Evaluating Biogen’s Sustainability Strategy: The Customer Perspective

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MIT Sloan Sustainability Lab

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Outline

• Project Introduction
• Methodology
• Findings
  – Patient Awareness
  – Patient Advocacy Networks
  – Healthcare Providers
  – Insurance Providers
  – Other Stakeholders
• Roadmap for Biogen
PROJECT INTRODUCTION
Biogen is a leader in sustainability

- Focus on climate change initiatives
- Strong company culture of sustainability
- Proactive implementation through many diverse programs

Source: Biogen 2015 Corporate Citizenship Report
Sustainability

Biogen As A Biopharma Company

- “Patients First” mantra with the development of safe, effective drugs as the top priority
- Over $11 billion in revenues in 2016
- Distributes in 70 Countries
- 7,000+ Employees Globally

Source: Biogen 2015 Corporate Citizenship Report, Biogen 2016 Form 10-K

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Patient-Facing Social Sustainability is Most Material

Environmental issues also feature prominently. Environmental issues in healthcare sustainability issue in access to treatments as well.

2017 Materiality Assessment reveals that patient-related issues are most material.
Materiality Assessment Lacks Customer Perspective

- Many external stakeholders such as advocacy groups, competitor or peer companies, and consultants have been brought into the discussion but they are not consulted as materiality matrix stakeholders, but they are not.
- Customers are primary beneficiaries of Biogen's business, but they are not consulted as materiality matrix stakeholders, but they are not.
- Need to assess customer priorities.

Source: Biogen 2015 Corporate Citizenship Report
Biogen seeks a deeper understanding of the awareness and importance of its sustainability efforts to its customers (patients, doctors, hospitals, insurance companies, contract manufacture clients), with an eye towards how it can better align its sustainability programs towards current customer needs and future trends.

Problem Statement

Biogen invests significant capital and effort to ensure it conducts its business in the most environmentally and socially sustainable way possible. Yet it is unsure if its customers are aware of its initiatives and what their priorities are. Biogen seeks to understand the awareness and importance of its sustainability efforts within its customer base, with an eye towards how it can better align its sustainability programs towards current customer needs and future trends.
Key Questions: What Do Customers Care About?

- Do customers care about sustainability?
  - Climate Change?
  - Access and affordability?
  - Ethical supply chains?
  - Diversity in Clinical Trials?

- Do customers know about Biogen's sustainable practices?
  - Regardless of awareness level, are the factors primarily focused on other areas?
  - Contract manufacturing
  - Hospitals
  - Doctors
  - Patients

- What are most important issues to customers?
  - Climate Change
  - Diversity in Clinical Trials
  - Ethical supply chains
  - Access and affordability
METHODOLOGY
Primary Research: Interviews of Internal & External Stakeholders

- Patient Advocacy
  - FSH Society
  - Executive Leadership National MS Society
- Healthcare Providers
  - Practicing Doctors
  - Boston Consulting Group Healthcare/Biopharma Consultant
- Other Stakeholders
  - External Leadership ACS Green Chemistry
  - Senior Program Manager Biogen
- Insurance
  - EHS & Sustainability Director of Global Sustainability
  - Program Manager Health Care Senior Partners
  - Written and Verbal Interviews with 3 Internal Biogen Stakeholders
  - Territory Business Manager in the Biogen Sales Team
  - Territory Manager in the Biogen Sales Team
  - Healthcare Providers
  - Practicing Doctors
  - Boston Consulting Group Healthcare/Biopharma Consultant
  - Executive Leadership FSH Society
  - Executive Leadership Executive Leadership
Primary Research: A Patient Survey

• Online survey of patients (n=115)
  – A seven question survey sent through an e-list by the FSH Society to individuals with FSH or who are caregivers for individuals with FSH
  – Not intended to be a representative sample of all patients with a serious illness*

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Special Thanks to the Facioscapulohumeral Muscular Dystrophy Society for their help!

*See Appendix A for detailed explanation of the survey audience and methodology.
Primary Research: Stakeholder Interviews

- Series of stakeholder interviews across the field
- 30-60 minute qualitative research interviews and written interviews

- See Appendix B for interview guides
- Asked about shifting emphases and potential for changed focus
- Asked stakeholders about their primary sustainability interests and needs
- Not limited to environmental sustainability explicitly included social issues
- Explicitly included social issues
- Doctors
- Patient Advocacy Organizations
- Biogen
- Health Insurance Companies
- Hospital Administration
- Stakeholders

- Biogen Management Program 2017
Secondary Research: Databases, Journals & Web

- Searched online databases for existing research on sustainability efforts by the pharmaceutical and biopharmaceutical industries.
- Conducted web searches for news, existing and potential regulations, and other relevant content.
- Read corporate citizenship reports and supplier conduct agreements of competitors and partners.
- Searched online databases for existing research on sustainability efforts by the pharmaceutical and biopharmaceutical industries.
Customer Stakeholder Awareness & Perceptions of Sustainability

Tying It All Together To Gain Perspective
FINDINGS
PATIENTS
Survey of Members of the FSH Society
Question: Do you know which drug companies make the medicines you are prescribed?

