

**White Paper**  
**Topics Covered at the Berkeley Innovation Forum**  
**April 7-8, 2021**

**Transforming & Transitioning Your Firm During Geo-Political Unrest Through OpenInnovation**

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Research and analysis presented in this paper are based on discussions between and among the following practitioners and academics on related topics:

**Topic: The Roles of Energy Production and Distribution in Managing Geo-Political Unrest**

**Keynote Speaker:**

[Vinod Philip](#), Chief Technology & Strategy Officer, Siemens Energy

**Discussants:**

[Dr. Ganesh Das](#), Director of R&D TATA Power

[Marco Alberti](#), Sr. International Institutional Affairs Officer, Enel

[Jeff Southerland](#), Leader/Market Strategy & Solutions/Solutions Development, Duke Energy

**Topic: How Can Earth Surveillance Information/Technologies Help Business in Terms of Global Unrest?**

**Keynote Speakers:**

[Parimal Kopardekar](#), Director of NASA Aeronautics Research Institute (NARI)

[Rupak Biswas](#), Director of Exploration Technology, NASA Ames Research Center

**Discussants:**

[David Rapaport](#), Head of Research & Collaboration Management, Siemens

[Molun Zhang](#), R&D Sr. Manager External Technology Acquisition, The Coca-Cola Company

[Ajit Ranade](#), President & Chief Economist, Aditya Birla Group

**Topic: Rebuilding India – Overcoming Calamities of the Past and Present for Self-reliance**

**Keynote Speaker:**

[Dr. Rajiv Kumar](#), Vice Chairman, NITI Aayog, Office of Prime Minister, India

**Discussants:**

[Pankaj Munjal](#), Chairman, Hero Cycles

[Anil Sahastrabudhe](#), Chairman, All-India Council for Technical Education

[Yashraj Bhardwaj](#), Garwood Innovation Fellow & Research Advisor, Rebuilding India Initiative

**Topic: Leveraging Entrepreneurial Leadership Styles During Geo-Political Unrest**

**Keynote Speaker:**

[Dr. David Teece](#), Professor in Global Business, University of California, Berkeley

**Discussants:**

[Jim Spohrer](#), Director, Cognitive Open Technology, IBM

[Hans-Georg von Lewinski](#), Senior Partner, Korn Ferry International

[Will Decker](#), VP, Plug and Play

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## **Executive Summary – Turning Challenges into Opportunities by Using Open Innovation**

This report is the result of an in-depth study of the presentations, panel discussion sessions, and remarks made during the Berkeley Innovation Forum (BIF) Spring 2021. The collected notes were summarized and put into a white paper to benefit the BIF attendees and their companies. These recommendations do not represent full solutions, but suggestions and visions contributing to how firms can transform and transition during geo-political unrest through Open Innovation.

This report includes presentations by the following organizations:

1. **Siemens:** The Role of Energy Production and Distribution in Managing Geo-Political Unrest
2. **NASA:** How Can Earth Surveillance Information/Technologies Help Business in Times of Global Unrest?
3. **NITI Aayog:** Rebuilding India – Overcoming Calamities of the Past and Present for Self-reliance
4. **UC Berkeley:** Leveraging Entrepreneurial Leadership Styles During Geo-Political Unrest

The following sections report the discussions conducted during each session and capture questions and remarks from the attendees. Moreover, we provide a short presentation of more general recommendations that result from a cross-analysis of all discussions that go beyond the individual presentations and sessions, and concern:

1. Sustainability: the importance of the local context and collaboration
2. Digitalization: application in the broadest ways
3. Business Models: moving beyond innovation
4. Geo-political transformation

## **Topic #1: Siemens: “The Role of Energy Production and Distribution in Managing Geo-Political Unrest” by Vinod Philip**

In his role as the CTO of Siemens Energy, Vinod is responsible for developing the product and technology portfolios needed to ensure the long-term success of Siemens. Siemens Energy has a strong market position that is well-positioned to work with customers around the world to balance sustainability, affordability, and reliability. Thanks to their scale of operations, technological know-how, execution capabilities, and experiences, Siemens can adapt to meet specific needs from countries and societies around the world through a combination of different technologies (production and transportation) while aligning with ecological goals. Vinod emphasized that the ongoing transformation of the global energy system is rapidly progressing. Global electricity generation is expected to increase by up to 50% by 2040 since global electricity consumption is growing vastly and 770 million people around the world do not have access to electricity yet. How to address such demand while doing it in a climate-neutral and sustainable way is the key question Siemens and the whole energy industry are facing and working on.

### **Main takeaway 1: Green energy transformation requires global energy equilibria**

When looking around the world, sustainable transformation is progressing at different speeds and has different starting points across countries. Many parts of the world where there is a high potential for green energy - be it wind, solar, and hydro - are often far away from the demand side. The key is to efficiently transport energy across countries to match supply and demand to ensure a green energy transformation.

### **Main takeaway 2: Green hydrogen can solve energy transport challenges**

Hydrogen as a very versatile molecule can be used to transport energy in different forms. The big challenge however is producing it at scale. Vinod stated that 1,500 million tons per year (from currently 750 million tons per year) of green hydrogen would be needed to power transport, industrial production, and energy production. This jump is the equivalent of the entire renewable grid generation of Europe.

