Highlights

- Brazil’s biotech industry currently exists in a complex regulatory environment. However, outputs from previous Biotechnology Ecosphere sessions have helped to spur policy reforms that make the country more welcoming to the biotech industry (see Opening Session).
- Intellectual property (IP) practices that are not aligned to the rhythm of innovation create a number of hurdles for entrepreneurs and show that there is still work to do to create an environment in Brazil that is welcoming to innovation (see Recap from Previous Biotech Conferences).
- Brazilian companies and universities have historically found it difficult to establish broad and successful collaboration on research and development and the government can help to bridge this gap by serving as a matchmaker between industry and academia (see Landscape Definition/Breakout Sessions – Innovation).
- Second-generation biofuels represent the future of the industry and will require business investment, collaboration and policy support to move the technology beyond its early stages, but there are also opportunities to support first-generation fuels in the near term to stabilize the market (see Landscape Definition/Breakout Sessions – Advanced Biofuels).
- Communicating the environmental benefits of bio-based chemicals to consumers and labelling products so that consumers know they are bio-based will be essential in advanced the biochemicals market (see Landscape Definition/Breakout Sessions – Biochemicals).
- The biotech industry needs to push to get on the agenda at COP21 to win over public perceptions that biotech solutions should be used to tackle climate change (see Landscape Definition/Breakout Sessions – COP21).

Introduction

The Chemicals and Advanced Materials team at the World Economic Forum launched the Biotechnology Ecosphere platform in 2010 to bring together leaders in biotechnology and drive change in the industry. Since then, the platform has held sessions in locations such as Brazil, China and North America, while organizing virtual touchpoints to share learnings across regions. Given the industry’s current challenges, collaboration and discussion across the biotechnology value chain will be essential in the coming years. As such, the main goals for the platform in 2015 are:

1. Establishing a clear vision on how biotechnology can enable circular economy solutions across industries
2. Harmonizing industry stakeholders around issues and establishing a unified voice for the industry
3. Employing this unified voice to influence policy development and change in key global regions

The 2015 South American gathering for Biotechnology Ecosphere was held on 14 August 2015 in São Paulo, Brazil. The World Economic Forum convened esteemed participants from leading industry partners, innovative start-ups, and the public sector to discuss key issues that will impact the future of the industry. The output from these meetings will develop a credible narrative to get biotechnology back on the climate change agenda, inform policy recommendations that participants will bring back to their respective governments, and set the stage for further discussions at subsequent gatherings in Dalian (China), Geneva and Davos.
Discussion Summary

Opening session

Brazil is now the world’s largest producer of bio-based materials, making it an optimal location for a major conference of biotechnology leaders. Although Brazil faces many challenges in its political and economic environment and is lacking investment in innovation, the biotech sector remains promising. Technology transfers from universities to companies are picking up, companies are investing and carbon is beginning to be priced relatively competitively worldwide. Outputs from previous World Economic Forum Biotechnology Ecosphere sessions in Brazil have been instrumental in spurring the government to adopt new policies supporting the biotech industry. These include: introducing a fast-track for green patents; introducing a cellulosic mandate; and opening dialogues with industry. The Forum plays a key role at the intersection of all the players in the industry, which will be critical as it was noted that certain parts of the value chain have been missing from these discussions historically. Its partnership with Brazilian private companies has been long and fruitful and will likely continue to generate positive results for the biotech industry. Ultimately, the conversations that occur during this meeting will inform public and private policies, and play a crucial role in informing the discussion at larger events.

Recap from previous biotech meetings in São Paulo and Montreal

The opening speaker, leader of a prominent investment group in biotech, began the discussion by sharing anecdotes about the different Brazilian companies he has invested in. Of the 45 Brazilian companies in his investment portfolio, most would never file for patents because the seven to eight years of administrative processing time required to get one was longer than the lifecycle of the product. There were also a host of issues related to IP, such as the fact that Brazilian law dictates that if the government supports the R&D of universities, the government has complete control over how that IP is commercialized. These challenges are not new to any entrepreneur, but it indicates that there is a lot of work left to do to help the Brazilian biotech industry reach its full potential.

