Raport Badawczy

Research Report

RB/28/2002

Sprawozdanie z działalności Konsorcjum „Bioenergia na Rzecz Rozwoju Wsi" w 2002 roku

W. Ciechanowicz, Z. Uhrynowski

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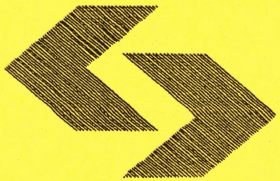

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Warszawa 2002

Załącznik do punktu 2.7

Wizja Europy jako czołowego światowego producenta bioenergii

Prof. dr hab. inż. Wiesław Ciechanowicz
Instytut Badań Systemowych PAN
Przewodniczący Konsorcjum
„Bioenergia na Rzecz Rozwoju Wsi"

Warszawa, 29.10.2002

Pan
Prof. dr hab. Jerzy Kołodziejczak
Prezes Polskiej Akademii Nauk
Warszawa, PKiN
Pl. Defilad 1

Wielce Szanowny Panie Profesorze,

W dniu 25.10.2002 otrzymałem adresowane do mnie jako Przewodniczącego Konsorcjum pismo z Unii Europejskiej od Hydrogen Economy Organization zawierające informacje o zamierzeniach władz Unii mających na celu uczynienie z krajów stowarzyszonych we Wspólnocie światowej potęgi w zakresie wykorzystania bioenergii oraz stosowania technologii ogniw paliwowych.

Sprawa ta jest osią strategii działań Konsorcjum ukierunkowanych na wdrażanie wysokowydajnej produkcji biomasy i przetwarzania jej na metanol właśnie do zasilania ogniw paliwowych.

Pozwalam sobie przesłać kopie powyższego pisma, aby udokumentować stale podnoszoną przez mnie wagę tych problemów, wciąż jeszcze niedocenianych a nawet kwestionowanych w kręgach decydenckich i opiniotwórczych.

Wyrażam nadzieje, że Pan Prezes uzna, że zaistniała sytuacja stanowi wyzwanie i szansę wynikającą z włączenia się Polskiego środowiska naukowego do realizacji tego unijnego programu o wielkim znaczeniu globalnym i skutkach nie do przecenienia dla rozwoju całego naszego kraju, a w szczególności obszarów wiejskich.

Potrzebą chwili jest jak najszybsze podjęcie działań wychodzących naprzeciw formułowanej przez Unię strategii zwłaszcza, że mamy już niewątpliwe osiągnięcia i atuty.

Z wyrazami głębokiego szacunku

Wiesław Ciechanowicz

Prof. dr hab. inż. Wiesław Ciechanowicz
Przewodniczący Konsorcjum
„Bioenergia na Rzecz Rozwoju Wsi"
Instytut Badań Systemowych PAN
Ul. Newelska 6, 01-447 Warszawa

Warszawa, 30.10.2002

Pan
Prof. dr hab. Michał Kleiber
Minister Nauki
Przewodniczący Komitetu Badań Naukowych
00-529 Warszawa, ul. Wspólna 1/3

Wielce Szanowny Panie Ministrze,

W nawiązaniu do poprzednich listów, które do Pana Ministra adresowałem, jako Przewodniczący Konsorcjum „Bioenergia na Rzecz Rozwoju Wsi", czuję się w obowiązku przekazania informacji jakie otrzymałem od „Foundation on Economic Trends in the Area of Hydrogen Economy" z siedzibą w Waszyngtonie. Informacja ta dotyczy strategicznych rozwiązań w ramach Unii Europejskiej i mających związek z dążeniem Europy, aby stać się pierwszym super mocarstwem Ekonomii Wodorowej w 21 wieku w zakresie wykorzystania bioenergii oraz stosowania technologii ogniw paliwowych.

Chodzi o biomasę występującą najbardziej obficie na kuli ziemskiej. Tę, której materię organiczną tworzy lignocelluloza, a więc drewnopochodną. Tę, która może występować jedynie na rynku roślin przemysłowych, jako jednym z rynków roślinnych, obok rynku upraw spożywczych. Przetwarzaną do metanolu lub metanu, wykorzystywanych jako sposób na dostarczanie wodoru do ogniw paliwowych.

Prezes Fundacji, prof. Jeramy Rifkin jest doradcą Prezydenta Unii Europejskiej Romano Prodi w tym zakresie. Wyżej wymieniona Fundacja opracowuje dla Unii długoterminowy strategiczny plan uniezależnienia się od paliw kopalnych w pierwszej połowie tego wieku.