A combination of policymakers, B2B customers, and technology providers could make hydrogen production commercially viable. Subsidies as originally used for wind and solar could cover the green premium to kick start a high-scale production. Eventually, market-driven innovation and efficiency can replace the delta for subsidies over time. Siemens fully aligns with a green, renewable energy transformation and does not choose to engage in nuclear energy technology as an alternative source of energy due to the high risk-reward perspective.

An increasingly connected energy system across countries will ensure that green energy can be efficiently produced and consumed. However, this transformation makes the energy sector prone to new challenges - such as global unrest.

### **Main Takeaway 3: Market-driven approaches unlock efficiency of the energy system**

Ganesh emphasized that the Indian state governments ensures the way that energy is being produced and distributed have the last mile connectivity and outreach to customers. These processes were untouched for the last 100 years. Tariffs are centrally steered (e.g. typically 81% of residential consumers in Delhi get subsidies from the government) affecting industry competitiveness heavily. Tata Power could successfully increase energy efficiency and customer value in Delhi when taking over the whole distribution and applying technology and process innovation. From an average of 20% overall losses (technical and commercial), Tata Power could lower

losses to only 7.25% marking a giant leap towards efficiency and resilience on par with leading countries in this space.

To plug into a global energy system that is more and more using green energy and that requires balancing supply and demand across countries efficiently, countries like India need to become ready. Through market-driven innovation, as shown from Tata Power, this transformation can succeed in making India a valuable partner for the green revolution on the global stage.

#### **Main Takeaway 4: An interconnected system comes with geopolitical challenges**

The unstoppable and rapid green energy transformation requires technologies on an unprecedented scale and therefore, requires a drastic shift towards opening up, Marco explained. This shift, however, can, in turn, cause new challenges specifically when international interdependencies in the energy sector add a new layer for international relations and economic development:

1. **Technology pushes the margin costs of renewable energy very low.** By 2030 the need for renewable energy will quadruple compared to as of today. However, if not properly managed, countries, regions, supply chains, and companies may prefer certain carbon-intensive technological systems to persist over time, 'locking out' lower-carbon alternatives.
2. **There is a risk of weaponization of energy.** Due to higher grades of distribution, renewable energy systems are more likely to be prone to security risks.
3. **Grids are the point of conjunction between energy transition and geopolitical exploitation.** It is projected that 2 million km of transmission rates and 14 million distribution grids are needed. Economic shocks can cut those investments and affect the stability of the energy system somewhere leading to geopolitical tensions in an interconnected, more and more global energy market.

#### **Main Takeaway 5: There is the need and market to address geo-political problems directly for the customer base through a diversified portfolio**

Jeff linked geopolitical problems to the largest portion of their customer base that are residential customers explaining that there is a natural connection between energy management and safety inside homes to achieve protection from inside. There are new and lucrative fields to tap into the whole smart home business through diversified products (e.g. warranty portfolio, security systems). The direct customer relationship, however, is the most valuable asset of utilities, and potential complementary partners such as Google and Microsoft are eager to tap into that, requiring a very strict business model alignment across partners.

## **Panel Consensus #1: Open Innovation is key to succeed in the race for leading the green energy transformation**

All panelists emphasized that Open Innovation is an essential part to make the transition towards green, digitized energy systems. Due to its interconnected nature, the energy systems of tomorrow require strong collaborations, and thus, partnerships are critical to integrating technologies and business models to unlock new value - for customers, economies, and our planet.

### **1. Siemens: Five drivers for establishing successful Open Innovation partnerships.**

Vinod explained that the transformation cannot be done by one company alone. That's why Siemens collaborates with multinational entities. To establish successful partnerships, he emphasized five different drivers:

1. Access to certain markets through local partners
2. Access to certain competencies, e.g. construction partners for building plants
3. Core development of technologies, e.g. access to partner's power plant to develop technology specific to their needs and handing over eventually
4. Co-funding of technologies with partners
5. Access to pure technologies that are not part of their core portfolio, e.g. joint ventures through complementary technology partners

### **2. Tata: Open Innovation as a means to provide solutions for energy challenges**

Within India, there are challenges to balance energy generation supply and demand. This of course is prevalent across countries with some having energy surplus and others energy losses. TATA wants to help to achieve an energy balance and provide solutions for any energy-related challenge through their Open Innovation Framework:

1. Provide technology as a support system for clients
2. Partner with large companies to provide comprehensive, effective, efficient solutions
3. Create startup ecosystem to innovate (160 partners) with incubation center with startups to create and scale impactful new technologies
4. Have own strong R&D system

### **3. Enel: Open Innovation as the flip coin of sustainability and business growth**

Enel opened 10 innovation labs globally and conceives innovation as the flip coin of sustainability. This made Enel's exponential growth possible. Thanks to Open Innovation, filling the lack and gaps could be accelerated since the early 2010s - when Enel was knowingly a non-innovative utility company. Utilities are transforming themselves into platforms and acting as system orchestrators. Enel is doing it in Chile to produce green hydrogen not as a single innovator but in partnership with Siemens, Porsche, and a Chilean power generation company<sup>1</sup>.