At last year’s biotech meeting in Brazil, participants identified challenges and opportunities in the industry and agreed on ambitious actions to change the industry. Reviewing the progress that has been made on addressing these actions, the speaker indicated that several small but significant steps have been taken, using the analogy, “How do you eat an elephant? In pieces.” This year, industry stakeholders are much more aligned (i.e. through the creation of the Brazilian Biotech Association), but there is room for improvement. The Brazilian biotech industry needs to develop a shared vision and voice and the goal for this year’s meeting is to identify further opportunities and propose further actions for participants to take to their respective organizations.

Landscape Definition

Innovation

Brazil’s biotech industry exists in a complex regulatory environment. Innovation policy was previously focused vertically on 19 sectors, but upcoming policy changes will adapt this to a more horizontal focus. The latest industrial policy, Brasil Maior, was designed to improve innovation by reducing the regulatory burden and obstacles companies face when trying to commercialize their innovations. This is a welcome shift as it has historically been difficult for companies to turn knowledge into economic gains. The speaker during this session, a prominent Brazilian official tied to the biotech industry, recounted the difficulty of creating a framework for a new innovation law to better tie together the academic and business worlds. One of the largest hurdles in crafting the innovation law was recognizing and supporting the involvement of professors in private sector research. Initially, the government wanted to allow academics to spend only 240 hours a year supporting private research, but they increased this total to 480 hours, which was a major win for the biotech industry. Adapting the law will be crucial if companies are going to partner successfully with public academic institutions. The speaker expects that the new innovation law will be approved soon and will help to spur innovation by reducing regulatory and bureaucratic hurdles and generally creating an environment that is conducive to innovation.

In addition, the speaker discussed the changes affecting the Brazilian patent office, which include a new president, an increase in the number of patent examiners and a rise in their pay and benefits, IT improvements to help streamline the patent process, an increase in international cooperation, and more prevalent use of best practices from other countries. This will be important as no one, including Brazil, currently has patents completely right and collaboration will be required on this issue. During President Obama’s visit to Brazil in June 2015, the Patent Prosecution Highway was signed, which highlights the international cooperation currently under way. As the IP protection process in Brazil improves, companies should feel more secure about investing in innovation. All of these regulatory improvements (and expected future improvements) have led to tangible results. In the past year, there has been an increase in venture capital spending, both in the number of investors and amount of seed money invested. However, more can be done to support this investment. There are currently plans to create a fund to help companies grow during the early stages of development.

A major challenge for the biotech industry is earning the confidence of foreign technology companies to invest in Brazil. This confidence will come mostly from good perceptions about the country as a whole and ensuring that the tax environment is not too complex. APEX, the Trade
and Investment Promotion Agency, helps to cut through the complexities, as it can act as a one-stop shop for companies that want to invest in Brazil. APEX has helped to foster partnerships between Brazilian companies and companies in France, Israel, Germany and the UK. ABBI, the Brazilian Industrial Biotech Association, is a great example of how collaborative innovation can be promoted through joint ventures. Other examples of policy support from the Brazilian government include the PAISS initiative, which is attracting investment in building plants, and BNDES, which is financing those investments.

Advanced biofuels

There is an opportunity for a breakthrough in ethanol technology in Brazil. Biofuels currently make up about 0.8% of energy sources, which means there a long way to go to make it one of the country’s most important energy sources. One limitation to the industry is the efficiency of the current extraction process; technology needs to improve to allow for more biofuels to be extracted from inputs (i.e. sugar) to bring overall costs in line with other energy sources. Another limitation for the industry is finding ways to produce more inputs (i.e. grow more sugar) for bioenergy. There is currently a lot of potential for dramatically increased sugar cane production; it is likely that the industry can move from 7 litres per hectare in 2015 to 25 litres in 2025. Overcoming both of these challenges would make it possible to quadruple the productivity of ethanol output in 20 years. Between 2008 and 2009, there was a period when demand for ethanol was higher than petrol, which is promising for the future of the industry as this can be achieved again. The industry must find a way to repeat its success from 2008-2009 – the alternative is that increases in energy demand will be supplied with traditional petrol. With the right collaboration between governments, academics, and businesses, green energy through ethanol is a real possibility.

The questions after the discussion on biofuels revolved around two themes: second-generation biofuels and ethanol/flex cars. Although second-generation biofuels are a major advancement, there is still strong momentum behind first-generation biofuels, which already have the scale and incentives in place. The Brazilian government is even exploring additional incentives for promoting first-generation biofuels, as the second generation is still seen as a future breakthrough.

