GLOBAL CLEAN ENERGY CONGRESS & EXHIBITION 2011

CALGARY, ALBERTA, CANADA

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GLOBAL CLEAN ENERGY CONGRESS AND EXHIBITION REPORT
DAY 1 – NOVEMBER 1, 2011

Opening Remarks and Chairman's Challenge to the Delegates

On November 1-3, the inaugural Global Clean Energy Congress and Exhibition was hosted in Calgary AB at Stampede Park. The very successful informative event organized by dmg events and WADE Canada, featured keynote speakers, inventors, educators, scientists and investors. Sessions were held on cleaner hydrocarbons, energy efficiencies, transportation, nuclear, hydrogen, onsite generation, general fusion and more. Participants at the event explored the possibilities of new and future technologies, real-world applications of forward-thinking initiatives, and strategies for a successful integration. Approximately 3,000 visitors, 400 delegates and over 100 exhibiting companies were in attendance.

First day highlights began with NRGreen Power and General Electric announcing a new clean energy project where the first global application of the latest emissions free energy generation is underway. This project will use GE's proprietary ORegen™ system that is the latest in Organic Rankin Cycle technology. The technology generates electricity through the use of waste heat at compressor stations and will be installed at Alliance Pipeline's Windfall Compressor Station near Whitecourt, Alberta. "This technology recovers heat energy that would otherwise be lost to the atmosphere and transforms it into electric energy without producing any new emissions. It makes for a very clean form of electricity generation," said Murray Birch, President and CEO of NRGreen, an affiliate of Alliance Pipeline.

The Whitecourt facility will deliver up to 14 megawatts of electricity per hour which will power approximately 14,000 Canadian homes without producing new emissions. This is a milestone for GE and NRGreen as it is the first commercial application for GE in the world and the first NRGreen project to utilize ORegen that doesn't require any new fuel or water. A project like this will help Alberta transition to a clean carbon future and is primed lead in the clean energy revolution.

The other big announcement at the start of the conference was by Elyse Allan, President and CEO of GE Canada, who informed the crowd that GE will be setting up a clean energy innovation centre in Calgary by the spring of 2012. The centre will

showcase GE's technology innovations for customers and allow others across Canada to collaborate. Calgary, Alberta, and Canada will definitely play a role in clean energy innovation and generation for years to come.

Dr. David Lewin, Vice Chair of the Climate Change and Emissions Management Corporation (CCEMC), set the positive tone and a recurring theme for the rest of the conference. "Revolutions are about confidence, leadership and courage not fear. We must push back the barriers and listen with an open mind. Innovation and ingenuity can achieve outstanding results. We are here because clean energy matters to everyone. Once we define what we mean by that, we need a strategy to get there."

Anouk Kendall, President of WADE Canada and World Alliance for Decentralized Energy, had a lot to say about the direction of energy efficiency and onsite generation. "We need to increase the pace of progress by bridging the gap between market opportunities and optimum technology solutions. Understanding the clean energy market potential and raising awareness of the investment opportunities are critical." She emphasized that the clean energy revolution will be characterized by:

- *Energy supply systems that maximize the benefits of both centralized and decentralized energy generation using a variety of fuel sources*
- *Vastly improved energy delivery systems that deploy Smart Grid and energy storage technologies*
- *Increased focus on rural and remote communities and their substantial economic diversification opportunity*
- *A move from competition to a more collaborative or co-creation mindset and adjusted corporate growth targets that support longer term business success*
- *Emphasis on small to medium size businesses and their role in increasing the pace of innovation in our global clean energy markets*

KEYNOTE SPEAKER

The Clean Energy Revolution

Jeremy Rifkin, President, Foundation on Economic Trends

Jeremy Rifkin, leading expert on workforce, energy, and the environment, spoke in a live video to the audience. He informed the audience about the exciting and emerging Clean Energy Revolution.

Internet communication is now merging with an energy revolution. In his riveting presentation, he spoke about the advent of this 3rd industrial revolution propelled forward by "the great economic earthquake affected by the high price of oil."

