



**UNIT 3:
FOOD AND POWER**

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CORPORATE RESPONSIBILITY

Note to Teachers

Sustainability is a hot topic in corporate strategy. Companies of all sizes recognize that today's dominant approaches to producing, processing, packaging and distributing consumer goods are unsustainable, and many have articulated sustainability goals to mitigate their impact. The term "corporate responsibility" identifies the principles and practices developed to address these problems, and captures the broader corporate movement toward taking social and environmental damage seriously. Terms such as "regenerative business" have also been coined recently to refer to businesses that not only protect but also take steps to improve the economic, environmental and social futures of the world and its inhabitants. Many companies have shifted in this direction to meet consumer demand as customers increasingly want to know that the products they are using and the food they are eating are not harming the planet, themselves or others.

This lesson addresses the link between corporate sustainability goals and the United Nations Global Goals, as expressed through the work of the Business and Sustainable Development Commission. This Commission is comprised of influential business leaders from all sectors of the global economy.

Due to their global reach, multinational corporations face some of the fiercest challenges in reaching sustainability goals, but they also have a birds-eye view of best practices from around the world and many are taking the lead on these issues. Corporate participation in transforming business practices that harm the earth is a key lever for change in the food system, as these companies' large supply chains and customer bases are such dominant forces in the economy.

This lesson will take two to three class periods.



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Please use this margin to notate how to best adapt this curriculum to your students.

Goals *In this lesson, students will*

- learn about some of the ways in which dominant corporate practices are not sustainable.
- be exposed to the steps some corporate leaders are taking to develop business practices that align with the Development Goals identified by the United Nations.
- develop an appreciation for the complex challenges corporations face as they navigate this territory, as well as the immense potential for impact they have at scale.

Objectives

- Students will use excerpts from the 2017 report of the Business and Sustainable Development Commission to gain a business perspective on sustainable principle and practice, its goals and beneficiaries, and the types of changes it will most likely target in the domain of food and agriculture.
- Students will study the websites for one of two brands as a case study to understand how one corporation, Unilever, has sought to articulate and actualize its own work on sustainability.
- If time permits, students will develop a digital presentation that analyzes both the content and presentation of the websites.

Materials

- Reading
- Computers with Internet access

Instructions

Part I. Introduction

1. Distribute the reading. It is long and fairly dense, so consider a technique like reverse outlining to help students get through it. The goal with this reading is to introduce students to the idea that the corporate impact on the food system is nuanced and has the potential for both great harm and great positive effect on both people and the planet.
2. Introduce the reading, which is a prominent international business organization's (Business and Sustainable Development Commission) attempt to facilitate a global corporate shift toward more sustainable practices as articulated by the UN. Most of the excerpts here come from the report's "Executive Summary."
3. Ask students to read for answers to these questions:
 - a. Why are current business models unsustainable? What are some of their consequences?
 - b. What do the U.N. Development Goals offer businesses? Why do you think that the members of this Commission aligned their own vision for change with them?



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- c. What types of sustainability goals does the Commission recommend in the domain of food and agriculture?
 - d. Who will benefit from success in meeting these sustainability goals, and how?
4. Open a discussion to gauge students' understanding of these excerpts. Use the above questions to help clarify any misunderstandings or gaps.
 5. Once students have a solid comprehension of the report, ask students to think about some of its implications.
 - a. How difficult will meeting sustainability goals be? Can students imagine some of the obstacles that business leaders might encounter?
 - b. What factors might prompt or dissuade business leaders from undertaking sustainable development?
 - c. What role will governments play in supporting or slowing sustainable business practices?
 - d. Do students think that sustainable business practices should advance all, rather than just some, of the Global Goals? If so, why?
 6. This discussion addresses some heady issues that may seem very abstract for students. The second part of this lesson enables students to see how one multinational consumer product corporation has developed, framed, and presented its sustainability initiatives.