Answers from 115 Respondents:

- No: 74
- Yes: 17
- Some of Them: 24
Patients Generally Aren’t Aware of Sustainability Efforts

Question: Do you know anything about the sustainability efforts of the companies that make your medicines, or of the biopharma industry in general?

Answers from 115 Respondents:

- No: 104
- Yes: 3
- Some of Them: 8

"I have not read anything in the media about this topic. Sustainability issues relating to the pharmaceutical industry have not been publicized to the general public. More should be done to publicize them and make the information available."

~ Patient with FSH

Industry in general make your medicines, or of the biopharma sustainability efforts of the companies that...
Even Relatively Educated Patients Aren’t Aware

Question: For those who know who makes some or all of their medicines, are they aware of sustainability efforts of the drug companies?

Answers from 41 Respondents:
- No: 32
- Yes: 3
- Some of Them: 6

Even Relatively Educated Patients Aren’t Aware...
Patients are focused on a variety of issues (104 respondents)

Concerns about the prescriptions they take:

Percentage of survey respondents who selected the following as their biggest
Patient Perceptions Of Social Sustainability

Patients are focused on the social sustainability efforts of the biopharmaceutical industry but generally do not recognize these as aspects of social sustainability. The majority of their concerns relate to access to medicines, affordability, and transparency of pricing.

Selected Quotes

• “Access for everyone at an affordable price.”
• “Price gouging & transparency.”
• “Social/Access: government intervention to ensure that medications vital to life are not excluded from delivery to particular pockets of society with limited financial resources.”
• “US and the apparent lack of regulation to combat this.”
• “No - it's actually the last thing that concerns me about the pharma industry. My main concern is their price gouging in the US and the apparent lack of regulation to combat this.”
• “This is the first time I've heard this issue addressed. I don't think that the pharmaceutical industry has any sustainability initiatives in real terms. Would be great if they did.”

21% of survey respondents who submitted detailed free-form answers mentioned price gouging & transparency as important to them.

29% of survey respondents who submitted detailed free-form answers mentioned access to medicine as important to them.

18% of survey respondents who submitted detailed free-form answers mentioned affordability & assistance as important to them.

The majority of their concerns relate to access to medicines, affordability, and transparency of pricing.
Patients are minimally aware of environmental sustainability efforts. It’s important to me that pharmaceutical companies are not affecting the manfacturing plant have any sustainability or energy conservation efforts. 

Selected Quotes

- “Proper disposal of medications is very important. We hear of improper disposal of meds. This needs to be addressed by the pharmaceutical companies, as well as by government agencies.”
- “I am disturbed by what I hear about Bayer’s practices affecting proper disposal of medications - Are they natural or synthetic? Does the manufacturing plant have any sustainability or energy conservation efforts?”
- “I personally would love to know how the chemicals are resourced to making certain medications - Are they natural or synthetic? Does the manufacturing plant have any sustainability or energy conservation efforts, including contamination of our drinking water supply from improper disposal of meds. This needs to be addressed by the pharmaceutical companies, as well as by government agencies.”

Patient Perceptions of Environmental Sustainability

- 6% of survey respondents who submitted detailed free-form answers mentioned environmental impact from product manufacturing & transport as important to them.
- 9% of survey respondents who submitted detailed free-form answers mentioned climate change as important to them.
- 9% of survey respondents who submitted detailed free-form answers mentioned packaging waste as important to them.
Patients are aware and concerned about the perceived lack of information sharing between research institutions, universities, government agencies, and other bodies involved in pharmaceutical research and trials.

- "Institutions need to share their knowledge and information so that more headway will be made in treating illnesses and diseases."
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A repeated theme in the patients’ comments is a desire to see packaging "that uses more sustainable elements" as well as "improved waste/disposal methods and systems for medications."

Environmental and social sustainability efforts are not mutually exclusive—patients generally care about both, even though their primary concern may be about affording and getting their prescriptions.

- "Climate change and access to medicine are some really big issues that effect many aspects of our lives."