"We are on the cusp of a third energy/communication revolution that will bring in a new world in the next 40 years. We need a new economic vision of the world. It has to be practical. We have to be off all carbon based fuels by 2040 if we want a sustainable future." He talked of how energy and communication revolutions converge. Fossil fuels will never be cheap again and since the whole infrastructure is based on carbon, it is crumbling fast. Rifkin added, "We have enough renewable energy to supply us until kingdom come."

There were five key points that Rifkin stressed that would create this sustainable future:

- *Like the European Union, we should have a mandate in every community to use renewable energy, at least 20% or more.'*
- *How we collect renewable energy is important especially since they differ in each region.*
- *Worldwide transport of energy – turn every building into a micro home where it is energy efficient which will create thousands of jobs.*
- *We will produce our own energy and share it worldwide through an Energy Internet. Storage technology will solve the problem when the sun isn't shining.*
- *Transportation issues such as cost and availability will be solved through electric cars and hydrogen fuel cell technology.*

Rifkin went on to say the economic revolution is essentially the "energization revolution of the people" and this new vision will create a new democratic economy.

Changing the infrastructure is crucial, as it requires a shift in consciousness where we will be responsible for our own energy. Energy companies will be running the Energy Internet. "We cannot separate ourselves from the rhythms of nature. Energy becomes part of us again when we integrate it. Everything we do, we leave an ecological footprint. I know of no other moment in history like this. We have to believe we can do it. And most important we have to believe we have the imagination to do it."

Although Rifkin concluded that this is a huge generational shift, it is important to keep the existing infrastructure alive until the sustainable energy infrastructure is in place the next thirty years. He called the emerging shift of the new energy revolution democratic, sustainable, and practical. "Power companies can initiate the shift or else they will die." He suggested that we have to tell a story and lead quickly in the next thirty years and added, "Are we so short sighted that we must have faith in fossil fuels or do we have the foresight to use renewables. Who will be better off, those communities using renewables or those using carbon based fuels?"

A sustainable future will lead to millions of jobs that are sorely needed all over the globe. The future seeds must be planted now for a brighter future because this very unique and unprecedented shift is being propelled forward by the collective consciousness of the people.

KEYNOTE LUNCHEON

Driving Innovation and Growth
Elyse Allan, President and CEO of GE Canada

Elyse Allan, President and CEO of GE Canada, was the Keynote Speaker for the Keynote Luncheon where she spoke of Driving Energy Innovation and Growth. She informed how clear public policy rules can lead to investment. In 2002, GE wasn't in the wind business but now they are leading in this industry. Technology is making wind more economical than ever.

Allan informed the audience of the progressive moves GE has made by creating an innovative path to the future by implementing their Ecomagination Challenge.
Powering Your Home was Phase II of the GE Ecomagination Challenge, a $200 million innovation experiment that involved businesses, entrepreneurs, innovators and students. Ideas were shared on how to improve our energy future. Phase II

focused on home energy and people were encouraged to brainstorm ideas about capturing, managing, and using energy in the home. GE went one step further by making it practical from a business standpoint by teaming up with the best-known venture capital firms such as Emerald Technology Ventures, Foundation Capital, KPCB and Rockport Capital to back the most promising ideas. Innovators from around the world were aloud to participate.

Ecomagination delivered solutions for clear energy. It is essential that environmental solutions are efficient and the operational performance was optimal. Ecomagination has become a powerful source of innovation and growth where technology uses these infinite resources. Allan talked of four lessons that were learned from the process of rediscovering energy applications:

- *The "tradeoff" between the environment and economics is a falsehood. Clean solutions can save money and stimulate growth. GE's ORegen system is an example. This innovation and process will reduce the oil and gas footprint around the world.*
- *Clean energy isn't about only being clean but about industrialization. Partnerships and sharing play a huge role in this new energy industrial revolution. Above all, it will create numerous jobs.*
- *Innovation with partnerships is vital. For example, Innovate Calgary will combine business input with universities. GE's Ecomagination is another example of this collaboration. Seeking breakthrough ideas was Phase I. Phase II Empowering Your Home was launched in 2011. They reviewed over 5,000 innovative ideas and have given money to the innovators. This led to the Thin Film Solar Pilot Line. They are building a new solar manufacturing company to produce this line in Aurora, Colorado.*
- *Transformation internally for one's own operation is essential. They applied the technology to their own operations that saved GE more than 130 million dollars in operation expenses. They pledged to become more energy efficient by 50%. It has become a huge motivator for their employees. Expectations will only accelerate. Public policies also have to be shaped. Clean energy is just as much about the environment as the economy. It's a win/win change but it has to start within by finding one's own energy inefficiencies. This new industrial revolution will enhance people's lives around the world.*

