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Delicious Future is a public benefit corporation with a mission to accelerate the shift to regenerative eating. Find out more at deliciousfuture.com

OF REGENERATIVE EATING

from theory to practice toward a positive,
self-healing, and regenerative future of food

Abstract:

The growing awareness of and concern for climate change is reflected in international agreements and governmental policies, and has been incorporated into corporate strategic plans - even if it is still far from sufficient in scope and speed from many scientists' accounts. Across the food system, the challenge is particularly acute as globally it is responsible for over 30% of greenhouse gas emissions¹. However, conversely, the food system might provide the keys to reversing the current dynamics, with conscious practices, for instance Regenerative Agriculture. But agriculture is only one part of the food system, and individuals, if considered at all currently, are seen as ultimate, passive recipients, instead of integral participants of the system.

While system transformation might feel entirely out of reach for a single individual, what agency do we have, if any? How might our daily food habits nurture positive change, for us individually and for our ecosystem?

At the individual level, regenerative practices can provide a guiding philosophy for how we interact with the food system, and more broadly how we view ourselves as part of a broader ecosystem. We have reached a moment where "sustainability" is insufficient to restore and replenish. As we strive for Regeneration, we prioritize both planetary and human health, while strengthening community resilience and preserving cultural integrity. Achieving regeneration in our food systems demands combined efforts from both individuals and collectives, spanning farmers, transporters, processors, retailers, chefs, and every consumer, with a shared goal of promoting both environmental sustainability and social justice using resources such as the [Mandela Partners Co-operative](#), the [Common Grounds](#) guide, and the [Soul Fire Farms](#) food sovereignty action steps. In turn, in this interconnected and living system, we posit that by regenerating our food systems, we will also positively contribute to improving public health, supporting the resilience of communities, and repairing natural ecosystems.

We all have a role to play, and each choice we make as individual eaters contributes to the conglomeration of outcomes in our food system. This implies that each of us individually can participate in and even accelerate this shift, at the very least by evolving our eating habits. So we ask: **what does regenerative eating mean for you today?**

To explore this question, we conducted a survey² of 115 participants in tandem with this perspective piece. As shown in the survey, many individuals care about climate impacts and have intentions towards action, but making decisions around food is deeply challenging. Moving to regenerative eating is a total paradigm shift and for even the most conscious of eaters, there are many barriers to change, from behavior to decision-making, limited information and

¹ <https://news.un.org/en/story/2021/03/1086822>

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https://www.canva.com/design/DAF2VitW1xg/wtUAgy9ONYbc89RwXtyV1g/view?utm_content=DAF2VitW1xg&utm_campaign=designshare&utm_medium=link&utm_source=editor

transparency in our supply chains, real economic realities impacting access and availability, and other socio-cultural weights.

In our survey, we asked participants to rate the importance of environmental impact when making food choices on a Likert scale of 1-5, where 1 is not at all important and 5 is very important. Over half (52%) rated it as a 3 or lower. Moving forward, we need to mobilize resources and accessible actions for individual eaters. There are many entry points to explore the food system, each reflecting a particular perspective, intention, and reality that are all interconnected and equally important; in this perspective piece we weave narrative threads between some representative examples.

A regenerative food system consists of collective and individual food practices that enhance the holistic wellbeing of our planet, surrounding ecosystems, and communities. Eating regeneratively implies reconstruction, stewardship of natural ecosystems, and social conscience, and ultimately serves as more of a holistic framework resulting in a *philosophy of practice*, rather than a checklist of discrete crops, ingredients, or techniques.

We provide readers four main pillars for this framework:

- 1) Individual health benefits and preferences,
- 2) Community knowledge, resiliency, and public health,
- 3) Labor justice, social welfare, and food security,
- 4) Ecosystem management that promotes positive climate change responses, biodiversity, and soil health.

We provide examples of implementation, where ingredients were selected due to their overlapping benefits: to the natural environment, relevance to the local ecosystem (both natural and cultural), impact on human and planetary health, and contribution to delicious cuisine.

As a source of renewal and repair, the concept of Regeneration offers an alternative to the traditional market perspective of Consumer vs Producer. As the regenerative food system shifts to more resilient and reciprocal dynamics, it must also celebrate the joy of eating and the notion of food as a love language. Shifting this paradigm involves transcending the transactional view of food as a mere product for consumption and embracing a holistic understanding that acknowledges the emotional, cultural, and social dimensions of our relationship with food. We leave the reader with questions and tools with which to experiment for themselves.

This perspective is meant as an open invitation to question our individual food habits as they relate to our environment. It does not intend to be judgemental or pedantic - on the contrary, it is intended to guide the reader through thorny questions that concern us all so intimately.

Its original content for this perspective was produced by four students enrolled in the Plant Futures Initiative (PFI) course at UC Berkeley's Haas School of Business, over the Fall Semester 2023:

- Yasmin Abu-Hamad (Senior - Undergrad Ecology, Nutritional Science, Food Systems)
- Phoebe Wu (Sophomore - Undergrad Economics, Society & Environment)
- Hannah Schmid (exchange student - MBA at Haas)
- Tina von Albertini (exchange student - MBA at Haas)

The PFI partners with outside organizations to give students opportunities to work on real world challenges related to the future of food.

Delicious Future mentored the student team in investigating the nascent concept of regenerative eating, proposing a working definition and guiding principles in order to promote individual behavior change, and providing practical tools for implementation.

This perspective is the result of research and conversations over several months.

We are grateful to the team at PFI: Dr Nina Guilbeault, Samantha Derrick, Brittany Sartor, for their enthusiasm for our vision and mission, and their support with the student team.

We extend special thanks for their time and insights to the experts we interviewed: Prof Timothy Bowles, Prof Peter Newton, Ashley Rouse, Eric Sirvinskas, Anthony Corsaro, and Rebecca Chesney. We deeply appreciate the inspirational leadership and thoughtful guidance from Will Rosenzweig, Dr Cari Borja, Paola de Almeida, Tina Owens, and Michelle Hayward.

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Introduction

This month saw an unprecedented agreement at COP28 regarding the transition away from fossil fuels, albeit with limited diplomatic success³. Another notable step forward in Dubai for the climate gatherings was the focus given to the food systems. Participants came up with a strong plan of action⁴, where the respective roles of governments and the industry are well described - and that encourages “civil society to be mobilized.”⁵ What does this mean practically?

While considering system transformation might feel entirely out of reach for a single individual, what can societal transformation look like if each of us took action, even a little?

Beyond grand declarations at the diplomatic levels, this is fundamentally a behavioral question. How do we individually shift our habits so that as a society we encourage innovation and investment toward food production techniques that are beneficial to our health, that of our communities and our planet?

In other words, how might we make our daily need for food an instrument of positive change, for us individually and for our ecosystem?

As a concerned mother of teenagers, social scientist and designer in health tech (and lover of good food) Raphaëlle has been toying with this question for the best of the last two years. Similarly, as a researcher working on plant-based meat formulations and a proponent of community care, Bianca has wondered how to bridge the tensions between developing new food technology, creating truly sustainable food options, and providing tasty, nutritious and accessible foods that are culturally-relevant.

Unmitigated climate change (unpredictable and extreme weather, aridification, increasingly inhospitable environments, etc) is increasing pressure and public support for action is on the rise. Currently, much of the discussion focuses on how dire the situation is becoming. While our climate reality is indeed very heavy, this approach often leaves people overwhelmed and defeated, rather than empowered and energized.

Simultaneously, we are becoming more and more aware of the climate impacts of our food system, which in many ways fails to feed people in a healthy, accessible, affordable manner. Proponents of the current food system will rightfully point out that it has been feeding a fast-growing population. But quantity here is far from enough and the primary focus on scale has fostered consequences to the detriment of the system as a whole: industrial agriculture

³ <https://www.brookings.edu/articles/the-successes-and-failures-of-cop28/>

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https://www.nytimes.com/2023/12/12/climate/dubai-cop28-climate-food-agriculture.html?mc_cid=bdefd851ff&mc_eid=8c925f55aa

⁵ <https://news.un.org/en/story/2023/12/1144617>

practices like monocropping, and the prevalence of ultra-processed food products have led to the collapse of biodiversity and unprecedented rates of preventable diet-related diseases⁶.

Beyond sustainability, the concept of regeneration is gaining momentum as a promising approach to move us away from prior extractive systems and towards repairing ecosystems. The World Economic Forum states "this idea involves a strategy that promotes the restoration and regeneration of natural resources and social systems. It goes beyond sustainability and seeks to create positive impacts on the environment, society and economy. This approach requires a fundamental shift in business practices and is integral for any organization with ambition for positive impact and growth⁷."

The Nature Conservancy expands the definition further: "A regenerative food system takes us beyond mere sustainability toward positive growth that benefits our planet and the billions of farmers, fishers, ranchers and others who work to provide our food—without sacrificing the health and dignity of rural people and communities of color⁸."