Even through their primary concern may be about affording and getting their prescriptions, patients are aware and concerned about the perceived lack of information sharing between research institutions, universities, government agencies, and other bodies involved in pharmaceutical research and trials.

18% of survey respondents who submitted detailed free-form answers mentioned disposal and recycling of medicines as important to them.
PATIENT ADVOCACY NETWORKS

National MS Society & The FSH Society
Our interviews with Patient Advocacy Organizations found that patients care about social sustainability but largely are not engaged in any conversations about environmental sustainability.

Important Issues for Patient Advocacy Organizations:

- Easy access to information on drugs and clinical trials
- Effective design and management of clinical trials, including diversity of participants
- Gaining public awareness and advocating for increased access to medicines and passed on to patients
- Promoting affordability and price transparency at the state and federal level
- Sharing of research data, tissue, and other biological materials between researchers
- For MS specifically – lack of basic knowledge including how many people in the U.S. suffer from MS and a growing interest in sharing information through a grassroots network
Pulling It Together: Opportunities In The Patient Space

There is room to better educate patients on what biopharma companies are doing in both social and environmental sustainability to address issues they care about. Biogen could highlight its partnerships with academia and other institutions more, because the lack of information sharing or perceived lack of information sharing – or perceived lack of information sharing between industry, academia, and government – is a concern for patients and patient advocacy groups. Knowledge of Biogen is actively working with academia could alleviate misconceptions that secrecy delays or prevents discovery of treatments and potential cures. Patients and patient advocacy groups view secrecy as delaying or preventing discovery of treatments. Biogen's sustainability efforts are unlikely to impact patient purchasing behavior, but could impact how Biogen is perceived by its patients and improve general public opinion of the company. Estabbling improved communication and promoting awareness about social responsibility programs that patients and patient advocacy groups view as important could improve the perception of Biogen and Biogen's sustainability efforts. Patients are concerned about the waste resulting from medication packaging as well as how to properly and safely dispose of any unused or expired medications. Biogen could explore a closed-loop supply chain or medication/waste take-back programs. Patients are concerned about the waste resulting from medication packaging as well as how to properly and safely dispose of any unused or expired medications. Biogen could explore a closed-loop supply chain or medication/waste take-back programs. Patients are concerned about the waste resulting from medication packaging as well as how to properly and safely dispose of any unused or expired medications. Biogen could explore a closed-loop supply chain or medication/waste take-back programs.

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4. Patients are concerned about the waste resulting from medication packaging as well as how to properly and safely dispose of any unused or expired medications. Biogen could explore a closed-loop supply chain or medication/waste take-back programs.
Doctors are singularly focused on efficacy and safety.

- Doctors often prescribe from hospitals and insurance providers' drug formularies, which are influenced by price and affordability.
- US doctors generally are not aware of environmental sustainability initiatives undertaken by drug companies, nor are they interested.
- Doctors focus vastly outweighs any other concern.
- US doctors generally are not aware of environmental sustainability initiatives.

Source: Doctor Interviews.
Corporate Social Responsibility May Sway Doctors

According to multiple interviewees, patient health is the most important factor for prescribing intent, thus information about access and affordability may have positive impact. Doctors tend to under-estimate cost of drugs, and this doctors may actively consider price or financial assistance programs when prescribing.

- Doctors in advanced treatment hospitals and hospitals with more than 200 beds were more likely to choose CSR-active companies.
- Impacted by hospital type: doctors in advanced treatment hospitals and hospitals with more than 200 beds were more likely to choose CSR-active companies, especially when efficacy, safety and price were comparable between 2 drugs.
- Impacted by conference attendance of doctors: greater conference attendance increased CSR effects on prescribing intention.
- Study of 300 doctors in Japan found that doctors were swayed by CSR activities of a company, especially when efficacy, safety and price were comparable between 2 drugs.

Anecdotal evidence suggests this impact is less prominent in the US.

1 Schutte et. al., 2016
2 Reichert et. al., 2000
3 Uryuhara, 2015
Doctor-patient communication is evolving, so information sources should too.

- Explore adding a sustainability sub-site to drug information websites and track viewership.
- There may be an opportunity to leverage existing DTCA efforts to educate patients and doctors about sustainability efforts.

Information obtained from the website is associated with behavioral intention to revisit and use the site.

- Perceived DTCA website trust was found to be significantly associated with importance and number and importance as a consumer information source.
- Today's consumers are increasingly relying on online sources for prescription drug-related information.