Biochemicals in Brazil

Brazil currently has a $32 billion market for chemicals and the market opportunity for biochemical products is also huge, with the cosmetic industry a prime example of an untapped market. In addition, sugar cane waste, a major by-product of Brazilian agriculture, is potentially the most competitive raw material in the world for bio-based products’ manufacturing. Sugar cane and corn represent 60% of first-generation ethanol production globally, and Brazil represents 30% of total global production. This feat is accomplished with only 1% of land in Brazil being used for sugar cane production. In the coming years, the government has made the commitment to preserve natural land. However, that commitment does not preclude increased sugar cane production and growth in the biotech industry. There was also discussion on opportunities to derive bio-based products from other raw materials beyond sugar, such as wood for paper. Finally, public policy can promote the biochemicals industry by exploring government procurement programmes that give preference to bio-based products.

COP21

The general feeling coming from the Biotechnology Ecosphere meeting in Montreal is that biotech solutions are not very visible to the public. The public does not see biotech solutions because the industry doesn’t sell directly to them and, as a result, people are currently talking about wind and solar as sources of renewable energy—not biofuels. The solution is more dialogue and commitment from the whole industry as well as developing solutions and plans to make the promise of growth in biotech more tangible. Unfortunately, the lack of visibility of biotech solutions has led to biotechnology being excluded from the current COP21 agenda. This year at COP21, there will be an agreement on climate policy, which will likely trigger strong global cooperation. Unfortunately, what governments bring to the table at COP21 provides only about 43% of what is needed to make a significant change, which means that many people could be very disappointed. If the biotechnology industry wants to stay on the minds of people and governments as climate change policy is discussed, it needs to get space on the agenda at COP21. There will be some matchmaking to be done if this is to occur, as it’s not only what biotech can offer that is important; dialogue and commitment from buyers are also needed.
Breakout Sessions

Breakout Group 1 – Innovation

Breakout Group 1 focused on answering a number of key questions designed to identify specific barriers to innovation in Brazil and discussed ways of lifting those barriers. One issue highlighted was the cost of innovation and the role of tax policy in increasing this cost. Participants noted that high import taxes, value added tax and other taxes make R&D more expensive in Brazil than in other countries, particularly when the research requires specific equipment to be imported. While tax policy is a larger issue that will need to be tackled by the government over a longer period of time, a number of financial incentives for innovation were discussed that could offset these higher costs in the meantime. There are some financial incentive policies for innovation in Brazil, but they are mainly targeted at large companies. Given the increasingly important role of start-ups in innovation, it will also be important to include them in these programmes so they gain recognition for their benefits. Another policy is specialized loan guarantees, which decrease the financial risk for smaller innovators, such as start-ups as well as professors and students.

Another set of interrelated issues that was discussed at length was the importance of talent and the need for improvements in education to better develop and attract talented employees to Brazil. Participants noted a shortage of students pursuing engineering degrees as well as a lack of world-class institutional knowledge at Brazilian universities in engineering and the hard sciences. A direct cause of this shortage is because many universities are unwilling to make the large upfront investments needed to purchase high-quality laboratory equipment. Additionally, there does not appear to be sufficient incentives for students to pursue engineering degrees, with many students choosing instead degrees in the humanities. This has all led to a shortage of professionals with engineering training. One idea for improving this was to further promote interdisciplinary learning, as most academic departments have traditionally built their knowledge base in silos. It was also suggested that Brazil should further promote immigration for skilled foreign workers, students and researchers by making it easier to obtain a visa; this can help to fill the current skills gap and encourage further domestic development of engineering skills in the longer term. There is also value in exchange programmes, with Brazilian students travelling abroad to soak up additional knowledge and by bringing more international students to Brazil to study. Additional initiatives, such as spouse assistant programmes and support for the elderly to re-enter the workforce, would also help to bridge the talent gap.

In addition to developing talent, it was also noted that academia has an important role to play in innovation by collaborating with industry. Participants noted that the academic and business worlds in Brazil have grown apart and that most Brazilian universities are not focused on how their research could potentially be applied and commercialized. Companies and universities are also judging their success of their research by different standards. One participant said “the currency for academia is publications, but for companies, particularly in the chemicals sector, the currency is patents”. This leads to an environment in which there is collaboration among universities and among companies, but very few “bridges between these two worlds”. The government can help to bridge these gaps by acting as a matchmaker between universities and companies and identifying potential areas of collaboration, which would be a new and welcome development.

