

**Key Signals**
**Scenario Overviews**
**COMMONS**

**Sustainable Citizens**  
**Little Sister is Watching**  
**Open Economy**  
**Sustainability Reputations**  
**Global E-Unions**  
**Open-Source Design**  
**P2P Energy**  
**P2P Recycling**  
**Micropower Markets**

In the Commons scenario, bottom-up development and an “Open Economy” may shift transportation from individual vehicles to a system of interconnected modes of transit. Networks connecting individuals and mobility systems can lead to seamless transitions between modes of transportation and enable next generation ride-sharing programs. Increased transparency and “Sustainability Reputations” will also provide people with deeper understanding of the impacts of their travel habits. Companies in this space will need to be prepared for a new level of scrutiny.

**MARKETS**

**Downsizing**  
**Markets in the Metaverse**  
**Impact Accounting**  
**Ecosystem Services Markets**  
**Wall Street as Watchdog**  
**Urban (Re)mining**  
**Sustainable South**  
**Carbon & Biodiversity Trials**

In this scenario, the transportation industry is driven by the market demand for sustainable mobility systems. The products set up to succeed are better for society and the environment during the production, use, and post-use stages, and these effects will be measured through “Impact Accounting.” The traditional model of vehicle ownership may even be questioned and perhaps replaced by leasing, a sharing model, or public transit. As measuring carbon footprints becomes common practice, the transportation industry may become a prominent target—perhaps even for “Carbon Trials.”

**POLICY**

**Managed Migration**  
**Sustainability Labeling**  
**Redistributive Carbon Tax**  
**Infrastructure Taxes**  
**Local Value Policies**  
**New Public Utilities**  
**Environmental Armed Forces**  
**Tradable Emissions Quotas**  
**Global Policy Framework**

In the Policy scenario, regulation will force a global shift towards sustainable behavior, impacting business throughout the entire transportation supply chain. Policies such as “Managed Migration” or a “Redistributive Carbon Tax” may impact labor conditions during materials extraction, chemicals used during manufacturing, efficiency of vehicles, consumer travel behavior, and product take-back systems. “Local Value Policies” and government support for “New Public Utilities,” including transit services, are likely to change automobile usage.

**SCIENCE & TECH**

**Personal Lifecycle Tools**  
**Low-Impact Robotics**  
**Molecular Manufacturing**  
**SVVs**  
**Sustainable “Levittown”**  
**Waste = Resource**  
**Moonlanding as Model**

In this future, transportation as we know it will be transformed by technology into innovative mobility machines and systems. Not only new fuel systems, but new advances in navigation systems, public transit, travel lifestyles, and transportation infrastructure will redefine the automobile. New technologies, such as “Molecular Manufacturing,” and closed-loop design approaches, where “Waste = Resource,” will change production processes to be more sustainable. Transportation businesses must be connected with the latest technological developments in order to keep up with the evolving industry.

	Business Implications	Risks	Opportunities
<b>COMMONS</b>	<p><b>Global E-Unions</b></p> <p>As workers unite globally online, their ability to share information and expectations will change the nature of labor negotiations.</p>	<ul style="list-style-type: none"> <li>■ <b>Increase in union power</b> United workers around the globe can collectively impact larger portions of the supply chain.</li> <li>■ <b>Higher exposure</b> Working-conditions issues spread quickly via networked interfaces.</li> <li>■ <b>Need for global alignment</b> Responding to Global E-Unions requires effective international coordination within the company.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Improved understanding</b> Increased transparency of working conditions enable better informed decision making.</li> <li>■ <b>Reducing risk</b> As more under-represented workers (e.g., migrant workers) gain a voice, risk of human rights violations is reduced.</li> </ul>
<b>MARKETS</b>	<p><b>Sustainable South</b></p> <p>Companies in the global South will have a larger role in defining standards for industry and sustainability strategies.</p>	<ul style="list-style-type: none"> <li>■ <b>Decrease in OEM leverage</b> A growth in the number of auto makers globally will provide suppliers with more options and negotiating power.</li> <li>■ <b>New rules</b> Coordination on Southern regulatory, trade, and sustainability standards will require all to adapt in order to remain competitive.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Investing in economic development</b> Building relationships in the South leads to opportunities for sustainable business development as the industry grows.</li> <li>■ <b>Differentiation strategy in North</b> Northern businesses may consider competing on high-end quality and sustainability to differentiate themselves from the Southern market.</li> </ul>
<b>POLICY</b>	<p><b>New Public Utilities</b></p> <p>New forms of utilities, such as those based on travel, will change the demand for vehicles as consumers gain new incentives to watch their mobility behavior.</p>	<ul style="list-style-type: none"> <li>■ <b>Travel substitutes</b> New models for mobility and accessibility may start to fill in the current role of vehicles.</li> <li>■ <b>Policy impacts</b> Policies supporting new transit-related utilities may impact the business regulatory environment.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Service model</b> Travel services (e.g., car sharing, public transit) may play a larger role.</li> <li>■ <b>Technology enhancements</b> Vehicles will include technologies to measure and optimize travel behavior.</li> <li>■ <b>Fuel efficient vehicles</b> Demand for more efficient vehicles and mass transit is likely to increase.</li> </ul>
<b>SCIENCE &amp; TECH</b>	<p><b>SVVs</b></p> <p>As next-generation vehicles are built on cutting edge technologies, current automotive companies must find a way to be a part of this movement.</p>	<ul style="list-style-type: none"> <li>■ <b>New competitors</b> New technologies will bring new types of vehicles and innovative production processes into the competition.</li> <li>■ <b>Uncertain adoption</b> As the automobile is redesigned through a range of technologies, betting on which ones will be adopted as mainstream will be a gamble.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Innovative products &amp; services</b> Technology opens the door for new mobility solutions; the automotive industry can shift its strategy from commodity to product differentiation.</li> <li>■ <b>Partnerships</b> There will be opportunities for automotive companies to partner with technology firms to offer new types of vehicles.</li> </ul>