Regenerative Agriculture offers a new paradigm of ecologically restorative and more responsible food systems. Regenerative practices can revitalize our soils and reverse the doomful path we have created. The Rodale Institute estimates that "we could sequester more than 100% of current annual CO2 emissions with a switch to widely available and inexpensive organic management practices, which we term 'regenerative organic agriculture.'" Clearly, shifting our agricultural practices can benefit us as a species, while also improving planetary health.

So, what is slowing down this transition?

The term "regenerative" is typically used in the context of "Regenerative Agriculture" - which we believe is too limited a scope when addressing the food system, as it does not account for the complexity and interdependencies of all its moving parts. That artificial dichotomy in the language deepens the differences between the actors, emphasizing their opposing positions, and especially minimizing the needs of the ultimate recipient: the "eater". At this point, the individual is notoriously absent from the regenerative shift happening in the food system.

Indeed, regenerative practices can provide a guiding philosophy for each person on how we interact with the food system, and more broadly how we view ourselves as part of our ecosystem. Based on the seven guiding principles put forward by the [Global Alliance for the Future of Food](#)⁹, our collective actions can challenge the status quo and drive the movement toward our desired food system.

⁶ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9921002/>

⁷ <https://www.weforum.org/agenda/2023/03/regenerative-business-sustainability/>

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<https://www.nature.org/en-us/what-we-do/our-priorities/provide-food-and-water-sustainably/food-and-water-stories/regenerative-food-systems/>

⁹ https://futureoffood.org/wp-content/uploads/2021/06/GA_PrinciplesDoc.pdf

The seven principles identified by Richardson are:

- renewability,
- resilience,
- health,
- equity,
- diversity,
- inclusion,
- and interconnectedness

As this shift occurs, it provides a great opportunity for individuals to be deeply involved in lasting, positive change. However, even when intentions are aligned, meaningful behavior change is extremely difficult to initiate, achieve, and maintain. Even the most motivated individuals can become frustrated when progress feels slow and tangible steps feel indiscernible. Furthermore, the challenges we face with regards to food and climate can feel complex, abstract, and contradictory, making personal change even more difficult.

The problem we are facing, thus, is an extremely nuanced one. We have limited time to solve these issues and an increasing list of barriers. We put together this perspective to point to the connections, opportunities, and changes that can give us hope and help us build our solutions collaboratively. We believe that understanding the potential of regeneration for individual consumers and eaters is powerful and exciting.

We posit that transforming our food systems to be regenerative requires combined collective and individual efforts toward environmental and social justice – from farmers, transporters, processors, retailers, chefs, to every “eater.” In turn, in this interconnected and living system, we propose that by regenerating our food systems, we will also positively contribute to improving our health and wellbeing, supporting the resilience of communities, and repairing our ecosystems.

Before we dive in, let us insist that this perspective is not meant as a moralistic prescription. Instead, the intent is to provide a path forward to those who want to align their food choices with their environmental concerns, as a form of personal agency in the face of a global threat that can be paralyzing for individuals. We all have a role to play, and each choice we make as individual eaters contributes to the dynamics of our food system. This implies that each of us can participate in - and even accelerate - this shift by evolving our eating habits. The question therefore becomes: “What does regenerative eating mean for me?”

To address this question, we explore the following topics:

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Methods and Approach

The initial scope of work was the creation of a database of regenerative ingredients that could be leveraged in consumer-facing tools and education to provide both the nutritional value and the ecosystem properties of twenty food ingredients. We conducted an extensive literature review on relevant developments in agriculture, sustainable food, climate impact of food, and nutrition.

As a first exercise to establish what regenerative eating might include, each student conducted a quick research in their respective fields of expertise - from agroecology to economics. Then, as a group, we unpacked their findings, highlighting similarities and differences, pointing to the lack of a clear and shared understanding of what regenerative eating entails.

Given the variations in what they found, we decided to shift our scope of work to a qualitative exploration to come up with a more specific and nuanced definition, based on the current perspectives of subject matter experts, and regular “eaters”.

We interviewed professionals across many sectors of the food system. We asked them to pinpoint areas where we can all get involved, where disconnects or dilemmas lie. Co-authors Phoebe Wu and Yasmin Abu-Hamad used their personal experiences within the Plant Futures Initiative course, and beyond, to develop their point of view.

In parallel, Hannah Schmid and Tina von Albertini created a survey to learn about young adults' attitude toward regenerative eating¹⁰. Specifically, the survey explored their understanding of “regenerative,” whether they connect their concern for the climate crisis with how they make their daily food decisions, what their current understanding of “regenerative” is, and which levers for action we might uncover from their preferences and current barriers. In addition, the student team relied on the expertise and previous research of the Delicious Future team.

In the interviews with experts, we asked the following questions:

- What is your relationship with the food system?
- How would you describe regenerative eating?
- What is your vision for the food system?
- What values would you like to highlight in your ideal food system?
- What aspect of the food system do you feel is inadequately represented?
- What changes would you make to your system?

We conducted interviews with six professionals involved in the biological, social, and economic sectors of the food system:

Timothy Bowles, associate professor of agroecology at the University of California, Berkeley has a research background specializing in agroecology, soil ecology and biogeochemistry, and plant-soil-microbe interactions.

Peter Newton, associate professor of environmental studies at the University of Colorado, Boulder has conducted interdisciplinary research on agriculture, food, forests, environment and sustainability.

Ashley Rouse, the executive director of the Edible Schoolyard Project offered insights into public education about the food system through organic school gardens, kitchens, and cafeterias.

Eric Sirvinskas, the community engagement manager at the Plant Future Initiative provided a perspective on helping young people engage with transformative food system work.

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https://www.canva.com/design/DAF2VitW1xg/wtUAgy9ONYbc89RwXtyV1g/view?utm_content=DAF2VitW1xg&utm_campaign=designshare&utm_medium=link&utm_source=editor

Anthony Corsaro, the creator and host of the ReGen Brands podcast and founder of Regeneration Nation, brought in the investor's perspective on regenerative food businesses and brands.

Rebecca Chesney, a food anthropologist and Director of Sustainability Innovation at Guckenheimer, brought insights into the regenerative food supply chain.

By bringing these insights into this perspective, we hope to give readers the context and tools to make their own interpretation, both philosophically and practically, of what eating regeneratively might mean for themselves.

We leveraged existing guides from resources like the [Rodale Institute](#) and [Omni Action](#), and offer our own questions and decision frameworks to help individuals feel empowered instead of overwhelmed by this complex, and emergent topic.

A working definition of “regenerative eating” in the climate-food nexus

In the broadest sense, sustainability simply refers to the ability to maintain or support a process continuously over time. Unlike regeneration, sustainability does not necessarily aim to restore and replenish: at its highest, it reaches for net neutrality.

In the context of a food system, sustainability can be equated to harm reduction and is mostly associated with the organic movement.

As food is grown and processed, transported, distributed, prepared, consumed, and its remaining waste disposed of, it emits greenhouse gasses that trap the sun's heat and contribute to climate change. Fertilizers pollute downstream and alter marine ecosystems. In 2014, a UN official reported that we had only 60 harvests left given the rates of soil depletion from intensive agriculture¹¹. While this number has been challenged, there is an indisputable relationship between currently prevalent ways of producing our food and their environmental impact.

Our food system is a dynamic and interconnected web of ecological, geographical, historical, economic, social, cultural, psychological factors, from the global to the individual level.

For instance, soil health impacts production capacity, nutrient density, carbon-capture capabilities, erosion prevention, biodiversity below and above ground.

¹¹ Aresenault, Chris. Only 60 Years of Farming Left If Soil Degradation Continues. Scientific American (2014). <https://www.scientificamerican.com/article/only-60-years-of-farming-left-if-soil-degradation-continues/>

In parallel, personal decision-making around food is complex and depends on a myriad of factors from preferences and familiarity to access and evolving needs. Linking individual daily actions to the whole food system is near impossible, and certainly out of the grasp of most of us.

In turn, what we eat and how that food is produced not only affects our health but also the environment. Researchers estimate global food-system emissions to be 15.8 GtCO₂e, equating to 30% of the world's greenhouse gas emissions¹². As the world population has grown, so has our reliance on industrialized agricultural processes, thereby increasing the toll on our local and global ecosystems' health. Similarly, as per capita income increases, the first addition to shopping baskets is meat, as particularly remarkable in China¹³ over the last 30 years.

Reducing waste is the largest immediate opportunity¹⁴ as a third of production is not only lost or wasted but also contributes to half¹⁵ of the greenhouse gas emissions for the whole food system as it decomposes. Each year, 80 million tons of food is wasted in the United States, equivalent to 149 billion meals¹⁶. Given the levels of hunger, malnutrition, it is a tremendous missed opportunity and also points to the inefficiencies of the system.

However, it is not our focus here, and tremendous organizations are working to address this challenge such as Full Harvest¹⁷, a business-to-business marketplace offering produce otherwise left behind by distributors.

