. For every meal purchased one is donated to a local charity.

#### Hot Bread Kitchen <sup>16</sup> [MW]

Hot Bread Kitchen is a bakery, business incubator, and training program designed to support women, immigrants, and people of color in the food industry. To date, Hot Bread Kitchen has helped incubate over 250 food businesses and helped 280 women find jobs in the food industry. In addition to teaching people the way of making a tasty meal, they're "making the food industry a more effective and reliable platform for economic mobility.<sup>17</sup>"

Serving energy bars and super-teas, Aduna makes nutritious food and drinks powered by African superfoods while creating sustainable livelihoods for rural households. Through a combination of educational outreach on the health benefits of their products and sourcing ingredients from small-scale producers, Aduna aims to help create demand for unique superfood products while creating jobs for agriculturalists in Africa.<sup>18</sup>

#### Munch Bowls [SCI]

In 2011 Munch Bowls founder Georgina de Kock had an idea, "If you can put food on a biscuit, why not make it a bowl!" Nearly 10 years later they are exporting their unique edible food container as a food package replacement to five countries. Looking ahead, they're working to make edible food packaging for relief and humanitarian missions, leaving nothing to waste.



#### Winnow [ES] [SCI]

Winnow's products help make kitchens around the world more efficient. As an example, their Winnow Monitor records exactly how food is being wasted through smart meter technology attached to food waste bins. Artificial intelligence and image sensors provide further insights into where waste streams originate in the food preparation process.

#### Pivot Bio [RS] [SCI] [ES]

Manipulating biology and employing machine learning and computational modeling, Pivot Bio enhances microbes'

ability to convert nitrogen from the air and serve as a natural fertilizer. Pivot Bio's biological nitrogen fixation solution was available for 2019 planting in select US states. Delivered as an infurrow application, their first-generation product adheres to the plants' roots and feeds the crop daily without leaching, volatilization or denitrification.



#### C16 Biosciences [RS] [ES] [SCI]

C16 Biosciences has developed a synthetic palm oil through a microbial fermentation process that converts carbon streams into lipids that match or are similar to palm oil. The company is looking to "brew" palm oil—much like beer to develop a sustainable alternative to palm oil that does require deforesting tropical forests. The product is not expected to be distributed for another 18 months.

#### Agrobot [SCI] [ES]

Utilizing swarms of robots with intelligent image identification, Agrobot makes it possible for farmers to automate away many of their time-consuming tasks, including removing pests and sorting vegetables. Their e-series robots use up to 24 robotics manipulators together to pick strawberries without damaging them.

#### Gamaya [SCI] [ES]

Gamaya's drone-based system focuses on increasing the productivity and scalability of small-scale farming with advanced solutions for mapping and diagnostics of farmland. Their system helps farmers use fertilizers, chemicals, water, and fuel more efficiently while focusing on both quality and quantity.

#### Port of Mokha [LS] [ES] [MW]

For 150 years starting in the 16th century, Yemen was the coffee supplier to the entire world. But by the time Mokhtar Alkhanshali first travelled to his family's native country as a child over twenty years ago, Yemen had all-butvanished from the global coffee scene. As an adult, Mokhtar dedicated himself to changing that. Through the success of Port of Mokha, he has led the renewal of a long-dormant industry and improved livelihoods in his ancestral land, returning Yemen's coffee to the world stage.

#### New Wave Foods 19 [RS] [A]

Plant-based foods require far fewer inputs than the animal originals they replace. The same is the case for seafood. New Wave Foods is entering this growing space with their seaweed-based shrimp alternative. The benefits? Zero cholesterol, no shellfish allergens, and lower calories.



#### Aspire Food Group <sup>20</sup> [RS] [A] [ES] [V] [MW]

Aspire Food Group is the global industry leader in the edible insect movement. In the United States, Aspire raises food-grade crickets on a commercial scale, and are actively working to normalize the consumption of insects in the western world as an abundant, low-cost protein substitute. In Ghana Aspire commercially farms palm weevil larvae and run a program which empowers peri-rural farmers to raise palm weevils locally. Aspire was the winner of the 2013 Hult Prize.

