

Ready for a Revolution

NOBUO TANAKA SAYS MASSIVE ENERGY SPEND LOOMS

BY MARTIN ROSENBERG

✚ NOBUO TANAKA TOOK THE STAGE at a huge energy conference in Washington recently and proclaimed, “We need a new energy revolution.” But while the world desperately needs to spend more on energy research and development, the executive director of the International Energy Agency said, spending has actually declined of late.

“We must act now,” he bluntly said, perhaps uncharacteristically for a man who spent many years in the trenches of the Japanese government. To avoid a 6-degree Celsius average rise in world temperatures by mid-century, Tanaka said, we must spend \$45 trillion by 2050 – the equivalent of 1 percent of the world GDP over that period – to cut greenhouse gas emissions in half. In other words, every year between now and 2050 the world must build something like the equivalent of 32 nuclear plants, 175 million square meters of solar panels, 17,500 wind turbines of 4-megawatt size and 35 coal-fired generating plants equipped with carbon capture and storage technology to master the climate change problem.

The International Energy Agency was formed three decades ago as the industrialized world’s answer to oil cartels intent on disrupting the economies of Western nations. Now its small squad of economists, diplomats and energy experts work away in the shadow of the Eiffel Tower, analyzing the world energy scene for 27 member nations. Tanaka, 57, says that more than half of his efforts now are directed toward dealing with climate change. *EnergyBiz* recently interviewed him to learn more about the man and the agency he directs. His comments were edited for style and length.

ENERGYBIZ Your agency predicts world energy needs will grow 55 percent between now and 2030.

TANAKA Yes.

ENERGYBIZ Is growth accelerating?

TANAKA Growth is not accelerating. It’s kind of moderating. Economic growth is expected to be about 3 percent annually to 2030. The growth comes mainly from emerging economies like China and India.

ENERGYBIZ Do you see the current mix of generation resources staying the same or do you think renewable will play a greater role?

TANAKA Fossil fuels still maintain quite a significant percentage to 2030. We think it’s not sustainable to meet the current challenge of climate change. If we continue business as usual demand, it may lead to the 6-degree Celsius temperature increase.

ENERGYBIZ Specifically, you see coal share going from 25 percent to 28 percent.

TANAKA Coal will increase. That is one major challenge.

ENERGYBIZ Is that inevitable?

TANAKA For China and India, coal is really the most abundant energy source. The problem is that its use emits enormous amounts of CO₂. But a new technological avenue seems particularly promising: capturing CO₂ and storing it, that is trapping it in deep geological layers, whether coal layers, depleted oil or gas deposits or saline aquifers. However, there is as yet no full-scale demonstration using a commercial-sized power plant. R&D is essential.

ENERGYBIZ Are you saying that since China and India will have to rely heavily on coal, the rest of the world will have to get off coal at a much faster pace?

TANAKA No, all coal users will have to learn to use it in a cleaner manner.

ENERGYBIZ You’re predicting the need for \$22 trillion of cumulative investment in energy-supply infrastructure by 2030, about half of it in the power sector.

TANAKA That’s correct.

ENERGYBIZ Is that level of spending sufficient to develop energy alternatives and look for carbon sequestration technology?

TANAKA That is a very important question. In fact, \$22 trillion by 2030 is not enough. That sum covers the infrastructure investment for oil, coal, gas and electricity that we project will be needed on the

assumption that governments do nothing to encourage a shift to a cleaner and more sustainable energy system. About \$11.6 trillion would be for the power sector. China is about 17 percent of that \$22 trillion figure. We are now preparing a publication, called "Energy Technology Perspective 2008," that estimates the world will have to spend an additional

\$45 trillion until 2050 on energy technology and deployment. It is a little longer perspective, but that is the additional investment that is necessary if we intend to reduce CO₂ emissions 50 percent by 2050.

ENERGYBIZ Now this \$45 trillion, what will it buy? Will it buy carbon sequestration?

TANAKA It is all the renewable energy technology and cleaner transportation like electric cars or fuel cell powered vehicles. It's more research, development and deployment.

ENERGYBIZ Has anybody analyzed what \$22 trillion by 2030 and an additional \$45 trillion by 2050 will cost consumers?