Sprawa ta jest osią strategii działań Konsorcjum ukierunkowanych na wdrażanie wysokowydajnej produkcji biomasy i przetwarzania jej na metanol właśnie do zasilania ogniw paliwowych.

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Potrzebą chwili jest jak najszybsze podjęcie działań wychodzących naprzeciw formułowanej przez Unię strategii zwłaszcza, że mamy już niewątpliwe osiągnięcia i atuty.

Z wyrazami głębokiego szacunku

To: <hydrogeneconomy@foet.org>
Subject: PRESS RELEASE: EU & Hydrogen
For immediate release:
For further information, contact Stephanie Woodhouse
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The European Union becomes the first superpower to announce a plan to become a Hydrogen Economy.

An American, Jeremy Rifkin, is credited with facilitating the historic E.U. energy initiative.

Romano Prodi, the President of the European Commission, the governing body of the European Union, announced, last week, a coordinated long-term plan for Europe to make the transition from fossil-fuel dependency to become the first Hydrogen Economy superpower of the 21st century.

The American author, consultant, and Wharton School fellow, Jeremy Rifkin, who serves as an advisor to President Prodi, is the architect of the strategic white paper that launched the E.U. energy initiative.

Washington, D.C…

Romano Prodi, the President of the European Commission, the governing body of the European Union, unveiled, last week, the E.U.'s long-term plan to make the historic transition out of the fossil-fuel era and into a renewable energy economy powered by hydrogen. (See the attached news stories from The New York Times and The Wall Street Journal.) The plan includes a $2 billion dollar E.U. commitment, over the course of the next several years, to bring industry, the research community, and government together in pursuit of a common road map toward a Hydrogen Economy future. President Prodi said that the E.U.'s scientific effort would be as important for Europe as the space program was for the United States in the 1960s and 1970s. With increased public concern over global warming, Third World debt, and rising geopolitical tensions in the Middle East - all of which are deeply connected to oil - the E.U. initiative is timely and critical.

The American author, consultant, and professor, Jeremy Rifkin, who serves as an advisor to President Prodi, prepared the initial white paper that led to the current E.U. energy initiative. Mr. Rifkin is a fellow at the Wharton School in Philadelphia, where he teaches in the Executive Education Program, and is president of The Foundation on Economic Trends in Washington, DC. His new book, The Hydrogen Economy, was published this fall.

According to Mr. Rifkin, "The E.U. decision to transform Europe into a Hydrogen Economy over the course of the next half century is likely to have as profound and far-reaching an impact on commerce and society as the changes that accompanied the harnessing of steam power and coal at the dawn of the industrial revolution and the introduction of the internal-combustion engine and the electrification of society in the 20th century."

THE WALL STREET JOURNAL EUROPE
October 16, 2002

For Prodi, Hydrogen is Fuel of the Future

By SCOTT MILLER and BHUSHAN BAHREE

BRUSSELS – Europe is aiming to overtake the U.S. and Japan in the race to a hydrogen future.

Leading a European drive toward a massive increase in hydrogen research and development, European Commission President Romano Prodi says the scientific program will be as important for Europe as the space program was for the U.S. in the 1960s. If successful, hydrogen power also would relieve Europe from a potentially dangerous and growing reliance on oil and gas imports, and address the concerns of the region's politically powerful "green" lobbies.

Mr. Prodi said that hydrogen power, although still years from widespread use, had reached a point where it presents a realistic alternative to fossil fuels. Government financial support and legislation, he said, could now push the technology toward practical use, thrusting Europe into the global lead in hydrogen and triggering a wave of scientific achievement.

"It's like going to the moon in a series of steps," he said of the European Union's hydrogen ambitions. "We expect an [even] better technological fallout."

Last week, Europe announced ambitious plans to promote hydrogen, which, when converted into electricity with fuel cells, can power everything from cars to factories. The EU plans to spend €2.12 billion ($2.09 billion) from 2003 to 2006 on renewable energy development, mostly technologies related to hydrogen. That's up from only €127 million spent between 1999 and 2002.

The European initiative comes as the U.S. debates its own energy future. The U.S. Congress is now considering a proposal that would require utilities to supply as much as 10% of their power from renewable energy sources. The EU has already committed itself to seeing 22% of gross electricity consumption coming from renewable energy by 2010 and 12% of all energy coming from renewable sources by the same date.

