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**CONTEMPORARY BUSINESS INVESTMENT
IN RENEWABLE ENERGY IN EUROPE****Somova E.I.****Scientific supervisor - Associate professor Borisenko G.A.
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Fifteen miles off the south-east coast of England, the world's largest wind farm is under construction. Poles are being planted in up to 100ft of water, topped by Siemens turbines that reach as much as 400ft above the sea. It is difficult and dangerous work: last November a man was killed on a boat working at that place. But the Greater Gabbard project, being built by Scottish and Southern Energy of the UK and RWE of Germany, is a prototype for what is expected to be a huge expansion of wind power in the waters around Britain. It will have 140 turbines; the government wants to take several thousand in water place across UK by the end of the decade, estimated cost - £100bn (\$160bn, €115bn).

Frank Mastiaux, head of the renewable business at Eon, the German energy group, considers that wind power and other forms of alternative energy are moving "from boutique to industrial scale". The expansion of wind farms planned by the UK is only a little part of the massive investment required of the European Union's energy industry. This decade, European companies will have to invest about €1,000bn (\$1,400bn, £870bn) to meet government targets for developing renewable energy and cutting greenhouse gas emissions, and replacing out-of-date infrastructure. It is a commitment so big that it will help to shape Europe's economy, politics and finances over the next years.

The EU is a world leader in renewable energy and has set more ambitious targets for it than any other leading economy. It hopes the US will follow. Nevertheless many in the industry are beginning to argue that Europe's commitment may be unsustainable. The pledge to make the continent the global pioneer for renewable and emissions reduction was sealed by a previous generation of leaders, including Tony Blair of Britain and Jacques Chirac of France, at the Brussels summit in March 2007. There was a mood in the EU of climate "hysteria", as Günter Verheugen, industry commissioner, postponed it for a time. The vulnerability of Europe's energy supplies had also been highlighted by the most serious clash in a long-running dispute over gas prices between Russia and Ukraine, in January 2006. The result was two historic commitments: European leaders pledged to cut greenhouse gas emissions by 20 per cent from 1990 levels and to raise to 20 per cent the share of the EU's energy derived from renewable sources - both by 2020.

European energy companies, particularly in France, Germany and Italy, were already facing a big task in replacing the generation of infrastructure installed in the prosperous decades after the Second World War. The new targets added an extra degree of difficulty - never mind that the combination of the two objectives agreed in Brussels is much harder to achieve than a simple reduction in carbon dioxide emissions would have been. "Replacing ageing infrastructure costs enough, but if you do it with emissions reductions and then put a renewable objective on top, it is incredibly expensive," says Dieter Helm, an energy expert at New College Oxford. The cheapest way to cut emissions is to replace coal-fired power stations with gas-fired plants, which produce half the carbon dioxide per megawatt of electricity. But with the EU's commitment to renewable, prompted by concerns about the security of gas supplies from Russia and other potentially unreliable countries, European countries are making commitments to invest in expensive wind farms. While governments have set the objectives, it is the private sector that has a possibility to be investment. That will put a big strain on European energy companies, which confronted by a shortage of finance and a slide in demand

caused by the recession have cut their capital spending programmes sharply for this year. As you can see, they seem unlikely to be able to step up again to deliver the needed investment.

The energy industries of the EU's five largest economies - Germany, France, Britain, Italy and Spain - invested about €35bn a year for most of the 2000s, and then increased expenses to €60bn in 2008 and €65bn in 2009. But spending will fall back to about €54bn this year, according to analysts at Citigroup, whereas to contribute their share of the €1,000bn, companies in the five economies must invest €80bn a year for the rest of the decade.

Now the financial freeze is starting to thaw, energy suppliers with their relatively stable revenues are among the more attractive borrowers in the market. But the demand for capital will be vast. Ian Temperton of Climate Change Capital, an environmental investment group, argues that the UK wind industry, for example, "will be a prospective field of capital investment for the next 10 to 15 years". He adds: "On aggregate it pretty much needs to reinvest every penny it makes for that period."

Shareholders are aware that the requirements are frightening. In the three years since the Brussels summit, the stock market ratings of European energy companies have wilted as the scale of the investment challenge has become obvious. "Investors are becoming increasingly concerned over the levels of capital spending required of utility companies," says Peter Atherton of Citigroup. "On current proposals, utility companies could account for 25 per cent of all private sector capital expenditure in Europe. These concerns are depressing share prices, casting even more doubt on whether the enormous investment programmes can be funded."

Enterprising bankers have been looking at a range of unconventional sources of finance, including plenty funds and companies with an interest in renewable energy, such as Google. Last November China Investment Corp, the sovereign wealth fund, acted to spend \$2.2bn buying 15 per cent of the shares and 35 per cent of the wind power business of AES, the US power company. Masdar, an Abu Dhabi clean energy company, stepped in to back the London Array, another large offshore wind farm, when Royal Dutch Shell pulled out. It is now being protected by energy companies all over the world that are seeking funding. However, the only way that the industry will give any chance at all of attracting the capital it needs is if governments make commitments to guarantee investors' returns. Nick Luff, finance director of Centrica, the owner of British Gas, says: "If you put the right framework around them, these assets are very suitable for pension funds and other long-term investors."