Key Signals

Scenario Overviews

COMMONS

- New Political Identities
- Human Rights Commons
- Little Sister is Watching
- Open Economy
- Sustainability Reputations
- Global E-Unions
- Open-Source Design
- P2P Recycling

In the Commons scenario, individuals will have more say in the products they purchase, impacting the role of the consumer products industry. The commons will enable consumers to be involved in the design phase through “Open-Source Design,” make more informed purchasing decisions based on “Sustainability Reputations,” and promote “P2P Recycling” after use. Workers and civil society, empowered by more information, will have a stronger voice as well, and the industry must find a place for these perspectives in its business practices.

MARKETS

- CSR SmartMobs
- Downsizing
- Innovation from the Margin
- Markets in the Metaverse
- Impact Accounting
- Real-time Feedback
- Wall Street as Watchdog
- Sustainable South

In this scenario, the consumer products industry must find a way to continually reinvent itself to meet the demands of consumers that are increasingly interested in sustainable and sustainably produced products. Further, with “Wall Street as Watchdog” demanding stringent measurement and reporting with “Impact Accounting,” the consumer products industry will need to monitor and improve its sustainability record in order to capitalize on a growing number of market-based incentives.

POLICY

- Global Public Goods
- Language Preservation
- Managed Migration
- Sustainability Labeling
- Redistributive Carbon Tax
- Local Value Policies
- Global Policy Framework
- Resource Nationalism

Policy-makers at the local and global level will push the sustainability agenda, be it through a “Redistributive Carbon Tax,” “Sustainability Labeling,” or the enactment of a “Global Policy Framework,” requiring Consumer Products companies to adapt their practices. Policies that govern transnational labor patterns, such as “Managed Migration,” will also impact the industry’s labor force. Leadership companies can seek a first mover’s advantage by meeting these regulations proactively.

SCIENCE & TECH

- Extended Human Capacity
- Personal Lifecycle Tools
- Socially Responsible Geomapping
- Low-Impact Robotics
- Molecular Manufacturing
- Waste = Resource

Technology will enhance the consumer products industry’s operations in a range of functions. “Low-Impact Robotics” and “Extended Human Capacity” can help increase overall productivity. Closed loop “Waste = Resource” systems could potentially result in cost savings. Simulation and monitoring technologies, such as “Eco-Simulation” and “Socially Responsible Geomapping,” can help inform the design and engineering processes, enabling sustainability considerations to be integrated throughout the entire value chain.

	Business Implications	Risks	Opportunities
<b>COMMONS</b>	<p><b>Open-Source Design</b></p> <p>As design becomes more democratized, upholding intellectual property rights will become an increasing challenge.</p>	<ul style="list-style-type: none"> <li>■ <b>Design becomes a commodity</b> As more design takes place in the commons, the role of design by corporations is challenged.</li> <li>■ <b>Increased competition</b> Traditional manufacturing businesses can increasingly compete on the basis of design.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Open-source design tools</b> Companies can provide products to enable open-source design.</li> <li>■ <b>Design certification</b> Companies can meet the demand to distinguish good design by providing labels and rankings.</li> <li>■ <b>Enhanced marketing opportunities</b> Companies can identify and market good open source designs.</li> </ul>
<b>MARKETS</b>	<p><b>Downsizing</b></p> <p>Faced with a decrease in demand for material goods, industry will need to re-invent itself to remain relevant.</p>	<ul style="list-style-type: none"> <li>■ <b>Decrease in Demand</b> Companies that are unable to move from the provision of goods to services or tap into new distribution channels will lose business.</li> <li>■ <b>Heightened Competition</b> The virtual world threatens companies that are unable to establish a brand presence and develop an active engagement strategy with consumers online.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>New Markets</b> Companies that innovate and redefine their offerings from goods to services will be able to tap into new markets.</li> <li>■ <b>Reduced Risks</b> Companies that move to a service-based model will be less exposed to the reputational risks associated with out-sourced manufacturing.</li> </ul>
<b>POLICY</b>	<p><b>Local Value Policies</b></p> <p>With government policies supporting local businesses, the competitiveness of global operations will be challenged.</p>	<ul style="list-style-type: none"> <li>■ <b>Global supply chains undermined</b> Policies that reward local business may take away benefits of global supply chains.</li> <li>■ <b>Economies of scale challenged</b> Local production and distribution diminishes the traditional benefits of economies of scale.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Decentralized business model</b> Companies can develop localized operations to meet local market demands.</li> <li>■ <b>Stronger loyalty</b> Localized businesses may lead to stronger customer and employee loyalty.</li> <li>■ <b>Reduced footprint</b> Potential cost savings can result from reducing global footprint through energy savings and carbon taxes.</li> </ul>
<b>SCIENCE &amp; TECH</b>	<p><b>Extended Human Capacity</b></p> <p>As people push the limits of physical human capabilities, the abilities and interests of customers, employees, local communities, and other stakeholders will evolve.</p>	<ul style="list-style-type: none"> <li>■ <b>Product obsolescence</b> Extended human capacity may replace the need for existing products.</li> <li>■ <b>Unequal opportunity</b> Unequal access to enhancements will result in asymmetrical competition and provide some employees with an unfair advantage.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>New products &amp; services</b> New markets are created for products and services to extend human capacity and to meet the resulting changing demographics.</li> <li>■ <b>Stable workforce</b> Extended human capabilities could lead to healthier and more productive workers.</li> </ul>



