



Intergovernmental  
Renewable  
Energy  
Organization

## 2009 Conference on Renewable Energy

June 11, 2009

United Nations Headquarters

Conference Room 4

### Organized by

IREO & Permanent  
Mission of Honduras to  
the United Nations

### In cooperation with

The Brazilian Foundation  
of America

### Sponsored by

Permanent Mission of  
Honduras to the United  
Nations

### With the participation of

UN Member States, UN  
Agencies, International  
NGOs, Private Sector  
Companies, Academia



## Conference Proceedings

Prepared by Deputies S.G. Nicole Hansen and Jason Keramidas

Assisted by Alastair Shearman, notes compiled by Jennifer Urgilez



# Credits

## **Producers**

Nicole Hansen  
Jason Keramidas

## **Co-Producers**

Tess Cacciatore  
Lora O'Connor  
Alastair Shearman

## **Volunteers**

Kate Comerford  
Alex Lightman  
Amanda Luke  
Natasha Paracha  
Nora Simpson  
John Sutton

## **Publicity**

Jessica Hoy, BGR Group

## **Media Coverage Producer**

Gianna Palminteri

## **Commentator**

Sarah Backhouse

## **Camera**

Allen Styer



# Table of Contents

Remarks from the Secretary-General.....	3
Agenda.....	4
Speaker Biographies.....	6
Opening Remarks.....	6
Session 1: Sources of Renewable Energy.....	7
Session 2: Investing in Renewable Energy.....	8
Session 3: The Future of Renewable Energy.....	9
Summary of Selected Speaker Presentations.....	11
Opening Remarks.....	11
Session 1: Sources of Renewable Energy.....	12
Session 2: Investing in Renewable Energy.....	13
Session 3: The Future of Renewable Energy.....	15



## Remarks from the Secretary-General

The first annual Conference on Renewable Energy represents an important step in the development of the Intergovernmental Renewable Energy Organization. The success of this event highlights our ability to bring together leading minds from academia, the private and public sectors to discuss the pressing issues and enormous potential of renewable energy today.

This event sparked lively discussion amongst the panelists and attendees, and should serve as a model for how we can come together to look at how best to work towards a sustainable future. Our efforts cannot stop with discussion, it is now incumbent on IREO and its partners and supporters to put these solutions into place, to bring energy to developing communities, and help alleviate the effects of dependence on fossil fuels.

This document includes a summary of presentations from the conference as well as biographies of the speakers who presented. I hope that by reviewing these proceedings, you will be energized to support IREO in its mission to promote renewable energy around the world. This is just the first of many conferences we plan to organize for the United Nations community and we look forward to your future participation.

This conference would not have been possible without the aid and support of the Permanent Mission of Honduras to the United Nations. This conference is a testament to their diligent support, and we at IREO are very grateful.

Robson Mello  
Secretary-General



## Agenda

### Wednesday, June 10, 2009

4:30PM - 6:00 PM Early Registration  
Main Visitor Lobby

### Thursday, June 11, 2009

8:30AM - 10:00AM Registration  
Main Visitor Lobby

10:00AM - 10:45AM Opening Greeting  
Conference Room 4

Greeting HE Jorge Arturo Reina Idiaquez, Permanent Representative of Honduras  
Greeting HRH Prince Malik Ado-Ibrahim of Nigeria, The Bridge  
Welcome Robson Mello, Secretary-General, IREO  
Keynote Dr. Arthur Nozik, Senior Research Fellow, NREL

10:45AM - 11:00AM Break

11:00 AM - 12:30PM Session 1 - Sources of Renewable Energy  
Conference Room 4

Moderator HE Ivan Romero, Ambassador, Permanent Mission of Honduras  
Hydro Claire Smith, the Scottish Government  
Algae Dr. Jürgen Polle, Brooklyn College  
Solar Dr. Daniel Nocera, MIT  
Waste Dr. Bindeshwar Pathak, Sulabh International Social Service Organisation  
Government Luiz Marinho, Mayor of São Bernardo do Campo

12:45PM - 2:30PM Break

2:30PM - 3:30PM Session 2 - Investing in Renewable Energy  
Conference Room 4

Moderator Tom Kadala, Research Pays, Inc.  
Hydro Ron Smith, Verdant Power  
Wind Jim Eats, Garden Energy Inc.  
Investment Holger Heims, The Falcon Group  
Investment Ferdinand Porák, The Falcon Group  
Investment Todd Sibilla, Bloomberg  
Investment Chris Womack, Southern Power

