

Press Release

## **Sustainable Bioenergy Research Consortium at Masdar Institute Breaks Ground on Innovative Agriculture and Energy Pilot**

***Consortium building the world's first bioenergy pilot project to use desert land – irrigated by seawater – to produce both bioenergy and food***

**Abu Dhabi-UAE: 14 June, 2015** – The Masdar Institute of Science and Technology's Sustainable Bioenergy Research Consortium (SBRC) – a non-profit consortium supported by founding members Etihad Airways, Boeing [NYSE: BA], and Honeywell UOP as well as more recent members Takreer, Safran and General Electric [NYSE: GE] – today broke ground and began construction of its integrated seawater, energy and agriculture facility at Masdar City.

At a groundbreaking ceremony, officials said that the demonstration project will use desert land irrigated by seawater to sustainably produce biofuel, bio-chemicals and food. The facility, which was designed with technical support from CH2M Hill, is expected to be completed before the end of 2015.

“This innovative research is tackling the challenge of harmoniously producing food and fuel in water- and arable land-constrained regions,” said Dr. Ahmad Belhou, CEO of Masdar. “The project is also a reflection of Masdar City's ecosystem that enables public and private partners to coalesce and advance sustainable solutions that have social and economic impact. This type of co-innovation is how we re-imagine what's possible and take bold ideas to commercial reality.”

The pilot project is intended to run for three to five years, allowing researchers to learn more about the optimal operations and conditions to support the scalable production of bioenergy.

Dr. Moavenzadeh, President, Masdar Institute, said, “The UAE and the world need renewable and sustainable fuels. That is why Masdar Institute is proud to be leading the SBRC and launching the Integrated Seawater Energy and Agriculture System, which is more than an aviation biofuel production facility; it represents a holistic approach to sustainably produce food and bioenergy in a way that does not compete with fresh water and arable land. We are pleased to begin construction of the world's first integrated seawater bioenergy pilot plant – a truly innovative project to mark the UAE's Year of Innovation.”

James Hogan, President and CEO, Etihad Airways, said, “Etihad Airways has a crucial role in helping Abu Dhabi diversify its economy, and one way we will achieve this is by supporting the development of sustainable, carbon-neutral and commercially viable aviation fuels. This pilot facility will help clarify this system as a viable option for the future.”

The 20,000 square-meter bioenergy pilot facility will include saltwater aquaculture ponds where fish and shrimp will be grown. Water from the ponds, including nutrient-rich waste produced by

these fish, will be used to irrigate and fertilize salt-tolerant halophyte plants that will then be harvested and turned into aviation biofuel and other products. Flowing from the halophyte fields, the seawater will also nourish a wetland planted with mangroves – a plant that serves as a natural carbon sink to absorb carbon dioxide from the air.

Bernard Dunn, President, Boeing Middle East, said, “We are pleased to partner with Masdar Institute, Etihad Airways and other leading companies to create a new source of sustainable aviation biofuel in the UAE. In addition to helping the aviation industry to meet its environmental goals, this new facility places the UAE at the forefront of innovation that can support sustainable food production and reduce regional water pollution.”

“In line with ADNOC’s sustainability policy, Takreer will provide its research techniques and support to this bioenergy pilot plant. We invest in renewable energy and believe that coupling innovation and technology has become a necessity to diversify the economy and produce environmentally viable aviation fuels,” said Jasem Ali Al Sayegh, CEO, Takreer.

Nabil Habayeb, GE’s President and CEO for the Middle East, North Africa & Turkey, said, “Driving and supporting localized innovations that address regional needs is a top priority at GE. We have an established partnership with Masdar, underlined by the opening of our Ecomagination Center in Masdar City, to strengthen the nation’s sustainable development, covering key areas such as energy and aviation, through innovative approaches. The new center is a great example of public and private sector partners working together to co-create innovative projects, especially to conserve natural resources and promote alternate energy sources.”