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**Human Rights Commons**  
**Little Sister is Watching**  
**Sustainability Reputations**  
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**P2P Energy**  
**P2P Recycling**  
**SMS Democracy**  
**Micropower Markets**

In the Commons scenario, the extractives industry is subject to heightened scrutiny in its labor and environmental practices. Individuals can collect information on extractive operations, including footprinting, health and safety records, and wage policies, and share this with other consumers, civil society organizations, and unions. In other words, “Little Sister is Watching.” In this scenario, companies that proactively partner with the commons (e.g., through “Human Rights Commons” or “P2P Recycling”) will be better off.

**MARKETS**

**Downsizing Production**  
**Markets in the Metaverse**  
**Impact Accounting**  
**Ecosystem Services Markets**  
**Wall Street as Watchdog**  
**Urban (Re)mining**  
**Carbon & Biodiversity Trials**  
**Sustainable South**

In the Markets scenario, consumers will spend an increasing amount of time in the virtual world and spend less on the acquisition of material goods, thereby “Downsizing” production. Wall Street will demand integrated reporting based on “Impact Accounting,” and customers will track companies’ ecological impacts, pushing the industry to innovate and improve its sustainability record. Extractive companies will need to find creative ways, such as “Urban (Re)mining,” to meet consumers’ and investors’ expectations on sustainability performance.

**POLICY**

**Global Public Goods**  
**Managed Migration**  
**Redistributive Carbon Tax**  
**Undevelopment Policies**  
**Local Value Policies**  
**Endangered Ecosystems**  
**Global Policy Framework**  
**Resource Nationalism**

At the local level, regulators will develop “Local Value Policies” to protect communities and regional ecosystems, while at the international level, they will set a “Global Policy Framework” to govern global resources, address the environmental implications of extraction, oversee wages and working conditions, and manage transnational labor patterns. Extractive companies will be expected to invest in local communities while meeting more stringent global resource management standards that may restrict the industry’s overall mobility.

**SCIENCE & TECH**

**Extended Human Capacity**  
**Socially Responsible**  
**Geomapping**  
**Low-Impact Robotics**  
**Sustainable “Levittown”**  
**Eco-Sensor Networks**  
**Geoengineering**  
**Waste = Resource**  
**Eco-Simulation**

Science and technology will enable communities to monitor extractive operations and make relevant sustainability data accessible to local populations. Communities will also be able to model current impacts on ecosystems and simulate long-term consequences of extraction through “Learning Ecologies” and “Eco-Simulation” technologies. The extractive industry must keep track of new technological developments that enable them to be more sustainable, such as “Waste = Resource” systems, in order to meet local and global stakeholder expectations.