3:30PM - 3:45PM Break



3:45PM - 5:00PM Session 3 - The Future of Renewable Energy

Conference Room 4

Moderator **Dr. Carl Liggio**  
Biofuels **Riggs Eckelberry**, OriginOil  
Technology **John Paul DeJoria**, Paul Mitchell  
Solar **HRH Prince Malik Ado-Ibrahim** of Nigeria, The Bridge  
Options **Josh Tickell**, Director of FUEL  
Development **HE Francis Lorenzo**, Ambassador, Permanent Mission of the Dominican Republic

5:00PM - 5:15PM Closing Remarks

Conference Room 4

**HE Ivan Romero**, Ambassador, Permanent Mission of Honduras



## Speaker Biographies

### Opening Remarks



**HE Jorge Arturo Reina Idiaquez** is the Permanent Representative of Honduras to the UN. Prior to his appointment, Mr. Reina held numerous party positions as well as significant academic posts. He received the “Orden de Bernardo O’Higgins en el Grado de Gran Comendador” from the Government of Chile; the Orden Mexicana del Aguila Aztecan en el Grado de Insignia” from the Government of Mexico; and the “Cruz de las Fuerzas Armadas” from the Armed Forces of Honduras. He holds doctorate degrees in political science and law from the University of El Salvador and the National University of Mexico as well as a degree in law and social sciences from the National University of Honduras.



**HRH Prince Malik Ado-Ibrahim** is a Co-founder of THE BRIDGE and the third son of HRM Alhaji Ado Ibrahim of Nigeria. Prince Malik has been involved in the energy sector from a very young age and over the years he has expanded his interest into renewable energy. He currently looks at ways and means to produce, safe affordable renewable energy in areas of the world where there is erratic or no electrical power available. He has teamed up American Reliance Inc. with The Bridge to identify, customize and market solutions to every day issues that affect over one third of the world’s population.



**Robson Mello** is Secretary-General of the Intergovernmental Renewable Energy Organization (IREO). Mr. Mello, who has led the IREO since its creation in 2008, combines the skills and career experiences of visionary, entrepreneur, and advocate for emerging energy technologies as well as Brazilian children in need. Mr. Mello founded the IREO in response to the need for global renewable energy solutions and the international community’s willingness to implement them. Prior to his work for the IREO, Mr. Mello established the Brazilian Foundation of America (BFA) to assist both Brazilian Americans and immigrants. In 2008 he received the DTM Latino Trendsetters Award, with recognitions for his humanitarian efforts from the Brazilian Consulate in New York, Hilary Clinton, Thomas Suozzi, The City of Mineola, The Brazilian American Chamber of Commerce NY, and many others.



**Dr. Arthur J. Nozik** is a Senior Research Fellow at the US DOE National Renewable Energy Laboratory (NREL) and Professor Adjoint in the Department of Chemistry and Biochemistry at the University of Colorado, Boulder. Dr. Nozik received his BChE from Cornell University in 1959 and his PhD in Physical Chemistry from Yale University in 1967. Before joining the then Solar Energy Research Institute (SERI) in 1978, he conducted research at the Materials Research Center of the Allied Chemical Corporation. He has published over 200 papers and book chapters, written or edited 5 books, holds 11 U.S. patents, and has



delivered over 250 invited talks at universities, conferences, and symposia. He has received several awards in solar energy research, including the 2008 Eni Award from the President of Italy and the 2002 Research Award of the Electrochemical Society. He served as Senior Editor of The Journal of Physical Chemistry from 1993 to 2005. Dr. Nozik is a Fellow of the American Physical Society and a Fellow of the American Association for the Advancement of Science; he is also a member of the American Chemical Society, the Electrochemical Society, and the Materials Research Society.

## Session 1: Sources of Renewable Energy



**Ivan Romero-Nasser** is the Ambassador and Deputy Permanent Representative of Honduras to the United Nations and has served as his country's representative to many countries. In the Intergovernmental arena, Mr. Romero-Nasser has served as the Permanent Representative of Honduras to the International Coffee Organization, the International Sugar Organization, the Common Fund for Commodities, the International Maritime Organization and the International Satellite Organization. He has served as Special Adviser to the Government of Honduras at the International Court of Justice and the European Union.