On the production side, "Regenerative Agriculture" describes farming and grazing practices that reverse climate change by rebuilding organic matter and restoring degraded soil biodiversity. The term was first introduced by Dr. George Washington Carver, with emphasis on the soil, air, water, plants, animals and humans as interconnected pieces of one whole system and aims to regenerate, or improve, that whole system. It was later popularized by Robert Rodale of the Rodale Institute in the 1980s, marking the visible beginning of the movement.

Regenerative Agriculture encompasses crop diversification, cover cropping (enriching soil through coverage), low-to-no tillage, cropland composting, use of biochar, reduced chemicals, and managed grazing etc. Depending on the farmers' particular needs, there could be the addition of perennials, wildlife developments, incorporation of agroforestry systems, and other soil-positive actions. It's important to acknowledge these practices have existed long before the term 'regenerative agriculture' was used in common language. Practices such as crop rotation have developed independently by indigenous communities across the globe such

¹² Crippa, M., Solazzo, E., Guizzardi, D. et al. Food systems are responsible for a third of global anthropogenic GHG emissions. Nat Food (2021). doi:10.1038/s43016-021-00225-9.

¹³

<https://ourworldindata.org/grapher/meat-consumption-vs-gdp-per-capita?time=1990..2020&country=~CH>
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¹⁴ <https://www.washingtonpost.com/climate-solutions/2021/02/25/climate-curious-food-waste/>

¹⁵ <https://www.nature.com/articles/s43016-023-00710-3>

¹⁶ <https://www.feedingamerica.org/our-work/reduce-food-waste>

¹⁷ <https://www.fullharvest.com/>

as the Bayyo Community of the Philippines, the Enga people of Papua New Guinea, and the Masindi, Hoima, and Kibaale districts of Uganda are examples of communities whose ecological sensitivities are promoted by their connection to the food system. Biochar, or *terra preta*, has been used by Amazonian communities for at least 500 years as a soil amendment¹⁸. Biochar is a form of charcoal: it is produced by heating wood chips, manure or other organic material at a high temperature in the absence of oxygen. The remaining solid carbon, or biochar, has remarkable soil-enriching properties and can stay in this form for up to 5,000 years - making it a very powerful, long-lasting carbon capture mechanism.

Soil health

The Natural Resources Conservation Service, around 2010, began to favor a new term, “soil health,” which is defined as the continued capacity of soil to function as a vital living ecosystem that sustains plants, animals, and humans - taking into account the services that soil provides, such as regulating water, filtering pollutants and cycling nutrients.

Permaculture

Pioneered by Australian biologist Bill Mollison, permaculture is “the conscious design and maintenance of an agriculturally productive ecosystem, which has the same diversity, stability and resilience that natural ecosystems have.” The concept seeks the “harmonious integration of landscape and people” to provide people with food, energy, shelter and other needs. That means working with nature rather than against it, and practicing thoughtful observation rather than thoughtless labor. That means recognizing there is a limit to what a system can produce and overshooting that limit will degrade it.

In permaculture, animals have their integral place, including enriching the soil with excretions, opening the soil for oxygenation without mechanical tillage, and providing quality protein foods¹⁹. This symbiosis points to the value of raising animals who additionally can provide meat for consumption, in moderation and when appropriate given the needs of the system. Let us be clear however: we do not advocate for the absence of meat from a diet. This is a personal choice. But we point out that this practice is diametrically opposed to the industrial farming of animals.

The term regenerative is confusing and not commonly understood.

As we began our inquiry, it appeared that the term “regenerative” and especially “regenerative eating” is not a widespread concept. In our survey, we asked participants to define the term “regenerative” in their own words. We distinguished participants based on their familiarity with the food system, either from education or professional experience.

¹⁸ Sands, Bryony, et al. “Moving towards an Anti-Colonial Definition for Regenerative Agriculture.” *Agriculture and Human Values*, no. 40,

¹⁹ <https://www.permaculturenews.org/2016/03/07/permaculture-animals-as-a-discipline-to-the-system/>

For those without experience, answers ranged from “honestly I don’t know” to simple terms like “renewal and growth”. Some even pointed to “greenwashing.”

Amongst those who had taken a class or worked in the food industry, the definitions provided were more specific: “Rather than minimizing harm, using practices that actively restore the planet by increasing carbon sequestration or some other environmental benefit.”

or “To restart or regrow, to give back the nutrients that were harvested (such a proper crop rotation with cover crops to refix nitrogen or specific elements to the soil) or a complete food web or full utilization of slaughtered animals (nose to tail cooking). This also applies to sustainable farming, such as using the full plant and not discarding what is considered a “weed”. There are a lot of uses for this term”.

A lack of clear terminology can perpetuate disengagement and confusion. “Language is so important yet challenging,” says Rebecca Chesney. “I feel like no one has a consensus on ‘agriculture’ either.” Ashley Rouse also highlights how “researchers, academia, and consumers all have different terms to describe similar things”.

This ambiguity contributes to misunderstanding, and misuse of the term - thereby undermining its potential for positive change.

Thankfully, given the far-reaching potential of embracing regenerative practices, the topic is catching the interest of various governmental bodies: the European Union issued their definition for policy frameworks earlier this year²⁰, and the California State Board for Food and Agriculture is currently setting up a working group tasked with defining regenerative agriculture for farmers, producers, and consumers by June 2024²¹.

Regenerative eating and the role of individuals in the system

“Regenerative Eating” goes beyond eating what is grown with regenerative agricultural practices. A regenerative food system consists of collective and individual food practices that enhance the holistic wellbeing of our planet, surrounding ecosystems, and communities. Eating regeneratively implies reconstruction, stewardship of natural ecosystems, and social fabric.

There are four main pillars to this framework:

- 1) Individual health benefits and preferences
- 2) Community knowledge, resiliency, and public health
- 3) Labor justice, social welfare, and food security, and
- 4) Ecosystem management that promotes positive climate change responses, biodiversity, and soil health.

²⁰ https://knowledge4policy.ec.europa.eu/publication/what-regenerative-agriculture_en

²¹ <https://www.cdfa.ca.gov/RegenerativeAg/>

Shifting to regenerative eating will look differently for you and for me, depending upon our level of concern, our upbringing, cultural and socioeconomic backgrounds, personal preferences, access, seasonality, etc.

It is more of a practice and a philosophy than a prescriptive diet with do's and don'ts; it's a way of eating that aligns our individual needs to those of our environment, including our natural environment and our communities. As eaters, we have the ability to progressively shift towards eating more responsibly under the constraints of our priorities and limited information. In such circumstances, it is critical to equally hold strong intentions and genuine self-compassion.

In this paper, we examine the multiple facets of regenerative eating to ultimately provide context and propose a framework for you to answer: what does regenerative eating mean for me today?

Decision making and shifting daily food habits

The illusion of eating as a mundane act

The monotony we experience from the repeated act of eating might make it seem mundane. However, of the behaviors we engage with daily, it is certainly the one with the most complex and with the farthest reaching impact.

Everything we eat becomes the next version of us: about 330 billion cells are replaced daily, equivalent to about 1 percent of all our cells. In 80 to 100 days, 30 trillion will have replenished—the equivalent of a new you²².

The prevalence of fast food chains, and more commonly the “Western” diet and the availability of ultra-processed foods, is directly linked to major public health challenges in the US and worldwide. The addictive properties of those high calorie / low nutrition foods are particularly disastrous in their high-sugar contents. The impact of sugar-rich diets has been undeniably demonstrated as linking to higher rates of obesity, in turn fostering cardio-vascular diseases and diabetes. Less commonly understood are the effects of fast acting sugars on our cognitive functions²³.

Those individual, and perhaps seemingly insignificant eating habits tend to ripple forward broadly: as social animals, we are highly influenced by the behaviors of our social circles, even

²² <https://www.scientificamerican.com/article/our-bodies-replace-billions-of-cells-every-day/>

²³ <https://hms.harvard.edu/news-events/publications-archive/brain/sugar-brain>

as it relates to weight and obesity²⁴. Similarly, a recent study illuminated the long-term effects of sugar rich diets²⁵. Based on decade-long data from WWII in the UK where the population was subjected to strict rations until 1953, this paper shows how a sugar-rich diet was correlated to lower rates of higher education and overall lower income levels in mid age, as compared to those who had limited access to sugar as children.

The brain-gut connection

More immediately, our food choices impact our gut (un)health, which has regulating effect over our entire body's functioning, from immunity to emotional balance, and even our decision-making abilities²⁶.

The soil not only provides nourishment for us, but its dynamic microbiome tends to be mirrored in our own. Indeed, the human body is host to a very large set of bacteria, referred to as our microbiome²⁷.

A teaspoon of topsoil typically contains a vast range of different species and up to 6 billion microorganisms—bacteria, fungi, earthworms and termites, etc. They each play a vital role in soil organic matter decomposition and behave efficiently in the development of soil structure and soil aggregate. However, current agricultural practices not only dismantle soil structures but also disrupt the valuable living beings that promote our soil health.