Allan continued, "We spent 5 billion on dollars Ecomagination and we are doubling it." They also bought the company Envirowind. They lost money at first, but after GE improved the process, they tripled their profits. Solar power use will increase because the fuel, powered by the sun, is free. Expensive transmission lines are not necessary. A goal and a vision need to be set before bringing innovation to the market and moving forward. GE has taken up the challenge by engaging the brightest minds in the world for a better sustainable future.

SEMINARS

Transforming Canada's Forestry Sector – Bio-energy and Bio-products

Catherine Cobden, Vice President, Economics and Regulatory Affairs
Forest Productions Association of Canada (FPAC)

The day continued with many seminars covering a vast array of topics for a sustainable future. One important presentation was by the Canadian Forest Products Industry, an innovative leader in the new Bio-economy. Canada's forest sector had annual revenues of $57 billion in 2010 and it is projected to reach an estimated $200 billion by 2015.

The Forest Products Association of Canada (FPAC) was formed in 2001 when they received their certification. Instead of conflicting with environmentalists, they started collaborating with them and therefore the collaboration has created an exemplary partnership. The forestry industry has truly embraced the concept of sustainability by having implemented a carbon neutral commitment in 2007 and the Canadian Boreal Forest Agreement in 2010. No longer is it an "us versus them" mentality but they are now collaborating. Partnering with other sectors is creating phenomenal growth.

The newly formed Bio-Pathways Partnership Network facilitated by FPAC, provides a forum for member companies to collaborate by exchanging ideas and contact information. The Bio-Pathways Project was a comprehensive study of the opportunities to produce diverse bio-products using wood fibre residues. The market potential and possibilities are astounding by integrating a suite of technologies for bio-energy, bio-chemicals, and the bio-materials within the industry's infrastructure. The result was that new technologies not only would lead to improved productivity and environmental performance, but also it would leverage returns on assets and investments.

FPInnovations, is Canada's leading forest sector innovation and R&D centre which performs research, technical services and technology transfer activities relating to wood harvesting, wood products, pulp and paper, nanotechnology, bio-energy and chemical production. Its research laboratories are in Québec City, Montréal and Vancouver. Currently, the centre is working with industry partners to test and optimize the gasification of biomass at mills.

"The market is definitely there for wood fibre and the technology is pretty close," said Catherine Cobden, Vice-President of Economics for FPAC. "We want to integrate. We can't do this alone so it's a very different game. We don't know how to serve dynamic niche markets."

She informed the audience that Alberta is a "bio-hub" of sorts. They are not advocating competition but rather seeking engagement with other sectors. There are 165 organizations already engaged. The magnitude for the Canadian Forestry Industry is huge, especially when wood fibre can be utilized for these industries: clothing, bio-plastics, tires, bio-oil, bio-active paper, bio-pharmaceuticals, and bio-buildings.

Borealis Geothermal Power

Tim Thompson, Borealis GeoPower Inc.

Geothermal is the lowest cost energy. It's not the same everywhere. There are 5 blocks of technologies. This will make you money over the long term. Canada represents the undeveloped market, more so than the U.S.

There are 2 groups of players with geothermal. They own 70% of the market. Most have been sponsored by oil and gas. Other companies are from IPOs. They are researchers and they need partners. Though one of the problems is that they are drilling too many dry holes, the geothermal targets are huge if they can get it right. With the same asset, you can get a different outcome depending on who is developing it. There is a great opportunity for oil and gas firms to partner with geothermal energy companies.