**Dr. Jürgen Polle**, Associate Professor in the Department of Biology at Brooklyn College of the City University of New York, received his diploma degree and his doctorate degree in biology from the Georg-August University at Göttingen in Germany. His focus includes fundamental and applied research in the area of algae biotechnology. For the past decade he studied how to biologically improve microalgae productivity in mass cultures. Currently, Dr. Polle's laboratory is funded to isolate and screen microalgae for biofuels applications. He co-edited a book on the alga *Dunaliella*, published last month.



**Daniel G. Nocera** is the Henry Dreyfus Professor of Energy at the Massachusetts Institute of Technology, Director of the Solar Revolutions Project and Director of the Eni Solar Frontiers Center at MIT. His group pioneered studies of the basic mechanisms of energy conversion in biology and chemistry. He has been awarded the Eni-Italgas Prize (2005), IAPS Award (2006), Burghausen Prize (2007), Harrison Howe Award (2008) and ACS Inorganic Chemistry Award (2009). He has been elected to the American Academy of Arts and Sciences and the National Academy of Sciences.



**Dr. Bindeshwar Pathak** founded Sulabh International Social Service Organisation in 1970 in Bihar and launched a social reform-cum-environmental upgradation movement, taking up the challenge of the problem of sanitation related pollution caused by the practice of open defecation and use of bucket toilets for centuries in India. Dr. Pathak developed the eco-friendly, twin-pit, compost, pour-flush toilet technology for individual households as an alternative to cost prohibitive sewerage or septic tank based systems.



**Luiz Marinho** has a long career as an advocate and champion of worker rights, serving as a representative of Brazilian Metalworkers Unions for over 20 years. In July 2005 he assumed the position of Minister of Labor under Luiz Inacio Lula da Silva's government. In that year, he commanded a historic negotiation with the representative of all union central to define the value of the minimum wage in 2006. In March 29, 2007, he assumed the Ministry of

Welfare, investing in technology and modernization of the agency. He now serves as Mayor of São Bernardo do Campo.

## Session 2: Investing in Renewable Energy



**Tom Kadala** is a nationally recognized speaker, presenter, panelist, author, lecturer, senior editor, inventor, and discussion facilitator on issues affecting Spanish-speaking countries, US-based Hispanics, and other multicultural markets. He most recently is conducting facilitated discussions on renewable energy strategies at the United Nations in New York for South and Central America including the Caribbean area. Fluent in Spanish and Italian, Tom has

a B.S. (CEE) from Cornell University and an MBA from the Harvard Business School.



**Ron Smith** is a founding partner in Verdant Power Inc., a renewable energy company commercializing kinetic hydropower systems that deliver hydro electricity without dams or impoundments, in the United States for global application. He has an MBA from Harvard Business School, an MS in Systems Management from the University of Southern California, and a BA in mathematics and economics from Mount Saint Mary's University.



**Jim Eats** is an entrepreneur, CEO and co-founder of Garden Energy Inc, a supplier of renewable energy from wind. Previously, Jim was Division President – Americas for GE Wind Energy, highlighting a 20+ year career with GE in the energy marketplace. Jim's experience includes: In Singapore as GE Energy Region Executive and General Manager of South Asia, leading GE Power Systems-Korea, and leading GE Energy Thailand. Jim

holds a Masters in Mechanical Engineering from Rensselaer Polytechnic, and a Bachelor in Engineering from Clarkson University. He has multiple US patents, and was awarded GE Energy Young Engineer of the Year.



**Holger Heims** is a co-founder and Managing Director of Falcon Group, a private equity and asset management firm focusing on renewable energies, water and waste management and selected IT & telecom opportunities in emerging markets. He has been involved in international M&A transactions and private equity investments for almost 20 years. Mr. Heims was General Partner in several international investment venture capital and private equity



funds supported by institutional investors. A German national, he graduated from the University of Munich and later at INSEAD in France.



**Ferdinand Porák** has over 20 years of international experience as a Managing Partner and senior investment professional at leading international investment banks, private banks and independent private equity funds. Prior to Falcon, he was Executive President of AIG Advisory Services S.A. (Argentina), Managing Partner of Kingsbridge Capital and Vice-President at the Global Private Equity unit of Dresdner Kleinwort Capital. He has an MBA from Warwick Business School and a Law degree from the University of Manchester.