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<sup>1</sup> <https://fuelcellsworks.com/news/enel-green-power-together-with-ame-announces-plans-for-first-pilot-project-for-green-hydrogen>

#### **4. Duke Energy: Customers are ready for Open Innovation solutions; cybersecurity concerns remain.**

Transmission and distribution infrastructure is an area for fertile partnerships, e.g. with telecom companies to provide broadband locally through energy infrastructure. This would solve huge customer problems in rural areas as broadband is lacking. Merging infrastructure with carriers comes with regulatory challenges that are difficult to navigate due to primarily cybersecurity and geopolitical concerns. There would be a high wall between energy companies and networks when needing to share not just the fiber but their meters, network, and other critical tracking technologies. Jeff concluded that the need for end-to-end control over energy infrastructure often excludes Open Innovation solutions that have customer demand.

#### **Panel Consensus #2: Grid resilience is the major challenge and opportunity for the energy transition**

The energy shortage in Texas in February 2021 due to cold weather showed how a grid collapse led to a dramatic situation where people with no energy were facing extreme danger. Grid resilience shows to be the critical factor to sustain existing and future energy systems. Moreover, barrierless, digital grids offer a plethora of opportunities to excel in the ongoing energy transition.

##### **1. Siemens: Learn from mistakes and balance solution portfolios.**

**Step 1:** Understand what were the root causes of breakdowns to provide an objective assessment as opposed to politicized, emotional arguments, and opinions.

**Step 2:** Increase the realization for a balanced portfolio of options to address the need for grid resilience and sustainable generation. These come with a tradeoff due to the high rotation of energy that requires grid stabilization.

##### **2. Tata: Leapfrog through innovation integration despite prevailing system regulations.**

Ganesh emphasized that to achieve resilience within the energy system, companies should not wait until processes from e.g. policymakers change but leapfrog rigid systems through technology innovation. A support network addressing the weakest links through sensing and monitoring values is important. Different digital mechanisms and technologies need to be integrated into a common platform that pushes the transition to a digital-rich system to prevent shortcomings, become more efficient, and ensure grid resilience. How to integrate is the key to success in grid resilience, Ganesh concluded.

##### **3. Enel: Energy dominance is moving to energy sobriety for achieving resilience.**

There are two major problems for grids when exceptional events happen:

1. Ensuring sufficient level of digitization .
2. Ensuring high level of interconnections in the grid.

Breaks like in Texas do not depend on renewable energy. Marco further explained that the digitalization of grids is a key point to make grids resilient and create a barrierless grid that can transmit energy across state borders. For achieving this, the concept of energy dominance has to shift to energy sovereignty of countries. Key points needed for this shift comprise:

1. Preventing dependencies from old energy sources
2. Protecting existing clean energy sources through innovation (e.g. address cost pressure)
3. Creating locally-based industries (e.g. PV) and supply chains
4. Moveing from cost-based decision to system value approach (e.g. Enel's social impact assessment methodology).
5. Creating strategic alliances inside countries (PPP to have technology be the key driver alongside policymaking) and between countries (e.g. transatlantic alliances for addressing climate change: EU and Biden Administration to be the cleantech innovation space).

#### **4. Duke Energy: Grid resilience, digitization, and green energy offer new business models.**

Finding a business case to make the grid smarter and more resilient while improving the grid itself for the customer base goes hand in hand. Business cases about resiliency and sustainability of traditional grid through digitization are in the making for the last 10 years. Now, the age of green energy offers new exciting cases building upon digital grids, e.g. bidirectional energy production where energy is consumed and produced through a community solar model, he emphasized.

#### **Topic #2: NASA: "How Can Earth Surveillance Information/Technologies Help Business in Time of Global Unrest?" by Parimal Kopardekar and Rupak Biswas**

Parimal serves as the Director of NASA Aeronautics Research Institute (NARI). He is responsible for exploring new trends, collaborations, and partnership needs related to aviation enterprise. He also serves as NASA's senior technologist for AirTransportation Systems and principal investigator for the Unmanned Aircraft Systems Traffic Management project. In his talk, Parimal discussed how NASA uses its technological knowledge to detect geopolitical challenges such as forest fires, volcanoes, and air quality issues.

Rupak is the Director of Exploration Technology at NASA Ames Research Center and has held the Senior Executive Service position since January 2016. He is in charge of planning, directing, and coordinating the technology development and operational activities of the organization that comprises advanced supercomputing, human systems integration, intelligent adaptive systems, and entry systems technology. In his talk, Rupak discussed the importance of open innovation across industry boundaries and the importance of proper risk analyses of new technological innovations.



## **Main takeaway 1: Creating resilience by using digital technologies (NARI, The Coca-Cola Company, and Aditya Birla Group)**

As Parimal explained, events such as flooding, hurricanes, volcano eruptions, and wildfires can negatively influence the resilience of our economies. The resilience of business at large can be positively influenced by the use of digital technologies. These technologies can support the detection and monitoring of events that can negatively influence the economy. To enable this resilience, the integration of data and systems is very critical. Open innovation can support to move beyond mere detection and monitoring, and move towards responding upfront on these kinds of events. An example of such a solution is an initiative around land fires that consists of a program with 20 national geo-spatial layers that are available for databases and ecological models that are available to the public for the US. Mapping the risks of natural disasters with the location of suppliers, can also provide information about the resilience of a firm's supplier network. Information technology can support business continuation.