Sustainability is growing as a major hospital initiative. Sustainability influences hospital operating culture:

- One third of US hospitals have committed to environmental goals.
- 80% expect sustainability to be fully integrated into product purchasing.
- 60% expect sustainability to be fully integrated into product purchasing.
- Many sustainability programs in hospitals started as “grass-roots” initiatives, demanded by staff, patients, and visitors. The elimination of Styrofoam trays in cafeterias was pushed hard by staff, employees, and hospital visitors.
- Vocalization of desire for sustainability became too loud to ignore.
- Cost reduction is a major focus to reduce costs to patients:
  - Partners Healthcare to cut $500M in next 3-5 years.

Hospitals’ commitment to sustainability is likely to influence doctors’ awareness of sustainability issues and may affect prescription choices in the future. Sustainability influences hospital operating culture:

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Sources: Partners Healthcare, Practice GreenHealth, Johnson & Johnson.
Impacts Of Sustainability On Current Hospital Purchasing Behavior Are Mixed

- Majority of procurement practices that involve sustainability focus on medical devices and general supplies, but not drugs
- Johns Hopkins, MGH and similar hospitals have sustainable procurement strategies
- Kaiser Permanente and Partners HealthCare emphasize sustainability and social chain practices, and/or sustainability offices
- Kaiser’s procurement processes have incorporated sustainability requirements
- Johns Hopkins, MGH and similar hospitals have sustainable procurement strategies
- Generally, most sustainability efforts within hospitals are focused primarily on hospital operations, followed by improving the general health of the community
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Sources: Hospital Websites & Sustainability Sub-pages
Sustainability initiatives focus on three main areas:

- **Patients and Employee:** Patient and employee health and safety
- **Healthy Environment:** Reducing impact on the earth
- **Resources:** Controlling health care costs by using resources wisely

Programs are run at two levels:

- **Local:** Through local projects, often initiated by employees
- **National:** Through cooperation with peer hospitals

Founded Healthier Hospitals Initiative with group of other sustainability-aware hospitals to promote sustainable initiatives.

Works closely with Practice GreenHealth to further their own and other hospitals' sustainability commitments.

Other sources:

2. Interview with Partners' Sustainability Program Manager

Sustainability initiatives focus on three main areas:
Case Study: Partners’ Active Supply Chain Management

To Increase And Promote Sustainable Behavior

Manufacture and production of environmentally preferable products

- “Greening the Supply Chain” Initiative provides additional leverage to support the
  level of environmental awareness and alter purchasing habits
- Practice GreenHealth, an activist organization, works with the largest GPOs to raise
  awareness, material, and use excessive energy
- Smarter Purchasing seeks to avoid products that generate waste, contain
  hazardous materials, and reduce costs and price of care to patients

Currently channeling 40% of procurement through Group Purchasing

Primary concern remains providing the best possible support for patient population

- Focus is still on how vendors can help Partners meet its own sustainability goals
- Actively working to promote and expand social and environmental sustainability

Sources: http://www.partners.org/, https://practicegreenhealth.org/initiatives/greening-supply-chain, Interview with Partners Sustainability Program Manager
Partners still select formulary drugs based on performance (safety/efficacy) and price, a fact that is unlikely to change. Secondary considerations are harmful chemical components, input and output products, and waste generated by the medication—this may provide opportunities for differentiation.

Most “smart” and “green” purchasing focuses on general and medical supplies, and medical devices. However, this could reasonably be expected to extend to some capability to include biopharmaceutical products in the next 5-10 years for those hospitals that are at the forefront of sustainability. However, this could reasonably be expected to extend to some capability to include biopharmaceutical products in the next 5-10 years for those hospitals that are at the forefront of sustainability.

What’s Next For Partners?

Example: Drug company takeback programs to help Partners reduce cost and therefore better serve patients. These takeback programs deal with hazardous waste (from purchased meds, i.e. unused/expired/used injectors, etc.). Future implementing a takeback program could influence formulary decisions in the near future.

Integrated Hospitals May Lead the Charge on Drug Company Sustainability Importance

An interview with Partners Healthcare Sustainable Initiatives Program Manager indicated that sustainability is currently important and is becoming increasingly prominent in three areas:

1. Internal operations
2. Health of patients, doctors, staff, community
3. R&D laboratories

Social responsibility across the board and may lead the charge with respect to incorporating drug company sustainability into hospital sustainability requirements.

More than 500 hospitals nationwide currently pledged to one or more sustainability challenges tracked by Healthier Hospitals Initiative, indicating increased interest and awareness. Formularies could be influenced by drug company sustainability.