01: Andrew Hagan, Director, Chemistry and Advanced Materials, World Economic Forum, Switzerland
02: Bernardo Gradin, Chief Executive Officer, GranBio Investimentos SA, Brazil
03: Marcos Vinicius de Souza, Secretary of Innovation, Ministry of Development, Industry, and Trade (MDIC), Brazil providing a perspective on collaborative innovation from government
IP protections are one last area that currently serves as a barrier to innovation but which could also become a significant opportunity if addressed properly. Improving IP policies will be essential in ensuring that entrepreneurs can capture value from their innovations, particularly in Brazil where the cost of innovation is high. While IP seems to be on everyone’s agenda, there still appears to be a knowledge gap, as many in Brazil are still learning about IP. A few specific knowledge gaps were discussed, including the need to differentiate between originality and innovation, as many people misclassify any original idea as an innovation. Another issue is that researchers and universities are frequently unable to quantify the value of their work, leading to commercialization challenges. Technology transfer offices can play an important role in addressing these gaps and providing universities with the capabilities to receive patents, but they will need to have the proper staff and resources to have an impact. Valuation comparables were also discussed as a way to provide researchers with additional information about the value of their work.

**Breakout Group 2 – Advanced Biofuels**

Breakout Group 2 focused on identifying key bottlenecks to the scalability of advanced biofuel solutions and ways to unlock these barriers and spur growth. The discussions started by putting the current situation into context. When ethanol solutions were first being promoted, oil prices were very high and biofuels provided cleaner and more economically competitive solutions. That situation has changed, as falling oil prices and the public perception of ethanol have cast doubt on the industry. As ethanol producers were not previously sophisticated enough to rise to these challenges, the sector experienced significant issues and damaged public perception of the industry. Steps such as increasing efficiency and promoting options like flex-fuel cars will help to stabilize the market.

Determining the path forward for the biofuels sector requires understanding the differences between the current state and future opportunities for first- and second-generation feedstocks. While participants agreed that the second-generation fuels hold significant promise and will eventually become competitive without subsidies, there is still a need to develop first-generation fuels. Though participants described the latter as currently being “in the valley of death”, given the established footprint and infrastructure associated with them, there is an opportunity to use them as a way to stabilize the industry so that second-generation fuels can really take off. This would support the synergies between first- and second-generation fuels and promote collaboration across the value chain. This will all be very important in supporting the development of advanced biofuels as a number of companies appear to be making the same mistakes and not learning from one another.

Advanced biofuels represent a significant opportunity given their potential global impact and the ability to repurpose the technology used to make these fuels towards other end markets such as bio-based chemicals. However, transitioning from first-generation to second-generation fuels will require additional considerations, as changing the feedstock that is used will also change the manufacturing processes involved. Additional members of the biofuels value chain, such as enzyme and equipment providers, will also need to be involved to create a competitive market for advanced fuels. However, these players will be reluctant to invest until a more robust market for advanced fuels develops creating “a chicken and egg” problem. This need to spur initial investments to create the path forward for the industry underscores the need for strong policy support. Examples from other countries, such as the United States, shows that strong government support (i.e. mandates) can create demand and encourage investment by reducing risk.
The group focused on the government’s role in supporting the development of advanced biofuels in Brazil, particularly while the industry is in its “learning curve” stage in which key technologies are being researched and commercialized. Participants noted that there is currently “a desert to cross” as initial optimism on second-generation cellulosic ethanol plants has borne fruit. While there is significant work to be done by the industry, government policy has a role to play as well. In order to secure this support, the industry needs to present a unified message to the government with a compelling case as to why the policy support is needed as opposed to just what form the support should take. This case should be made by technical experts at companies who can accurately identify how the government can establish these solutions. Finally, creating a panel of expert advisers to the government who have both scientific and business expertise, similar to the President’s Council of Advisors on Science and Technology in the US, would be helpful to promote cooperation between the government and industry.