This insight was also supported by Ajit, who gave the example that his company used a system to locate its employees and their families when they were working and living in an unsafe area. The system was backed up with extensive and empathic communication with workers, and as a result, no single day of loss of output was noted. This example shows that, when managing disruptions appropriately, resilience can be maintained or restored in a good way. Molun added to the discussion that it is important to be creative, agile, and flexible, and to for example reformulate ways of working and products, to decrease the impact of disruptions.

## **Main takeaway 2: Understand the real supply chain needs (NARI)**

Innovations often fail because of issues with the supply chain. When designing a supply chain, it is important to understand that a supply chain should cover the entire product life cycle. To do so, the following three needs have to be considered:

- **Access:** access to suppliers is important in the design and build phase
- **Resilience:** important to have consistency, continuity, and conformance with multiple suppliers when manufacturing and testing the innovations, mostly because when product designs are stabilized, it is time to go to the market.
- **Scalability:** high production rates should be able to meet the growing needs in the operation phase, and when the solutions have to be maintained, repaired, and overhauled.

A successful example of an ARS supply chain is a project that connected farmers with food banks. A successful supply chain is agile, adaptable, and resilient. A good supply chain can be a real competitive advantage for firms.

## **Main takeaway 3: Investments are critical in digitalization in remote areas (Q&A)**

Challenges exist with forest fires in India that are endangering the genetic pool. This, and all kinds of other challenges, are trying to be resolved with satellites, and NASA supports this. The digitalization of agriculture is difficult in quite some areas in India, mostly because of a lack of private investments in this area. Not much experimentations are present yet, resulting in a fragmentation of agricultural digitalization. Lots of interventions exist within the policy domain but have not yet been able to fully stimulate the innovation in agricultural digitalization. We need to understand how commodities work, what useful sustainable indicators are, how SDGs influence expectations, and how ecosystems can be compared. The use of different successful digitalization use cases could stimulate the development. Economies of scale, when done at a large scale, can increase the affordability of the technologies. Also important to look for local strengths, such as the presence of students, that

could be put to work on how to transform systems, how to build new systems, and how to integrate IT systems.

#### **Main takeaway 4: Be realistic about both potentially positive and negative effects of technology (NASA Ames)**

Technologies can be used in both a positive and negative way, and it is important to upfront think about how you guarantee that technologies are not going to misbehave or be used for negative matters. Risk analyses can be done by for example thinking about how various pieces of information can be connected to solve the problem. Data can be used for generation and validation. To be able to properly analyze both the positive and negative effects of technologies, partnerships are important. An example of a technology that needs to be properly investigated is autonomous systems. We have to understand how humans and autonomous systems work together, as these systems can do good things, but many things will never be able to do as good as humans. Tensions exist between adaptive systems and human work/activities/needs.

#### **Main takeaway 5: Open Innovation is key for technological innovations (NASA Ames and Siemens)**

In the case of NASA, collaboration exists with many countries and companies. Many innovations are developed with non-traditional businesses. For example, Tesla is actually a software company, but they developed a car. That is what we also see in space, as many smaller countries are producing major innovations. Partnerships are key in realizing these major innovations, as not everything can be done in-house anymore. NASA Ames represents a technology transfer program, with the ultimate goal of making the humanity better. NASA Ames would like to make a transition, and the company might need some NASA involvement to accelerate it. Triangles of partnerships can exploit synergies between different organizations.

David added that it is important to create a triangle of governments, industry, universities, and research institutes, with all parts of the world to be able to respond to disruptions. This for example helped, in times of covid-19, to change and reinvent technologies in areas it could help.

#### **Main takeaway 6: We innovate for the customers (The Coca-Cola Company, Siemens, Aditya Birla Group, NASA Ames)**

Molun explained that companies eventually innovate for their customers. To a certain extent, customers are predictable. Innovations related to this predictability are not that difficult, but investments related to unknown behavior are riskier. Most of these projects will fail. It is important to not make mistakes twice. Important to innovate by reading customers in the near and far future and have big bets in research. Be committed and resilient and do not be afraid to fail.

Ajit added that it is the question of how you can add value to a limited amount of customers. He stated that innovation in manufacturing is a daily, incremental journey, in which every small step contributes. Every small step can contribute to the value creation for customers.

David added that the ROI needs to be behind every decision. Innovation is long-term process, and it can be difficult to understand what customers want in 10 to 15 years. It is important to identify local trends, bring them back to the current day and develop a map how the future will look like. Key in this process is the use of inflection points.

Rupak added that innovation is a continuous process and that inflection points are important for transformational happenings to arise. Innovations will only succeed when customers are willing to use them. Innovation can be triggered internally or by customer needs.

## **Evaluations and Conclusion by Henry Chesbrough**

### **Main takeaway 1: Have trust in the economy and invest!**

Across both sessions, a steem of resilience and adaptability was seen. The pandemic qualifies as a major shock, and very few people paid attention at the time. There was a big impact on supply chains, but businesses are quite strong. OI mechanisms can respond to these shocks and can support the company to become more adaptive. Economic indicators in the US show unmistakable signs of real growth, of 6% or more for calendar 2021. Now is the time to plan for growth, and to invest in it. Don't neglect the role of partnerships: companies are in need to ally and team with others to get goals to happen. History shows that these are the times where Industry leadership is won, sustained, or lost. One last important point is that we see that companies who are ethically socially acting responsibly, have higher financial performance. These companies are already engaged with ecosystems, to be environmentally sustainable.