The ancestral practice of eating local honey to improve immunity and reduce allergic reactions to local flora is not just an old witch's tale. Similarly, eating fresh, local, and seasonal produce actively contributes to our health. Ashley Rouse from Edible Schoolyard stresses our deep connections with food and land. "The soil is the greatest connector to our lives, soil is the source of everyone's health." She shares that there is a saying from the South "God made dirt, dirt won't hurt, put it in your mouth, and make it work." For vegans who tend to lack B12, it is recommended to take nutritional supplements. Another option is to eat unpeeled organic vegetables to benefit from the microbes left on the skins.

From the myths of the fountain of youth to Silicon Valley's obsession with immortality, we have had this long-held belief that there are simple recipes to longevity and good health.

But these magical remedies merely equate to silver-bullets that obfuscate the complexity of the interactions between our health and the other systems it interacts with.

²⁴ <https://www.hsph.harvard.edu/news/hsph-in-the-news/friends-and-family-can-influence-your-weight/>

²⁵ https://www.nber.org/system/files/working_papers/w30799/w30799.pdf

²⁶ <https://www.maastrichtuniversity.nl/news/your-gut-microbiota-affecting-your-decisions>

²⁷

<https://www.nih.gov/news-events/news-releases/nih-human-microbiome-project-defines-normal-bacterial-makeup-body>

Food anthropologist Rebecca Chesney stresses how “everyone is a significant player in the system, which results in a wide range of priorities and values. Oftentimes, we subscribe to a particular practice without a clear understanding of its multi-fold impacts.”

Twenty years ago, a popular research study called Blue Zones showed the commonalities across different communities of centenarians around the world²⁸. What emerged are nine key practices that all point toward interconnectedness, between our food, exercise, and social habits. Most interestingly, it emphasizes the accountability between small groups of humans and the repetitive patterns. Though more multifaceted than many food and health studies, the Blue Zones is exclusively human-centric.

It is possible to marry the needs of all stakeholders, in fact it is a natural phenomenon. In Braiding Sweetgrass, Kimmerer emphasizes respect and reciprocity in her example of human intervention in nature for planting specific species, harvesting in moderation for human consumption and weeding to reduce overgrowth - balancing levels of resilience, and providing enhanced dynamics between species. This approach does away with the binary lens of “either or”.

Yet, oversimplification is tempting, and easier to communicate. In “We are the Weather: Saving the Planet starts at breakfast”²⁹ Jonathan Safran Foer urges us to eat less meat as a single principle that can align our concern for the environment with our diets. In his intimate account, he admits how difficult it is to put this advice in practice - even for him.

Daily choices and behavior change

While system change will take time, we are confronted daily with the question of how we, as eaters, might contribute to the food system transition.

As a practical example, we start with Phoebe, a college student who values delicious food as much as our planet’s health. Throughout the week, Phoebe prepares plant-forward meals using whole ingredients and frequently finds herself faced with a dilemma regarding her food choices. While her focus on a plant-rich diet simplifies her decision-making, she still struggles to determine what constitutes sustainable eating.

“Should I walk next door to Trader Joe’s and buy tofu that is wrapped in plastic, or should I drive to the Asian store (emitting additional carbon dioxide) and buy it in bulk? Yes, tofu is plant-based, but looking at it systemically, is soy ‘sustainable’ given its production has been linked to deforestation and biodiversity loss? And also, soy is such a quintessential part of Chinese cuisine; should I give up part of my cultural identity upon discovering certain truths about what I grew up eating?”

However, this dilemma is not a widespread concern: because our food choices are not based primarily - if at all - on their environmental impact.

²⁸ <https://www.bluezones.com/about/history/#>

²⁹ <https://civileats.com/2019/09/20/jonathan-safran-foer-stopping-climate-change-starts-at-breakfast/>

In our analysis of the survey results, individuals ranked sustainability and planetary impact last as a key criteria when selecting foods, far behind taste and budget. Over half of our participants rated environmental impact a 3 or lower out of 5. Only a minority of 18% gave it a 5.

In contrast, when asked about their climate concern, survey participants showed a high level of concern on average (4.16/5) and shared that this concern has translated practically into their daily life. However, those new daily habits only tangentially included food and eating habits, again far down the list, after easier transitions like recycling or taking public transit.

Although our actions sometimes lead to negative outcomes, we are not necessarily ill-intentioned or intentioned at all for that matter. For most of us, food choices are guided by ingrained habits that depend more on our preferences, ease, and budget than other factors.

Moreover, those decisions are often instantaneous³⁰. Whether we select a convenient item at the store, or quickly order in line at the restaurant, we rely on “fast” thinking and rarely dedicate the time to research the information that could guide us - if it is even out there.

While there are resources that exist such as [OmniAction](#), clearly, the system is too dynamic and complex to be reduced into a simple set of metrics. Adopting regenerative eating is a total paradigm shift that has to operate - and that even for the most conscious of eaters, the information is generally not out there or at least not aggregated in a way that can support a quick decision, thereby exacerbating the challenge.

Furthermore, the tools that are created for the macro level are rarely helpful or applicable to the micro level. For instance, while there is some data on the carbon footprint of different food products, how realistic is it for us to pull out a complicated app or website everytime we consume a food item?

Our habits are well-intended shortcuts to minimize brain power on repeated tasks. And while this has benefited human development, those same habits become serious impediments to change when faced with new contexts.

Simply put, our primal brain often hijacks our best intentions in adopting a new behavior- even if it is in our longer-term interest. This phenomenon is a key reason why so many people repeatedly make resolutions to manage their weight, initially shedding some weight, and soon regaining the hard-lost pounds. The effort necessary to seek out the information and transcend habits takes too much of a toll, and former patterns tend to re-emerge sooner than later: 80% of dieters gain back the weight they lost or more within 5 years³¹.

This is relevant because in the case of this shift to Regenerative Eating, it is not a quick fix we are proposing - but rather a new paradigm and a life-long practice to cultivate the transition, and an evolving definition as we uncover more nuances in our analyses. For

³⁰ Kahneman, Daniel, and Lan Hong. *Thinking, Fast and Slow*, 2019.

³¹ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5764193/>

instance, eating animal meat is one of the key controversial topics. In vegan circles, meat consumption has become shameful and taboo - a behavioral norm stemming from environmental protection and animal welfare values. However, as with any orthodoxy, we are bound to discover more nuance and perhaps more controversy and dilemma. The advances in the science might not always provide the clean-cut answers we're looking for, such as in this recently published paper challenging the former calculations of greenhouse emissions from pasture-finished beef production³². Often, these findings invite further questions around land use, and the role of animals in farming and culture.

As we navigate those waters of complex, dynamic, and changing systems, remaining curious, open, and humble is key to remaining poised and serene - especially since for most of us, the perspective of a long-term or even permanent commitment to adaptation and transformation can be quite overwhelming.

Acknowledging those painful emotions

It is natural to have an aversion to questions that have no immediately obvious answer and require embracing both complexity and ambiguity. Complex, multi-layered issues leave most of us unsettled, uncertain, sometimes even angry and apprehensive.

In the case of food, this repulsive reflex is amplified as it is counter to the sense of safety and relief we gain from the sustenance and familiarity of our food. Making space for emotionally charged issues like climate change takes away from the daily joy and pleasure most of us seek from eating. In our survey, we asked our respondents about how they feel when they think about climate change: they selected fear, overwhelm, anger, guilt and shame.

This aversion also creates a distance, an artificial chasm that we forge in our minds between our eating behaviors and their consequences. Thus, as we unpack the concept of "regenerative eating" in this qualitative inquiry, we acknowledge and fully welcome this paradoxical reality.

As Jonathan Safran Foer writes: "The problem with the planetary crisis is that it runs up against a number of "apathy biases". Although many of climate change's accompanying calamities—extreme weather events, floods and wildfires, displacement and resource scarcity chief among them—are vivid, personal and suggestive of a worsening situation, they don't feel that way in aggregate. They feel abstract, distant, and isolated rather than like beams of an ever-strengthening narrative."

A playbook rather than a checklist

For those who are aware of and want to take action against this doom fate, regenerative eating can provide an active way to address our predicament. The philosopher, inventor, and

³² <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0295035#abstract0>

architect Buckminster Fuller³³ described the role of “trim tabs” as a powerful catalyst of system change. In Fuller’s philosophy, a trimtab is a small mechanism that can help stabilize and alter the course of a navy ship or an airplane. His metaphor carries to how individuals can have a momentous impact on society with small, deliberate, even easy changes, which together and overtime can alter the trajectory of the collective system. At Delicious Future, we like to think of small daily regenerative food choices as mini “trimtabs”.

Despite the absence of a full systemic picture, individuals can experiment with regenerative eating. The regenerative framework does not constitute prescriptive rules but rather shifts in mindsets.