**Todd Sibilla** is a Bloomberg Commodity Product Specialist. In this role his responsibilities include market research and analysis, public speaking, product development and client relations for Bloomberg LP. Mr Sibilla has been published multiple times regarding various aspects of the commodities complex in BLOOMBERG Markets Magazine. Prior to this role, he was a Principal at Bloomberg Tradebook LLC.



**Chris Womack** joined Southern Company in 1988 as a governmental affairs representative for Alabama Power. He has held his current position as Executive Vice President, Southern Company; President, External Affairs since January 2009. Previously, Womack was executive vice president of external affairs for Georgia Power. He has held numerous executive and management positions, including Southern Company's senior vice president of human resources and chief people officer, and senior vice president and senior production officer of Southern Company Generation.

### Session 3: The Future of Renewable Energy



**Dr. Carl Liggio** has a BS, MS and PhD in Civil Engineering from The Johns Hopkins University and a Masters in Systems Analysis and Economics for Public Decision Making from the Department of Geography and Environmental Engineering at Johns Hopkins. He previously worked for Orion Power Holdings a startup independent power producer. In 2006 he joined US Power Generating Company as Director of Commercial Strategy and Alternative Energy Programs. In 2007 he started Pharos Enterprise Intelligence providing software and consulting for the operations of power plants.



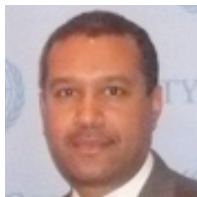
**Riggs Eckelberry** is one of the inventors of the OriginOil's breakthrough technology. He has an extensive background in building and managing successful technology companies including positions as: President and COO of CyberDefender Corporation, President of TechTransform, General Manager of Panda Software, Chief Operating Officer of MicroHouse Technologies, and VP Marketing of TriVida.



**John Paul DeJoria** is the co-founder and CEO of John Paul Mitchell Systems. He is a first-generation American turned entrepreneur, philanthropist, government servant, and pillar of the business community. John Paul has a strong commitment to giving back, supporting a wide range of philanthropic causes both domestically and internationally. He has given advice on the environmentally sound harvesting of energy in African and other nations, and discussed the development of a demilitarized ecological zone in the context of the reunification of the Koreas with senior level North Korean officials.



**Josh Tickell** is one of the nation's leading experts in sustainable biofuels. He has written two best-selling books: *From the Fryer to the Fuel Tank* and *Biodiesel America* which jump-started the US biodiesel movement. In 2003, he began work on *FUEL*, a documentary that investigates the possible replacement of fossil fuels with renewable energy. The film has won numerous accolades, including the Sundance Audience Award for Best Documentary. He founded The Veggie Van Organization, which was selected by President Bill Clinton as an inaugural part of his Global Initiative on Climate Change.



**Ambassador Francis Lorenzo** is the Deputy Permanent Representative at the Dominican Mission to the UN. He is a founder and Vice-Chair of the Public-Private Alliance Foundation and currently serves as Vice President of the Commission on Social Development. He is a founder of the United Nations Association of the Dominican Republic (UNA-DR), which has brought together thousands of students, teachers, and key stakeholders in the country. Ambassador Lorenzo holds a Bachelor of Science in Psychology; he speaks Spanish, English and French.



## Summary of Selected Speaker Presentations

### Opening Remarks

#### **Keynote Address**

**Dr. Arthur Nozik**

**Senior Fellow, National Renewable Energy Laboratory (NREL)**

A NASA photograph of Earth at night reveals the darkness found mainly in Africa and South America. While the world currently uses about 13 terawatts of energy, by 2050 we will need 26 terawatts. We must find a way to produce that additional requirement through renewable energy, as the amount being used will be equivalent to each person using 100 light bulbs every day for a year.

As a result of the greenhouse gas effect, carbon dioxide (CO<sub>2</sub>) concentrations are leading to temperature changes. There has been a huge increase in CO<sub>2</sub> over the past 100 years. By way of example, the atmosphere of Venus is composed of 97% CO<sub>2</sub> and has a surface temperature of 890°F, whereas Mars, with essentially no CO<sub>2</sub>, has a temperature of -50°C. The CO<sub>2</sub> in the atmosphere contributes significantly to the average temperature of the planets, and an uncurbed greenhouse effect can surely lead to global warming. The ice in the Arctic region has shrunk by 40%, especially during the summers. Glaciers are melting at about 4 times the rate they did 4-5 years ago. Polar bears are becoming isolated. By the end of the century, if carbon dioxide emissions aren't curbed, sea levels could rise as high as several meters. By 2050, if we continue at our current rate, we will gain only 1 of the 20 terawatts needed of carbon-free energy. Still, the total amount of energy consumed and used in one year is equivalent to one and a half hours of sunlight. From this, the question is how to capture this great source of carbon-free energy.