### **Main takeaway 2: The role of start-up companies**

Even though massive systems with huge capital investment might seem to be unpromising to startups, startups are playing a huge role that offers new solutions, particularly software-based. Companies for their part are creating new processes, such as incubators and accelerators, which are designed to work with startups and to make decisions at the pace of startups.

### **Main takeaway 3: Crowdsourcing**

During the event, we saw evidence of the value of crowdsourcing from the demand side. It is important to aim at one's crowdsourcing queries in areas where customer value may be in transition, and customers are willing to pay for it.

### **Main takeaway 4: Renewable energy and digitalization convergence**

Renewable energy and digitalization trends are converging. With Smart grid, smart homes, and smart meters, the building blocks of infrastructure are now in place for new business models. Instead, power going from the production facility to households only, distribution models can change into situations where normal households can become generators to make it available to the system.

### **Main takeaway 5: The importance of business models**

There are many new technologies coming from lots of different places, including many from our BIF members. But, every BIF again we see in our discussions that technology alone is not enough: we need to look for the right business models to commercialize and deliver technologies to create customer value and ensure ROI. Without a proper business model, the value of new innovative technologies cannot be appropriated.

## **Topic #3: NITI Aayog: “Rebuilding India – Overcoming Calamities of the Past and Present for Self-reliance” by Dr. Rajiv Kumar**

Dr. Rajiv Kumar is Vice Chairman, NITI Aayog, in the rank and status of a Cabinet Minister. He also serves as the Chancellor of Gokhale Institute of Politics and Economics, Pune. Rajiv has experience in policy reformation, economic advisor, director of the center of reserve bank and state bank of India. He is also the chairman of the BIFI. In his talk, Rajiv focused on NITI Aayog, and how this organization supports the facilitation and promotion of private enterprises. He highlighted the changes that India has to make to be future-proof, as well as the potential talent pool and customer base that India has to offer for global companies.

### **Main takeaway 1: Time for change in India**

India is facing several political challenges. Given India’s continental size, and diversity across multiple dimensions, change implementation can be challenging. Despite the challenges, India is making changes to be future-proof.

#### **1. Ending public sector monopoly**

First, the public sector monopoly is thought to be ended by the government of India. In the current setting, the prime minister noted that 75,000 regulations and compliances exist. This makes the regulation system very complex and results in a need for renewal. There is a mandate to 1) suggest new transformative ideas for political actions and to make sure they are implemented by the right ministries, 2) work with states/provinces as developing partnerships to promote competition among them to stimulate public service and business environment, 3) improve governance by improving accountability, and output evaluation of all government agencies, and 4) create, establish, nurture and promote innovation ecosystems, by the support of a specialized agency within NITI Aayog. It will take time and effort, behavioral change, institutional change, and empowering people at the ground level to enable the required changes in the government and policies.

#### **2. Untapped potential**

Second, India is not following the sequential path of development as has been done in Europe and the US. The Western model cannot be followed, as India cannot get anywhere by just following the West. It can be difficult for Western companies to do business in India because, for example, land buying is complex. India is currently making several transitions. Benchmarks have been laid in a variety of areas, and huge progress has been made in some areas such as agriculture and healthcare. It is important to move the social and technological progress forward as the country develops. The challenge is to ensure that India succeeds in the economically challenging times. It is important to create a market-based open economy that will nurture private enterprises. Succeeding in completing the transition will have global ramifications. To succeed, everyone in India needs to contribute. India will only succeed if it gets access and the benefits of frontline innovations from all kinds of companies. India offers the largest untapped consumer base and talent pool. Every organization can massively scale up by going to India. It is thus important for India to provide opportunities for scaling up, create licenses and patents in a safe environment, and stimulate open innovation practices.

#### **3. Synergy sustainability and economy**

Third, economy and sustainability have to go hand in hand. India has chosen to not sacrifice the environment for rapid growth, as we do not have the luxury of pollution. To address this issue, we have to find technological and innovative solutions. NITI Aayog is leading the development of clean and green energy, urbanization, mobility, etc.

It turns out to be difficult to simultaneously create growth and sustainability. It requires the use of all the latest innovations. Besides, it is also important to create a dynamic organizational structure, that provides both robustness and flexibility to the grounded realities across India. Support is crucial to be able to achieve growth and sustainability. In the upcoming years, India needs to quadruple the energy production, expand manufacturers, and increase the share in the global market of goods from 1.5 to 5 percent.

### **Main takeaway 2: Investments for the future by privatization**

As also briefly mentioned in main takeaway 1, India has been privatizing several public companies such as banks and insurance companies. Foreign investors can participate in this privatization, and NITI Aayog supports this process by derisking the projects for investors. Despite the initial attempts to attract international investments, more works need to be done to create a stronger foundation to work together. It is now the main focus to develop investor-friendly environment. An example of investment stimulation initiatives is the production launch incentive scheme. Recently, India has started to develop production launch incentive schemes with large amounts of money, to payout cash incentives to create economies of scale by new technological solutions. This provides SMEs the opportunity to become important vendors, and it provides larger coverage to include all input to make the country globally competitive. India believes that growth is led by private investors, innovation, and the youth. Active engagement, feedback, and involvement will help in taking this forward. India is willing to learn and looks forward to time-bound a plan of action.