Concentrated Solar Power and Thermal, Results of Pre-Congress Workshop

Andy Reynolds, Portfolio Manager for Clean Energy, Alberta Innovates – Technology Futures

Andy Reynolds discussed how the level of sunshine in Southern Alberta per year exceeds that of Florida. This makes Alberta a good place to test out all sorts of solar applications. As well, solar augmentation can maximize energy efficiency by using other processes along with solar.

There are 4 types of solar technology:

- *Parabolic troughs, the most mature solar thermal energy collector*
- *Linear Fresnel Technology – direct steam technology with Areva Solar being the leading technology and is the most cost-effective and land-efficient Concentrated Solar Power (CSP technology)*
- *Solar Tower Technology can do thermal energy storage where they use flat movable mirrors or heliostats to focus the sun's rays upon a collector tower that is the target*
- *Parabolic Disk Technology – highest efficiency compact design*

Reynolds spoke of a solar plant in Spain that generates energy even through the night. With Thermal Energy Solar, you collect energy as heat so therefore you can store it as heat. This helps when there is a misalignment of peak demand, solar usage and mismanagement.

Parabolic Disk Technology has the highest efficiency since it is a compact design.

Canadian Solar Technologies (CST) will displace natural gas consumption. It is currently being used in Medicine Hat Alberta. CST is a high-tech provider of evacuated tube solar collectors.

The conclusion of the workshop was that thermal energy, without energy storage, is hard to justify.

SunSaluter: A low-cost Passive Solar Tracking Solution

Eden Full, Founder, Roseicollis Technologies (Scotiabank EcoLiving Student Leadership Award)

This very interesting seminar featured Eden Full, creator of the SunSaluter. Eden Full came up with the idea when she got frustrated with the solar panels not rotating to optimize the sun's power during different parts of the day. The SunSaluter controls how the solar panels rotate.

"What they need in the industry is a standardization of mounting," she explained to the audience. China is apparently "leaving us in the dust" with Smart Grid technology. Currently, she is doing a project with Light of the World organization. She suggested there is a rapid need to build infrastructure with solar, especially in third world countries.

Decentralized Energy: Are you Smart Grid Ready? First Nations Micro Grid B.C. Nemiah Valley

Scott Henneberry, Schneider Electric

Scott Henneberry of Schneider Electric informed the attendees that there are three motivating factors for a Smart Grid: growing electricity demand; reduce global emissions; and constraints on existing networks. The equation parameters vary across the world. The integration of renewables is better and more advanced in Europe. Renewables are now being placed at points and aspects of the power grid. Energy users are being forced to be more energy efficient. The challenge is that instead of one way power flows we have power flows in many directions so this is why energy management has taken on more importance.

One of the applications and purpose of the Smart Grid is to balance the energy. With renewable and conventional energy going through the power grid, they have to implement Smart Grids to simplify and maintain the standards that exist. Therefore, combining the Smart Grid with other infrastructures is needed to keep a balance. There are five key domains: flexible distribution, efficient homes, demand response, smart generations, and enterprise.

The Role of Municipalities in Solar PV Project Implementation

Mayor Jeff LEHMAN, Mayor of Barrie, Ontario

In this compelling delivery, Mayor Lehman explains that it has fallen to communities to experiment with renewables. He talked of a "self-healing grid" that will reconnect and start to heal itself. Grid and control operators respond quickly now compared to a few years ago.

Since they generate power, they also have to think of garbage as a revenue stream. In Ontario, they have the Green Energy Act that was implemented 2 years ago. Overnight, a new industry was generated in Ontario. Renewables must be economic and for many of the technologies, it's there. For example, wind power is economically feasible now.

They have three community centres with solar panels on them and this tells them which panels work best. Their mission is simple. "We will be a socially responsible company, committed to the environment and sustainable growth, leading the way into the future," concluded Lehman.

During question period for this session in the Energy Efficiency and Onsite Generations B room, they discussed how smaller utilities would "drown" in a deregulated market. Some companies are leading the way in innovation and others are not. When the energy storage technologies become viable and more efficient, it will be a game changer. Lehman admitted that "politicians don't like surprises" and that there is "more risk tolerance at a local level."