Equating regenerative eating to a simple list of ingredients would undermine many valuable aspects of the holistic food system. For instance, certain crops—like seaweed, legumes, hemp—provide extremely beneficial ecosystem services, yet a varied and well-balanced diet cannot be restricted to these few ingredients³⁴.

Similarly, there are some categorical misconceptions and oversimplifications that we hold as true that are deeply seated. For example, eating locally is “always” better. A thorough examination showed that imported New Zealand lamb is less polluting than domestically factory-farmed lamb in the UK³⁵. Our subscriptions to “eating locally” thus become challenged by Life Cycle Analyses and Carbon Footprint Data that showcase the nuanced truths about locality and environmental footprint³⁶.

Of course, this question might be moot if we simply decide to exclude certain food products, such as lamb or red meat, from our diets altogether. But not all of us are able or ready to let go of culinary traditions - therefore we can choose to ignore the dilemma or accept the limits of our choices.

Another example is the notion that organic or fresh produce is more expensive is a commonly-held belief, including amongst our survey participants for whom the perception of higher cost is a key hurdle to the adoption of climate-beneficial foods. And again, this perception is based on the immediacy of the information (or lack thereof) we have to make our decision. Considering longer term horizons, a nutritiously-rich diet represents long-term healthcare cost savings, including weight management and reduced risks of common chronic conditions. And eating regeneratively, as a “prosocial behavior” can provide other health benefits, both physical and mental³⁷.

³³ <https://www.bfi.org/>

³⁴ <https://www.foodnavigator-usa.com/Article/2023/04/24/Under-the-sustainable-sea-weeds-gimme-Seaweed-talks-eco-friendly-and-organic-snacks>

³⁵ Food Miles – Comparative Energy/Emissions Performance of New Zealand’s Agriculture Industry. Lincoln University, Agribusiness and Economics Research Unit, July 2006.

³⁶ <https://www.ecoandbeyond.co/articles/british-new-zealand-lamb/>

³⁷ <https://www.apa.org/news/press/releases/2020/09/doing-good-boosts-health>

More practically, it will also require addressing the challenges of economic realities in business and access for individuals.

Economic reality for business transformation and access for individuals

While this paper is primarily looking into personal agency of individuals, we would be remiss not to mention the entrenched financial interests of “big ag” and “big food” who are heavily invested in the status quo, and whose fiduciary responsibilities to their shareholders incentivizes short-term profit over benefits to all stakeholders, thwarting individual efforts.

Food is the first building block of any economy.

Major food corporations are turning to Regenerative Agriculture to reduce risk in their supply chains as climate change threatens harvests and destroys crops, while on the demand side, we experience a significant information asymmetry and lack of transparency about our food’s provenance and impact. Anthony Corsaro, the creator of the ReGen Brand Podcast underscores “the gaps and lack of attention towards downstream elements of the food system, specifically consumer demand and interest, infrastructure, and brands”. Consumers are limited in their choices by what the producers decide to produce. both in terms of products and communication on the contents and journey of their products. However, the lack of transparency often invokes confusion, skepticism, or even distrust.

Labels and certifications

The Rodale Institute established the label “Regenerative Organic Certified (ROC) in 2017. Certified products hold qualitative standards for soil health, animal welfare, and farmworker fairness. In 2023 alone, there were 382 applicants, 156 farms, and 753 products certified³⁸.

Meanwhile, Certified Regenerative is another framework established by A Greener World. In comparison to ROC, they have stricter requirements for animal welfare and human health such as antibiotic-use and in-depth biodiversity plans. Additionally, they also have more explicit actions for community resilience, such as emissions reduction, financial planning, and encouragement of regenerative producer networks.

Guiding decisions with certifications and labels

³⁸ <https://regenorganic.org/roc-directory/>

With the multiplicity of standards within current notions, metrics, data, and certifications, there have been divergent narratives regarding what “regenerative” truly means.

However, these certifications have limited impact so far: they require a long and arduous process from the farmers who in turn need reassurance that their new products will find a market. And the labels are not yet recognized widely. “Competing certifications and definitions make it difficult to communicate” says Anthony Corsaro. “And at the same time, labels and certifications are critical to communicate to consumers on what is a regenerative brand and what is not.” The ROC framework is not very well understood, even amongst those who are in the business: in each of our survey since 2022, we have asked: “Have you ever bought ROC food?” where the choices are Yes, No, and “I don’t know that ROC stands for”. “I don’t know” is what 75% of all respondents reported.

The ROC website calls each individual to action, stating that “everyone who eats food can play a role in the movement for regenerative organic agriculture by choosing foods, fibers, and personal care products with the Regenerative Organic Certified® label.” They claim that “when you purchase Regenerative Organic Certified®, you know at-a-glance that your purchase makes a positive impact on the farm at every level”. This statement demands significant trust from consumers regarding the transparency and comprehensiveness of their labels.

In Europe, the Parliament enacted a new directive to protect consumers from greenwashing³⁹, limiting the use of terms like “planet-friendly” or “green” in favor of more nuanced communication. In the US, we do not (yet) have such protection in the language. The USDA offers resources to farmers to grow organic foods⁴⁰ and more recently grants⁴¹ to adopt regenerative farming practices called “climate-smart commodities”- but this is yet in its infancy.

The USDA⁴² is the regulatory body that oversees and enforces organic and regenerative labeling on food, which makes sense from a production standpoint. However, considering “food as medicine”⁴³, an argument could be made for the participation of the Health and Human Services Department in this process.

Meeting market demand

Regeneration as a source of renewal and repair opposes the traditional market perspective of consumer vs producer. In the current system, the “eater” is often referred to as a consumer whose preferences are measured in financial terms, based on what they choose to buy - which inherently gives more share of voice to those with higher means and does not point to demand for what is not purchased. This question of our contribution as eaters illustrates our place in the food system and opens the doors to consider how our individual choices and collective values influence the food system and vice versa. It is challenging for individuals to

³⁹ [https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI\(2023\)753958](https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2023)753958)

⁴⁰ <https://www.usda.gov/topics/organic>

⁴¹ <https://www.usda.gov/climate-solutions/climate-smart-commodities>

⁴² <https://www.ams.usda.gov/about-ams/programs-offices/national-organic-program>

⁴³ <https://health.gov/our-work/nutrition-physical-activity/food-medicine>

create systemic shifts with their choices alone - especially when our choices are limited to what options are available.

In innovation centers around the world, food tech is a growing focus of investors and entrepreneurs, especially around alternative sources of protein that can be grown and/or produced at scale: cell-based meats, plant-based fish, plant-proteins in burgers, shakes, etc, including as a potential option to replace lower quality conventional meat products such as nuggets and sausages.

What is the place of those foods in a well-balanced, nutritious diet that also serves the needs of the planet? How do we, as eaters, evaluate the pros and cons here without going into food wars?

For example, Impossible Burger, which gained almost overnight popularity thanks to its addition to the menu at McDonald's, has had to dramatically increase their need for sourcing soybean which they decided to source from genetically-modified crops from the US⁴⁴. To their credit, the company was transparent about its choice. However, the decision may not have been as straight-forward as they said. Soy is typically grown as a monocrop, and GMO is not organic⁴⁵ - therefore, this was a short term, business decision first, and a reduction of harm second, which in the context of a for-profit company with investors to report to, makes sense. It is hardly the role of those companies to educate the public about long-term benefits—which brings up the question of whether the VC model even makes sense for new food businesses.

Is it desirable that the constraints and objectives of private entities - which may or may not legitimately align with those of other stakeholders in the system - be the primary decision factor? Taste and cost repeatedly emerge as primary motivations behind food choices, and companies' concern is to "meet the market where it is", which means some disruption but not too much. For instance, most alt-protein companies bet on creating ersatz, replicating the familiar taste and aspect of meat⁴⁶ or fish.

Today, in our immediate reward-seeking culture, we have expectations of seasonal produce to be available year-round and we tend to be disconnected from the timelines of natural cycles. The Slow Food movement is a call to reclaim a more natural pace. And in regions where culinary heritage is well established and protected, the shift might find more opponents as it represents significant business interests: in Italy, the production and sale of cultivated meats have been banned by legislation this year⁴⁷, and in France, it is looking likely that a similar law is passed as well.

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<https://impossiblefoods.com/blog/how-our-commitment-to-consumers-and-our-planet-led-us-to-use-gm-soy>

45 <https://www.ams.usda.gov/services/organic-certification/organic-basics>

46 <https://thewordchef.medium.com/an-impossible-dilemma-c56d52030d>

47

<https://www.reuters.com/world/europe/italy-moves-ban-lab-grown-meat-drive-protect-home-products-2023-03-28/>

Our survey revealed similar findings: we asked our participants how thinking about the future of food made them feel: nervous and curious came up the most. Then, we asked which alt-proteins they could imagine eating in 10 years. They selected from a list of options or could add their own: 55% were open to having plant-based protein shakes and drinks, and only 25% were keen on trying less familiar options like cell-based chicken breast or insects. Less than 18% could not imagine adding any sort of alternative proteins to their diets in the future.

