

Remarks: American Association for the Advancement of Science (AAAS) Panel – Feb. 15, 2020 – Seattle, WA

Event description (what they want to hear): “This symposium will address how both academic and industrial research and development are required for global climate change mitigation, particularly for those around the world in poor communities. It will also examine how people-centered research and development through both governmental and private sector investment could help ensure positive change and drive a sustainable international economy.”

BP’s strategic messaging opportunity (what we want to say): Echo Bernard’s 2/12 message to academic thought-leaders; highlight relevant tech investments (venturing, partnerships); affirm how more energy helps the world’s poor.

SLIDE 1: Introduction

- Thank you, **Murray** and “Triple A-S.” **Pres. Robinson** and **Prof. Ferguson** – it’s an honor.
- Let me briefly introduce myself:
 - I’ve been at BP 36 years.
 - I’m a chemical engineer and a downstreamer – someone who’s worked in the refining, processing, marketing and distributing side of our business.
 - So far as I know, I’m the only Texan on this very Irish panel...
 - (OPTIONAL: I’m also a wife, mom and grandmother.
 - If we don’t take steps to address climate change it will affect my kids and grandkids.
 - Most powerful force on earth: “mom-guilt” – stronger than gravity.)
- **So today, I’ll talk about:** what BP is doing worldwide on climate change.
 - Specifically, how we invest in a low-carbon future via R&D in venturing and partnerships.
 - This helps us fight energy poverty which is linked to economic poverty.
- BP’s strategic priorities + proven technology uniquely position us to drive energy transition.

SLIDE 2: Bernard’s Announcement from 2/12

- Earlier this month, BP welcomed a new CEO, Bernard Looney.
 - Bernard grew up in County Kerry, Ireland and graduated from University College Dublin.
- Three days ago, he announced an ambitious new vision for BP.
- HOLD FOR BERNARD TP’s
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- Still new, but it’s a very exciting time (OR HOWEVER GROUP WANTS TO CHARACTERIZE) for BP as we take an even greater leadership role in the energy transition.

SLIDE 3: Human development and energy consumption (Chart)

- I want to discuss the energy transition in human terms. Let's take a look.
- The UN Human Development Index tells us 100 Gigajoules / head leads to increased human development and well-being.
- 80% of the global population lives *below* that standard.
 - US: 287 Gigajoules / head.
 - Nigeria: 7 Gigajoules / head.
- Scott Tinker: average American “fridge consumes 9x times more energy than one person in Ethiopia.”
- Today, an estimated 2.7 billion people cook using wood, coal and dung to heat their food ¹
- UN estimates: almost 4 million people will die prematurely this year due to unclean cooking fuels.
- More energy is needed to support growth and enable billions to move from low to middle incomes.
- At the same time, we also need fewer emissions.

SLIDE 4: Energy Transition (formerly “dual challenge” slide)

- BP's Energy Outlook tells us global energy consumption is set to increase by a third by 2040.
- This is mostly from fast-growing, developing economies.
- In the same time frame, global population is forecast to reach ~ 9.2 billion people.
- The 2015 Paris Agreement set expectations.
- BP understands the urgency and we support the aims of that agreement. “Consistent with Paris.”
- HOLD FOR ANY ADDITIONAL BERNARD TP's

SLIDE 5: BP's Approach

- The world is not decarbonizing fast enough.
- Lack of energy is keeping billions in poverty.
- There is no technological silver bullet – we must pursue multiple pathways.
- And it's not just about a net-zero destination, we need to consider **every possible technology**.
- From Silicon Valley to partnerships worldwide, using highly leveraged investment for broad range of ideas.
- Let me briefly walk us through just 5 areas of focus: **biofuels, solar, AI, forest management and hydrogen**.

SLIDE 6: Joint Venture for Biofuels: BP Bunge Bioenergia

- In **Brazil**, we created a world-class bioenergy company **through our joint venture BP Bunge Bioenergia**.
 - We believe that biofuels are key to decarbonizing transportation and an increasingly important part of a lower carbon energy system.
 - Sugarcane ethanol is one of the most carbon-efficient biofuels available.
 - Waste biomass from sugarcane generates powers for the industrial biofuels operations. The remaining renewable energy is exported to the Brazilian grid.
 - Through BP Bunge Bioenergia, BP now has a position of scale: **11 biofuels sites in 5 states across Brazil**.