	Business Implications	Risks	Opportunities
<b>COMMONS</b>	<p><b>Global E-Unions</b></p> <p>Global collective bargaining will lead unions toward the highest common denominator, potentially raising wages where local unions have historically been weak.</p>	<ul style="list-style-type: none"> <li>■ <b>Increase in labor cost</b> A rapid rise in labor costs may halt exploration in some locations.</li> <li>■ <b>Low grade exploration challenged</b> If wages increase regardless of productivity and process grade, exploring lower grade deposits in locations with cheap labor may become unviable.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Alignment of industry &amp; union expectations</b> Wage information will be shared globally, enabling better alignment of unions with each other and with industry.</li> <li>■ <b>Skill transfer</b> A connected workforce will enable companies to develop new models for skill transfer and be better equipped to hire locally and promote workers from within.</li> </ul>
<b>MARKETS</b>	<p><b>Urban (Re)Mining</b></p> <p>Urban re-mining challenges traditional exploration and provides an untapped and more sustainable avenue for metals and minerals.</p>	<ul style="list-style-type: none"> <li>■ <b>Increased competition</b> New sources of metals and minerals will spur the growth of smaller extractive businesses that specialize in urban re-mining.</li> <li>■ <b>Loss of customers</b> Cradle-to-cradle mining will have greater appeal to environmentally conscious customers.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Increase in market share</b> Companies that proactively explore urban re-mining may be able to increase market share.</li> <li>■ <b>Enhanced reputation</b> Extractive operations can market themselves as cradle-to-cradle operations, boosting their overall reputation.</li> </ul>
<b>POLICY</b>	<p><b>Undevelopment Policies</b></p> <p>Government mandates to protect regions will impact the extractive industry's flexibility in conducting explorations.</p>	<ul style="list-style-type: none"> <li>■ <b>Increased capital costs</b> Legislation could mandate levels of protected regions resulting in increased capital cost and potential closure of marginal projects.</li> <li>■ <b>Ill-defined regulation</b> Policies may be poorly designed due to inadequate consultation, resulting in negative impacts on both the industry and local communities.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Increased access to resources</b> As land use expectations are clarified, companies leading in sustainable practices may gain preferential access to resources.</li> <li>■ <b>Public / private partnerships</b> Proactive companies engaging with the public sector can play an influential role in the development of win-win regulations.</li> </ul>
<b>SCIENCE &amp; TECH</b>	<p><b>Eco-Simulation</b></p> <p>Simulations will model impacts of company operations and share data with relevant local and global stakeholders.</p>	<ul style="list-style-type: none"> <li>■ <b>Inaccurate simulations</b> Simulation models can be misinterpreted or misused, and erroneous information broadcast globally may rapidly hurt the industry.</li> <li>■ <b>Loss of license to operate</b> Poor performance could negatively impact resource access locally and damage the company's and industry's reputation globally.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Better data</b> Ecological impacts will be more accurately factored into project decision-making, positively impacting a company's overall sustainability.</li> <li>■ <b>Competitive advantage</b> Leadership companies that actively reduce their impact will enjoy increased levels of trust from communities.</li> </ul>





Key Signals

Scenario Overviews

COMMONS

- Sustainable Citizens
- Sustainability Reputations
- Global E-Unions
- P2P Food
- Emergent Famine Response
- Biosphere Rights
- Biotrusts

In the Commons scenario, the food and beverage industry is contending with both an expansion of the local food movement and an increase of information in the public domain, including product performance and environmental footprints through “Sustainability Reputations.” The combination empowers consumers to use and create real-time information on products and brand choices and to drive increased local control over food access. The advent of “Biotrusts” proves challenging to traditional R&D models.

MARKETS

- CSR SmartMobs
- Green Health
- Ecosystem Services Markets
- Wall Street as Watchdog
- (Agri)cultured Organisms
- Carbon and Biodiversity Trials
- Global Standards Consortium

In this scenario, the Food and Beverage industry will be at the confluence of shifting consumer demands and marketplace drivers for sustainability performance. Companies will be exposed to intense scrutiny regarding use of resources through new transparency practices driven by “Wall Street as Watchdog” and a “Global Standards Consortium.” They will also enjoy clear market drivers for sustainable performance and products with the advent of “CSR SmartMobs.”

POLICY

- Sustainable Children
- Managed Migration
- Sustainability Labeling
- Redistributive Carbon Tax
- Local Value Policies
- Environmental Armed Services
- Food Web Protections
- Endangered Ecosystems
- Global Policy Framework

The food and beverage industry will find this scenario disruptive as natural resource use and stewardship take center stage for policy makers. The already confusing and sometimes conflicting international, national, and local regulatory regimes will grow increasingly complex and onerous with new labeling and tax schemes. Supply cycle disruptions from “Resource Nationalism” and “Endangered Ecosystems” will prove difficult to navigate. Anticipation and flexibility are necessary for companies to stay ahead.

SCIENCE & TECH

- High-Tech Personal Medicine
- Extended Human Capacity
- Personal Lifecycle Tools
- Sustainable “Levittown”
- Waste = Resource
- Cultured Meat
- Nanopurification
- Seed Banks and Frozen Zoos
- Geoengineering
- Moonlanding as Model

Developments in science and technology will have a big impact on the food and beverage industry. Innovations such as “Cultured Meat” will alter the production cycle and will come with a high bar for consumer acceptance. Technology such as “Personal Lifecycle Tools” will further drive transparency of company and product sustainability performance profiles requiring companies to address sustainability issues in real-time.