Divide the students into pairs and assign each pair one of the following Unilever brands: Hellmann's and Knorr. Use these two brands as a case study for what the broader conversation about corporate responsibility looks like as articulated by a particular corporation. Unilever has positioned itself as a global leader in corporate sustainability and has outlined measurable sustainability goals for its operations and products. Give students the following links:

- Hellmann's
<https://www.hellmanns.com/us/en/we-care-about-sustainably-sourced-ingredients.html>
 - Knorr
<https://www.knorr.com/uk/sustainability.html>
7. Ask students to explore these promotional websites in light of the Business and Sustainable Development Commission's report discussed in part one of this lesson, focusing particularly on the brands' discussions of sustainability. As students consider both what they present and how the information is communicated. In particular, ask them to consider the following questions as they move through the websites:
 - a. What types of sustainability goals are articulated in these promotional materials (refer back to Exhibit 2 of the reading to help you)?
 - b. Can you find or deduce a definition of sustainability from what you see and read?
 - c. What specific ways is the company working to achieve its sustainability goals?



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- d. What record of success do they report? What are the challenges to achieving these goals?
- e. How are environmental goals, such as slowing climate change, linked to social goals such as better jobs or healthier communities?
- f. How does Unilever tell the stories of its sustainability efforts? What types of information do these promotional sites contain, and how is that information presented?
- g. What do you find most compelling about the brand's sustainability efforts? What information would you like to see that does not yet seem to be available?

8. Share students' discoveries:

- a. If time is limited, moderate a discussion that helps students delve into what they have found on these websites and how it could help them understand the broader realm of sustainable business principles and practices.
- b. If you have more time, consider asking students to build a digital presentation which uses the questions above to explore and analyze the brand information presented on the website. Where possible, encourage students to study the content and its presentation, and to present their findings with specific textual and visual evidence.

Moderate a discussion that encourages students to share the insights they gained from completing this project.

Part II. Cooking Lab

This lesson was developed in collaboration with Unilever. Not all packaged food products are created equal. As the students read in the earlier case study, Hellmann's has shifted to a more sustainable model: using cage-free eggs and sustainably-sourced oils for their mayonnaise. These decisions by major corporations can help contribute to a healthier food future. This recipe uses Hellmann's mayonnaise to create a delicious plant-based burger.



This program is made possible by generous support from Unilever.



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BLACK-EYED PEA BURGERS WITH SLAW

4 students

Equipment List

- 2 large bowls
- 4 peelers
- 4 cutting boards
- 4 knives
- 4 graters
- 2 wooden spoons
- Masher
- Citrus juicer
- 1 medium skillet
- 1 burner
- Metal spatula
- 1x ½ cup dry measure
- 1x ¼ cup dry measure
- 1x ⅓ cup dry measure
- 1x 1 teaspoon
- 1x ½ teaspoon

Food Items

- 1 small cabbage
- 2 to 3 carrots
- 1 teaspoon Dijon mustard
- 6 tablespoons lemon juice
- 4 tablespoons Hellmann's® mayonnaise
- a pinch of salt
- ¾ cup finely minced red onion
- 1 can black-eyed peas
- 1 cup shredded carrots
- 2 tablespoons finely chopped carrot tops or parsley
- 2 cloves garlic
- 1 teaspoon grated lemon peel
- ½ teaspoon ground cumin
- 1 tablespoon butter (substitute olive oil if desired)
- 8 slider buns



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BLACK-EYED PEA BURGERS WITH SLAW

YIELD: 8 sliders and side salad

Created by Chef Normajeau Longfield of
the Unilever Culinary Team

Ingredients

SLAW

- 1 small cabbage, very, very finely sliced
- 2 to 3 carrots, grated
- 1 teaspoon Dijon mustard
- 6 tablespoons lemon juice
- 2 tablespoons Hellmann's® mayonnaise
- a pinch of salt

BURGER

- 2 tablespoons Hellmann's® mayonnaise, divided
- $\frac{3}{4}$ cup finely minced red onion
- 1 can black-eyed peas (about 1 $\frac{1}{2}$ cups)
- $\frac{1}{3}$ cup shredded carrots
- 2 tablespoons finely chopped carrot tops or parsley
- 2 cloves garlic, minced
- 1 teaspoon grated lemon peel
- $\frac{1}{2}$ teaspoon ground cumin
- 1 tablespoon butter (substitute olive oil if desired)
- 8 slider buns