¹ <https://switchon.org/news/scott-tinker-speaks-at-aipn-summit-on-energy-poverty-and-switch-on>

- The joint venture is capable of producing ~ **2.2 billion liters of ethanol equivalent** and exported **1,200 gigawatt-hours of low-carbon biopower** to the national grid.
- A large-scale example of BP's commitment leading a rapid transition to a low-carbon future.

SLIDE 7: Joint Venture for Solar: Lightsource BP

- **Lightsource BP** – a 50:50 joint venture between Lightsource and BP – is a fast-growing solar developer, with integration across development, funding, operation & maintenance, long-term management and ownership of large-scale solar projects.
 - 2GW of operational solar assets under management.
 - That's **equivalent to powering over half a million homes in the UK.**
 - Active in **13 countries.**
 - Since it began, Lightsource - and now LSBP - has **accessed ~\$7Bn of finance.**
 - Development portfolio of almost **6 GW of solar projects across the US.**

SLIDE 8: BP Ventures Overview

- BP Ventures lets us identify and invest in private, high growth, game-changing technology companies to accelerate innovation across the entire energy spectrum.
 - **Last 10 years, invested \$500+ million in tech companies.**
 - More than **50 entities** and **300+ co-investors.**
- Innovation ranges from:
 - **Converting gas to animal food protein tech to help reduce overfishing** (Calysta)...
 - To **ultra-fast battery charging technology for electric vehicles** (StoreDot, in Israel).
- Let's look at a few additional examples.

SLIDE 9: BP Ventures in AI: China

- **In China, BP Ventures** invested \$3.6 million in an artificial intelligence tech company called R&B.
 - **Buildings account for 1/3 of the world's total energy consumption.**
 - China accounted for **nearly 25% of global energy consumption in 2018.**
 - R&B specializes in energy management systems to predict, control and **improve energy use in buildings.**
 - Intelligent software picks through data points to **let building managers cut carbon emissions by optimizing energy use and anticipating maintenance.**

SLIDE 10: BP Ventures in forest management: Finite Resources, Inc.

- In the US, we invested \$5 million in **Finite Resources, Inc.**
 - Grows new line of businesses to incentivize sustainable forest management.
 - Financed by companies wanting to voluntarily offset carbon emissions.
 - **40 forest projects** covering nearly **3 million acres.**

SLIDE 11: Hydrogen: BP's refinery in Lingen, Germany

- Globally, we're also doing some fascinating work on hydrogen.
- **In Germany, we're driving down emissions in transportation sector with hydrogen.**
 - Hydrogen is really valuable in addressing 'hard-to-abate' sectors, like industry, residential and commercial heating and heavy transport.
 - **BP's refinery in Lingen, Germany** is the first in the world to use green hydrogen (created with renewable power).

SLIDE 12: Hydrogen: the Port of Rotterdam

- In **the Netherlands**, we're working with the H-vision Program to explore large-scale blue hydrogen production at the port of Rotterdam.
 - **'Blue' hydrogen** is natural gas reforming with carbon capture and storage.
 - Currently the lowest-cost source of low carbon hydrogen at scale.
 - We think this technology will be a vital enabler for widespread hydrogen use.
- Blue hydrogen requires **carbon capture, use and storage** – and BP has been an advocate for that here in the US.
 - National Petroleum Council last December released a report on deploying CCUS at scale in the US.
 - The study was chaired by my predecessor, John Minge.
 - The report offers a range of policy solutions for consideration, including financial incentives, standards and mandates, and market-based policies. Congress has a chance to evaluate all options for at-scale deployment.
 - It is no longer an engineering problem.

SLIDE 13: Blank Transition

- That's a great segue to what is probably the most important thing I'll say today:
- Industry, the academy, government and the E-NGO's **have to work together on climate change.**
- As the head of Climate Leadership Council noted in a New York Times op-ed last month ...

SLIDE 14: [Quote Page]

"There is a real danger that the climate debate is deteriorating into a game of name-calling, with oil and gas companies all too often portrayed as opponents of climate progress. But polarizing the debate in this fashion will not get us any closer to solving the problem. **We can achieve far greater and faster emissions reductions if environmentalists and energy companies work together....**

SLIDE 15: Title Slide

- I'll close by saying that I fundamentally believe we have more in common than we think we do.
- As our CEO Bernard Looney said just this week, "QUOTE."
- Thank you for having me.
- I'm looking forward to the Q &A.