### **Main takeaway 3: The importance of the bottom of the pyramid**

In the challenges that India is facing, it is important to not forget the bottom of the pyramid. Technology will create a dualistic structure in the economy, and we have to eliminate this to protect the bottom of the pyramid. 380 million bank accounts have been developed, 370,000 community service centers for rural folks have been set up, and 250,000 clusters have been connected to broadband with optical fiber connections. The poorest of India set themselves participating in the development process. Only when these steps are continued, the bottom of the pyramid will be included.

### **Main takeaway 4: Change from assembling towards manufacturing hub (Hero)**

Currently, India is mostly assembling rather than manufacturing products. To become a manufacturing hub, India has to develop all kinds of new capabilities. These capabilities can help India to go towards Europe with India's products. It is important to look at your company from an outside-in perspective, to for example be honest to yourself that your company is not competitive. Sharing IP is just an example of an OI mechanism that can support the development of a manufacturing hub. When building a manufacturing hub, it is safest to build upon existing supply chains. India is still quite expensive at the moment for companies to go to, as everything is not adding up yet. The government must develop schemes with incentives for everybody to stimulate developments towards becoming a manufacturing hub. It is important to make champions, nurture sectors, and make these sectors global champions that can build ecosystems. Brick by brick, global ecosystems have to be built.

### **Main takeaway 5: Open innovation for rebuilding India (Berkeley Haas)**

Markets like India are challenging, also because they often use closed innovation. Various government initiatives exist to open up and broaden the mindset of the Indian population. This is for example done in education, by stimulating students to share their ideas. It is important to connect India to the rest of the world to learn from others. It is important to bring all stakeholders to the same room, to create a flow of knowledge. Need of stakeholders from government, industry, academia, and customers around the table. They need to be engaged in

the conversation to share and create knowledge with each other. This will help in evaluating value propositions. With Open Innovation, a holistic approach with all sectors and all stakes might be developed. Social and human capital needs to be mobilized, before financial capital. When you mobilize a crowd, financial capital will follow. Research is needed to understand how Open Innovation can help to rebuild India.

### **Main takeaway 6: Education as a prerequisite for growth (All-India Council for Technical Education)**

To realize all the changes that India is facing, they will need a large talent pool. New education policies are being developed. In terms of access and equity, it is important to have skill development and technical education for the full young generation. Digital education is important, as it also enables education in rural areas. Connectivity is key to enable this digital education. It is now the question of how digital and traditional classrooms can be combined, to jointly educate the young Indian population. A platform was developed in India with over 3000 courses about all kinds of topics, free of costs for the entire population. 114 countries are using the platform. An academy was established to educate teachers on all kinds of important digital areas. Also, an internship portal was developed, with more than 300.000 sectors. It is now time to take action and implement changes to make the Indian government system future-proof!

### **Topic #4: “Leveraging Entrepreneurial Leadership Styles During Geo-Political Unrest” by Professor David Teece**

David Teece is an economist and an authority on matters of industrial organization, technological change, and innovation, competition policy, and intellectual property. He has received eight honorary doctorates. Teece has over 30 years of experience as an active consultant performing economics, business, and financial consulting services to businesses and governments across the world. In his presentation, David discussed how the global innovation systems are changing, and how this influences how companies are positioning themselves in the global market. He also discussed how these changes influence entrepreneurial leadership in the States, Europe, and Asia.

### **Main takeaway 1: Global Innovation Systems: Why dynamic capabilities and entrepreneurial leadership matters**

#### **1. Technology application - not generation**

The innovation system has been changing a lot. China’s R&D expenditure (and the global stock of knowledge) is nearly the same as the USA and India’s is almost as big as Japan - it is much different than 20 years ago. Nevertheless, the wealth does not come from a generation, but from the application of technology and of global intellectual knowledge stock.

#### **2. Collaboration between countries and institutions is crucial**

Asia has displaced Europe as the top collaborative partner of R&D-intensive nations. According to Web of Science in 2019 China - not Western Europe was the key R&D collaborator. America and Europe are still quite connected in regards to patents, but there are also interdependences and vulnerability, and the industry - to industry links in science and technology are not that strong.

### **3. Stronger IP rights post-1980 strengthened the market for know-how**

Knowledge has always been dispersed, but its flows have increased more rapidly than commodities and capital. When IP protection was strong the system worked well. Nowadays courts and jurisdiction, treatments of firms are different in different countries, it is becoming more strategic decision of where to protect the knowledge and where to open up.

### **4. Innovation in 2020 is different – much more global**

We have to recognize that firms have to involve in R&D on a global scale. The use of technology is more important than patents. Moreover, nation-states make it hard for some firms to compete than to others – e.g. a new Biden infrastructure bill focuses on the utilization of technologies and ensuring that value gets captured domestically. There will be restrictions in the flow of technology that has not been there before.