Directions

1. For slaw, mix vegetables in a large bowl. In a small bowl, whisk mustard and lemon juice, then add mayonnaise and salt. Taste for seasoning. Add to vegetables and mix.
2. For burgers, heat 1 Tablespoon mayonnaise in a non-stick skillet over medium heat and cook onions, stirring occasionally until tender, about five minutes.
3. Coarsely mash black-eyed peas in a large bowl. Stir in onion, carrot, carrot tops or parsley, garlic, lemon peel, cumin, remaining 1 Tablespoon mayonnaise and flour. Add salt and pepper to taste.
4. Shape into 8 small patties. Melt butter in the same skillet over medium heat and cook patties, turning once, until golden brown and heated through, about 10 minutes.
5. Serve on buns with a side of slaw.



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Achieving the Global Goals would create a world that is comprehensively sustainable: socially fair; environmentally secure; economically prosperous; inclusive; and more predictable. They provide a viable model for long-term growth, as long as businesses move towards them together. The goals are designed to interact, so progress on them all will have much more impact than achieving only some. Of course, the results will not be heaven on earth; there will be many practical challenges. But the world would undoubtedly be on a better, more resilient path. We could be building an economy of abundance.

These are results that business leaders will surely support. However, they are less likely to feel responsible for delivering them: one survey shows that half the business community think this is government territory.

EXHIBIT 1: The Global Goals for Sustainable Development



Our research tells a very different story. First, it shows that business really needs the Global Goals: they offer a compelling growth strategy for individual businesses, for business generally and for the world economy. Second, the Global Goals really need business: unless private companies seize the market opportunities they open up and advance progress on the whole Global Goals package, the abundance they offer won't materialise.

Those of us on the Commission who lead companies are choosing to incorporate the Global Goals for Sustainable Development into our core growth strategies, value chain operations and policy positions. This report argues that other business leaders should do the same and soon, whatever the scale of their operations.

“Achieving the Global Goals creates at least US \$12 trillion in opportunities.”

Achieving the Global Goals opens up US\$12 trillion of market opportunities in the four economic systems examined by the Commission. These are food and agriculture, cities, energy and materials, and health and well-being. They represent around 60 percent of the real economy and are critical to delivering the Global Goals. To capture these opportunities in full, businesses need to pursue social and environmental sustainability as avidly as they pursue market



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share and shareholder value. If a critical mass of companies joins us in doing this now, together we will become an unstoppable force. If they don't, the costs and uncertainty of unsustainable development could swell until there is no viable world in which to do business.

This is new territory. Moving business to a sustainable growth model will be disruptive, with big risks as well as opportunities at stake. It will involve experimenting with new "circular" and more agile business models and digital platforms that can grow exponentially to shape new social and environmental value chains. Knowing how to move first and fast is critical; so is reducing exposure to the risk of assets being stranded by the shift to low-carbon, more automated economies.

The report that follows is a call to action for current and future business leaders. It explains why they should go for growth in line with the Global Goals and how to lead that change, in their own businesses and beyond.

THE BUSINESS CASE FOR THE GLOBAL GOALS

The business case for sustainable development is strong already: it opens up new opportunities and big efficiency gains; it drives innovation; and it enhances reputations. With a reputation for sustainability, companies attract and retain employees, consumers, B2B customers and investors, and they secure their licence to operate. That's why sustainable companies around the globe are thriving and delivering attractive returns to shareholders. That is why over 9,000 companies around the world have already signed up to the 10 principles of the UN Global Compact, a guide to sustainable business behaviour.

The business case for sustainable development as core strategy gets much stronger as the world achieves the Global Goals. Our research shows that the Global Goals opens the 60 biggest market "hot spots" worth up to US\$12 trillion a year in business savings and revenue in the four examined economic systems alone by 2030 (Exhibit 2). The total economic prize from implementing the Global Goals could be 2-3 times bigger, assuming that the benefits are captured across the whole economy and accompanied by much higher labour and resource productivity. That's a fair assumption. Consider that achieving the single goal of gender equality could contribute up to US\$28 trillion to global GDP by 2025, according to one estimate. The overall prize is enormous.