DAY 2 – NOVEMBER 2, 2011

OPENING KEYNOTE

The Honourable Dr. Ted Morton, Minister of Energy, Government of Alberta

The Honourable Dr. Ted Morton, Minister of Energy, Government of Alberta spoke on the second day of the conference. Alberta is currently the lead in wind generation in Canada with 20 existing wind farms and 800 megawatts in wind projects. The new transmission line will bring the wind up from the most southern part of Alberta to Calgary.

There will be a bio-energy renewable fuel standard credit program. Carbon capture can also be used to enhance oil recovery. With environmental targets and a strategy in place, Alberta can reduce 5 tons of emissions in a few years. For large emitters, greenhouse gas emissions targets will be set. If a target is missed, the company or organization will have to pay a penalty that will go into the Clean Energy Fund. Part of the money from the fund has already gone to projects that reduce emissions.

An important point was made that Alberta will be positioned as the energy centre for Canada and that includes renewable clean energy.

Virgin Earth Challenge
What we thought we knew and what we learned on the journey
Dr. Alan Knight, Sustainability Advisor, Virgin Group by Calgary Economic Development

Honorary citizen of Calgary and Director of the Virgin Earth Challenge Dr. Alan Knight told the audience that there is a huge entrepreneurial spirit in Calgary, especially where fiscal management and engineering is concerned which makes Calgary a perfect place to do business.

Seven of the eleven finalists for the Virgin Earth Challenge presented their ideas that would affect our sustainable future. It was a fascinating session as inventors shared their creative solutions. The speakers who presented their ideas were as follows: Graciela Chichilynsky – Global Thermostat; Morgan Williams – Biochar Solutions; Tony Lovell – Savory Institute; Nathaniel David – Kilimanjaro Energy; Henrik

Karlsson – Biorecro; David Keith – Carbon Engineering; David Shearer – Full Circle Solutions; Thomas Harttung – Black Carbon; Christoph Gebald – Climeworks; Bob Polak – Coaway; and Prof. (Mr) Olaf Schuiling – Smart Stones.

The purpose of the Challenge was to establish a safe technology and business to capture carbon from thin air. The Canadian company that made the cut was Carbon Engineering led by David Keith. After a thorough technical review process, the 11 leading organizations were: Biochar Solutions (US); Biorecro (Sweden); Black Carbon (Denmark); Carbon Engineering (Canada); Climeworks (Switzerland); Coaway (US); Full Circle Biochar (US); Global Thermostat (US); Kilimanjaro Energy (US); Smart Stones (Netherlands) and The Savory Institute (US). These organizations bring expertise and solutions from a broad range of areas that includes air capture, biochar, bio-energy with carbon capture and storage, enhanced weathering on land, and land management.

A stand out company at the conference was Full Circle Biochar (US). Biochar is made from a process where you heat plant or animal manure in the absence of oxygen that in turn creates a stable carbon product and energy. You get half out as a stable carbon and half out as energy. It's like charcoal that acts like a fertilizer. The advantage of this process is that food can be produced with less water and less fertilizer.

Dr. David Shearer who presented at the conference said, "We are creating value by doing good." Food security, water security, energy security, climate change, waste management are all part of the "value" this company wants to bring to the world by creating this product.

During the panel discussion, Graciela Chichilnisky, Co-Founder & Managing Director of Global Thermostat, summed up the value of carbon capture. "The critical thing about carbon capture is that you can do it anywhere. Carbon capture is similar all over the world. You can take it from anywhere and reduce it simultaneously anywhere."

Dr. Alan Knight concluded, "What started as a competition will end in an international collaboration with these 11 companies."

KEYNOTE LUNCEON

Cenovus Energy
What kind of energy will succeed in the 21st century?
Judy Fairburn, Executive Vice President, Environment and Strategic Planning, Cenovus Energy Inc.

Judy Fairburn's presentation emphasized that all forms of energy must have a role. "Innovation is the key. Successful companies must use innovation. The status quo is not an option." Since a progressive approach will create new solutions for a better world, the status quo is not acceptable anymore.

As the population on the planet increases, producing enough energy will be a challenge. "With more people comes more need for energy. No one source can meet this demand alone. It must be affordable and consider the environment. Expectations of environmental performance plays an important role now in business," explained Fairburn.

