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Q&A: The importance of offshore aquaculture

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Forristall: Why is offshore aquaculture being held back?

Forster: The case we make for it right now is that there is a big seafood deficit and we import 80 percent of our seafood. We could produce some of that here and save the country USD 4 billion to USD 5 billion in imports. But Congress and politicians don't talk in terms of less than a USD 100 billion idea.

We need to do something bigger that captures their imagination. It's more than just about supplementing our seafood supply; it's potentially a new system of food production.

There are so many environmental benefits, you don't have to use fresh water or fertilizer and you don't have to use any more of the land; there's almost unlimited space. There's big potential if we could only solve the problems, and they're formidable. But there is potential for a big new sustainable industry concept that makes sense to me, but until we can present that idea and get the message across that ocean aquaculture is more important than topping off our seafood supply.

Why is it so hard to get people on board?

Because it's difficult. The easy thing to do is taking a piece of land and plowing it and turning it into farm. Human beings are designed to do it. Going into the ocean is a different thing to do and unless we invest the resources and the effort to solve the problems and develop it then we won't do it.

If we put the same amount of effort we put into renewable energy like wind power, or even nuclear fusion — look at renewable fuels and huge amounts and effort into solving those problems — I'm not sure we've attached the same level of importance to offshore aquaculture. I think aquaculture is fundamentally important to human well-being.

Our economic success up until now has been based on low hanging fruit — the easy stuff. The immigrants came and we had abundant fertile land to farm, and then fossil fuels and then machines and it turned into the industrial revolution; that was the easy stuff. The next option gets harder.

The question is, "What's the next big thing that human beings are going to do to sustain our desire to sustain middle class lives?" Something somewhat fairly fundamental is food production.

What will it take to attract investors?

People need to start discussing it and put it front and center and maybe somebody important will say, "You know what, that sounds interesting, I need to know more," and then something will happen and it will be addressed at a high enough level that action may be possible.

We are going to need another 5 billion tons of food to feed ourselves by 2050, so it's a huge industry waiting to happen with a huge amount of jobs. My suggestion is much of it could happen in the ocean if only we can get our heads around offshore aquaculture. Doing so would ease a lot of pressure on the land.

Will the economic situation have to get worse before the idea is taken more seriously?

I hope not. The reality is that a lot of economic policy formulation in all our societies amounts to crisis management, we need a crisis before people and politicians are willing to act.

We've got a real problem with food supply; it's not something you can fix overnight and we need to be addressing it now so we have solutions or potential solutions.

Everyone understands that the world could run out of fossil fuels and we're in big trouble if that happens, so renewable fuels make perfect sense so everyone's on board with that idea and it's been a major investment for 30 years. But we haven't really yet thought really hard about our food supply. Most people can't imagine that we'd never be able to go to the grocery or a store and buy whatever we want.

[Offshore aquaculture] is a major opportunity for economic growth. We have the technology and the know-how and resources to do it, not to mention a huge EEZ. We need better perspective of what our future food needs might be.

What are the problems with offshore aquaculture?

Simple engineering, working in [the ocean]. We need people to invest in development and allow entrepreneurs and investors the opportunity to test their ideas. There are very complicated permit processes that tend to cause people to say, "I'm not going to follow through or I'll go elsewhere because the obstacles are too great here."

Unless we embrace the idea of food production as something on the same level as renewable energy production we're not going to have the will and the effort to solve these problems.

People complain it might get in the way of recreational fishing, compromise commercial fishing and why would we want to do that? People think we don't need to take those risks.

What can offshore aquaculture contribute to U.S. seafood production?

When I talk about marine agronomy, it would be a plant-based ocean aquaculture, not just based on production of animals. If you look at agriculture, 90 percent is about producing plants, many of which we feed to animals. In the long-term future, plants can grow seaweed to use primarily as raw material and those plants just like agriculture can be converted into food, feed and fuel.

There are already companies producing seaweed for sale as human food and companies that are developing enzymes that will break down seaweed and what's left over may be used as feed material. It's significant. The Chinese produced 10 million tons of seaweeds, half of which is used for industrial purposes and half for consumption. It's not a new technology. We have to figure out how we might do that here on a very large scale and then learn how to use the products effectively.

It's not a new idea, the idea has been around since 1968, but then it all lost its way because we started pumping more oil out of the ground and everyone got rich, fat and happy. The time has come to relook at that idea.

Photo courtesy Professor Chen Jiaxin

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