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EXHIBIT 2: 60 biggest market opportunities related to delivering the Global Goals

	 Food and Agriculture	 Cities	 Energy and Materials	 Health and Well-Being
1	Reducing food waste in value chain	Affordable housing	Circular models - automotive	Risk pooling
2	Forest ecosystem services	Energy efficiency - buildings	Expansion of renewables	Remote patient monitoring
3	Low-income food markets	Electric and hybrid vehicles	Circular models - appliances	Telehealth
4	Reducing consumer food waste	Public transport in urban areas	Circular models - electronics	Advanced genomics
5	Product reformulation	Car sharing	Energy efficiency - non-energy intensive industries	Activity services
6	Technology in large-scale farms	Road safety equipment	Energy storage systems	Detection of counterfeit drugs
7	Dietary switch	Autonomous vehicles	Resource recovery	Tobacco control
8	Sustainable aquaculture	ICE vehicle fuel efficiency	End-use steel efficiency	Weight management programs
9	Technology in smallholder farms	Building resilient cities	Energy efficiency - energy intensive industries	Better disease management
10	Micro-irrigation	Municipal water leakage	Carbon capture and storage	Electronic medical records
11	Restoring degraded land	Cultural tourism	Energy access	Better maternal and child health
12	Reducing packaging waste	Smart metering	Green chemicals	Healthcare training
13	Cattle intensification	Water and sanitation infrastructure	Additive manufacturing	Low-cost surgery
14	Urban agriculture	Office sharing	Local content in extractives	
15		Timber buildings	Shared infrastructure	
16		Durable and modular buildings	Mine rehabilitation	
17			Grid interconnection	



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Leading for sustainable development

The Commission has identified the following six actions you can take as a business leader to capture your share of this prize. All of them need real leadership from the top, to inspire purpose and commitment among everyone in your business and to transform the markets in which you all operate together.

1. **Build support for the Global Goals as the right growth strategy** in your companies and across the business community. The more business leaders who understand the business case for the Global Goals, the faster progress will be towards better business in a better world.
2. **Incorporate the Global Goals into company strategy.** That means applying a Global Goals lens to every aspect of strategy: appointing board members and senior executives to prioritise and drive execution; aiming strategic planning and innovation at sustainable solutions; marketing products and services that inspire consumers to make sustainable choices; and using the goals to guide leadership development, women’s empowerment at every level, regulatory policy and capital allocation. Achieving the Global Goals will create 380 million new jobs by 2030. You need to make sure your new jobs and any others you generate are decent jobs with a living wage, not only in your immediate operations but across your supply chains and distribution networks. And you need to help investors understand the scale of value that sustainable business can create.
3. **Drive the transformation to sustainable markets with sector peers.** Shifting whole sectors onto a sustainable footing in line with the Global Goals will unlock much bigger business opportunities. Consider food and agriculture. A global food and agriculture system in line with the Global Goals would deliver nutritious, affordable food for a growing world population, generate higher incomes – especially for the world’s 1.5 billion smallholders – and help restore forests, freshwater resources and vital ecosystems, including the world’s oceans. It would create new economic value of more than US\$2 trillion by 2030 and would be much more resilient to climate risk.

“Business as usual” will not achieve this market transformation. Nor will disruptive innovation by a few sustainable pioneers be enough to drive the shift: the whole sector has to move. Forward-looking business leaders are working with sector peers and stakeholders to map their collective route to a sustainable competitive playing field, identifying tipping points, prioritising the key technology and policy levers, developing new skill profiles and jobs, quantifying new financing requirements, and laying out the elements of a just transition. Over the next 15 years, driving system change in line with the Global Goals with sector peers will be an essential, differentiating skill for a world-class business leader. It means shaping new opportunities, pre-empting the risks of disruption and renewing businesses’ licence to operate.