Breakout Group 3 – Biochemicals

Breakout Group 3 focused on identifying key bottlenecks to the scalability of advanced biofuel solutions and ways to overcome these barriers and spur growth in the sector. The discussions started off by noting the challenges that need to be addressed when competing in a commodity-focused industry. Given the volatility of global commodity prices, such as sugar cane, the economic viability of bio-based chemicals is subject to change over time. While the benefits of biochemicals extend beyond their price competitiveness, if consumers are not aware of these advantages they will choose the cheapest option available. Additionally, biochemicals are competing with an entrenched industry with over a century of experience. Disrupting this established industry will require creating a framework and policies to support the development of the biochemicals sector.

An important facet of this framework will be establishing a means to signal the benefits of bio-based products to consumers. Biochemicals can be included as part of a compelling narrative to consumers given their potential impact as a green product in reducing pollution and greenhouse gas emissions, while improving health. In order for consumers to make purchasing decisions based on this information, they will need to be made aware of which products are bio-based. Labelling and other signals for consumers will play an important role. If consumers are made aware that these green products are available, they may also be willing to pay more for them in certain sectors because of their environmental benefits, helping to offset the pricing challenges that arise from competition with commodities. This effect may be particularly acute in Brazil, where consumers are well versed in the need for environmentally friendly products given recent events such as the São Paulo water crisis.

The group also stressed the importance of policy support in developing the biochemical industry. There are opportunities to use tax policies to create a level playing field for prices; while creating consumer demand for biochemicals can be difficult when prices are unequal, the value proposition for bio-based chemicals is clear if consumers are choosing between two similarly priced options. There is also an opportunity to streamline regulations to reduce the burden on companies as they seek to innovate and develop new materials and technologies. Additionally, the government can communicate to consumers and educate them about the environmental benefits of bio-based chemicals. Finally, the government can provide support by incubating and helping to develop key technologies and processes that will be crucial as the industry moves past its early stages. All of these steps will be helpful in establishing a strong local market for biochemicals in Brazil. While participants noted that the end goal of the sector should be to export bio-products to other markets, there is a significant opportunity to develop the Brazilian market due to local advantages such as availability of raw materials and use this local market as a base for further growth.
Breakout Group 4 – COP21

Breakout Group 4 discussed the ways in which the biotechnology industry can play a leading role in helping to shape the global climate change agenda and how public and private sector cooperation is needed to advance this agenda. A main focus of the conversation was the need for the biotechnology industry in Brazil to present a unified front and develop a specific message from both businesses and governments while securing commitments from both sides. Taking a value chain approach will be essential in ensuring that the correct players are engaged in developing this message. A key part of this effort will also be making the benefits of biotech more understandable to the general public. Much of the technology that is being discussed by the industry is still being developed, but the industry will need to show that it has a package of solutions which can create value today. Raising awareness on the value of the biotech industry will also require providing solid data on the carbon impact of bio solutions, which can be shown to the government and used to convince the public of the benefits of the biotechnology industry.

An important first step in this effort will be to show that business leaders are engaged and are committing to greenhouse gas reduction targets. While a number of business leaders have expressed a desire to participate in the climate change agenda, more tangible actions, such as signing the CEO Climate Change Agreement by Brazilian chief executive officers, are still to be done and are needed. There are examples of large companies developing letters to measure and deliver on goals to reduce emissions by 2050, which have been signed by biotech companies as well as companies in the construction, mining, and chemicals sectors. Existing business organizations and coalitions, such as the Brazilian Industrial Biotech Association, can also be leveraged to increase engagement with senior executives. Identifying the correct members of government to lead these efforts will also be important, as previous collaborations with government have involved the Ministry of Agriculture while key players such as the Ministry of Energy were not engaged.

Playing a role at COP21, and as part of the broader climate change agenda, will require significant development of the biotechnology market, which will need to be promoted through public/private cooperation in a number of areas. One particular area of cooperation is through creating the correct incentive structures. Currently, Brazil does not have the right incentives in place to promote growth in biotechnology and should seek to develop policies such as green financing mechanisms and loan guarantees for green projects that will increase the engagement of the private sector. Developing a cohesive government policy and messaging on biotech is also badly needed. Participants noted that while there are currently a number of policy initiatives in place, they are small and are segmented. Joining together these varied initiatives into a cohesive vision will simplify and streamline efforts and allow the government to take a longer-term focus.
Developing the talent needed to create long-term success will also be essential. Increasing the connectivity between academia and industry as well as between the public and private sector will help to ensure that all available ideas and resources are being utilized. In a similar vein, training and education in biotech will also play an important role in developing the skillsets needed to grow the industry and can be promoted through developing exchanges and offering online classes in biotechnology. Improvements in skills and education will be needed to create the technological breakthroughs to increase the economic competitiveness of the industry, as it was noted that biotech currently has low value economically but very strong value with respect to sustainability.