	Business Implications	Risks	Opportunities
<b>COMMONS</b>	<p><b>P2P Food</b></p> <p>The traditional food value chain is fully disrupted as production and distribution of food has been taken over by locally governed and run cooperatives.</p>	<ul style="list-style-type: none"> <li>■ <b>Increased scrutiny</b> Industrial food system faces severe scrutiny and possible backlash for its legacy.</li> <li>■ <b>Infrastructure barrier</b> Industry infrastructure prevents flexibility and adaptation.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Regional assets</b> Regional assets (relationships and infrastructure) can be leveraged to serve the P2P movement.</li> <li>■ <b>Commons service partner</b> Companies can sell know-how and assets to the commons to meet their objectives.</li> <li>■ <b>Enhanced reputation</b> Reputation benefits flow from adaptability and partnerships.</li> </ul>
<b>MARKETS</b>	<p><b>Ecosystem Services Markets</b></p> <p>New value propositions and revenue streams mature throughout the supply chain, introducing new market drivers for sustainably managed land assets.</p>	<ul style="list-style-type: none"> <li>■ <b>Poor performance</b> Companies face financial and reputation penalties for poor management of land assets.</li> <li>■ <b>High prices</b> Pressure on production to implement sustainable practices may result in excessive costs and higher food prices.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>New financial model</b> New markets lead to new revenue streams for supply chain partners.</li> <li>■ <b>Performance as brand</b> Positive performance can be marketed to stakeholders.</li> <li>■ <b>Market access</b> Good performance can lead to new partners and access to new markets.</li> </ul>
<b>POLICY</b>	<p><b>Food Web Protections</b></p> <p>The traditional industrial agriculture model is challenged as land use is increasingly protected by local and regional regulations. Flexibility will be rewarded.</p>	<ul style="list-style-type: none"> <li>■ <b>Cost structure pressure</b> Efficient systems built on economies of scale will need to evolve to enable flexibility.</li> <li>■ <b>Meeting compliance standards</b> Companies that cannot adapt quickly may risk reputation damage.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Local business rewards</b> Companies can develop localized operations to meet local market demands.</li> <li>■ <b>Stronger loyalty</b> Localized businesses may lead to stronger consumer and employee loyalty.</li> <li>■ <b>Reduced footprint</b> Potential cost savings result from reducing global footprint (e.g., transport).</li> </ul>
<b>SCIENCE &amp; TECH</b>	<p><b>High-Tech Personal Medicine</b></p> <p>Access to customized, real-time information changes consumer purchasing behavior and exposes individual products and companies to increased scrutiny.</p>	<ul style="list-style-type: none"> <li>■ <b>Consumer scrutiny</b> "Radical," real-time transparency leaves "no place to hide" for companies of debatable health performance.</li> <li>■ <b>Product obsolescence</b> Traditional processed foods find less market appeal.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Food = medicine</b> New product opportunities abound to position food and beverage as medicine/nutrition delivery devices.</li> <li>■ <b>New business partners</b> Companies look to non-traditional partners (e.g., pharmaceutical, fitness, technology) to innovate.</li> <li>■ <b>New markets</b> New market segments open with new product and performance benefits.</li> </ul>







Key Signals

Scenario Overviews

COMMONS

- New Political Identities
- Little Sister is Watching
- Open Economy
- Financial Commons
- Sustainability Reputations
- Biotrusts
- New Civil Society

In this scenario, the professional services sector will begin to see its customer base erode and then evolve. As the commons takes on more roles that have previously been dominated by business and government, the professional services sector will develop new services and products that enable the commons to deliver on the promise of bottom-up innovation, leadership, and governance. Professional services firms across a range of disciplines are adapting services that enable “Little Sister is Watching” and “Sustainability Reputations” to take hold.

MARKETS

- Impact Accounting
- New Corporate Structures
- Real-Time Feedback
- Ecosystem Services Market
- Wall Street as Watchdog
- Reinsurance Power
- Global Standards Consortium

In this scenario, one of the defining aspects for all sectors is a drive towards “radical transparency.” For companies in the professional services sector, this poses an opportunity to lead in developing new tools, methodologies, and other innovations that enable transparency and collective dialogue. These may range from accounting and assurance tools to enable new “Ecosystems Services Markets” to standards for verifiability of claims against standards set by the “Global Standards Consortium.”

POLICY

- Global Public Goods
- Regulated Philanthropy
- Sustainability Labeling
- Redistributive Carbon Tax
- Infrastructure Taxes
- Tradeable Emissions Quotas
- Global Policy Framework

With increased regulation and the enforcement of policies for more sustainable practices, the professional services sector will have new opportunities to facilitate translation of policy into meaningful and usable guidelines helping affected organizations implement relevant practices. They will provide the implementation framework required for tax structures like the “Redistributive Carbon Tax” and “Infrastructure Taxes,” leveraging their historic core competencies. They will also provide a roadmap to organizations complying with new policies such as “Regulated Philanthropy.”

SCIENCE & TECH

- Extended Human Capacity
- Learning Ecologies
- Eco-Sensor Networks
- Moonlanding as Model
- Eco-Simulation
- Planetary Mark-up Language

In this scenario, technologies for sustainability solutions will impact not only how the professional services industry develops and delivers services and products but also the environment in which their services are utilized. These firms will help develop and interpret the context in which new tools, such as “Eco-Sensor Networks” and “Planetary Mark-Up Language,” are implemented. They will also reap the benefits of “Extended Human Capacity” as their core resource remains employee knowledge and creativity.