"The E.U. is just now starting to see the need to take the lead politically on this issue," said Jeremy Rifkin, author of the new book, *The Hydrogen Economy*, and an advisor to the EU. "They are now starting to focus on becoming a hydrogen power.

For all of the hope surrounding hydrogen, it is still years – if not decades – away from making significant inroads into the power and transport markets, which currently account for most of the world's oil and gas use. Hydrogen is still substantially more expensive than traditional power sources, and massive investments in infrastructure are needed to make it attractive to consumers.

Hydrogen-powered autos, buses and electricity-generating plants, which are for all practical purposes still in the development stage, also still need to prove their reliability.

The Paris-based International Energy Agency - whose members are the world's industrialized countries - reckons that fuel cells will start making a contribution to the world energy supply after 2020, mostly in stationary use. The IEA also figures that fuel-cell-powered autos will account for only a small fraction of the vehicle fleet by 2030. "Whether fuel-cell bus prices will ever be competitive with conventional diesel buses or even CNG [compressed natural-gas] buses is, however, still an open question," the IEA said in a study of future bus systems.

Of course, scientific breakthroughs with funding help from governments could change all that. But even proponents of hydrogen agree that for the moment the power source is only one of the possibilities for the future. What's more, the rollout of fuel cells is expected to be a tense time. A major setback in reliability or safety at the outset of commercialization could doom fuel cells to failure.

Although converting hydrogen to electricity with a fuel cell produces nothing more than a little water, substantial amounts of energy are needed to make hydrogen in the first place, meaning that other fuels such as natural gas will still be used until other energy sources like wind are plentiful enough to meet hydrogen demand.

Mr. Prodi, who compared the importance of his hydrogen initiatives with the introduction of the euro and EU enlargement, said that the technology carried a higher priority in Europe than in the U.S., where fuel is cheaper. Although the U.S. public and private sectors now spend more on fuel-cell research than the EU, the investment isn't well coordinated and won't be as effective as Europe's new approach, he said.

"For us, it's even more urgent than it is for the U.S.," Mr. Prodi said of the promise of hydrogen.

Already meager, oil and gas resources in Europe are being rapidly exhausted to meet rising demand. Even Britain, a North Sea oil producer, is heading towards becoming a net importer of oil. According to the IEA's latest World Energy Outlook, the EU will be importing 92% of its oil needs by the year 2030, up from 73% in 2000, as indigenous production declines and demand rises. Similarly, imported gas is seen accounting for 81% of Europe's needs by 2030, up from 44% currently. Quite apart from the security concerns raised by such heavy reliance on imported fuels, Europe also will find it difficult, if not impossible, to meet its commitments to limit carbon emissions under the Kyoto protocol.

Europe's interest in hydrogen, however, runs deeper than gas prices. Environmentally oriented political parties hold considerable sway in the politics of several nations such as Germany. And promoting research and science plays well in the 15-nation bloc where economists worry about America's technological prowess. Mr. Prodi envisions the EU subsidizing basic developments in fuel cell cars and motors, and said he soon planned to offer guidelines for developing a hydrogen infrastructure.

THE NEW YORK TIMES

October 16, 2002

Europe Pushes for Renewable Energy

By PAUL MELLER

BRUSSELS, Oct. 15 — Romano Prodi has seen the hydrogen-powered light.

In an interview today, Mr. Prodi, the president of the European Commission, described his view of Europe in a post-fossil-fuel era, when homes would generate the power they need from renewable sources like the wind and the sun, store it in hydrogen fuel cells and harness it as needed, replacing all the polluting energy sources in use today.

He is not just musing. Speaking for the 15-nation European Union at a conference in Johannesburg over the summer, he said the union had set a goal of obtaining 22 percent of its electricity and 12 percent of all energy from renewable sources by 2010.

Economics and geopolitics are behind the move as much as environmental concerns. Europe depends much more heavily on imported energy than the United States does: around 70 percent of its oil and gas comes from abroad, mainly the Middle East and Russia.

"For us, reducing fossil fuel dependency is a priority," Mr. Prodi said.

The great impediment to wider use of renewable energy has been the difficulty of storing and transporting it for later use, a practical necessity that fossil fuels make relatively simple. Hydrogen may, too, which is why Mr. Prodi takes it so seriously.