01: Participants engage with moderators for an update on opportunities for actions
02: Alan Hiltner, Vice-President Business Development, GranBio Investimentos S.A, Brazil
03: Collaborative innovation; exchange of ideas
Debrief and Next Steps: Opportunity for Action

As the meeting came to a close, the participants debriefed on what had been discussed and outlined opportunities for actionable next steps. They broadly fell under four categories: COP21, biochemicals, advanced biofuels and innovation.

**COP21**

The group stressed the need for getting biotechnology on the agenda at COP21 and increasing engagement from senior leaders on addressing the climate issue. Specific action items are:

1. Get biotechnology on the action priority list for COP21 by drafting a statement that can be signed both by industry and government leaders
2. Campaign for more chief executive officers to sign the CEO climate statement
3. Increase collaboration on climate issues across the value chain

**Biochemicals**

While the biochemical industry has difficulty in tracking chemicals across the value chain, there are several steps that can be taken to increase transparency and build the market for biochemicals:

4. Implement labelling systems to help consumers know if they are buying something more sustainable
5. Explore bio-preferred government purchasing programmes such the one in the US
6. Get 10 cities to commit to buying sustainable products to increase demand
7. Develop a priority list of chemicals that are perceived badly by the public and provide better education to change that perception
8. Support EMDS and the “fines” initiative in Brazil

**Advanced Biofuels**

Participants identified several next steps to help stabilize the market for first-generation biofuels and support the development of second-generation technologies:

9. Create a council of technical experts to advise the government, similar to the President’s Council of Advisors on Science and Technology in the US
10. Capitalize on the fact that carmakers want lighter and more powerful engines, which can only be achieved with petrol and ethanol mixes
11. Create a customized programme for cellulosic ethanol for Brazil and take it to the Minister of Finance to promote development of advanced biofuels technology

**Innovation**

To promote innovation in Brazil, several next steps can be taken to support entrepreneurs and increase collaboration between industry and academia:

12. Create a loan guarantee programme to decrease financial risk of entrepreneurship
13. Facilitate an academic track for R&D that has commercialization as the end goal
14. Support the government proposal that is currently being drafted by the Ministry of Development to spur innovation
# List of Participants