One such project that emulates this approach is the oil extraction project at Foster Creek where they are using Steam Assisted Gravity Drainage (SAGD). They have reduced their water use and their emissions in 10 short years.

Evolutionary processes create economic opportunity. Fairburn calls this "the ketchup effect" where a squeezable bottle idea made getting ketchup out of the bottle easier. She also emphasized that collaboration is "critically important." A corporation must advance to "true collaboration" with government, education, institutions, business and test theories in a real world lab. "Great minds can collaborate to create change for a clean energy future." The goal is to reduce their carbon footprint and Fairburn continues, "Oil and clean energy are not mutually exclusive. All forms of energy have a role in the future. It should be our collective aspiration."

One such collaboration is Cenovus' investment in GeneralFusion, a company developing fusion technology that will be devoid of greenhouse gas emissions, pollution or radioactive waste. Fusion occurs when hydrogen atoms are fused together to form helium that creates huge amounts of heat used to generate electricity with traditional steam turbines. The isotopes of hydrogen can be taken from seawater and derived from lithium that creates an incredible supply of clean energy.

Also, Cenovus has an employee rebate program to have their employees be energy efficient in their own lives. They have other internal ideas within the company so they walk their talk.

SEMINARS

Post Fukushima – Impact on Global Nuclear Markets
Chris Gadomski, Lead Analyst, Nuclear, Bloomberg New Energy Finance

During this presentation, Gadomski talked about how renewables have driven different technologies in various areas and for the first time, renewables have a net profit in comparison with fossil fuels. After the Fukushima disaster, Japan is no longer embracing nuclear as an energy source so 4 more plants are closing down. Within 13 months, all of the nuclear reactors will be closed. They will have natural gas and solar as energy sources.

In the Middle East they are not interested in renewables but rather want to build 16 nuclear stations in the next 20 years. By 2028 if the Saudis don't have nuclear, they will have no oil to export.

In China, the energy sources they are using and developing are coal, solar, wind and nuclear. The Chinese government is effective in targeting wind and solar energy. There is a huge thrust in China for wind as more money is being spent on its development. This is the predominant technology going forward but they are also global leaders in solar energy.

India is way farther ahead than China by investing in clean energy, since they must be responsive to the needs of their large energy intensive population.

The competitive advantage has shifted in technologies. "We are approaching grid parity. Cost competitive clean energy is here. You can't say that about nuclear energy," explained Gadomski. Smaller nuclear modules may be an advantage in one way, but security is an issue.

DAY 3 – NOVEMBER 3, 2011

OPENING KEYNOTE

Ian Goldin, Director, Visionary & Economist, Oxford University

Ian Goldin began his speech by saying, "The future of clean energy is the future of the world. There is a level of connectivity like no other the world has ever seen. I believe this is just the beginning of this renaissance. The measures of restrictiveness are going down rapidly while he measures of openness are increasing."

Asia will continue to outpace the world. By 2020, Asia will be the largest economy with China having income levels of Europe today. They will lead the world in clean energy innovation.

As far as the economic downturn, Goldin admits, "We knew what to do in theory but we never saw this coming." Energy, water, and food will be the focus in the future. Collaboration is the key. "Protectionism will return if we are not careful. There are ways to manage collective resources. We have to provide clean energy solutions. It will take shifts in production and technology. It is imperative to globalization."

Goldin also spoke of how we are moving towards miniaturization and nanotechnology. Goldin explained, "It is a battle of ideas. This is about putting science together with finance." He went on to praise Alberta for its innovation. "The technologies being researched and implemented here in Alberta are remarkable."

Goldin concluded that in the future, "politicians and CEOs will be followers and be driven by the people, the consumers."

GLOBAL REPORT – Energy Supply and Demand for 2050; Perspectives from Africa and China

The Role and Value of Technology Funds

Aaron Falkenberg, Board Member, Climate Change and Emission Management (CCEMC) Corporation

Falkenberg was the moderator for the African and Chinese speakers Wisdom Ahiataku-Togobo and Yande Dai from China. He talked about how the technology funds can't be used for any other political need. Their investments are leveraged. The CCEMC model drives down emissions through clean technologies. The technology funds support the development of new industry and technologies.