4. **Work with policy-makers to pay the true cost of natural and human resources.** Sustainable competition depends on all the competitors facing prices that reflect the true costs of the way they do business – internalising the externalities, to use the jargon. The idea of pricing pollution at its true environmental and social cost has been around for a long time. But the need for strong carbon pricing is becoming ever more urgent to tackle the risk of runaway climate change.



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Establishing prices for carbon as well as other environmental resources (especially water in many areas) and sticking to those prices fires the starting gun for a “race to the top”. Businesses that choose to pay living wages and the full cost of their resources need to be certain that their competitors will do the same in the not too distant future if they are not to be at a cost disadvantage. Business leaders must therefore work openly with regulators, business and civil society to shape fiscal and regulatory policies that create a level playing field more in line with the Global Goals. This could involve fiscal systems becoming more progressive through putting less tax on labour income and more on pollution and under-priced resources.

5. **Push for a financial system oriented towards longer-term sustainable investment.** Achieving the Global Goals will likely require an estimated US\$2.4 trillion a year of additional investment, especially for infrastructure and other projects with long payback periods. There is enough capital available. But in the world’s uncertain circumstances, most investors are looking for liquidity and short-term gains. As soon as companies are paying “full” prices that reflect social and environment externalities, then their financial performance will be the main signal that investors need to understand companies’ relative performance on the Global Goals. But achieving full prices across the economy will take time. Until then – and to help bring that day closer – business leaders can strengthen the flow of capital into sustainable investments by pushing for three things: transparent, consistent league tables of sustainability performance linked to the Global Goals; wider and more efficient use of blended finance instruments to share risk and attract much more private finance into sustainable infrastructure; and alignment of regulatory reforms in the financial sector with long-term sustainable investment.
6. **Rebuild the Social Contract.** Trust in business has eroded so sharply since the global financial crisis, the social fabric is wearing thin. Many see business as renegeing on its social contract. Business leaders can regain society’s trust and secure their licence to operate by working with governments, consumers, workers and civil society to achieve the whole range of Global Goals, and adopting responsible, open policy advocacy.

Rebuilding the social contract requires businesses to pay their taxes transparently like everyone else and to contribute positively to the communities in which they operate. In total, there are over 700 million workers employed directly and indirectly in global supply chains. Treating them with respect and paying them a decent wage would go a long way to building a more inclusive society and expanding consumer markets. Investing in their training, enabling men and women to fulfil their potential, would deliver further returns through higher labour productivity. And ensuring that the social contract extends from the formal into the informal sector, through full implementation of the UN's Guiding Principles on Human Rights, should be non-negotiable. There are still between 20-40 million people working in forms of modern slavery¹⁶ and over 150 million children working in the fields, mines, workshops, and rubbish dumps that underpin much of the global economy, unseen and unprotected.

“More than 150 million children are working unseen and unprotected.”



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Reading

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This is an unacceptable feature of 21st century capitalism – one that boardrooms, investors and consumers can no longer ignore.

Making the choice

Businesses don't have to lead the shift to a sustainable global economy. There are two alternatives. They can do more of the same, so today's slow shuffle towards sustainability continues, two steps forward, one or more steps back. Or they can delay the shift because of apparent advantages to them in the status quo.

But neither option has a long-term future. The environmental and climate science is clear: so are the growing costs of inaction. People and most governments want faster progress.

Delaying a better world is wrong, and decent board members, employees, consumers and investors want to do the right thing. And if progress is too slow, there may be no viable world to do business in.

If social and environmental indicators don't improve in the next 5-15 years, what's most likely is a strengthening popular backlash against business and increasingly drastic regulatory responses from governments. First movers who have already aligned their resource use and workforce management with the Global Goals will have a 5-15 year advantage on the sustainable playing field. The faster a critical mass of company leaders decide to line up their business objectives with the Global Goals and make their sectors more sustainable, the more business there will be for everyone in a more predictable, prosperous, peaceful world.

"First movers will have a 5 to 15 year advantage."