	Business Implications	Risks	Opportunities
<b>COMMONS</b>	<p><b>Biotrusts</b></p> <p>Biotrusts will necessitate new ways to leverage bio resources for private activities and establish a de facto set of rules for public and private activity to comply with.</p>	<ul style="list-style-type: none"> <li>■ <b>Changing R&amp;D context</b> Biotrusts could have negative implications for R&amp;D ROI, calling for new models of accounting and incentives.</li> <li>■ <b>Services obsolescence</b> Innovating the business model to let go of old streams of revenue may lead to obsolescence of traditional services.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Collaboration opportunities</b> Collaboration and partnership with public/ semi-public institutions for R&amp;D can lead to innovation.</li> <li>■ <b>New role</b> Firms can facilitate the creation of framework and guidelines for operating under new rules.</li> <li>■ <b>New services</b> New services can advise organizations operating under new rules.</li> </ul>
<b>MARKETS</b>	<p><b>Impact Accounting</b></p> <p>New accounting standards and assurance / monitoring / verification processes will drive new incentives for doing business.</p>	<ul style="list-style-type: none"> <li>■ <b>Shift service portfolio</b> Firms must quickly establish new skills and services to ensure relevance of service offerings.</li> <li>■ <b>Urgent demand for norms</b> Challenge to meet demand for “objective” norms (especially in social impact areas) to enable comparability and credibility.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Lead development</b> Opportunity to lead definition of new standards and implementation protocols.</li> <li>■ <b>New revenue streams</b> Firms can innovate new services to meet demands.</li> <li>■ <b>Reputational benefits</b> Leadership can lead to perception beyond compliance and enforcement.</li> </ul>
<b>POLICY</b>	<p><b>Sustainability Labeling</b></p> <p>All companies will struggle to meet new compliance requirements to share sustainability information. Collecting, verifying, and communicating information will be a challenge.</p>	<ul style="list-style-type: none"> <li>■ <b>Meeting expectations</b> Lack of knowledge and resources may cause difficulty implementing new protocols.</li> <li>■ <b>Accountability for information</b> Unclear who is accountable for and how to assure quality of information.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>New role</b> Firms can play a role in interpreting requirements and defining protocols.</li> <li>■ <b>New service/revenue</b> More market demand for services related to data collection and analysis, verification, and communication.</li> <li>■ <b>New customers</b> Demand from wide range of information users to help interpret and make best use of new information.</li> </ul>
<b>SCIENCE &amp; TECH</b>	<p><b>Learning Ecologies</b></p> <p>Knowledge and skills will be acquired quickly in all dimensions of sustainability, creating a boom in teaching and training as well as a challenge to stay current.</p>	<ul style="list-style-type: none"> <li>■ <b>Staying current</b> High expectations for the industry to stay current if not lead on tools as well as content.</li> <li>■ <b>Attracting talent</b> Necessary talent may not be attracted to traditional industry.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>New services</b> A boom in online learning and e-curricula with new enabling technologies is an opening to tap into demand with existing and new clients.</li> <li>■ <b>New partners</b> To stay current and deliver services on evolving platforms, new relationships will be built with a range of partners, from academic institutions to technology companies.</li> </ul>



**Key Signals**
**Scenario Overviews**
**COMMONS**

**Human Rights Commons**  
**Little Sister is Watching**  
**Open Economy**  
**Global E-Unions**  
**Open-Source Design**  
**P2P Recycling**  
**P2P Food**  
**Emergent Famine Response**

In the Commons scenario, the ability for like-minded stakeholders to congregate on key issues and monitor companies' "Sustainability Reputations" puts pressure on retailers to become more aware of their human rights records and environmental impacts throughout the supply chain. The retail industry will also form new practices in response to commons developments, such as "Global E-Unions" and "P2P Recycling" systems. Retailers that reach out and engage with relevant stakeholders will have a competitive advantage.

**MARKETS**

**CSR SmartMobs**  
**Green Health**  
**Downsizing**  
**Innovation from the Margin**  
**Markets in the Metaverse**  
**Virtual Consumption**  
**Impact Accounting**  
**Wall Street as Watchdog**  
**Sustainable South**

In the Markets scenario, consumer demands have shifted toward more sustainable and health-conscious choices, with an increased appetite for "Markets in the Metaverse" as opposed to material goods. Retailers must adapt the shopping experience accordingly by providing social and environmental data on their merchandise and innovating new types of services. Wall Street's increased emphasis on societal, health, and environmental indicators and "Impact Accounting" will require retailers to have a better understanding of and control over their footprint.

**POLICY**

**Sustainability Labeling**  
**Redistributive Carbon Tax**  
**Managed Migration**  
**Local Value Policies**  
**Food Web Protections**  
**Global Policy Framework**

In this scenario, retailers will be faced with regulation requiring them to implement sustainable practices. "Local Value Policies" may shrink global supply chains, affecting their sourcing operations. "Sustainability Labeling" may become standard in stores, pushing retailers toward transparently labeling the health, labor, and environmental impacts of products. Storefronts can be redesigned to be greener in response to a "Redistributive Carbon Tax" and "Global Policy Framework." This top-down approach to sustainability will necessitate effective adaptation across the board.