### **5. Links and ties between liberal democracies will strengthen**

China becomes a strategic rival by priding technology from foreign companies. Many Multi-National Enterprises (MNEs) fail to understand the competitive implications of technology transfers and licenses. The strategic rivalry is spilling over and will impact what firms are willing to do - as a consequence technology flows will be regulated. The nation-state starts to recognize that China is playing a different game than other countries- regulatory process on the uneven way, access but not sharing, and asymmetric benefits from the system.

### **6. Today's predicament - 2021**

The global innovation system is in a major transition. Corporations lack nationality – as metamultinationals, they will need to identify which nation-state they really belong to. CSR will take on a new dimension, where patriotism will become a major factor. As the nationality of the firm will matter more in global strategic rivalry companies will have to pick their side - liberal democracy or autocracy. As a consequence, global research and development will be organized differently.

### **7. Open Innovation model will have to be reengineered**

To survive companies will have to achieve evolutionary fitness. CEOs will have to take into account not only markets and technologies but also sovereignty. In the past the Soviet Union was just a small and unconnected economy - China is different. It is in the central part of the global system of innovation and supply chain so the environment is more complex to navigate. That is why we will have to rethink our OI model and recognize areas where we will not be able to collaborate with China. Big, bold, and brassy bets will require strong dynamic capabilities and an entrepreneurial approach.

## **Main takeaway 2: David Teece Q&A**

- **NOT generation, but application, utilization, and appropriation**

In the past US did not need to worry about the appropriation of value through technology as it owned about 50% of global knowledge stock. Today it is 18%, so the generation of technology innovation and knowledge no longer can be assumed.

- **China is no longer a developing country**

It is a well-developed economic success. In the past Soviet Union and Japan were challenges for the USA, but now 1) Chinese economic systems will soon be larger than US systems, 2) in 2019 money spend on education in China exceeded the money spent in the US 3) dynamic, challenging circumstances constantly impact the business environment.

- **China is undergoing some changes** - these are going to impair dynamic capabilities in China  
Some examples are 1) the change of the constitution which requires companies in China to have CCP membership in the management, 2) attacks on the successful entrepreneurs in China Jack Ma. As a consequence the strong entrepreneurial spirit is under attack - this could be a mistake as well, especially that the dynamism is not coming from the public sector and party, but entrepreneurs.

- **Corporate structure & transformative agility**  
There is relative agility in Silicon Valley companies. However by addressing markets and technologies they probably never thought about these geopolitical issues and are unaware of the change which is coming. MNAs are delivering great values, but CEOs becoming executive chairs shows that the old management style will not succeed in the future. Our weakness is geopolitics.

- **Tips for nations companies and individuals for competing and collaborating**  
Compete for collaborators and partnerships. Biden bill offers money that can be shared with certain countries but not others. Europe has a Digital market act, which will overturn the position of current US-based platforms. Nevertheless, it will be easier for a liberal democracy to partner with a liberal democracy.

### **Main takeaway 3: The power of diversity and inclusion (IBM)**

- **The influence of the dynamic capabilities on the global access to data**  
AI is going to be a big destructor, we see differences in what fast means - cultural differences, some people feel like my data is my data, and others feel that my data is our data that is a big difference between China and the rest of the world.

- **Geopolitical dynamics**  
We see certain companies playing in old rules for OI and open collaboration, other companies try to change these rules by not playing fair. Certain companies share data, but people do not really read disclosures.

- **Dynamics which are playing between nations are also playing between firms**  
AI capability and Energy will bring disruption. AI systems will allow monetizing the data much better, but being or not being able to see data from China will make a difference.

- **Where you create jobs - will be important - not where you put your flag**  
Successful platforms create high-quality jobs. The tax structures will also be important there. The biggest disruption will be when we will be monetizing our data in a much better way - best education opportunities, monetizing capabilities, monetizing the data.

### **Main takeaway 4: Human capital and leadership transformation (Korn Ferry International)**

The key questions are what the geopolitical transformation means from the leadership perspective, and what kind of leaders you need to strategically address the exponential ambiguity.

- **Leadership styles have to change**  
The ADAPT model stands for **Anticipate** - quick judgments and offer clear directions, **Drive** – energize people and give purpose, **Accelerate**, **Partner** -connect to cross organizations and **Trust** integrate diverse value. It is a framework about self-disruptive leader, constantly question and disrupt what they are doing.

- **Creating success profile and measure on the country level**  
Point out what needs to be addressed via development or talent. Some leaders are quite comfortable with that (social ability) others need more structures.

- **Move on from individual to team leadership**  
IBM diversity and inclusion starts with a good foundation to address unforeseen challenges. How to create vision move complexity to clarify? We use the analogy of an orchestra without a conductor - have learned how to rely on



each other and still make it work. Cohesive and well-rehearsed, create innovative solutions and answers to challenges.

- **Dealing with uncertainty**

There are pressures from board compositions of locals. Unilever leader of 100+ organizations did not have anyone he could negotiate with. He was wondering how to make change happen - talk to a president of Poland or India? How to work out the sustainability questions - metrics or policies around it - large global organizations we had trust in them because there was a lot of uncertainty. Maybe we will see them reemerging.