According to Anthony Corsaro, regenerative eating involves “creating more life than what you found”. Rebecca Chesney echoes the idea that “regenerative is the antithesis of extraction” within the environmental, economic, and social dimensions.

If the environmental impact were the primary factor over familiarity, taste, or cost, then McDonald’s would be serving Akua⁴⁸ burgers instead of Impossible. The promise of seaweed is real. As Vincent Doumeizel, UN Senior advisor on Oceans⁴⁹ - shows in his book “The seaweed revolution”, the applications of this abundant and versatile resource are almost endless: from healing properties to disease prevention, carbon capture and habitat for whole marine ecosystems, alternative protein source for human and animal consumption, local economic opportunities⁵⁰. However, there are many barriers to the ubiquitous adoption of seaweed in the West - none the least the familiarity and adaptability of regulatory bodies.

Regulations, certifications, and other oversight can provide powerful guidelines and even frameworks for innovation. However, they can also be barriers to adoption from what they signal. Practically, organic certifications ban harmful pesticides and fertilizers, and propose sanctioned replacements that are less hazardous. While this is a laudable effort, the organic movement has not scaled to significant impact. Its current iteration dates back to the 1960s, yet today only 1% of land use is certified organic and even though it has been growing in recent years, organic products still only represent 6% market share of all US purchases.

In her blog Food Politics⁵¹, retired NYU Professor Marion Nestle⁵² recently published a piece which shows how the political divide is reflected in our food choices. In many communities in the US, organic is perceived as elitist, exclusionary, and sometimes even anti-American.

If the organic movement has not been able to reduce this polarization over decades, then how might regenerative eating transcend these differences - especially given our short time constraints?

How can we bring key/strategic actors together to have difficult and nuanced conversations about creating lasting change in our food system?

⁴⁸ <https://akua.co/>

⁴⁹ <https://unglobalcompact.org/take-action/ocean/doumeizel>

⁵⁰ <https://earthbound.report/2023/08/21/book-review-the-seaweed-revolution-by-vincent-doumeizel/>

⁵¹ <https://www.foodpolitics.com/2023/12/the-red-blue-divide-in-american-food-choices/>

⁵² Nutrition, Food Studies, and Public Health, *Emerita*

“Breaking bread together” is one answer. Bringing people together around the table, to share an intimate experience, has the power of bridging differences, finding common interests and concerns. Will Rosenzweig wondered what would happen if we created 300 ft long tables that could go across county lines to invite communities across the political spectrum to share a meal.

Access

Our role in the food system is profoundly shaped by systemic socioeconomic barriers that create unequal access and opportunities. These barriers—or opportunities—are often rooted in historical and structural inequalities, and influence our roles as consumers, producers, and advocates. Ashley Rouse points out that our connection to food is driven by what we’re able to access, the inequalities of access to land, rights, capital, market, education, community, and the supply chain create systemic barriers that prevent equal access to the food system as a whole.

Similarly, the few consumer packaged goods sold with the ROC label are more expensive than the highest organic option. For example, at Berkeley Bowl, an epicenter in the Bay Area foodie scene, sells a dozen regenerative eggs for \$10.99 vs \$5.79 for a local, organic dozen. That steep difference makes regenerative simply inaccessible to most. The financial barriers that can perpetuate existing disadvantages can amplify the preconceived notion that climate change is a challenge that only privileged populations can afford to fight against, further deepening societal chasms.

Additionally, Tim Bowles recognizes the historical racism and injustices within agriculture that are responsible for the inequities on the production end of the food system. Leveraging the intangible cultural heritage of food becomes a potent tool in navigating and reshaping this system. This heritage passed down through generations, provides a unique lens through which marginalized groups can assert their presence, identity, and contributions within the food system. By embracing and amplifying diverse cultural practices, culinary traditions, and local knowledge, individuals, and communities can challenge the prevailing narrative, offering a rich tapestry of perspectives that extends beyond the dominant capitalist paradigm. This not only reconnects us to our roots but also serves as a powerful means to advocate for inclusivity, social justice, and representation within a more equitable and regenerative food system. When we stand in the produce aisle with a tomato in one hand and an organic tomato in the other, we rarely pause to think of whose hands cultivated the soil and whose hands will collect our money. Instead, many of us merely see the price and not the story.

Regenerative foodways are the direct counter-response to the dominant industrialized and extractive food system. An example of this resilience is Ron Finley⁵³ in LA. In 2010, he started farming on the sidewalks near his house in South Central LA, a notorious food desert. The City of LA fined him for gardening without a permit, but Ron fought back and ultimately won his trial. He has since established community gardens in the neighborhood and beyond, and encourages the community to use really limited resources to do what they can, essentially

⁵³ <https://ronfinley.com/>

promoting the “start wherever you are” mentality. His work provides a precedent for local communities to reclaim access to growing and accessing food alongside the market system.

Fostering conscious consumption and an inclusive food culture

This multifaceted transition will provide opportunities for top-down and bottom-up initiatives, public and private programs, from policy, education, community efforts and market offering.

Uniting perspectives

Eric Sirvinkas highlights the importance of having non-judgemental learning communities on university campuses where students can learn about these multidisciplinary challenges and opportunities in the food system. Programs like the Plant Futures Initiative⁵⁴ Challenge Lab create opportunities for young people to connect with the food system in unconventional ways. The diverse representation of academic backgrounds naturally facilitates cross-disciplinary information sharing about the food system, which allows for holistic learning to take place. Confronting an unknown challenge collectively becomes a catalyst for individual learning and skill development, as collaboration and skill-sharing within the group create an environment where each person contributes unique strengths, fostering collective growth and adaptability. Learning becomes easy when there is no expectation to know everything; instead, there is the opportunity to figure out what’s there for yourself.

Creating inclusive spaces for people to learn and connect with the food system is an important facet of engaging consumers with regenerative eating. There are many entry points to explore the food system, each reflecting a particular perspective, intention, and reality that are all interconnected and equally important. As someone who centers the food system personally and academically, Yasmin Abu Hamad interacts directly with people from different sectors who each enhance her appreciation of disparate elements in the food system. Having worked in community gardens across the globe from the Middle East to Northern Europe, and California, Yasmin has developed an understanding of land care practices, urban organic farming, and food sovereignty through direct experience and knowledge transmission. Courses like the Plant Future Initiative Challenge Lab have allowed her to learn more about the food system from a business and economics perspective. These spaces are crucial for building collective knowledge and participation in the transformative movement towards a regenerative food system. Achieving regeneration in our food systems demands combined efforts from both individuals and collectives, spanning farmers, transporters, processors, retailers, chefs, and every consumer, with a shared goal of promoting both environmental sustainability and social justice using resources such as the [Mandela Partners Co-operative](#), the [Common Grounds](#) guide and the [Soul Fire Farms](#) food sovereignty action steps.

⁵⁴ <https://www.plantfuturesinitiative.org/>

Another example of a transformative educational environment is Alice Waters' Edible Schoolyard⁵⁵ project, which integrates gardening and cooking into school curricula, fostering experiential learning and promoting a holistic understanding of food systems. Ashley Rouse described the awakening she has witnessed when children activate their senses and build connections to food when they visit the farm. These hands-on activities not only enhance their understanding of the natural world and where food comes from, but also instill a deeper appreciation for the diverse flavors, textures, and aromas of fresh, whole ingredients, fostering a lifelong connection with the food they eat. Each child's whole being is engaged in learning, their senses as well as their intellect.

When working in community gardens, Yasmin has found that ongoing curiosity is an integral part of the experience, enlivening us through connection to the earth and creating a felt experience with the food system. When this understanding of our role as custodians is cultivated at a young age, it contributes to a generational shift in our food system values that center joy and connection.

We can build and strengthen our connections with each other by sharing our experiences and listening to those of others. In this piece, we chose to recount stories from experts and from individuals as a tool to develop and share a more nuanced view of the intricacies of this complex system⁵⁶.

Symbiotic relationships

In *Braiding Sweetgrass*⁵⁷ Wall Kimmerer describes the Four Sisters agricultural system. Featuring the symbiotic cultivation of the three "sisters" - corn, beans, squash - plus the integral role of farmers, this polyculture is a testament to the interconnectedness of storytelling, land cultivation, and sustainable food production within Indigenous communities. The traditional practice is more than a method of farming; it is a cultural expression deeply rooted in storytelling. The narrative threads woven into the planting, growth, and harvest of each sister connect generations, imparting wisdom about harmonious living with the land. Corn, the firstborn sister, provides a sturdy scaffold for beans to climb, while the beans enrich the soil with nitrogen. The sprawling squash vines, the youngest sister, act as a natural mulch, retaining moisture and suppressing weeds. The farmers, as stewards of this interwoven tapestry, play a pivotal role in preserving and passing down the knowledge embedded in the agricultural system. Beyond mere sustenance, the Four Sisters embody a holistic approach to agriculture that reveres cultural heritage, emphasizes environmental harmony, and underscores the profound link between storytelling, land cultivation, and the sustenance derived from these timeless practices.