Last week, the commission convened the first meeting of a panel of senior executives from European companies with stakes in the matter, like Royal Dutch/Shell, DaimlerChrysler and Rolls-Royce, the aircraft engine maker. The panel will advise the union on the development of hydrogen fuel cells, which promise to be a practical power source for vehicles and fixed use.

The commission, the executive body of the union, has already earmarked more than 2.1 billion euros ($2 billion) for research over the next five years into sustainable energy projects, a 20-fold increase in the last five years (1997-2001). A central focus will be hydrogen fuel cells, a field where the union has lagged the United States and Japan in publicly financed research.

Mr. Prodi said that Europe was poised to leap ahead of its rivals in its overall energy strategy. "Neither the United States nor Japan is clear on its goals," he said, and without clear goals, there is little progress.

Industry agrees. "The European commission is playing a very significant role now in developing hydrogen fuel cells," said Don Huberts, chief executive of Shell Hydrogen, after the advisory panel met last week. "It is providing a framework for the introduction of the new technologies in

the E.U. It would be very hard to convert the environmental benefits into consumer benefits without this political leadership."

Herbert Kohler, director of environmental affairs at DaimlerChrysler, said political support was vital. "For the car industry, we can do a lot ourselves, but at a certain point we need fuel — and that means involving others," Mr. Kohler said after the meeting. "We need legislative and financial support to stimulate this sector, and for that we need government involvement."

Researchers have been trying for decades to harness hydrogen as a cheap fuel. Mr. Prodi said that now, for the first time, technological advances "give us the message that we are on the eve of being able to do this cost effectively."

"We are not working on a scientific experiment," he continued. "Science is already on board. We are working for change in the most important pattern of consumption of a contemporary society."

Before assuming the presidency of the European Commission, Mr. Prodi was prime minister of Italy, where he was credited with preparing the country to adopt the euro. In Brussels, he has overseen preparations for the European Union to take in 10 new members in 2004.

The energy project is in the same league as these other big ideas, Mr. Prodi said. "The difference is that with enlargement and with the euro, there is a big bang. Not here. My role here is to kick this process off; others will work on its implementation."

But before Mr. Prodi can fulfill his wider energy ambitions, there are still the union's existing energy goals to achieve, notably the creation of a liberalized market in energy within the union. Continuing state ownership and support of some major utilities, like Electricité de France, is creating friction with neighboring nations that have privatized faster.

Even old-fashioned energy monopolies like Electricité de France have a role to play in the energy future Mr. Prodi foresees, he said, by helping with the transition.

Mr. Prodi put the cost of converting Europe to a decentralized energy grid based on hydrogen fuel cells placed at or near the point of energy consumption at about five times the cost of installing a mobile-phone network. "The cost is enormous," he said, "but it is not out of reach." Without involvement of the private sector, the project will not succeed, he said, but companies will become involved in building the new energy network only if there is a strong political will behind them.

What if the looked-for dawn of cheap hydrogen energy never breaks? "Maybe this will fail," Mr. Prodi said. "But then there are no other serious alternatives."

L

Prof. dr hab. inż. Wiesław Ciechanowicz
President of Consortium
"Bioenergy for Rural Area Development"

Dear Madame,

Thank you very much for your kind letter and very interesting information.

We, as a Consortium "Bioenergy for Rural Area Development", are very interested in the cooperation in the area of Hydrogen Economy.

We have initiated our works on Hydrogen-Carbon Economy problem in 1999. It was the year when Ballard Power Systems Inc. informed that they elaborated a direct methanol fuel cell technology for automobiles and Siemens Westinghouse elaborated a ceramic fuel cell for stationary energy systems.

The Consortium incorporates, among others, numerous scientific and educational institutions, local and self-government organizations and farmer associations.

Last year we have organized an International Workshop in which participated Polish organizations as well as representatives of Daimler Chrysler, Gas Technology Institute from the USA, CSIRO - Australia, scientists from Italy, Austria, Sweden and Netherland.

After our workshop we have intensively worked on our main task - large scale production of willow biomass in rural areas of Poland.

This year we have organized a Seminar on the same subject where among others two papers of CSIRO representative were presented. We have elaborated a preliminary scientific research program as well as a strategy of the rural area development.

Proposals for two research projects concerning microbiological conversion of ligno-cellulose to methane and high effective willow clones have been sent to Polish Scientific Research Council.

Would you telling us to whom I should sent more detailed information about on activities performed in this field.