<table>
<thead>
<tr>
<th>Name</th>
<th>Position/Role</th>
<th>Company/Department</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bernardo Silva</td>
<td>Executive President at Brazilian Industrial Biotechnology Association</td>
<td>ABBI</td>
<td>Brazil</td>
</tr>
<tr>
<td>Rogério Ribeiro Abreu dos Santos</td>
<td>Business Development Director</td>
<td>Abengoa SA</td>
<td>Spain</td>
</tr>
<tr>
<td>Fernando Vieira de Figueiredo</td>
<td>Chief Executive President</td>
<td>ABIQUIM</td>
<td>Brazil</td>
</tr>
<tr>
<td>Edison Kopacheski</td>
<td>Chief Executive Officer</td>
<td>Advanta Seeds Brazil</td>
<td>Brazil</td>
</tr>
<tr>
<td>Ivo Fouto</td>
<td>Chief Executive Officer</td>
<td>AGN Agroindustrial e Biocombustíveis Ltda.</td>
<td>Brazil</td>
</tr>
<tr>
<td>Eduardo Loosli Silveira</td>
<td>Vice President</td>
<td>Amyris Brasil Ltda</td>
<td>Brazil</td>
</tr>
<tr>
<td>Andre Limp</td>
<td>Project Supervisor</td>
<td>ApexBrazil</td>
<td>Brazil</td>
</tr>
<tr>
<td>Rony Sato</td>
<td>Technology and Innovation Manager</td>
<td>BASF S.A.</td>
<td>Brazil</td>
</tr>
<tr>
<td>Denis Lima</td>
<td>Regional Regulatory Manager LATAM – Seeds</td>
<td>Bayer S.A.</td>
<td>Brazil</td>
</tr>
<tr>
<td>Luuk van der Wielien</td>
<td>President</td>
<td>BE-Basic</td>
<td>Netherlands</td>
</tr>
<tr>
<td>Ivan Coelho</td>
<td>Head of Second Generation Business Development</td>
<td>Beta Renewables / Biochemtex</td>
<td>Brazil</td>
</tr>
<tr>
<td>Artur Yabe Milanez</td>
<td>Manager - Biofuels Department</td>
<td>Brazilian Development Bank - BNDES</td>
<td>Brazil</td>
</tr>
<tr>
<td>Gabriel Gomes</td>
<td>Head of Biochemicals Department</td>
<td>Brazilian Development Bank - BNDES</td>
<td>Brazil</td>
</tr>
<tr>
<td>Maria Sueli Felipe</td>
<td>Head of Biotechnology Department</td>
<td>Brazilian Industrial Development Agency - ABDI</td>
<td>Brazil</td>
</tr>
<tr>
<td>Diogo Carvalho</td>
<td>Partner Commercial Director</td>
<td>BUG Agentes Biológicos</td>
<td>Brazil</td>
</tr>
<tr>
<td>Rony Sztamfater</td>
<td>Partner Executive</td>
<td>BUG Agentes Biológicos</td>
<td>Brazil</td>
</tr>
<tr>
<td>Marcia Regina Rios</td>
<td>Head of S&amp;A Industrial Applications, BU Industrial &amp; Consumer Specialties</td>
<td>Clariant Latin America</td>
<td>Brazil</td>
</tr>
<tr>
<td>Diana de Mello Jungmann</td>
<td>Head of Intellectual Property</td>
<td>Confederacao Nacional Da Industria</td>
<td>Brazil</td>
</tr>
<tr>
<td>Viler Correa Janeiro</td>
<td>Diretor de Negócios – Etanol Celulósico</td>
<td>CTC – Centro de Tecnologia Canavieira S.A.</td>
<td>Brazil</td>
</tr>
<tr>
<td>Patricia Osseweijer</td>
<td>Head of Biotechnology Department</td>
<td>Delft University of Technology</td>
<td>Netherlands</td>
</tr>
<tr>
<td>John Biggs</td>
<td>Research &amp; Development Director</td>
<td>Dow Chemical Company</td>
<td>Brazil</td>
</tr>
<tr>
<td>Luis Cirihal</td>
<td>Business Director – Plastics and Hydrocarbons</td>
<td>Dow Chemical Company</td>
<td>Brazil</td>
</tr>
<tr>
<td>Wilson Araujo</td>
<td>Biofuels Technology Manager</td>
<td>DuPont</td>
<td>Brazil</td>
</tr>
<tr>
<td>John Julio Jansen</td>
<td>Vice President – Industrial Biosciences</td>
<td>DuPont</td>
<td>Brazil</td>
</tr>
<tr>
<td>Name</td>
<td>Position</td>
<td>Organization</td>
<td>Location</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>----------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Kevin Maggitti</td>
<td>Project Manager, Collaborative Innovation</td>
<td>World Economic Forum</td>
<td>Switzerland</td>
</tr>
<tr>
<td>Alice Cascioli</td>
<td>Community Coordinator, Basic Industries</td>
<td>World Economic Forum</td>
<td>Switzerland</td>
</tr>
<tr>
<td>Bernice Lee</td>
<td>Head of Climate Change and Resource Security Initiatives</td>
<td>World Economic Forum</td>
<td>Switzerland</td>
</tr>
<tr>
<td>Mauricio Felicio</td>
<td>Community Lead, Business Engagement, Latin America</td>
<td>World Economic Forum</td>
<td>Switzerland</td>
</tr>
<tr>
<td>Andrew Hagan</td>
<td>Head, Director Chemistry and Advanced Materials</td>
<td>World Economic Forum</td>
<td>Switzerland</td>
</tr>
</tbody>
</table>
The World Economic Forum is a comprehensive and integrated platform to strategically shape global, regional, national and industry agendas.

The Forum helps the foremost political, business and other leaders of society to improve the state of the world, serving as an independent and impartial partner and acting as the officially recognized International Institution for Public-Private Cooperation.