⁵⁵ <https://edibleschoolyard.org/>

⁵⁶ <https://academic.oup.com/icb/article/58/6/1213/5061516?login=false>

⁵⁷ Wall Kimmerer, Robin. *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teachings of Plants*. Milkweed Editions, 2013.

This research points to storytelling as a powerful and underexplored strategy for inspiring transformative food system education because it embeds abstract concepts within a narrative which helps develop relational understanding and bridge theoretical frameworks to real-life scenarios and applications. Insightful and moving stories of farmers, innovators, and changemakers showcase emerging models that are already working today: The Little Big Farm, Tomorrow, Kiss the Ground, and Common Grounds, and coming soon the PBS series produced by Fed by Blue⁵⁸.

While Tim Bowles says “regenerative eating requires regenerative production”, we must also stress that a regenerative food system involves indigenous land and food sovereignty. Transitioning out of an extractive food system model requires recognition of the social extraction of traditional ecological knowledge and environmental extraction of resources on indigenous lands, both of which actively harm indigenous peoples. As curiosity and excitement build around regenerative land care practices, it is our duty to acknowledge that this wisdom comes from indigenous custodians across the globe who are systemically marginalized and whose voices are too often left out of these very conversations. Despite the growing enthusiasm in the field of sustainable agriculture, practices that have been coined with the modern term “regenerative” have emerged from indigenous communities throughout countless generations who shared an understanding of and the value in the relationship between people, plants, agriculture, ecosystems, landscapes and natural phenomena.

Peter Newton described the ideal food system as providing people with food security, which involves access to culturally appropriate foods, and resolves the gaps in food access in regard to hunger and malnutrition. This also includes less suffering for human and non-human beings. Systemic issues like chronic malnutrition and farmers’ injustice also reiterates the multiplicity of stakeholders whose needs must be taken into account. “The way the system operates creates challenges for people who are underrepresented on the web”, says Rebecca.

Culture making and behavior

Food culture extends beyond explicitly transcribed practices, relying on ‘intangible cultural heritage’ that encompasses the practices, knowledge, rituals, and social traditions associated with the production, preparation, and consumption of food within communities or groups⁵⁹. Our current food system model embodies the culture of ‘agro-extractivism’ which evolved from the colonial history of the United States⁶⁰.

Traditional methods of farming, seed-saving, and culinary techniques reflect an intimate understanding of ecosystems, emphasizing the importance of balance and harmony between humans and nature. By preserving and celebrating intangible cultural heritage, communities contribute to the resilience of local food systems, promoting diversity, fostering a sense of

⁵⁸ <https://www.fedbyblue.org/>

⁵⁹ [https://ich.unesco.org/en/lists?term\[\]=vocabulary_thesaurus-10](https://ich.unesco.org/en/lists?term[]=vocabulary_thesaurus-10)

⁶⁰ <https://www.tandfonline.com/doi/abs/10.1080/03066150.2023.2218802>

identity, and nurturing a sustainable relationship with the environment. We can reconnect to the food system in a more meaningful way by revitalizing our values towards the intangible cultural heritage of food.

In Tasting Tomorrow⁶¹, artist and philosopher Jonathon Keats is currently developing a repository of climate-appropriate crops in collaboration with the University of Arizona to ensure the posterity of food cultures while taking new realities of climate into account.

Gratitude and celebration

As the regenerative food system shifts to more resilient and reciprocal dynamics, it must also celebrate the pleasure eating provides and the notion of food as a love language. Shifting this paradigm involves transcending the transactional view of food as a mere product for consumption and embracing a holistic understanding that acknowledges the emotional, cultural, and social dimensions of our relationship with food. In adopting these values, the food system is more connected, inclusive, and celebratory. Embracing this perspective fosters a sense of gratitude for the intricate processes that bring food to our tables and encourages mindful, intentional choices that consider the well-being of individuals, communities, and the environment.

The sense of connection, pride, and wonder that growing our own food can provide can also be therapeutic: during the pandemic, gardening and direct skin contact with the soil were shown to have positive impacts on mental health⁶².

Ashley Rouse says that the food system “requires intention”. Food is an essential element of our social culture, if we are able to see each meal as an opportunity to connect with the soil, the plants, the farmers, the processors, the businesses, the retailers, and the chefs, we can instill regenerative values into our culture around food.

Culinary arts and practical examples

The transition to regenerative eating brings up tangible questions for food making.

In our survey of mostly students, 95% of respondents are committed to cooking at home, from a few times a week to every meal - which is a promising opportunity for safely exploring and experimenting.

⁶¹ <https://www.tastingtomorrow.org/pages/index.html>

⁶² Zhang, Xindi, et al. “Home Garden with Eco-Healing Functions Benefiting Mental Health and Biodiversity during and after the COVID-19 Pandemic: A Scoping Review.” *Frontiers in Public Health*, vol. 9, Nov. 2021, <https://doi.org/10.3389/fpubh.2021.740187>.

In the culinary space, regenerative cuisine is in its very early days. Instead of embracing regenerative as a framework, the few chefs looking to incorporate regenerative into their story add an ingredient or two, focusing on local and ethical sourcing. For example, a three-Michelin starred restaurant emphasizes their regenerative, claiming that they restore “its profound connection to nature, the elevation of its peasant farmer culinary traditions to high culinary art, the sharing of the gastronomic jewels of the Po valley.” While these are certainly laudable efforts, this cannot scale or easily translate to home cooking practices - constricting it to a highly gastronomical experience that is out of reach for most.

Since early 2022, Delicious Future has hosted a series of events to showcase how delicious regenerative eating can be. Building a menu requires holistic inquiry around the origin and impacts of food options, considering concepts such as ecosystem services, or the direct and indirect contributions of ecosystems to human wellbeing, which have an impact on our survival and quality of life⁶³. For these experiences, the team took into account the origin and location of food ingredients, the role of these ingredients in the local environment, the nutritional potential, and the cultural relevance of how ingredients could fit into an integrated menu. Uni, mussels and clams, wakame, and hemp are four relevant examples.

Uni (or urchins), currently extremely prevalent in the Pacific ecosystem, emerged as an exciting food for regenerative eaters. Urchins rely on bull kelp as a food source; kelp forests currently shelter and feed entire ecosystems of marine life. Climate shifts have triggered a series of events that have allowed purple urchin populations to explode, eradicating 90% of bull kelp forests and starving other kelp-reliant species. Simultaneously, urchins can be a nutritiously rich food source for humans: they are low on the food chain so they do not bio-accumulate toxins. They also provide an excellent source of protein, dietary fiber, zinc, iron, and vitamins like A and C. Using uni as an ingredient thus has multiple benefits- reducing the damage to kelp forests and providing healthy and delicious umami flavors for eaters.

Similarly, mussels and clams are bivalve filter feeders found in the Pacific Coast, acting as a source of food for numerous animals (such as sea lions, walruses, and seals), while also filtering out plankton, algae, and larvae and allowing sunlight to reach seafloor plants. They can be sustainably harvested or farmed. These bivalves are also nutritionally rich, offering an exceptional range of nutrients, such as Vitamins A, B12, and C, iron, omega-3 fatty acids, and protein.

Wakame, also featured in the kelp forests of the Pacific, was featured as a food that can be sustainably harvested. Wakame is nutritionally dense, with high levels of minerals (including calcium, magnesium, iodine, sodium, zinc, phosphorus, and potassium), vitamins (including A, B, C, and K), fiber, and protein. Wakame has been used traditionally as an herbal remedy due to its beneficial impacts on blood pressure, liver functionality, and tissue health.

⁶³ Costanza, Robert, et al. "Changes in the global value of ecosystem services." *Global environmental change* 26 (2014): 152-158.

Finally, we have used hemp in multiple creations, in shelled seeds or in flour for baking. Hemp is an amazing plant. It uses a fraction of the water needed to grow cotton, every part is useful and it absorbs more carbon dioxide per hectare than other crops and most trees. Hemp can grow in a wide variety of climates in most parts of the world, can be planted on land not suitable for other crops and helps to replenish the soil by removing heavy metals and other contaminants. It's also beneficial when included in crop rotation. Since all parts of the plant – roots, flowers, fruit, stems and leaves – can be used, growing hemp will lead to much less waste and pollution than other crops, whose discarded parts can have a huge ecological footprint.

In addition, it provides economic development opportunities for regions looking to boost their economies while protecting the environment.

In terms of nutrition, hemp is one of the rare plants that provides a complete source of protein. Hemp seeds is a protein-rich food: it contains all 9 essential amino acids, and has as much protein as soybean. It is rich in essential omega-3s, fiber, and contains vitamin E, magnesium, phosphorus, and potassium, iron, zinc, and B vitamins.