Some of us on the Commission run or serve smaller businesses and all of us have vendor and supply chains that include medium and small enterprises. We recognise that many of the 380 million new jobs that achieving the Global Goals will create, will be in businesses of this scale. Their strategies are critical to progress towards sustainable markets and value chains. Progress could be delayed if they don't get enough support. In particular, they need access to affordable finance to make sustainable investments that make a positive social and environmental impact as well as a decent return.

Over the coming months, members of the Commission plan to give our support to all those business leaders who, like us, want better business in a better world. It is time to change the game.



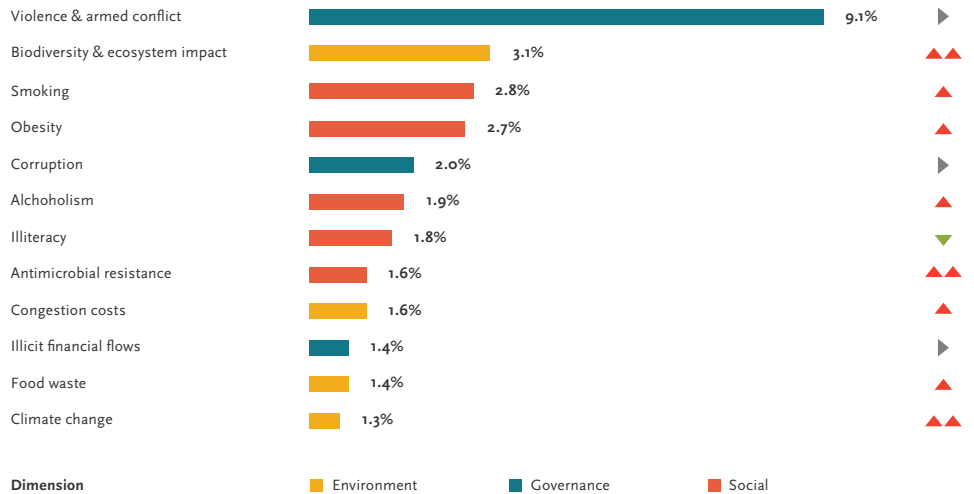
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QUESTION: SO WHAT ARE THE PROBLEMS CAUSED BY OUR CURRENT ECONOMIC SYSTEM?

EXHIBIT 3: Global burdens arising from the current model of economic development

Estimated annual global direct economic impact associated with selected global burdens
Share of global GDP, 2014

Future Trend *



* Assumes a “business-as-usual” approach where no concerted action is taken to address these global burdens.
Source: Literature review; WHO Global Burden of Disease database; McKinsey Global Institute, AlphaBeta analysis.

QUESTION: WHAT PROBLEMS DO BUSINESS LEADERS SEE IN THE AREA OF FOOD AND AGRICULTURE, AND WHAT TARGETS MIGHT HELP TO ADDRESS THEM?

2.2 Opportunities by economic system

The opportunities identified in each system arise from tackling the biggest social and environmental challenges confronting the systems in line with the Global Goals.

Food and agriculture. The global food system faces unprecedented challenges. There are 800 million undernourished people and 2 billion suffering from micronutrient deficiencies; crop yields are growing much more slowly than world population, which means that up to 220 million additional hectares of cropland could be needed by 2030 to meet expected demand for food, feed and fuel; and major environmental stresses, including water scarcity, loss of biodiversity, unsustainable fertiliser use and climate-driven extreme weather, all threaten supply.

The 14 largest opportunities in 2030 identified for companies that develop business models addressing these and further challenges facing food and agriculture have an estimated potential value of over US\$2.3 trillion at current prices. These opportunities include:

- **Reducing food waste in the value chain** (worth US\$155-405 billion a year by 2030). Today, 20-30 percent of food is wasted, much of it in post-harvest losses that are easy to prevent with technologies like small metal silos or plastic crates. In India and Rwanda, such technologies have reduced losses by over 60 percent – and increased smallholder farmers’ incomes by more than 30 percent.