Carbon-free energy includes nuclear fusion, solar, wind, tidal, ocean, thermoelectric, hydroelectric, and biomass. Solar photon conversion to electricity and fuel is now in its third generation, and this will be a good way to produce electricity.

To avoid disastrous climate change, we need at least 20 terawatts of carbon-free energy by 2050, equivalent to 20,000 nuclear power plants. Electricity is one third of energy consumed; fuel is two thirds. The sun provides 125,000 terawatts globally, and the present cost of photovoltaic (PV) energy is about \$0.30 per kilowatt hour. The goal is to become more reliant on solar power, both in solar electricity and solar fuel. There is a great need to make solar power less expensive than coal.

If transportation is electrified, liquid and fuel are no longer necessary. One problem with solar energy is storage, because the sun doesn't shine at all times. Electric cars have the potential to be a mechanism of storing energy, wherein having solar panels at home, could charge the car battery at the house. The 1/3 and 2/3 electrical fuel and energy analysis would be modified by a mass transition to hybrid and electric cars.



## Session 1: Sources of Renewable Energy

**Claire Smith**

**The Scottish Government**

The United Kingdom's target is to run 10% of power from renewable sources by 2010, but the Scottish target is to run 31% of electricity from renewable sources by 2011, and over 50% by 2020. Scotland's resources have great potential, including 60 gigawatts from all technologies, a skilled labor force, an oil and gas supply chain, carbon capture and storage (CCS) opportunities, scale and connections, academic excellence, and political ambition and backing. The country's renewable aims include being the green energy capital both of the UK and Europe, from which over 16,000 green jobs are anticipated. Scotland also has 25% of Europe's offshore wind energy potential, and the ability to produce 25% of Europe's tidal and 10% of its wave energy.

As we are running out of time to make a difference, Scotland challenges the world to develop renewable energy through the Saltire Prizes. This is Scotland's renewable development challenge for a £10 million prize. Scotland wants sustainable technology, not a quick fix.

**Dr. Jürgen Polle**

**Department of Biology, Brooklyn College of the City University of New York**

Algae are photosynthetic organisms, found in habitats including freshwater, brackish, marine, hyper-saline, and terrestrial environments. The idea of algae for energy is not a new idea, and was first conceived by Giacomo Ciamician in 1912 under the article "The Photochemistry of the Future." The advantages of microlagea start from the fact that algae compounds are similar to those of plants. Lipids can be converted into oil, while starch and cellulose can both be converted into ethanol or butanol. Further benefits include the fact that algae does not compete for agricultural land or food, and that it is a good source of carbon-free energy.

There is currently a great need and large demand for liquid transportation fuel. Algae provides fuel in the form of alcohol or oil, the latter of which is advantageous for its growth potential, its renewability, no CO<sub>2</sub> emissions, and that it can be produced domestically. The maximal theoretical algae productivity answers how much can be produced from algae. In open ponds, an average of 25 grams per square meter per day in biomass can be achieved.

The principal major challenge is to make algae fuels cost effective. The production target is to be less than \$300/ton of algae dry weight and less than \$1/gallon of crude algae oil. Presently, the cost is around \$20/gallon of crude algae oil. Other challenges include culture stability, harvesting, and productivity. The right algae must be found for the right job.

**Dr. Daniel Nocera**

**Professor, Massachusetts Institute of Technology**

In the 1970s, IBM talked about how expensive computers were and how they could not be downsized to a personal computer. We are reliving this cycle, this time about energy. Dismiss those who tell you it cannot be done. People were wrong to say that computers could not be



downsized or cost effective in production. Likewise, those who claim renewable energy is too expensive are also wrong.

Carbon-neutral energy resources include hydroelectric with a gross of 4.6 terawatts, of which 1.6 are technically feasible. Nuclear power has a gross of 8 terawatts, but is not really technically feasible, in that we'd have to build a nuclear power plant every 1.5 days forever.

Solar energy is only 0.1% of the market, not only because of photovoltaic (PV) material issues and prices, but also because a society cannot be run only if and when the sun shines. Solar energy will have difficulty penetrating the market until it can be stored. Batteries are not the answer to solar energy storage; we need a new storage mechanism.