Bringing drugs more directly under purview of supply chain sustainability may be the next step.
Insurance Provider Sustainability is Environmentally Focused

Source: Interview with Director of Sustainability and Environmental Health at a major firm

- Protecting the Environment
  - Some advocacy work in environmental policy, because climate change impacts
  - Green building (that may improve their health over time)
  - Environmental assessment and improvement (e.g. operational)

- Reducing Firm Impact
  - Accounts and/or members may benefit from environmental assessment and improvement

- Influencing Positive Health Outcomes
  - Accounts and/or members may benefit from green building (that may improve their health over time)

- Focusing on the Impact of Firm Operations
  - Reducing the environmental impact of firm operations to minimize impacts on the company and reducing the environmental impact of firm operations

- Promoting Employee Health and Well-being Within the Company
  - Accounts and/or members may benefit from green building (that may improve their health over time)

Sustainability Lab 2017
Coverage is not impacted by drug company CSR

Coverage is decided on a case-by-case basis – there is no situation in which a drug company’s sustainability programs would influence decision-making at this time.

Primary drivers are how many within coverage patient pool may be affected by coverage decision, and what are the possible outcomes.

Two drugs were otherwise equivalent, but not currently the case for corporate social responsibility to be a tie-breaker in the future (unspecified horizon).

If a drug company is very transparent about how it determines price, provides justification, and has initiatives to make a drug available to more patients, this could drive awareness about pricing and affordability and may influence coverage decision.

Caveat: If a drug company is very transparent about how it determines price, provides justification, and has initiatives to make a drug available to more patients, this could drive awareness about pricing and affordability and may influence coverage decision.

Cost, performance and safety drive coverage decisions.

Coverage is not impacted by drug company CSR.
CONTRACT MANUFACTURING & GREEN CHEMISTRY ADVOCATES

Other Stakeholders
Environmental Sustainability Clearly Matters for Contract Manufacturing

- Strong demand among potential contract manufacturing clients for Biogen's environmental initiatives such as energy, resource use, and waste reduction.
- Biogen's leading environmental sustainability position may make it a more attractive business partner.
- Biogen has a different contract manufacturing client relationship compared to its patient relationship. In contract manufacturing, environmental sustainability may give Biogen an edge over other suppliers.
- Most companies have robust supplier behavior contracts that require suppliers to meet certain sustainability standards, with a focus on environmental issues and ethical supply chains.
- For example, AbbVie, Samsung, J&J, Genentech, all current Biogen business partners, have robust supplier guidelines and company websites of Biogen partners and customers.

Sources: CSR Reports, Supplier guidelines and company websites of Biogen partners and customers
Case Study: Johnson & Johnson is very sustainability-focused.

Several supplier guidelines that relate directly to sustainability:

- Guideline 4: Respect human and employment rights
- Guideline 5: Promote the safety, health, and well-being of employees
- Guideline 6: Embrace sustainability and operate in an environmentally responsible manner
- Guideline 8: Disclose information associated with the supplier's impact on the environment and societal issues

Specific metrics or standards may be written into supplier contracts.

Diversity is another metric actively pursued by J&J.

J&J is heavily invested in sustainability and Biogen's leadership in the field may be important.
Green Chemistry: The Regulatory Landscape

- The danger of pharmaceuticals in the environment is a big concern as drugs are designed to be long-lived and stable.

- Green chemistry is current seen as a voluntary initiative.

- Green chemistry programs can often work against firms in NIH context.

- NIH: Currently has no support of green chemistry perspective, in fact having a strong green chemistry management.

- FDA: Promoting continuous processing for better quality drugs.

- Green Chemistry Awards Program

- US EPA: Previously tried promoting green chemistry – only a remnant is left in the Presidential.

- Department of State: Involved/supported several initiatives including some that are multi-agency.

- Department of Commerce: Pro-green chemistry through NIST.

- No accelerated review, extension to patent life considerations for green chemistry drugs.

- Many failed attempts to pass a bill for sustainable chemistry.

- No regulatory change or successful lobbying for green chemistry within the U.S.

- Green chemistry often contended by regulators and legislators with good chemicals.

- The danger of pharmaceuticals in the environment is a big concern as drugs are designed to be long-lived and stable.

- Green Chemistry: The Regulatory Landscape
DISTILLING WHAT CUSTOMERS VALUE
Customers Derive The Most Value From Social Sustainability Programs

Patients care most about being able to afford their treatments—be it through lowered list prices, financial assistance programs or the availability of less expensive biosimilar treatments. Doctors prescribe products that lead to positive health outcomes—they are the drugs they take.

Advocacy organizations seek a streamlining of research and medical data sharing to decrease a potential drug’s research and development timeline and cost. Generally unaware of exact pricing but support affordability, patients want to be able to easily access information about the drugs they take

Patient with FSH: “Patient with FSH, we will worry about sustainability. Just find treatments, then.”