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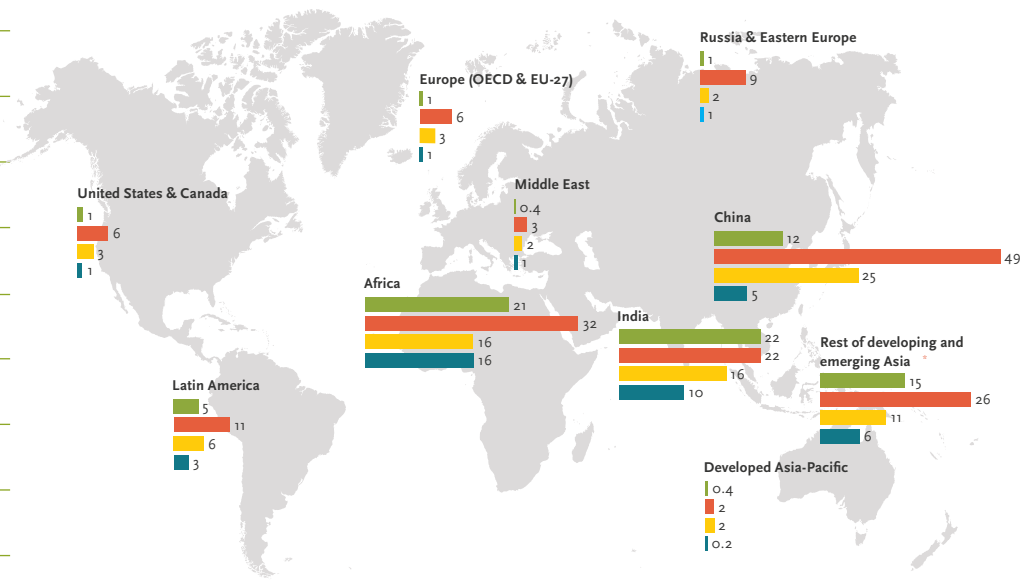
- **Forest ecosystem services** (US\$140-365 billion a year by 2030). Deforestation and forest degradation accounts for 17 percent of global emissions, more than transport. Just four commodities – beef, soy, palm oil and paper/pulp – are responsible for driving half of all deforestation. Assuming a carbon price of US\$50 per tonne by 2030 (roughly consistent with the planning assumption many leading companies make today) opens up major new opportunities in sustainable forest services, such as climate change mitigation, watershed services and biodiversity conservation, if mechanisms to pay for them develop too.
- **Low-income food markets** (US\$155-265 billion). The world's-poorest people spend as much as 60 percent of their household income on food – yet undernutrition and malnutrition remain widespread. Business can address this challenge by investing in supply chains and food innovation to give those on very low incomes access to food products that are more nutritious. As poverty decreases in line with Global Goal 2, so the 800 million people now undernourished will have more to spend on food.

QUESTION: WHO WOULD BENEFIT FROM SUSTAINABLE BUSINESS PRACTICES?

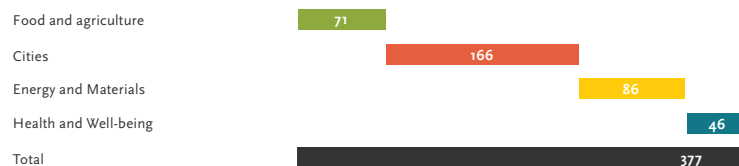
EXHIBIT 8:

Almost 380 million jobs could be created by Global Goals business opportunities in the four systems. Total jobs created by SDG business opportunities by region and system; In millions

■ Food and Agriculture ■ Cities ■ Energy and Materials ■ Health and Well-being



Total jobs created Millions of jobs



* Rest of developing Asia includes Central Asia (e.g., Uzbekistan), South Asia (e.g., Bangladesh), Southeast Asia (e.g., Laos), and North Korea. Note: Numbers may not sum due to rounding Source: Literature search, AlphaBeta analysis



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QUESTION: HOW WOULD CHANGE TAKE PLACE, AND WHAT WOULD BE SOME OF ITS GOALS?