**SCIENCE & TECH**

**Extended Human Capacity**  
**Personal Lifecycle Tools**  
**Socially Responsible Geomapping**  
**Sustainable "Levittown"**  
**Eco-Sensor Networks**  
**Waste = Resource**  
**Cultured Meat**  
**Energy-Producing Homes**

Science and technology will enable the retail industry to operate in a closed loop and leverage waste as a resource. Further technological and scientific developments will bring with it both opportunities, such as energy savings from "Energy-Producing Homes" and building designs, and risks, such as the health implications of "Cultured Meat." In a world that is constantly changing due to innovation, retailers that invest in research and development and keep pace with technological innovation and change will be rewarded.

	Business Implications	Risks	Opportunities
<b>COMMONS</b>	<p><b>Sustainability Reputations</b></p> <p>As sustainable behavior is monitored at all levels of society, retailers will be expected to provide this information for their own practices as well as the products they sell.</p>	<ul style="list-style-type: none"> <li>■ <b>Increased exposure</b> Consumers and investors can see and respond to unsustainable practices.</li> <li>■ <b>Loss of customers</b> Retailers who do not provide reputation data may lose customers.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Storefront innovation</b> Meeting demand for reputation information can lead to innovative models for the shopping experience.</li> <li>■ <b>Technology partnerships</b> Retailers partner with technology companies to provide reputation information.</li> <li>■ <b>Suppliers as partners</b> Transparency throughout the supply chain makes suppliers a bigger part of a retailer's brand.</li> </ul>
<b>MARKETS</b>	<p><b>CSR SmartMobs</b></p> <p>Smart, networked groups of consumers, concerned with sustainability, will require retail businesses to offer a different kind of shopping experience to meet their needs.</p>	<ul style="list-style-type: none"> <li>■ <b>Obsolete storefronts</b> Group purchasing and the demand for full product information disrupts the store shopping model.</li> <li>■ <b>Price pressure</b> The group purchasing model may drive down prices through competition on bulk discounts.</li> <li>■ <b>Increased competition</b> New models of shopping may start to compete with existing retail structures.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Collective purchasing interface</b> Companies can provide innovative ways to educate about sustainable products and enable group purchasing.</li> <li>■ <b>New loyalty</b> Appealing to "smartmobs" can lead to new streams of revenue.</li> </ul>
<b>POLICY</b>	<p><b>Redistributive Carbon Tax</b></p> <p>Replacing income tax with a carbon tax would turn business accounting on its head and result in new power dynamics where the good carbon performer wins.</p>	<ul style="list-style-type: none"> <li>■ <b>Change in shopping preferences</b> The new tax and resulting incentives may completely change the popularity of various products.</li> <li>■ <b>Switching systems</b> Businesses need to implement new management systems to operate under a new accounting regime.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>New carbon merchandising</b> Retailers can innovate to provide customers with information on the carbon impacts of their purchases.</li> <li>■ <b>Green shopping</b> The shopping experience can be redesigned to minimize carbon footprints.</li> <li>■ <b>Products to services</b> Carbon intensive products may be replaced by innovative service-based solutions.</li> </ul>
<b>SCIENCE &amp; TECH</b>	<p><b>Waste = Resource</b></p> <p>As the entire supply chain turns into a cycle, the retailer's role can no longer be defined without consideration for other phases, from material extraction to end of use.</p>	<ul style="list-style-type: none"> <li>■ <b>Increased responsibility</b> As the last point of contact with the consumer, the retailer may be responsible for ensuring that the cradle-to-cradle system works.</li> <li>■ <b>Increased dependency</b> Businesses are dependent on their supply chain partners to innovate and act.</li> <li>■ <b>Laggards disadvantaged</b> Retailers that do not offer technologies and processes to support this system will be at a competitive disadvantage.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>New revenue streams</b> Waste collection and reuse could be a new source of revenue.</li> <li>■ <b>Business model innovation</b> The role of the retailer in a waste-free and possibly more service-oriented model can be redefined.</li> </ul>



**Key Signals**
**Scenario Overviews**
**COMMONS**

**Little Sister is Watching**  
**Open Economy**  
**Open-Source Design**  
**P2P Energy**  
**P2P Recycling**  
**New Civil Society**  
**SMS Democracy**  
**Micropower Markets**

Technology is a key enabler of the Commons scenario, providing the mechanisms by which people are empowered to create change from the bottom up. Technology's role includes increasing transparency and facilitating communication and collaboration. "Open Economy" and "Open-Source Design" models can be disruptive to traditional business practices, and the high-tech industry will both benefit and suffer from their adoption. However, people who do not have access to technology are at risk of being left out of the movement.