Looking forward to hearing from you I remain

Sincerely yours

Wieslaw Ciechanowicz

To: "'Wieslaw Ciechanowicz'" <ciechano@ibspan.waw.pl>
Subject: RE: cooperation

Dear Sir,

On behalf of Jeremy Rifkin, I would like to thank you for your interest in collaborating with the Foundation on Economic Trends in the area of the hydrogen economy. I will forward to this email on to my colleague, Loring Katawala (lkatawala@foet.org) and will ask her to respond to your email.

Please do not hesitate to contact me if I may be of any further assistance.

Best wishes,
Stephanie Woodhouse

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-----Original Message-----
From: Wieslaw Ciechanowicz [mailto:ciechano@ibspan.waw.pl]
Sent: Monday, October 28, 2002 8:54 AM
To: Stephanie Woodhouse
Cc: CiechanowiczWieslaw@acn.waw.pl
Subject: cooperation

Załącznik do punktu 2.8

Inne działania

Działalność w ramach prac planowych IBS PAN w roku 2002

Podzadanie:
„Zagadnienia związane z produkcją i wykorzystaniem biomasy jako alternatywnego źródła energii"
Kierownik: prof. dr hab. inż. Wiesław Ciechanowicz
Członek zespołu: mgr inż. Zygmunt Uhrynowski

Publikacje
- BOS 2002 – Wiesław Ciechanowicz, Strategia rozwoju obszarów wiejskich,
- Rzeczpospolita: wywiad Krystyny Forowicz z Wiesławem Ciechanowiczem: Paliwo z rzepaku na dotacjach,
- Aura: nr 2/02 Wiesław Ciechanowicz, Cywilizacja: Rozwój i Zagrożenia,
- Aura: nr 7/02 Wiesław Ciechanowicz, Biopaliwa,

Wystąpienia na konferencjach i sympozjach
Wiesław Ciechanowicz
- BOSS 2002, Strategia rozwoju obszarów wiejskich,
- Toruń, Międzynarodowa Konferencja Gospodarcza, Temat: Produkcja biopaliwa oraz energii cieplnej i elektrycznej z biomasy, Przysiek k/Torunia 07.06.2002
- Kwidzyn, Konferencja Stowarzyszenia Powiatów Dolnej Wisły, 11.06.2002
- Międzynarodowe Seminarium poświęcone strategii rozwoju obszarów wiejskich, Temat: Strategia rozwoju obszarów wiejskich, 04.10.2002
- Wojewódzki Ośrodek Doradztwa Rolniczego w Warszawie, temat wystąpienia: Strategia rozwoju obszarów wiejskich w kontekście wykorzystania biomasy do celów energetycznych,

Zygmunt Uhrynowski
- BOS 2002 System komputerowy BIOREGION do wspomagania wariantowej analizy roli bioenergii jako czynnika rozwoju regionu oraz ochrony środowiska

Opracowania wewnętrzne, raporty

- W. Ciechanowicz, Strategia rozwoju obszarów wiejskich,
- W. Ciechanowicz, Ramowy program naukowo badawczy Konsorcjum „Bioenergia na Rzecz Rozwoju Wsi"
- W. Ciechanowicz, Z. Uhrynowski: Dokumenty organizacyjne i sprawozdanie z Międzynarodowego Seminarium „Strategia rozwoju obszarów wiejskich", Warszawa, 4 października 2002, Sala Lustrzana Pałacu Staszica
- W. Ciechanowicz, Z. Uhrynowski: Materiały Międzynarodowego Seminarium „Strategia rozwoju obszarów wiejskich", Warszawa, październik 2002
- W. Ciechanowicz, Z. Uhrynowski: Sprawozdanie z działalności Konsorcjum „Bioenergia na Rzecz Rozwoju Wsi" w 2002 roku
- W. Ciechanowicz, Z. Uhrynowski: Environmental Ascpects in Elaborated Computer Systems of Regional and Country Development,
- Z. Uhrynowski: Opracowane komputerowe systemy wspomagania decyzji rozwojowych z uwzględnieniem aspektów regionalnych i środowiskowych
- Z. Uhrynowski: System komputerowy BIOREGION do wspomagania wariantowej analizy roli bioenergii jako czynnika rozwoju regionu oraz ochrony środowiska , BOS 2002
- Z. Uhrynowski: Elementy oprogramowania dla generowania scenariuszy rozwoju w systemie komputerowym BIOREGION,