It’s Acute Innovation Dysfunction

What are the main technological trends in marine energy development?
It’s the early days right now. It’s human nature to approach the unknown or new with the familiar. I think we are seeing these adaptive technologies, basically marine engineering and windmill, and putting them underwater.

How “green” energy R&D is incorporated into national innovation system?
Very poorly. We could have had low cost clean sustainable energy going back 75-80 years which hasn’t made its way into energy mix. It’s acute innovation dysfunction.

What role should government play in “green” energy development?
Policymakers rely on experts that sometimes are not interested in innovation. If you are running a nuclear power program or nuclear power plant that’s the best solution. The same is basically for coal lobby and the hydroelectric developers. They all have got their interpretation of what we should be using for electricity and they are not open to new ideas. Nobody listens to the inventors and there is little motivation on the part of those who could assist them, to do so. There are some governmental programs but they are heavily influenced by the status quo. So, again, the innovators’ voice is not heard.

Sometimes the controversy is about science that is involved. In our case it isn’t. It’s a simple technology with aerospace design. Today it’s very doable. There is a determined willingness to preserve the status quo and that is the essence of the problem. The status quo includes the coal, the nuclear and hydroelectric and they dominate the space. The DOE, generally they have a monopoly. So, it’s not that they have to compete. They just do what they think is a good job and the rest of it they could care less.

Why?
Any organization has self preservation as its core interest. And innovators have no resources. The status quo has all the resources. In our case – BC hydro (third largest electric utility in Canada, which serves 94% of British Columbia’s population) – their operational communication budget exceeds our Federal election budget. If they need to tell the ratepayer that they have installed new transformers and hooked up 20 thousand houses in the last quarter that’s 3 sentences in the envelope of local utility bill. Why does a local utility have to spend so much money on communication? They don’t need a 150 million dollars annual budget to communicate their message. A big part of this communication is preserving their narrow interests and these interests do not always serve the greater good.

Whose positive experience may Russia use?
Scotland. They have a marine energy policy structured and their positive experience may Russia use?

Why do we need “green” energy for?
It is about the principles of sustainability. There were a lot of solutions that came and went last century that didn’t make it into the mix. The world is facing acute energy innovation energy dysfunction. It has a lot to do with the nature of power utility providers, their structure, their politics, their vested interests, preserving those interests and reluctance to try anything new. I’ve looked at probably 500+ technologies in the last 25 years and it’s quite surprising the ones that we’ve missed. I think we have a clean low cost energy future ahead of us. It will just take some time so see some of these innovations propagate into the energy mix.

What role government plays in developing clean energy in Canada?
Canada is not a leader in clean energy. We have leadership in technology and innovation but our policy and regulatory structure lags considerably far behind. Leadership here is in the U.K. – Scotland and, perhaps, South Korea. These two areas have recognized that there is much higher energy densities in marine resources, there is predictability in these resources that there isn’t in wind, and there is scalability and better economies of scale as a consequence of those.

Are you aware of any government programs aimed to support alternative energy in the U.K. or South Korea?
Yes, they have a policy and a framework for developments that is mature in the U.K., particularly in Scotland. These premiums that are paid to developers are essential at the early stages. The Scots, I think, understand that they risk less than, for example, Germans when they took their action in wind and now enjoy 10 to 12 billion British pounds annually in economic development in manufacturing spinoffs. The same will be the case in tidal power. It only will just be a bigger scale.

Martin Burger — CEO, Founder, and Director
Blue Energy Canada Inc., fellow with the World Innovation Foundation

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Whose positive experience may Russia use?
Scotland. They have a marine energy policy structured and they will produce results. They have created a “set aside feed in tariff” policy where a certain percent of power produced has to be sustainable. If that quota is not met then providers have to pay for these ROCs (Renewable Obligation Certificate). So, it creates a very powerful incentive that private investors can get behind and make these investments. And these

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investments will pay enormous dividends. They are expensive premiums but they are relatively small in the overall scheme of things and for a short period of time and they will serve to get valuable new technologies into the energy mix.

It's a very attractive incentive and it creates the climate for investors to make these decisions and commitments to these projects. That will produce an economic development benefit for the Scots that they will be providing the support services and probably manufacturing for the whole EU as a consequence. So, again, for less technology risk than Germans took in early days of wind they will see much larger economic benefits as a result of it. Plus they will enjoy the benefits of significantly large, clean, low cost energy projects.

What's in South Korea?
The South Korean model is much different from the approach that the Scots have taken. The Koreans for the reasons I don't know recognized the kinetic energy of tides. They have very dramatic tides there. It was fairly obvious to them. Here in British Columbia we hardly recognized we are a coastal province. I don't know what they did right in Korea. They didn't provide the investment climate but they did provide a lot of research and feasibility government grant funded. It's a bit of a different approach. I would suggest that more efficient approach would be the Scots' of the two of them.

What about your own technology?
It started a long ago before I came on the scene. Frenchman George Darrieus 1927 is the inventor. He did no practical work but he patented it for wind application and also tidal application. I came on the scene 22 years ago. I was running a mining company up in Canada's arctic. The government changed the incentive policy they had for junior minors at the time and I was left stranded at Great Bear Lake near the Arctic Circle. I inquired at the Canadian National Research Council, if there was any way I could get hydro kinetic energy from fast moving stream or a river. And they said "Yes, we've developed something like that". I started looking at this device. It's very simple and elegant and yet very sophisticated in its design, very efficient and scalable. So, I thought there must be something wrong with this invention. That's why it's not been used. But to my surprise this had some of the top scientists of the country behind it. Probably, these guys didn't know what they were doing. But these are the guys that are designing the most modern planes today and certainly they do know what they are doing. So, I started working to try to commercialize the technology and what should have been 3-4 months technical clarifying conversation with the local utility when they finally appreciate the merit of the development it is now dragged on for 22 years. You have to be determined and persistent to work in this pace that's been the story of the most of the century.

At the moment we are getting financing for our first commercial demonstration project. The technology has very well behaved and is scalable. I don't foresee long propagation curve that we saw in wind sector. I think the marine energy technology will propagate much faster.

I think Russia has got tremendous tidal resources. There was some interest shown by Rushydro over a couple of years ago but they seem to have lost interest or the conversation didn't bare any fruit. But the mid-term to long term looks very good for Russia in tidal power development.

Putting this technology in practice took you 22 years?
I know it's ridiculous. It's acute energy innovation dysfunction. This is a simple technology. The first commercial demonstration project will be in Scotland in 20 months.

What is in South Korea?

The conference focused on the key issues regarding tech entrepreneurship in Russia, including:

- opening the Russian market to multinational companies and competition;
- developing tech entrepreneurship community in Russia as an aid towards modernizing and diversifying the economy;
- Russian Going Global: What can Russia do to internationalise its tech entrepreneurship and to be more competitive in the global market.

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