AFRICA

Affordable Reliable Energy Supply

Wisdom Ahiataku-Togobo,
Director, Renewable Energy, Ministry of Energy, Ghana

The desert alone can provide energy but it has to be solar energy. In Ghana, their needs are different than ours because they are behind. The bulk of the people have no food to eat. Only 5% of the hydropower has been developed in Africa compared to 80% in Europe and North America. The coastline of Africa has a huge potential for small and medium scale windmills.

Out of 440 projects in the world, only 2 come from South Africa. With modern technologies, pollution will be minimized. The world reserve growth rate is 1.7%. Ahiataku-Togobo was excited about the possibilities. "The goal is to achieve universal access to affordable, cheap and sustainable modern energy services and become a net exporter by 2030." Research and development in clean energy production and utilization will definitely be explored.

The challenge resides in the stability of African governments, conflicts, and corruptions. However, this is becoming a thing of the past as the Rule of Law is emerging in Africa. There will be partnerships with the EU and others. The goal is to provide an affordable reliable energy supply to 100 million people by 2020. China and the US are helping Africa in the development of oil and coal. Also, Canada helped by getting them electrification. The Smart Grid must be carefully considered due to a weak grid.

Ghana won an energy award for energy efficiency but the goal is to increase access to sustainable energy. "Together we can take up the challenge for global clean energy development," said Ahiatau-Togobo.

CHINA

China's energy supply and demand situation as well as countermeasures, the objectives and strategies of energy saving and clean energy development in "12th Five-year"

Yande Dai, National Development and Reform Commission, Deputy Director of the Energy Research Institute.

Yande Dai is an energy expert and scholar. He talks about how 50% of oil is received from foreign importers as well as coal.

In 2010, China became the world's second largest economy with the GDP reaching 5.8% trillion US dollar. The cost of living in China is still cheap but they have a demanding economy. China's medium and long term social and economic goals are to build a well off society by 2020.

"China will need to double energy consumption by 2050 to achieve their economic development goals," said Dai.

However, they must overcome some major challenges such as:

- *An upward pressure on greenhouse gas emissions*
- *Severe regional environmental pollution*
- *Pressure on energy security and dependency on foreign oil*
- *Energy structure improvement*

The core of China's Energy Policy is green growth and involves the energy revolution. They are swiftly changing their energy to clean energy and they are implementing a renewable energy law to reflect this and speed up the process. Their overall target is energy conservation.

Among their accomplishments and efficiency goals, are energy conservation reduction targets driving the 12th FYP period. Their goals for energy consumption and emissions are:

- *Moving away from fossil fuels*
- *Specific goals in the next 5 years*
- *Allocated targets for different premises in China where energy consumption is controlled*

Currently, China has set four renewable energy records. They have the world's fastest wind power capacity. A new target is expected to raise the 2020 renewable energy productivity and the government of China will invest heavily in this industry.

During question period, Yande Dai answered some important questions. There will be collaborations among countries. Economic growth will be stimulated through implementing various initiatives. China has a very big agricultural country as well. International cooperation will be welcome for these clean energy initiatives that will ultimately serve this industry.

Adaptation and Financing Mechanisms: Navigating our business through the Revolution Part 1
Global Activity – Now and in the next 12 months
Michel DI Capua, Head of US Analysis, Bloomberg New Energy Finance

Alternative energy investing is now reaching levels of fossil fuel investing and by 2011 there will be grid parity. Challenges for the coming year begin in Europe and the US will face another challenge next year.

Smart Grid investing must grow in the future. It is a very tough time for clean energy stocks as funding is limited. The top 10 global PV cell manufacturers from 2006 – 2010 are from China. It's a "Chinese game" as they are heavily influential. There is a feed in tariff problem with solar. The regulators can't keep up with how fast solar costs fall. Financing is relevant in this sector because following the cost of debt is very important. The cost of capital to fund renewables has been more accepted and it has improved.

There are some solutions. Tax equity allows people to fund projects and investments' in the US. The private sector should support the public sector. The right mechanisms have to be in place.