## **Main takeaway 5: Opportunities of global entrepreneurship (Plug and Play)**

- **Chinese market**

Plug & Play has 8 offices and runs programs in China. Relocation from the US to China offers an opportunity to become domestic to China. Founders and entrepreneurs have a different approach, but while having the back against the wall entrepreneurs look for new opportunities to build and scale.

- **Connecting corporates and start-ups**

To do it efficiently, start-ups need to be prepared. It is important to identify the intent of the session – is it to be inspired and learn or to find technology to implement. Taking inspirational calls offers good networking opportunities and helps in building an open network of support to be able to take an idea to a trusted network of advisors.

- **China vs Silicon Valley - now two different words**

Being present in China can potentially pave the way for market entries. The insiders' learnings e.g. understanding the experience from a consumer perspective is very important. Besides the number of entrepreneurs' billionaires in China is steadily increasing. Nevertheless, technology markets are there, but one needs connections to the government. A few similarities between the US and China are the ability to dream big, need to recruit talents, and have skills to develop a vision and center people around it.

## **Main takeaway 6: David Teece response and Q&As**

- **Global system of innovation is getting increasingly complex**

If we were to draw on complexity theory then most of the economists' models of equilibrium have to be seriously examined. We need a new type of leadership model - adaptability is not as important as shaping public policies and corporate strategies. We cannot just be reactive we need to shape markets.

- **There are similarities between China and the US, but Europe is going to lose out**

The digital market act it will open up data lakes and reunite tech platforms to license the data to whomever. This will in turn disincentivize the collection of data - as you will need to make it available to competitors. We know that from the telecom act from the late 90s in the US.

- **Leaders will bring new technologies and business models**

The punctuated equilibrium model is a pivot for large companies. We are in great punctuation - it is an opportunity, but those who are ahead can fall behind.

## Conclusion and Main Takeaways

The companies present at the BIF Spring 2021 belong to different sectors and backgrounds, come from different countries and are tackling different challenges. The event focused on understanding how open innovation can be used to transform and transition firms during geo-political unrest. Nonetheless, it is interesting to notice that some elements emerging from the discussions were recurrent in more than one of the company challenges.

Here we summarize common takeaways that can be relevant for any company.

### **Main takeaway 1: Sustainability: the importance of the local context and collaboration**

The implementation of sustainable innovations requires changes in the current regimes. New infrastructures have to be developed, institutions need to be developed, users have to change their behavior, etc. Sustainability requires collaboration between a wide diversity of organizations to be able to jointly change the regime. Changes in the dominant way of working require open innovation, to jointly combine forces and to combine each other's complementary knowledge, network, and resources. The combination of organizations is needed to develop the required conditions for the implementation (e.g., changes in laws and regulations, behavior change, subsidies), and to make the innovation commercially viable (e.g., continuous innovation, market-driven innovations). Each region has its own unique characteristics and is therefore progressing at different speeds and different starting points. When aiming at implementing sustainable innovations in a specific region, firms need to understand the specific local circumstances, by for example collaborating with a local diverse group of partners. Only when the local circumstances are properly analyzed, the local needs and requirements can be integrated to increase the chance that the sustainable innovation will be implemented successfully. Though the local element is important for successful implementation, also the global aspect of sustainable innovations has to be considered. Interconnected energy systems, for example, come with a range of geopolitical challenges, such as transnational distribution lines. This can result in international interdependencies that have to be properly managed to enable constant access to green energy. An increasingly connected energy system across countries will be ensuring that green energy can be efficiently produced and consumed. However, this transformation makes the energy sector prone to new challenges - such as global unrest.

### **Main takeaway 2: Digitalization: application in the broadest ways**

Digitalization provides opportunities to manage a diversity of geopolitical challenges, ranging from forest fires to international energy grids. In the current situation, the level of digitalization is not sufficient to cope with the challenges that we are facing. The energy grid for example does not yet have a high enough level of interconnections. Digitalization could for example contribute to the resilience within the energy system, by enabling the possibility to address the weakest links through sensing and monitoring. A Digital-rich system can support the stimulation of efficiency and can prevent shortcomings to arise. Digitalization also can create a sense of diversity and inclusion and can create global access to data to for example further increase the energy system's resilience.

### **Main takeaway 3: Moving beyond innovation: the importance of business models**

To appropriate the value of innovations, good business models have to be developed. As David stated, wealth does not come from a generation, but from the application of technology and of global intellectual knowledge stock. The trends in knowledge generation are shifting from the US and Europe towards Asia, and therefore it becomes more important to appropriate value from the global knowledge stock. We need to look for the right business

models to commercialize and deliver technologies to create customer value and ensure ROI. Without a proper business model, the value of new innovative technologies cannot be appropriated.

#### **Main takeaway 4: Times are changing**

The world around us has been changing rapidly, and digitalization and sustainability are becoming increasingly important. Both for governments and firms, it is important to be agile and flexible and to move forward, and if possible, stay ahead of the competition. This can be done for example by the ADAPT model (see main takeaway 4; David Teece's presentation). This model offers a perspective on how leaders can become disruptive leaders, constantly challenging the world around them to eventually create real, disruptive innovations. Team leadership is an important point for consideration in this context; IBM explained how their employees learned how to rely on each other rather than a leader to create a joint impact.