Doctors

- Prescribe products that lead to positive health outcomes—patients want to be able to easily access information about the drugs they take.

- Seek a streamlining of research and medical data sharing to decrease a potential drug’s research and development timeline and cost.
Biogen has a mission to ensure no patient goes without medication, and

Biogen Salesforce Feels These Effects
Customers Don’t Derive Value From Environmental Sustainability – But They Still Care

Hospitals want safe and effective products that are easy to store and transport; price and waste management are becoming increasingly important.

- Contract manufacturers’ customers derive the greatest value from the environmental sustainability efforts of Biogen:
  - Continuing to maintain carbon neutrality, water and energy efficiency, etc. can help Biogen remain competitive in the contract manufacturing market.
  - Environmental sustainability can provide direct value to patients insofar as cost savings get passed through in some capacity, either through lowered drug prices or by funneling savings into other social sustainability programs.

- Environmental sustainability matters but is not front of mind for most customers (excluding contract manufacturers). But they still care.

- Environmental sustainability is clearly beneficial, but the aspects that impact patients the most are packaging and material waste generated from use.

- Contract manufacturers derive the greatest value from the environmental sustainability efforts of Biogen.
ROADMAP FOR BIOGEN
Programs Address Key Patient Concerns

Starting Position: Biogen’s Social Sustainability

*Source: Internal Biogen Documents*

- Patient Health Outcomes
  - AboveMS
  - MyELOCATE
  - MS-UP
  - Other programs increase patients’ engagement and education, improve health outcomes and support underserved populations.

- Patient Access to Treatment
  - Investigational therapies, financial assistance, co-pay and free medications programs, biosimilar treatment are expanding access to treatments and affordability of company drugs.

- Product Quality & Safety
  - Sophisticated packaging technologies, auditing and monitoring on-site, global supply chain and product sales to protect product quality.

- Data/Information Sharing
  - Supports clinical trial disclosure and data sharing through the EFPIA Disclosure Code/Clinical Trial Transparency policy.
Moving Forward: Sustainability Will Remain Critical For Business

• There is a clear, undeniable trend that sustainability, both the environmental and social aspects, is becoming an integral part of the biopharmaceutical industry landscape and one of the key factors that will determine companies' competitive positions in the next 5-10 years.

• Low customer awareness and gaps in understanding of social sustainability issues create a unique 5-7 year window of opportunity for Biogen to become an industry leader in social sustainability, capturing a privileged position with its key customer groups. These differences will dissipate as customers become more educated and shared common interests become more apparent.

• Given sustainability’s relatively recent emergence and prioritization among Biogen’s customer groups, there is still a unique 5-7 year window of opportunity for Biogen to become a leader in social sustainability, capturing a privileged position with its key customer groups.

• There is a clear, undeniable trend that sustainability will remain critical for business.
Next Steps To Continue The Research

**Price Transparency**
- Investigate additional opportunities for Biogen to work with research institutions in sharing research
- Look further into where Biogen can align product packaging and transportation with major purchasers' needs and reduce the waste from product use

**Packaging & Waste**
- Explore opportunities to engage in further educational patient outreach, potentially with patient advocacy organizations

**Research Sharing**
- Conduct an internal stakeholder assessment on the viability of working towards price transparency in the next two to five years
- Investigate additional opportunities for Biogen to work with research institutions in sharing research
- Look further into where Biogen can align product packaging and transportation with major purchasers' needs and reduce the waste from product use

**Green Chemistry**
- Discuss with other industry leaders the opportunity to push for green chemistry legislation in the United States

**Important Considerations For Future Action**

- Can Biogen create a viable medication recycling and waste program to reduce potential storage, and disposal?
- What has Biogen done so far to minimize packaging waste and make its products easy to transport, purchase, and reduce waste from a product’s use?
- Look further at where Biogen can align its product packaging and transportation with major buyer needs and reduce waste from a product’s use.

- Conduct an internal stakeholder assessment on the viability of working towards price transparency in the next two to five years.
- Is there an opportunity for Biogen moving forward as an industry leader in price transparency?
- What are the potential costs, risks, and benefits of Biogen moving towards implementing partial or total price transparency?
- Is it beneficial and is there room for Biogen to work in tandem with patient advocacy organizations?
- Biogen on its website?
- Is there value to including the ecological footprint and/or cost of each medication produced by Biogen?

- Explore opportunities to engage in educational patient outreach.
Important Considerations For Future Action

- Explore further opportunities for Biogen to work with patient advocacy organizations and other research institutions in sharing and streamlining research and other research institutions in sharing and streamlining research and other research institutions in sharing and streamlining research

- Discuss with other industry leaders the opportunity to push for green chemistry

- Is there room for the industry to work with Congressional leadership to push for legislation in the United States

- Is this something that Biogen should be worried about now or in the next decade?