TANAKA The consumer faces potentially higher prices for energy or vehicles. But at the same time, governments will be investing. So in fact this is kind of a reallocation of money from some other sector to the energy sector.

ENERGYBIZ In other words, we would be spending a lot of money on oil if we don't pursue new energy technologies?

TANAKA Correct.

ENERGYBIZ What is IEA's role in planning for the world's energy future? You represent 27 countries?

TANAKA Yes. They are primarily the OECD countries, the members of the Organization for Economic Cooperation and Development.

ENERGYBIZ So it's the major economies of the world.

TANAKA Correct, it is the developed countries. Our members use 50 percent of world energy. We were established in 1974 to promote energy security after the first oil crisis. There was an Arab oil embargo. This organization was created to develop a strategic stockpile of petroleum and jointly use it in case of emergency.

ENERGYBIZ You're an advisory group?

TANAKA The IEA is an intergovernmental organization that, in case of emergency, coordinates the necessary actions of the member governments.

ENERGYBIZ Are we in a state of emergency now?

TANAKA A state of emergency would be a physical oil supply disruption like one caused by Hurricanes Rita or Katrina in 2005. The hurricanes caused a huge interruption in the refinery and shipment of refined products in the United States. We mobilized about 60 million barrels a day of oil from the



Nobuo Tanaka

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stockpile of member governments and injected it into the market for about a month.

ENERGYBIZ Are China and India members of the IEA?

TANAKA China and India are not members yet but are observers in some committees. We have joint seminars and share information and practices.

ENERGYBIZ Well with those two countries rapidly expanding their fleets of coal power plants, do you see the need to get them to be members fairly fast?

TANAKA Yes. New members of the IEA must be members of the OECD first and the OECD has other requirements. So it's not easy.

ENERGYBIZ Do you think they will be members by 2010?

TANAKA Well it's difficult to say. Personally, I hope so, but 2010 is really very soon.

ENERGYBIZ What does the power industry in the United States need to know about the IEA?

TANAKA One of our roles is to make scenarios for the future. What is the demand scenario in 25 years or more? What does it mean for the possible demand for oil? What does it mean for CO₂ emissions? We also study the supply side. What is the reserve situation? This organization is the only intergovernmental organization for energy. Our data, statistics and analyses have a good reputation among energy professionals. Your readers, the energy companies in the United States, take a good look at our statistics.

ENERGYBIZ What is the emerging consensus on the world's energy future?

TANAKA All countries are getting more serious about renewables. To achieve a 50 percent reduction in carbon dioxide emissions we need to mobilize all possible technology, certainly wind and solar. Nuclear power is playing a very important role, and also carbon capture and storage. The next question is how all countries, including the United States, will provide a framework to make it possible.

ENERGYBIZ One specific recommendation you have is for the world to eliminate incandescent bulbs by 2012.

TANAKA It reduces about half a gigaton of CO₂ emissions.

ENERGYBIZ Your Web site says it will save as much

power as is produced by 80 nuclear power plants.

TANAKA Yes, it is a huge, huge contribution if that happens.

ENERGYBIZ So all we have to do is switch our light bulbs, and we'll make a major impact.

TANAKA That's correct, if everybody does it all over

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the world. There are many other small things that can be done that add up to significant savings.

ENERGYBIZ What's your best guess of what the world will look like from an energy perspective in 2050?

TANAKA That is a little distant from now. Let's say I am optimistic, because there are lots of potential technologies now under development. The price of oil is very high now, but that creates some incentives for research and development efforts in this area. We probably will see a huge energy revolution by then, along with moving into a very different lifestyle of using the energy, so I am quite certain that, in that sense, the technology eventually will solve this problem, and very optimistic for that.

ENERGYBIZ Now how many employees does IEA have?

TANAKA We have about 170 staff.

ENERGYBIZ What's your annual budget?

TANAKA Our annual budget is about 24 million euros, or \$37 million.

ENERGYBIZ What are your biggest priorities for the coming year?

TANAKA Energy security and the climate change challenge are most important. How can we make energy secure and have a sustainable future? How could the IEA provide scenarios and recommendations to the member governments? That's the basic challenge for me. ☺

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