Dr. Alejandro Rios G., Director of the SBRC and Professor of Practice at Masdar Institute, said, “The integrated seawater bioenergy pilot plant is a testament to Masdar Institute’s commitment to finding truly sustainable solutions to real world problems, like energy and food security, and freshwater scarcity. The Integrated Seawater Energy and Agriculture System produces fish, which can be used for food, and biomass for energy, without using fresh water, in an energy efficient way. At the same time, it provides the foundation for a viable aviation biofuel industry in Abu Dhabi, bolstering the emirate’s growing aviation industry.”

The UAE has invested significantly in its aviation industry. In 2014, Etihad Airways generated 14 percent of Abu Dhabi’s non-oil GDP. For this reason, aviation is a key sector for diversifying Abu Dhabi’s economy away from hydrocarbons. Innovative efforts that support the growth of the aviation industry directly support Abu Dhabi’s Economic Vision 2030.

As the global biofuels market is expected to double over the next decade, up to US\$185.3 billion by 2021, investing in biofuels may show significant returns.

“With a rapidly growing biofuel market, our bioenergy plant is not only good for the environment, it’s good for business,” Dr. Rios said. “The advanced biofuels industry we are working to develop could produce more jobs, as well as human capital skilled in biomass production and aviation biofuel technologies.”

The aviation sector currently accounts for approximately 2% of total atmospheric carbon emissions. Providing a renewable and low-carbon alternative to traditional aviation fuel through the production of sustainable and scalable biomass can help the UAE reduce its contribution to global climate change and help shrink its ecological footprint.

ENDS

**CAPTION:**

Bernard Dunn, President, Boeing Middle East, Hamza Kazim, Vice-President for Operations and Finance, Masdar Institute of Science and Technology, Charlie Hamlin, UOP-Honeywell Regional General Manager, Capt. Richard Hill, Chief Operating Officer, Etihad Airways, Marwan Al-Roub, Executive Director, GE Ecomagination Center, Dr. Mikael Berthod, Manager, Takreer Research Center, Dr. Alejandro Ríos Galvan, Director of Sustainable Bioenergy Research Consortium (SBRC), Masdar Institute, and other officials at the groundbreaking ceremony that marked the beginning of construction of the Integrated Seawater, Energy and Agriculture System (ISEAS) facility at Masdar City.

**About Masdar Institute**

The Masdar Institute of Science and Technology (Masdar Institute) was established by the government of Abu Dhabi as a not-for-profit, private graduate university to develop indigenous R&D capacity in Abu Dhabi addressing issues of importance to the region.

In collaboration with the Massachusetts Institute of Technology (MIT), Masdar Institute has developed an academic and research platform that articulates its mission and vision according to critical energy and sustainability challenges. An important characteristic of Masdar Institute is its focus on complex real-world problems that require a multidisciplinary approach for the development of solutions from an integrated technology, systems and policy perspective. This multi-interdisciplinary and integrated approach is supported by the structure of its academic programs and by the emphasis placed on engaging external partners from industry, government, and other academic institutions in collaborative activities.

Serving as a key pillar of innovation and human capital, Masdar Institute remains fundamental to Masdar's core objectives of developing Abu Dhabi's knowledge economy and finding solutions to humanity's toughest challenges such as climate change.

Masdar Institute integrates theory and practice to incubate a culture of innovation and entrepreneurship, working to develop the critical thinkers and leaders of tomorrow. With its world-class faculty and top-tier students, the Institute is committed to finding solutions to the challenges of clean energy and climate change through education and research.

Masdar Institute offers degrees in:

- MSc Engineering Systems and Management
- MSc Computing and Information Science
- MSc Materials Science and Engineering
- MSc Mechanical Engineering
- MSc Water and Environmental Engineering
- MSc Microsystems Engineering
- MSc Electrical Power Engineering
- MSc Chemical Engineering
- MSc Sustainable Critical Infrastructure
- PhD in Interdisciplinary Engineering

Please visit our website <http://www.masdar.ac.ae/>

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