NORTH AMERICA

North America Activity – Now and in the next 12 months

Roger Straathof, VP Commercial Financial and Energy Services, RBC Royal Bank

"This conference is all about energy and technologies driving it," said Straathof. RBC has resources to help start ups in the energy sector.

There was a focus on investment trends in Canada where 2.4 billion dollars is committed to the environmental industry. The TSX is a major player on the renewable front with very active trading. There is a 188% market cap on the TSX and TSXV for clean energy with 131 companies and 6 new listings to date. Among the top 10 clean energy financings in the last 12 months, wind is leading the way.

Canada's future in clean technology is very bright and is the place to invest because of the country's good banking system. There is strong support on the federal and provincial levels. The Western Canadian Sedimentary Basin or the WCS Basin is the new Silicon Valley of the north. Technology is being used to improve water use and reduce emissions.

During question period, they talked about the price of solar PV cell models. Currently, the going rate is $1.30 to manufacture them but the Chinese are doing it for $1.06. The government can play a role by lowering the debt structure. In the Middle East for example, they have a lot of subsidies.

There are two types of commodities: fuel prices going out and bio focused prices coming in. Canada has great prospects for geothermal, especially in British Columbia. New players with renewable energy are connecting all the time. Strategic partnerships are critical to push the clean energy movement forward.

KEYNOTE LUNCHEON

Skills for a Sustainable Future: The Polytechnic Role in Preparing a Clean Energy workforce

Irene Lewis, President and CEO, SAIT Polytechnic

Polytechnic institutes are important because they provide students with real world experiences and help bring innovative products to market. Polytechnics marry the arts with skills and they build strong relationships with industries. They are known for integrating and solving real world problems.

In the Polytechnic organizations, there are more than 1,000 diploma-based programs across Canada. They provide prototypes for real world solutions.

There are fantastic opportunities for solar energy. It will create more jobs than any other energy source. There are 1 million workers in solar and wind around the world. Clean technologies need educated practical workforces that meet career needs of each generation. Innovation can be created through partnerships with industry, government and small businesses. New training programs are provided when new niches need workers.

SAIT offers an Energy Asset Management Diploma. Applied Research is based on the industry needs and partners looking for help. Lewis explained the benefits of a practical education. "It is not solely theoretical. It is practical. It is innovation literacy. It has been very successful as it accelerates the innovation agenda."

Presently, SAIT is involved in inventing a more energy efficient windmill system that will minimize the undesirable effects like noise and air currents. The results have been excellent so far.

The Net Zero Housing Project involves students designing the homes right on campus. For example, in the Discovery 5 house, a rain roof collects water for toilets and there is a living wall for growing herbs.

For the Solar Decathelon Competition, SAIT was involved with designing a solar home along with U of C, ACAD, and Mount Royal University. Students collaborated to design this home.

SAIT is passionate about a sustainable future. The new Trades and Technology Complex being built is a Net Zero facility. This 20,000 square foot environmentally designed building will supply space where 8,000 students can study. The new Trades and Technology Complex opens in the fall of 2012. The School of Construction and MacPhail School of Energy will be part of it as well.

The following generous donations were given by government, industry and one alumnus for the new Trades and Technology Complex at SAIT:

Government of Alberta - $300 million dollars
Government of Canada - $4 million dollars
Leading corporations - $29 million dollars
SAIT alumnus Keith MacPhail - $10 million dollars
Enerplus Resources Fund - $5 million dollars
Renaissance Program within the Government of Alberta's Access to the Future Fund - $9 million dollars.

"The new generation wants to improve the lives of those around them," said Irene Lewis. Polytechnics will make a huge difference by collaborating with industry and giving back to communities. It shifts the traditional value of this Polytechnic experience. Partnerships and collaboration is the key."

As Calgary, Alberta, and Canada prepare to become clean energy leaders on the global stage, Anouk Kendall, President of WADE Canada, summarizes the events and collaboration at this inaugural Global Clean Energy Congress and Exhibition while offering hope for our collective future.

"What brings us together at the Global Clean Energy Congress is our common interest in the production, management and storage of clean energy and its economic diversification potential. What keeps us together are trusting relationships built on open and honest discussion and realistic expectations as we navigate through the clean energy revolution."


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