Photosynthesis stores solar energy by water splitting. It's important that most of the energy storage in photosynthesis is in water splitting, not CO<sub>2</sub> fixation. A possible solution is to maximize the storage potential of photosynthesis. This is the key of the future, as 13 megajoules of energy can be stored per liter.

In the future, the home will be a power station and a gas station, and we need everything to be cheap to be able to run your house just by using the sun 24/7. Energy storage has already reached levels of sufficient capacity for personalized energy. There is hope that one full jug and a large water container is all that will be needed to run a house. Running your house on water is attainable, and believe it will happen.

**Dr. Bindeshwar Pathak**  
**Founder, Sulabh International Service Organization**

Developing countries struggle when it comes to finding cost-effective ways of disposing of human waste. Because governments often do not want to invest in intricate sewage systems, human waste too often finds its way into river waterways, causing pollution and disease. In India, public toilets are on a pay and use basis.

With investment in public toilets that discharge waste into a community digester, it is both publicly acceptable and environmentally friendly. Making biogas from human waste improves sanitation and produces energy at your doorstep. Even during extreme cold weather conditions, biogas creation remains more or less constant. Biogas is used for body warming, electricity generation, cooking and lighting.

## Session 2: Investing in Renewable Energy

**Ron Smith**  
**Founding Partner, Verdant Power, Inc.**

The water-energy nexus is found in the marine renewable energy systems comprising those from wave, tidal, and river sources. The limited number of fish monitored near the turbines stress the real need for environmental monitoring. The turbines are turning 77% of the time when the tides are not slack. The U.S. Navy project Deep Tidal is a gravity-based anchoring system.



The global potential for the total addressable market is 250,000 megawatts. The topics to address are building sustainable communities, hybrid renewable energy systems, and water filtration.

**Todd Sibilla**  
**Commodity Product Specialist, Bloomberg L.P.**

Alternative energy is a new market place as a result of our overreliance on fossil fuels, global warming concerns, and outdated infrastructures. Renewable energy has initiatives welcome all economies. In the current environment, there is a global dependence on traditional fossil fuels: coal, natural gas, crude oil, etc., but this is not all bad. Developing economies can take advantage of their natural resources to support the infrastructure needs by using new technologies for energy and transport. The UN and other regional oversight bodies have identified responsible solution paths.

Risks and challenges include legacy power sources that create tremendous cost issues for industries to overcome and existing industrialized economies that have reason to be concerned about the scalability of solutions. Cheap fossil fuels distract worldwide attention from long term solutions, and a failure to act now creates greater problems in the future.

Investment and real interest already exists in biomass, including ethanol and biodiesel biofuels, wind farms, solar energy, hydro, nuclear, geothermal, tidal, and battery technologies including metals.

**Ferdinand Porák and Holger Heims**  
**The Falcon Group**

Latin America has a huge potential for renewable resources. The key countries are Argentina, Brazil, Chile, Colombia, Ecuador, Peru, and Uruguay. The key resources are agricultural, wind, hydro, solar, and biomass (ethanol, biodiesel, etc.) The standardization of quality and process is key. There remains a political risk which needs to be taken care of.

**Jim Eats**  
**CEO and Co-founder, Garden Energy**

There are new tops to wind turbines. Our business model is to provide a total solution to wind farm owners by retrofitting the turbines and increasing the power output two-fold. Our market reception begins with the launch of the customer and signing of the memorandum of understanding. The prototype is to be accepted in January 2010 on the Palm Springs wind farm. An initial 50 turbines will nominally provide a \$16 million contract for 2010 delivery. The delivery will be made upon the prototype being operational.



## Session 3: The Future of Renewable Energy

**John Paul DeJoria,**  
**Co-founder and CEO, John Paul Mitchell Systems**

Patrón Tequila uses recycled glass.

The biggest problem with wind energy is that blades break and separate apart.

All small contributions for bettering the environment matter. Unplug your chargers, conserve water, and be smart about your energy consumption.

**Riggs Eckelberry**  
**President and CEO, Origin Oil**

We can overtake petroleum by 2030 through innovation. The new mandate of the United States administration is a commitment to new energy for job creation. Ten million jobs are to be created in the next decade, and 30 million net new jobs by 2030. The new challenges include the 2030-2060 gap and CO<sub>2</sub> emissions spiraling out of control to levels that nearly triple today's by the end of the century unless those emissions are curbed.