The Commission's work on the food and agriculture economic system illustrates how such a Global Goal roadmap could help transform markets. The sample roadmap below gives an idea of what the details of a future sustainable economic system compared to its current state might look like.

EXAMPLE: WHAT MIGHT A GLOBAL GOAL ROADMAP FOR THE FOOD AND AGRICULTURE SYSTEM LOOK LIKE?

1. Vision

The food and agriculture system could capture sustainable opportunities in five key areas: i) inputs, ii) production, iii) food processing, iv) logistics and v) retail and disposal – in each of which, a shift from the status quo to a new, sustainable system would be envisioned.

2. Change map

The biggest changes will need to be made in:

- Growing markets which serve low-income consumers, create sustainably sourced products and focus on new breeding techniques / microbial fertilisers; and
- Lowering the amount of food loss along the production and supply chain, and shrinking the market size of products that use a lot of water, energy and land in their production.

See Page 11: Roadmap to a sustainable food and agriculture system: the vision on the next page.

3. Solutions

These could include a combination of:

- Engaging with public policy, e.g. pricing of environmental externalities to move from resource-intensive production and encourage production with lower environmental costs;
- Innovating products or services, e.g. assisting smallholder farms in implementation of new technology and better irrigation systems to move from limited innovation in production to “big data farming” and more use of micro-irrigation techniques;
- Driving sustainability through supply chain, e.g. funding research into new, less damaging farming techniques, to move from “heavy deforestation” products to sustainable forestry approaches such as holistic grazing;
- Changing consumer behaviour, e.g. engaging with consumers to change their food waste management and move from high levels of food waste to composting and energy capture; and
- Public private partnerships, e.g. partnering between public sector and private sector to decrease incidence of non-communicable diseases such as obesity and diabetes, moving from high sugar / high fat products to reformulated low sugar/low fat products.



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4. Overcoming Barriers

For example, a potential challenge is the adoption of pricing of environmental externalities: national-level pricing policies could prompt companies to move operations to countries with more lenient price policies (i.e. lower cost for companies). Potential solution would be supranational/global policy on pricing of environmental externalities to minimise risk of a “race to the bottom.”

Roadmap to a sustainable food and agriculture system: the vision

Value Chain Area	Current Value (US\$Billions)	From...	To...
Inputs	520	<ul style="list-style-type: none"> Traditional fertilisers Limited public/private collaboration Basic cross-breeding Aqua- and land-based feedstocks operating in silos 	<ul style="list-style-type: none"> Microbial fertilisers New PPPs focused on adapting technology to local conditions Precision phenotyping and bioinformatics Consideration of sustainability of blended approach of aqua- and land-based feedstocks
Production	2,175	<ul style="list-style-type: none"> Water, energy and land intensive products (e.g., beef) Forest degradation through unsustainable farming practices Heavy deforestation products (e.g., unsustainably sourced palm oil) Arms length dealings with smallholder farmers Loss-making fishing fleets Limited monitoring of animal welfare Low water-efficiency agriculture Limited innovation in production Low data, traditional farming Farming remote from markets 	<ul style="list-style-type: none"> Focus on crop and meat selection with lower environmental footprint Sustainable forestry management (e.g., agroforestry, reduced impact logging) Sustainable agriculture approaches (e.g., holistic grazing; low till/no till agriculture) Contract farming and new partnership models Sustainable fishery models/aquaculture Animal health monitoring & diagnostics Micro-irrigation techniques Precision agriculture Big data farming Urban farming
Food processing	1,377	<ul style="list-style-type: none"> High food waste processors High sugar/fat products Unfortified food production 	<ul style="list-style-type: none"> Low food waste processors Product reformulation, low fat/sugar products Food fortification
Logistics	>300	<ul style="list-style-type: none"> Limited storage systems Limited traceability 	<ul style="list-style-type: none"> Cloud storage systems Fully traceable product systems
Retail & disposal	7,180	<ul style="list-style-type: none"> Limited consumer differentiation for sustainable products Low food safety focus High levels of food waste 	<ul style="list-style-type: none"> Sustainably sourced and fair trade products Food safety as business opportunity Composting and energy capture