For each of these examples, ingredients were selected due to their overlapping benefits: to the natural environment, relevance to the local ecosystem (both natural and cultural), impact on human and planetary health, and contribution to delicious cuisine. Similarly, selecting foods based on regenerative eating principles goes beyond a static list of ingredients - it requires thoughtful consideration of the holistic context of ecosystem, societal, culinary, and health impacts of these foods.

Playing in the kitchen

Each and every one of us is empowered by our individual identity and our communal values to become the driving engine of our own food system. Despite the difficulty in navigating a systemic change, we can ground ourselves by reconciling the tensions between our individual needs and priorities. The choices we make everyday integrate and form a microcosm of the aggregate system that we struggle to visualize otherwise.

Hence, we are essentially navigating our own food system that encompasses choices that continuously and simultaneously influence our individual, societal and environmental wellbeing.

How can one approach and apply these theories in our daily practices without feeling overwhelmed by the scope of our efforts or questioning its utility?

Guiding principles & questions

Targeting a few sectors or values that are accessible to you individually is a good place to start. We all have different relationships with the food system. The way we relate to the seven principles proposed by the Global Alliance for the Future of Food is also linked to our personal values. The expectation to do this perfectly is unrealistic. By selecting a few of these principles

to integrate into our decision-making, we can collectively contribute to the transformation of the food system.

A personal example of this in Yasmin's life looks something like this: *I value resilience, inclusivity, and interconnectedness. I would try to buy from farmers who use diversified farming practices that promote agro-ecological resilience and economic stability for farmers by exploring various collectives such as the [Equitable Food Oriented Development \(EFOD\)](#), and the [HEAL Food Alliance](#). I would try to buy food that is grown locally using the [Organic Consumer Association's Farm Map](#) so that I can support the farmers in my area and feel more connected to the source of my food. Alternatively, I can start going to the local community gardens and farms in my area to grow some of my own food. I would try to buy food products from local BIPOC businesses or businesses that align with my vision of regenerative food such as the [Mandela Food Cooperative](#) and the [Indigenous Food Lab](#).*

For Bianca, exploring this space has led her to connect directly with farmers and food producers. Visiting farms and understanding existing practices, pressures, and concerns helps her identify potential overlaps in interests and motivation: both advocates of plant-based meat options and regenerative farmers agree that meat is often underpriced and current meat consumption has become unsustainable, so plant-based options might provide an avenue for replacing consumption of animals raised in concentrated, unhealthy environments with artificially depressed costs. Speaking to individuals across the food system helps her better understand sourcing and resource constraints, and inspired her to grow vegetables at her own house this year. While the majority of her food still comes from traditional marketplaces like Trader Joe's, this practice has made her more conscious of food waste and nudged her towards coops like Rainbow Grocery. She sources easily trace-able ingredients such as spices and coffee from companies like [Diaspora Company](#) and plants from nurseries such as [Cultural Roots](#) that specifically emphasize cultural heritage, equitable trade, and transparent sourcing.

Another example is Linda, a young mom of 2, who lives in Oakland, CA. She values the highest nutrition for her kids who are in elementary school and growing fast! She works full time, so she doesn't always have time for home-cooked meals, so when she does, she usually cooks in larger batches so she can have leftovers for the kids lunch (some of those foods taste better the next day!)

She prefers to pack them a lunch because she finds the school lunch options to be pretty abysmal, between pizza, tamales, and pasta bolognese⁶⁴. There are vegetarian options, and they do serve raw vegetables and fruit as well. But Linda is skeptical as to whether the kids would actually eat those when there is pizza instead. At home, she makes sure the kids have 5-8 fresh vegetables for dinner, either in soups, stews, or salads. The vegetables are the center of the meal, not a side or obligation before a reward in the form of a carb-heavy dish. Her husband who is not as concerned about food choices is grateful now that he has to watch his cholesterol and can't really eat as he used to in his 20s. She shops at the stores nearby, between Trader Joe's and Monterey Market - a 7-day covered farmer's market. And she started growing tomatoes with her oldest this year.

⁶⁴ <https://www.ousd.org/nutrition-services/our-food/school-menus>

We are all stakeholders in the food system, and yet, we each hold different perspectives, intentions, and realities. The tension created by the multilateral system has been pushing our planetary boundaries, social systems, and cultural values to a critical point. Some of us, including farmers, mothers, small business owners, and college students, experience this pressure for change more than others, but at the end of the day, what are our true options? We eat food every day, and are limited by the available choices around each of us. Our connection to food is informed by our culture, identity, memories, and emotions which makes it all the more important to preserve the integrity of this connection for the sake of our well-being. There is a tectonic shift occurring in the food system towards a more reciprocal, inclusive, and regenerative framework of interacting with food.

After reflecting on the conversations we had with experts from various professional backgrounds two significant insights emerged. Firstly, we must create inclusive and accessible learning environments to help people meaningfully engage with food systems as we transition to regenerative models. Secondly, our relationship with food has been harmed by the current food system model and our culture surrounding food needs to be repaired. While individually we cannot shift the food system, collectively we have the ability to influence and accelerate its transformation towards regeneration. We can start bridging the disconnects between ideals and practices by asking action-oriented questions under our regenerative framework.

The four pillars of the Regenerative Food System has been slightly adapted from the holistic to the individual level:

- 1) Individual Preferences:
 - a) What are nutrient-dense and eco-friendly foods I enjoy and how can I include more of them in my diet?
 - b) How can I approach a home-cooking-forward lifestyle with ease and convenience based on my own priorities?
- 2) Community knowledge and Informational Symmetry
 - a) What tools can help me make quick yet mindful decisions with limited information?
 - b) Where can I access reliable and accessible knowledge of regenerative eating practices?
- 3) Actionable Social Justice and Conscience
 - a) How do I make choices that reconcile my joy with the guilt of “not doing enough”?
 - b) How can I identify ethical sourcing under the limitations of food certifications?
- 4) Environmental Stewardship As Individuals
 - a) What tools can help me understand my individual impact and space for change and contribution?

- b) What are easily actionable and stress-free steps I can take to reduce my environmental impact?

Conclusion: what are some tools and resources for moving forward?

In the simplest terms, we have been answering our need for food in ways that are jeopardizing our species' very ability to survive on this planet.

Conversely, while our food system is a major cause of our environmental imbalances, it might also provide powerful solutions to our climate crisis. Specifically, each of us as individuals have an opportunity to change our perspective on the food system and our role in it. Internal mechanisms for upleveling our behavior will not be without challenges.

Whether we actively welcome it, each of us will be faced with climate-related diet changes. In what will be a personal shift, holding ourselves to higher standards while accepting the limitations of our agency provides opportunities for deeper connection to the ecosystem we are a part of, and ultimately to ourselves. This new practice might look entirely pragmatic for some and more values-driven for others. Either way is a first step. In the words of adrienne maree brown “Small is good. Small is all.”⁶⁵

This paper is a first step in this dialogue and exploration of regenerative eating, and we will evolve the definitions and findings as new research, trends, and creations emerge. We welcome all feedback, questions, and other resources you find helpful in your day-to-day and that can nourish its next iteration: please reach out to yum [at] deliciousfuture [dot] com

⁶⁵ <https://www.goodreads.com/book/show/29633913-emergent-strategy>

Appendices:

Expert Interviews:

- **Bowles, Timothy.** Professor of Agroecology Perspective on Regenerative Foods. Interview by Yasmin Abu Hamad and Tina von Albertini, 6 Nov. 2023.
- **Chesney, Rebecca.** Food Anthropologist Perspective on Regenerative Foods. Interview by Yasmin Abu Hamad and Phoebe Wu, 31 Oct. 2023.
- **Corsaro, Anthony.** Investor in Regenerative Brands Perspective on Regenerative Foods. Interview by Yasmin Abu Hamad and Hannah Schmidt, 6 Nov. 2023.
- **Newton, Peter.** Researcher of Environmental Studies: Perspective on Regenerative Foods. Interview by Yasmin Abu Hamad and Phoebe Wu, 30 Oct. 2023.
- **Rouse, Ashley.** Food System Education for Youth Perspective on Regenerative Foods. Interview by Hannah Schmidt and Yasmin Abu Hamad, 26 Oct. 2023.
- **Sirvinskas, Eric.** Community Relations for PFI Perspective on Regenerative Foods. Interview by Tina von Albertini and Hannah Schmidt, 31 Oct. 2023.

Quantitative data:

[Survey analysis](#)

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Existing tools we found useful:

- [Regenerative Health Coalition, a regenerative guide for consumers](#)
- <https://coolfood.org/consumer/>
- [Nutrient Density Alliance guide for eaters](#)
- [Rodale Institute course: being a regenerative consumer](#)
- [Rodale Institute Regenerative Buyers Guide](#)
- [Kiss the Ground: Guide to affordable regenerative food from Common Ground documentary](#)
- [Stop food waste tips](#)