Every European country has a subsidy system such as feed-in tariffs, which offer set prices for electricity generated from renewable, paid for by a premium added on to customers' bills. If investment is to grow, those subsidies will have to increase too. That means higher profits for companies and higher prices for consumers.

The impact on energy bills could be large. Ofgem, the UK energy regulator, has estimated that by 2016 the average annual bill in Britain could have risen 60 per cent to £2,000. That increase would represent more than 10 per cent of household disposable income once essentials such as housekeeping, food and clothing are taken care of. European consumers with higher energy bills when their resources are already about to be squeezed by the increased taxes needed to support governments' finances could be a significant drag on economic growth. It is also likely to become an increasingly contentious political issue.

Energy bills have already proved a flashpoint in a number of European countries. Pierre Gadonneix lost his job as chief executive of EDF of France last year after arguing, to the fury of President Nicolas Sarkozy, that prices would have to rise to fund investment. The severity of that treatment may be unusual but energy companies in Britain and Germany are familiar with newspaper headlines blasting them for high bills and excessive profits.

Already, the cost of supporting renewable energy has prompted reduction of programmes in some European subsidies. Spain curbed its solar power subsidy in 2008 and the industry collapsed last year. Germany plans subsidy cuts for solar power to take effect in

April. "People want green energy, but are they really prepared to pay for it?" asks Eon's Mr. Mastiaux. "That's a big question."

Part of his answer is that the investment must be made as cost-effective as possible, to keep the burden to consumers under control. But much of it will be in equipment that pushes back technological limit and, as a consequence, is more susceptible to delays and rising costs. The offshore wind farms of the future, for example, will be built further from land, in deeper water and on a larger scale than anything yet seen. The Areva EPR reactor at Olkiluoto in Finland, the first of the new generation of nuclear plants that will be built in Europe, is running well behind schedule and over budget - a monument to the risks connected with ambitious construction projects.

Another answer is energy efficiency. If consumers and businesses use their energy more carefully, with power-saving appliances, better insulation and so on, they can cut their bills by using less energy, even as the unit cost is rising. But if consumers use less energy, returns to investors will be at risk. No one has yet implemented a successful business model that allows companies to have higher profits while selling less energy.

Mr. Luff of Centrica considers that consumers will simply have to get used to the idea that energy will take up a growing share of their spending. He says there is a need for "an education process in the view of the understanding of the public and business about what energy bills will be". The question, however, is what happens if the public is fully educated and not happy about what it has learnt.

After the disappointment of the Copenhagen climate talks, European governments have been insistent that their commitment to cutting emissions and developing renewable energy was as strong as ever. Britain's Gordon Brown wrote an open letter pledging his government's "unstinting commitment both at home and internationally as we embark on this vital year in the global battle to tackle climate change". If impulse continues to drain away from the climate talks - with energy legislation stalled in the US, for example - European consumers are likely to question why they should carry the burden alone. Politicians would have to find ways of promising that the €1,000bn power bill can be cut.

The vast investment required for European energy infrastructure, along with concerns about the availability of finance to back it, has encouraged a wave of ideas for new ways to mobilize capital.

The European Investment Bank, the US Treasury and the World Bank have issued "green bonds": financial instruments used to raise funds for environmental projects, which can be helped by tax breaks. The infrastructure bank favoured by some energy industry executives and analysts would go further, creating a government-backed institution to manage the flows. By reducing the risk to investors, it could bring down the cost of capital for the industry and hence the ultimate cost to consumers.

George Osborne, chief finance spokesman for Britain's opposition Conservatives, said his party would study the case for a "green investment bank" to help finance low-carbon investment by drawing in private sector capital. This followed a report last year for Policy Exchange which said a UK infrastructure bank could draw on models such as Germany's KfW. The Labour government has also been considering such a bank as a way to raise funds from long-term investors such as pension funds. The bank could fund projects such as nuclear plants and wind farms, spreading the risk over a range of investments and issuing bonds that could carry tax advantages and possibly a state guarantee.

In return for the cheaper funding, the industry would have to accept tighter regulation, moving away from the UK's free market for energy towards a framework of returns agreed between companies and the regulator. Some industry executives say this could address the funding problem. But Dieter Helm, one of the Policy Exchange report authors, warns that in-

vestors would still have to be paid out of energy bills. "The bank helps, but the pension funds will still have to get a rate of return," he says. "It makes things better but it can't do alchemy."

Criticism is likely to be strongest from private sector bankers, who would be threatened by a state-backed competitor in a centre of business. The prospect of more government-backed debt at a time when the UK is borrowing record amounts would also be questioned.

This previous investigation of European experience in development of renewable energy has a possibility to show us, simple private consumers in Russia, that world community can do without natural resources, which are so essential in our export trade, in time. Russia might be entrapped without real national industrial production. If ambitious politicians and far-sighted business investors are in conflict in many insoluble energy questions they will have still been trying to get to conclusion taking into consideration adverse interests such as government's or private consumer's views. It is unlikely to imagine this «reasonable situation» in our country but nevertheless I hope this thorough search would be a good example for Russian society.