## "Falafel Inc. has provided meals for nearly 500,000 refugees to date"

Food for Good Pathways to Impact:

### THE EXAMPLE OF FALAFEL INC.

In 2017, Hult Prize founder Ahmad Ashkar set out to launch his own response to our global challenge for that year: "Reawakening Human Potential--The Refugee Opportunity." As a Palestinian American, he found inspiration in his culinary roots: falafel.

The food-for-good venture he launched to convert the refugee crisis into an opportunity was Falafel Inc.: A quick service restaurant offering affordable, healthy, vegetarian eats with a mission to feed and empower refugees.

Launched in Washington, DC and now expanding globally, Falafel Inc. has provided meals for nearly 500,000 refugees to date, and illustrates some of the pathways to impact you can have in mind as you take on this year's challenge.



Mission-driven hiring and talent development







#### Big Corporations Can Be Leaders Too: The Example of McDonald's Corporation

Innovating in the food supply chain is mostly going to involve challenging established incumbents and status quo business models. But look out for opportunities to partner with large corporations or to open up new markets for them. McDonald's Corporation has long been the biggest of the big when it comes to food service. But it has also been an innovator--often finding its best ideas among its thousands of franchisees globally. McDonald's first added salads to its menu in 1986,

becoming an early mover in the shift toward healthier quick service options. More recently, the company committed to ensuring that 100% of its customer packaging will come from renewable, recycled or certified sources by 2025. Think about how you can help them to reach that goal and take further steps toward food for good!

"Relatively little new land has been brought into agriculture over the last 50 years (though even this relatively modest conversion has often had major biodiversity impacts or affected the livelihoods of poor and indigenous groups), and the majority of the gains in production over this period have been due to improved yields.

There is little scope for agricultural land expansion in Asia and most of Europe, but there may be considerable room for expansion of agricultural land use in South America and some room in sub-Saharan Africa. However, there would be significant environmental and cultural costs to future land conversion, especially if it involves the further destruction of rainforests."

The Future of the Global Food stem" Godfray et al.