There are many limitations of the current approaches. If we capped CO<sub>2</sub> at current levels, the outcome is still perverse. The problem is petroleum. Current approaches are not enough and we need other models to overtake petroleum.

Technology innovation needs to be more like the Internet of the 1990s and not like the Tennessee Valle Authority of the 1930s. Leading green tech thinkers agree: the key is gaining entrepreneurial adoption. If you compare us to the Internet, we're at 1992. Entrepreneurs need to have specific, prepackaged applications for their community. For algae, this means a compact production system applicable to industrial settings with proximity to CO<sub>2</sub>, nutrients, etc.

Exporting technology rests on the motto to help the rest of the world built what we invent. We shall only be a producer of technology by promoting an industry of knowledge that helps local entrepreneurs worldwide. It has been done before; the historical analogy is the personal computer. We can create a great environment for innovation if it is funded. We must export those innovations so that others can also make it, and we can overtake petroleum by 2030.

**Josh Tickell**  
**Director, FUEL**

Emerald Energy hosts a MegaFlora tree farm. While a tree usually takes 15-30 years to mature, MegaFlora trees can mature within 3-4 years and once cut off will re-grow from their trunk. Not only do these trees absorb CO<sub>2</sub>, but their wood can be converted into biomass. Any organic organ can be converted into biomass.

There is immense untapped potential within wind turbines. Because wind turbines encompass 80,000 parts, their creation will also create jobs.

The FUEL film speakers suggest turning every city green. We should put trees on rooftops and create 30 feet tall vertical farms capable of feeding 50,000 people.

---



**HRH Malik Ado-Ibrahim**  
**Co-founder, The Bridge**

The market problem is the lack of a truly low-cost renewable hybrid system for off-grid markets. Dyna X Renewable Hybrid Power (RHP) systems are the solution, which are highly efficient, scalable, and Do It Yourself (DIY). It reduces costs and is 50% less expensive than market solar panels, and is supported by its great ease of use.

One thing you must have for vaccines is refrigeration, which can be provided by Dyna X. It brings power to those who need it most: those who have no light or electricity. By providing this simple system, you change the dynamics of these people's lifestyles. For example, refrigeration allows people to no longer worry that the milk bought in the morning will spoil by the evening.

Dyna X RHP's benefits are its low cost, easy deployment, and that it can be set up within 20 minutes. It optimizes power sources, maximizes system lifetimes, and is a high efficiency system scalable to power needs. It can be built on a 100-watt panel by simply adding more panels to increase energy production to 300 watts. Africa can now stand a chance and turn on the lights by providing low cost renewable energy through buildable solar panels.

**H.E. Francis Lorenzo,**  
**Deputy Permanent Representative, Permanent Mission of the Dominican Republic to the United Nations**

Under law 5707, the Dominican Republic enacted legislation to promote ethanol development. The Dominican Republic has been designated a pilot country for development and implementation of Millennium projects. It strives to implement the Millennium Development Goals and find modes of bringing renewable energy production and innovation to the country.



## Selected Speaker Presentations

### Session 1

**Claire Smith**

**Dr. Jürgen Polle**

**Dr. Daniel Nocera**

**Bindeshwar Pathak**

### Session 2

**Ron Smith**

**Todd Sibilla**

**Holger Heims**

**Jim Eats**

### Session 3

**Riggs Eckelberry**

**Malik Ado-Ibrahim**



Claire Smith  
The Scottish Government  
Renewable Energy Policy



Dr. Jürgen Polle

Department of Biology, Brooklyn College of  
CUNY

Algae for Renewable Fuel Production



Dr. Daniel Nocera

Massachusetts Institute of Technology

Personalized Energy for 1 x 6 Billion



Dr. Bindeshwar Pathak

Sulabh Social Service Organisation

Complete Recycling and Reuse of Human  
Excreta from Public Toilets Through Biogas  
Generation to Improve Sanitation and  
Environment



Ron Smith  
Verdant Power  
Marine Renewables



Todd Sibilla

Bloomberg

The Effects of Renewable Energy Markets on  
the Energy Marketplace



Holger Heims  
The Falcon Group  
Investing in Renewable Energy



Jim Eats  
Garden Energy, Inc.



Riggs Eckelberry

OriginOil

Can We Overtake Petroleum by 2030?



Malik Ado-Ibrahim

The BRIDGE

Dyna X Renewable Hybrid Power (RHP) System