- What dangers does this present to Biogen’s intellectual property, and do the potential efficiency benefits it may provide overcome them?
1. Continue with environmental sustainability efforts as the baseline for doing business and to meet societal expectations on how leading companies should operate – General public and customer focus on climate change and other environmental issues will intensify in the next 10 years.

2. Increase emphasis on social sustainability issues, i.e. affordability, access, and efficacy – Societal expectations on how leading companies should operate continue with environmental sustainability efforts as the baseline for doing business and to meet social and patient needs.

3. Educate patients on Biogen’s current social and environmental sustainability efforts and what positive impact these initiatives have on patients today. – Partner with patient advocacy organizations such as the National MS Society for a wide-spread education campaign.

4. Educate patients on Biogen’s current social and environmental sustainability efforts and what cost and sustainability of the drug Biozyn has worked to reduce its associated negative externalities, and what this means overall for the biopharmaceutical industry. – Create an infographic on each medication’s website detailing its environmental and social footprint, how Biogen has worked to reduce its associated negative externalities, and what this means overall for the biopharmaceutical industry.

5. Work with patients and hospitals to reduce packaging waste and develop a comprehensive medication recycling & disposal program – Consider implementing a reverse logistics system for Biogen’s biopharmaceuticals.

What Should Biogen Do Now?
Potential Long Term Initiatives:

- Continue to increase investments in social responsibility efforts, particularly access to medicines and affordability initiatives.
- Consider achieving partial or full price transparency in the next 5 – 10 years.
- Work with contract manufacturers to continue major institutional manufacturing and work with contract manufacturers.
- Anticipate and act on new environmental opportunities -- aim to continue sustainability efforts.
- Anticipate and act on new environmental opportunities -- aim to continue sustainability efforts.
- Horizons
  - Year 10+
  - Year 5 – 10
  - Year
Serious, progressive disease. This is not a perfectly representative sample of the general population who have a serious, progressive disease. No formal demographic information of the sample is available. It should be assumed that the Estimated number of recipients of the survey email is approximately 2000. The Executive of the FSH Society and their caregivers was surprised when we got as many responses as we did; he expected the total number of responses to be much less. It is intended to be a broad definition.

Audience
- Individually with a debilitating, progressive medical condition with no known cure
- Their caregivers
- Patients who are active in FSH advocacy
- Members of the FSH Society
- Executive Leader of the FSH Society

Survey Design & Audience
- Open-ended definition of sustainability contained within the survey
- Sent by email to a select e-list of active members in a patient advocacy network by the FSH Society
- Joint email survey sent by Biogen and the FSH Society

Note: Sustainability efforts include environmental and social impact programs, from climate change initiatives to increasing access to medicines – it is intended to be a broad definition.
Seven questions in an anonymized Qualtrics survey

1. Patient Status – Individual with FSH or a Caregiver of an Individual with FSH

2. What are your biggest concerns about your prescription medications? [Choose Top 3]

3. Do you know which drug companies that you are prescribed? [Choose One]

4. Do you know anything about the sustainability efforts of the companies that make your medicines or of the pharmaceutical industry in general? [Choose One]

5. Could you name some sustainability programs that you are aware of?

6. Are there any sustainability initiatives that are or will become particularly important to you? [Free Text]

7. Do you have any final thoughts on sustainability in the pharmaceutical industry you would like to anonymously share with us? [Free Text]
Patients – A Quantitative Analysis of the Qualitative Free-Text Answers

Percent of Responsive Survey Respondents (34 Total) who used the Free Text Area of the Patient Survey and Mentioned the Following Sustainability Issues
Patients – What Else Do They Say?

Selected Answers (Note: minor grammatical changes were made)

• “We need sustainability in every industry.”

• “MORE DISCLOSURE”

• “We need sustainability in every industry.”

• “We need sustainability in every industry.”

• “We need sustainability in every industry.”

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Selected Answers:

• "Concerned about environmental pollution put into the water supply from medicine."
• "Providing access to medicines to people who may not be able to afford them."
• "Most probably impossible to do them all."
• "Companies need to pick their core priorities and do them well. There are so many that it’s sustainable, and perhaps sustainable itself (or that some MIT students think they should be)."
• "Concerned about environmental pollution put into the water supply from medicine."

Patients – What else do they say?
Patients – What else do they say about access to medicine and affordability?