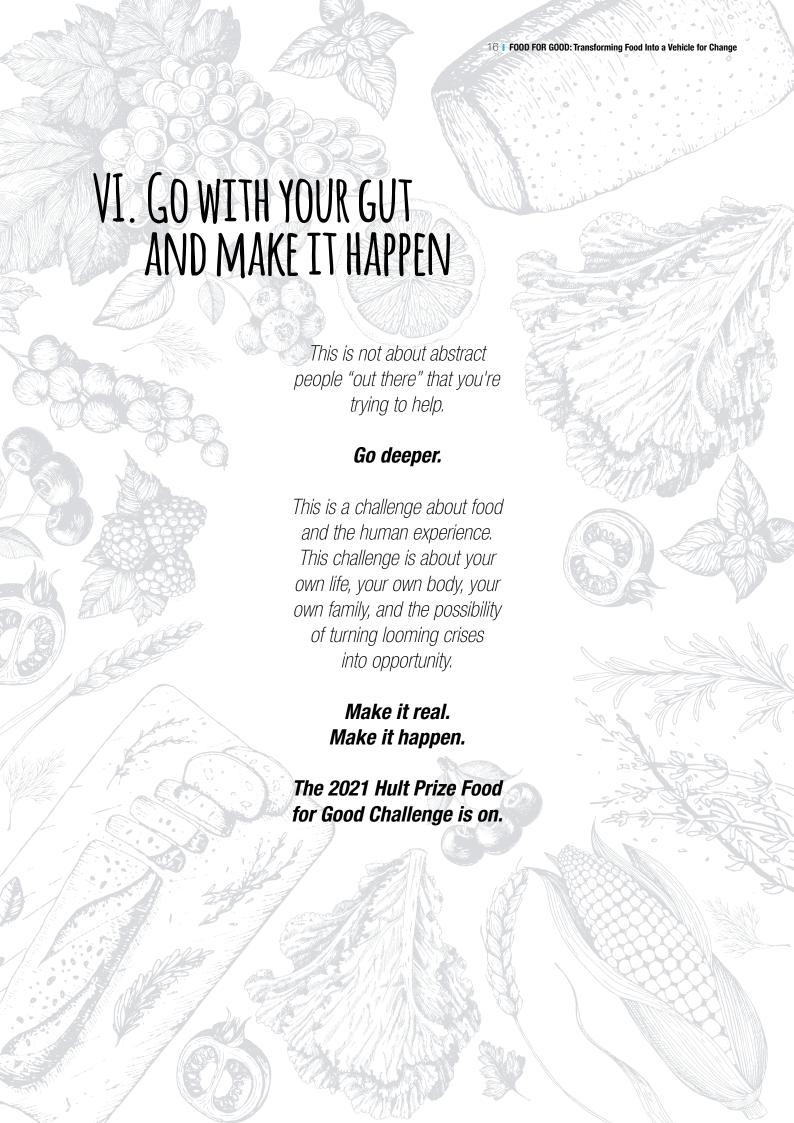




"The nutrition space for social entrepreneurship is a vacuum. For wealthy regions, the challenge may be accessing the RIGHT type of nutrition, whereas for developing regions it is the access to BASIC nutrition."

-Zubaida Bai, Managing Director CARE Social Ventures





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#### **DISCLAIMER**

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#### Ahmad Ashkar

Ahmad Ashkar is the Chief Executive Officer and Founder of the Hult Prize Foundation—named in a TIME Magazine cover story featuring the top five ideas changing the world and called by Newsweek, Bloomberg and others, "The Nobel Prize for Students." Fast Company named the Hult Prize, "One of the World's Most Innovative" in their annual listing of the worlds most creative and game changing companies.

A leader in development, academia and industry, Ahmad was named by Gulf Business as, "Top 100 Most Powerful Arabs" for his work in youth empowerment. He was also the 2018 GQ Entrepreneur of the Year, the 2017 CEO of the Year by Arabian Business and the 2016 Esquire Magazine Entrepreneur of the Year. Ahmad has spent more than a decade teaching entrepreneurship, building world leading innovation programs and educational content and inspiring millions of youth everywhere to change the world for the better through business. His startups, learning programs, projects and companies have been recognized as some of the most impactful and innovative in the world.

Ahmad is also the founding chairman of Falafel Inc—a venture backed social enterprise which feeds and empowers refugees around the world. The brand is the #1 rated quick service food social enterprise in America and has been recognized by Yelp! and USA Today as best in class.

#### Ahmad Ashkar

Chief Executive Officer | The Hult Prize Foundation.

Chairman of the Board. Falafel Inc.

Esquire Magazine Entrepreneur of the Year.

Gulf Business, "Top 100 Most Powerful Arabs".

**GQ Magazine** Entrepreneur of the year.

Executive Board Member, American Near East Refugee Aid (ANERA).

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Award Winning Author, "The Pursuit of Impact".



#### Philip Auerswald

Philip Auerswald is the Chief Academic Officer of the Hult Prize Foundation. He is also the Cofounder of Zilla Global LLC, the Cofounder of Innovations journal, the founding board chair and president of the National Center for Entrepreneurship and Innovation, and an Associate Professor of Public Policy at George Mason University.

Auerswald has published over fifty books, peer-reviewed articles, book chapters and professional reports on entrepreneurship, innovation, and public policy. He is among the leading authorities globally on policies to enable entrepreneurial ecosystems.

He is most recently the author of The Code Economy: A Forty-Thousand-Year History (Oxford University Press, 2017) and The Coming Prosperity: How Entrepreneurs Are Transforming the Global Economy (Oxford University Press, 2012). He has blogged and written op-eds for The New York Times, Harvard Business Review, Forbes, The International Herald Tribune, and The San Francisco Chronicle, among other outlets

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The Hult Prize transforms how young people envision their own possibilities as **leaders of change** in the world around them.

With a **US\$1,000,000 global startup prize** as its anchor activity, the Hult Prize has brought impact-focused programs and events to over a million students globally, creating a pathway for youth everywhere to take action to build a better world.



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