**MARKETS**

**CSR SmartMobs**  
**Downsizing**  
**Innovation from the Margin**  
**Markets in the Metaverse**  
**Virtual Consumption**  
**New Corporate Structures**  
**Real-Time Feedback**  
**Wall Street as Watchdog**  
**Big Business, Big Science**  
**Global Standards Consortium**

In a scenario defined by high demand for sustainable products and services, technology serves multiple functions. During the design phase, technology can help assess the social and environmental impacts of a product through "Real-Time Feedback." Simulation technology, enabling "Markets in the Metaverse," can also increase resource efficiency and reduce waste during the production process. Ultimately, in a market-driven world, where the name of the game is efficiency, technologies that enable businesses to align sustainability with efficiency will succeed.

**POLICY**

**Global Public Goods**  
**Sustainable Children**  
**Sustainability Labeling**  
**Redistributive Carbon Tax**  
**Infrastructure Taxes**  
**New Public Utilities**  
**Global Policy Framework**

Regulation and the enforcement of standards for more sustainable practices will bring about opportunities for the technology industry. Technology can help measure and monitor social and environmental performance, supporting "New Public Utilities" and "Global Policy Frameworks." The important features of these technologies will be reliability and the ability to standardize implementation. However, the technology industry needs to be engaged with policy makers to prevent counter-productive regulations developed by people who do not have a solid understanding of technology and its impacts.

**SCIENCE & TECH**

**Extended Human Capacity**  
**Personal Lifecycle Tools**  
**Low-Impact Robotics**  
**Molecular Manufacturing**  
**Eco-Sensor Networks**  
**Waste = Resource**  
**Energy-Producing Homes**  
**Eco-Simulation**  
**Moonlanding as Model**

In this scenario, technology is the protagonist and the key driver of sustainability solutions. Society has put its trust into science and technology, opening up market opportunities for new products and services, such as "Low-Impact Robotics," "Eco-Sensor Networks," and "Molecular Manufacturing," which have the potential to address social and environmental issues. Businesses must be careful in this volatile environment where technologies become obsolete as quickly as the new are adopted. The rapid acceptance of technology may also lead to unforeseen consequences that can come back to bite the creators.

	Business Implications	Risks	Opportunities
<b>COMMONS</b>	<p><b>SMS Democracy</b></p> <p>SMS Democracy will enable more people with access to technology to participate in governance at both the government and corporate level.</p>	<ul style="list-style-type: none"> <li>▪ <b>Loss of control</b> The expectation that everyone is involved in decisions may shift power from those used to having control.</li> <li>▪ <b>Increased tech responsibility</b> As technology plays a key role in enabling policy development, it may be seen as partially responsible for poor policy outcomes.</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Stakeholder engagement</b> Engaging customers, investors, and other stakeholders in company governance could lead to better informed decisions.</li> <li>▪ <b>Government support for technology</b> If technology is required for governance, access to it will effectively be a citizen's right and call for government support.</li> </ul>
<b>MARKETS</b>	<p><b>Wall Street as Watchdog</b></p> <p>Companies will need to measure, monitor, and communicate their sustainability performance in order to meet market expectations.</p>	<ul style="list-style-type: none"> <li>▪ <b>Inaccurate accounting</b> Inability to account for sustainability factors may lead to poor performance in the market.</li> <li>▪ <b>Market instability</b> Linking the market to sustainability issues, places it at risk of crashing with the advent of social and environmental problems.</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Technology as an enabler</b> Technology solutions can enable investors to account for sustainability performance.</li> <li>▪ <b>Advantage for sustainable products</b> Technology products and services developed with sustainability in mind will be reflected in performance in the market.</li> </ul>
<b>POLICY</b>	<p><b>Global Policy Framework</b></p> <p>Sustainability policies will shape the regulatory environment and level the global playing field.</p>	<ul style="list-style-type: none"> <li>▪ <b>Cost of unsustainable practices</b> Businesses that do not meet the new standards will be penalized.</li> <li>▪ <b>Need for centralized systems</b> Implementing policies on a global scale will require centralized systems to take advantage of efficiencies.</li> <li>▪ <b>Ineffective policies</b> Policy makers who are not technologically savvy may develop counterproductive regulations.</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Innovation to meet standards</b> New markets for sustainable products and services will emerge to support the new regulatory environment.</li> <li>▪ <b>Global markets</b> Product and service solutions to help meet global standards can serve a larger market.</li> </ul>
<b>SCIENCE &amp; TECH</b>	<p><b>Molecular Manufacturing</b></p> <p>Placing atomically precise, exponentially replicating manufacturing capacity in the hands of individuals will change the role of industry.</p>	<ul style="list-style-type: none"> <li>▪ <b>Eliminating phases of the supply chain</b> This process could replace the extraction, design, and manufacturing phases of the supply chain.</li> <li>▪ <b>Piracy</b> Individuals may be able to copy and share product blueprints at low cost—moving from software piracy to hardware piracy.</li> <li>▪ <b>Unforeseen risks</b> Producing products in a new way could lead to new liabilities.</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Outsourcing production</b> The production phase could be outsourced to other parties, even the end-user.</li> <li>▪ <b>Efficient resource use</b> This technology could lead to processes that promote more efficient use of resources and reduce waste.</li> </ul>