Selected Answers (Note: minor grammatical changes were made)

• "I am horrified that big pharma can charge whatever they like for drugs. This seems insane."  
• "In our current system, we are asked to participate in trials for medicine that we may not be able to afford. When a family member has a severe medical problem, normal rational thinking no longer applies. A parent will mortgage their home to buy a therapy for a child based on a successful trial."  
• "I can’t blame people for going to Canada (and elsewhere) for their necessary medicines. Compared to other countries, which limit the profits on drugs especially for the changing illnesses. I am horrified that big pharma can charge whatever they like for drugs. This seems insane."  
• "Honesty in need to set prices and consistency from one prescription to the next."  
• "Sustainability is an important element in today’s world. However, price gouging is more important than sustainability."  
• "Cost differential of drugs is significantly higher in USA than other countries despite drugs being manufactured abroad in many cases."  
• "The pharmaceutical industry appears to be mainly interested in maximizing profits for the pharmaceutical companies."  
• "End up not working. The system has a devastating history."  
• "I am horrified that big pharma can charge whatever they like for drugs. This seems insane compared to other countries, which limit the profits on drugs especially for the changing illnesses. I am horrified that big pharma can charge whatever they like for drugs. This seems insane."
INTERVIEW QUESTIONS

Appendix B
1. Do you have any indication that MS patients care about the social and environmental sustainability efforts of the companies that produce their medicines? If so, in what form (e.g. do they care more about reducing water/energy use, being carbon neutral, price reductions, access to medicines, diversity in medical trials, green chemistry)?

2. What aspects of sustainability does your organization think the medical industry cares about most? Why?

3. Similarly, what areas does your organization focus on in its patient-directed, industry-directed, and regulatory-directed advocacy work?

4. Do you have any bills or regulations you are trying to push for in the US or Europe that you would be willing to share with us?

5. Would you be willing to share with us sustainability in the next 5-10 years? Why? What aspects?

6. Do you see patients, hospitals, and/or insurance companies putting a stronger focus on sustainability efforts of the companies that produce their medicines?

Questions for Advocacy Organizations
1. How do you find out about new medicines and clinical trials?

2. Are you aware of the social and environmental sustainability efforts of pharmaceutical companies whose medicines you prescribe to your patients?

3. Do you and/or your patients care about the sustainability efforts of these pharmaceutical companies?

   – If so, what are the most important initiatives that pharmaceutical companies can undertake?

   Retail
Questions for Insurance Companies

1. Are you, in your role as a representative of an insurance company, aware of sustainability (environmental & social) efforts in the industry as a whole is becoming more concerned about the sustainability efforts of drug companies?

2. Do you have any indication that the insurance industry is aware of sustainability efforts by industry leaders?

3. Why do you care? Is it because of required reporting, regulations, or other?

4. To what extent do you think it will be important for your hospital in the next five years?

5. Why? What aspects?

6. Does your insurance company look at the upstream manufacturing (e.g., Biogen, Takeda, Novartis, Teva, other contract manufacturing) of the supply chain?

7. What aspects of sustainability do you care about the most?
1. Are you aware of sustainability (environmental & social) efforts in the industry?

2. Do you care about sustainability efforts by industry leaders? – To what extent?
   – What aspects of sustainability do you care about the most?

3. Why do you care? Is it because of required reporting, regulations, or other?
   – Why? What aspects?
   – To what extent do you think it will be important for your hospital in the next 5-10 years?

4. Do employees care about sustainability?
   – Why?
   – To what extent do you think your hospital will put more focus on sustainability in the next 5-10 years?

5. How does this manifest down the value chain, do patients care/pay attention to sustainability efforts of hospitals?
   – Do employees care about sustainability?
   – Why?
   – To what extent do you think your hospital will put more focus on sustainability in the next 5-10 years?

6. Does your hospital view the upstream manufacturing (e.g. Biogen, Takeda, Novartis, Teva, other contract manufacturing) of the supply chain?
   – What aspects of sustainability do you care about the most?

7. Do you have any indication that patients care about sustainability? If so, in what form?
   – Why?
   – To what extent?

Questions for Hospitals
1. How do large financial institutions view the sustainability efforts of pharmaceutical and biopharmaceutical companies?
   - Is the majority of concern revolving around potential risk to financial investments?
   - Is there a growing consciousness among socially responsible investors about drug company operations?

2. Are there any major trends in finance/ESG that will impact the pharmaceutical/biopharmaceutical industry in the next 5–10 years?
   - Is there a growing consciousness among socially responsible investors about drug company operations?

3. How do ESG specialists evaluate the sustainability efforts of companies?
   - What aspects of sustainability are the most important to your firm?
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Appendix C
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