SPECIAL REPORT

German science looks to new political players

Coalition change could affect policies, reports **Quirin Schiermeier**.

Science budgets in Germany have flourished under the current government led by Chancellor Angela Merkel. And despite the gloomy economic climate, the 27 September parliamentary elections seem unlikely to change that.

In fact, the biggest changes to German science could come from policies advocated by the Free Democrats, who may end up as the new junior partner in an extension of Merkel's Christian Democrat government. The Free Democrats, who could replace the Social Democrats in coalition with the Christian Democrats, have a distinctly liberal approach in hot-button areas such as genetically modified crops and stem cells.

All recent polls show Merkel's planned new coalition to have an average share of the vote of around 50%. The opposing Social Democrat party, which has nominated foreign minister Frank-Walter Steinmeier as its candidate for chancellor, has dropped to a historic low of 25% in the polls, with the

Greens and the Left Party behind that.

Most scientists think that Merkel, a chemist by training, will continue the science-friendly course she has pursued since coming to power in 2005. Federal science budgets increased by 10% this year, to around €10.2 billion (US\$15 billion), the latest rise in a steady upward trend in science spending over the decade (see graphic).

"It is gratifying to see that politicians have a great amount of trust in science," says Matthias Kleiner, president of the DFG, Germany's main granting agency. "We do know that this means an obligation for us to work hard to deliver what society expects from science."

Germany spends slightly more than 2.5% of its gross domestic product on science and technology, putting it ninth among the world's most research-intensive nations. In June, the federal government and the prime ministers of Germany's 16 states agreed an extra €18-billion package for universities and research

"We are set to increase the general freedom to research, and ease restrictions to stem-cell research and genetic engineering."

organizations (see <http://tinyurl.com/l768c6>). The heart of the package is a continuance of the so-called 'excellence initiative', a competition launched by the previous Social Democrat-Green government to raise the profile of German universities (see 'University excellence initiative takes off'). Without that funding, the

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Visions of a green future

Renewable energy now accounts for 17% of electricity generated in Germany — up from 6.3% a decade ago. "Germany is the only country in the world that has managed to substantially increase the share of renewable energy in a relatively short time," says Claudia Kemfert, head of climate, energy and transport at the German Institute of Economic Research in Berlin.

The reason is the Renewable Energy Sources Act (EEG), which most people credit with making Germany the world leader in renewable-energy generation. In the past four years, more than €9 billion (US\$13 billion) has been invested in new renewable-energy installations. The industry now

employs more than 200,000 people.

Introduced in 2000 by the previous Social Democrat-Green government, the law permits homeowners and farmers to connect solar power and biogas systems to the electricity grid. It also guarantees them a fixed price for the excess energy they produce and sell on the market; this year, these 'feed-in tariffs' for wind energy, hydroelectricity and geothermal energy were increased by another 10%. The law also requires businesses to buy energy generated from renewable sources first, in an amount proportional to the share of electricity generated nationally from renewables.

German companies lead the worldwide market for environmental technologies. But competitors, mainly in the United States, China and Japan, are catching up quickly. The administration of US President Barack Obama, for example, says it will invest hundreds of billions of dollars in solar, wind, biofuels and geothermal power, with a view to generating 25% of domestic energy from renewable sources by 2025. Last year, the United States surpassed Germany in installed wind-energy capacity, and China's wind-power capacity is also growing by leaps and bounds.

In solar energy, Japan and Germany are now almost on a par

in the percentage of electricity they generate from photovoltaic panels, and Arab states in the Middle East and North Africa are expected to significantly increase their solar-power capacities in the near future. "If we don't want to risk our global leadership, the government must maintain its support of the whole field," says Kemfert.

In particular, she argues, the new government will need to maintain the substance of the EEG, and create a market environment even more favourable for renewable energies. And she argues that the country's electricity grid must be expanded as quickly as possible — perhaps even under the aegis of a Europe-wide authority. **Q.S.**

VOLCANOES STIRRED BY CLIMATE CHANGE

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Angela Merkel has spearheaded large increases in federal science budgets.

initiative would have expired in 2011.

Biotechnology, environmental technology, energy and health research have also benefited from the German government's €14-billion high-tech strategy, which began in 2006. And thanks to massive public support, Germany has become a global market leader in 'green' technologies, such as wind turbines and photovoltaic cells (see 'Visions of a green future'). In August, the cabinet approved a plan to put 1 million electric vehicles on the road by 2020, including €500 million for developing novel battery technologies and building a network of charging stations.

Reducing red tape

If the Free Democrats, led by Guido Westerwelle, succeed in becoming the new coalition partner, they may use their influence to reduce red tape and restrictions in ethically sensitive branches of science.

"The economic situation won't allow excessive increases in science budgets," says Ulrike Flach, the party's spokeswoman for science and technology. "But we are set to increase the general freedom to research, and ease existing restrictions to stem-cell research and genetic engineering."

For instance, German researchers are

University excellence initiative takes off

"I've been warned that Germany is a country ruled by pessimism and bureaucracy," says Christopher Barner-Kowollik, a polymer researcher at the Karlsruhe Institute of Technology (KIT). "I found that none of this is true any more."

Last year, Barner-Kowollik moved his eight-strong group from the University of New South Wales in Sydney, Australia, to the KIT, one of nine winners in the first two rounds of the 'excellence initiative', launched in 2005, that has revitalized Germany's academic landscape. "No other recent programme had a similar impact on German science," says Matthias Kleiner, president of the DFG, Germany's leading grant agency.

The competition, which involves extra annual funding of around €30 million (US\$44 million), has over the past three years created some 4,200 new jobs in science. The largest group of beneficiaries are young group leaders, postdocs and PhD students. The initiative has also created hundreds of permanent positions for full professors and science managers.

About a quarter of the new posts have been filled by foreign scientists or by German researchers returning from abroad, and almost 40% are held by women.

The initiative has put an end to the decades-old doctrine that all German universities are equal. Applicants can apply for extra funding for

graduate schools, large-scale research cooperations called 'clusters of excellence' and for so-called 'future concepts'. Universities that succeed in all three lines of funding can call themselves 'elite'.

Institutions that have gained elite status so far include the KIT, the two universities in Munich, and universities in Aachen, Freiburg, Heidelberg, Göttingen, Konstanz and Berlin.

For the next round of funding, from 2012 to 2017, the money available will be increased to €2.7 billion. More than 100 universities have been invited to submit proposals for new research projects by autumn 2010. A panel of scientists and politicians will announce the winners in summer 2012. **Q.S.**

currently allowed to use only human embryonic stem-cell lines created before 1 May 2007. The DFG and most stem-cell researchers say these are sufficient, but Flach says that if the community feels more lines are needed, the Free Democrats will push to change or abolish that cut-off date.

In the past, the Free Democrats have also acted to release universities from ministerial restraint. In Bavaria and North Rhine-Westphalia, the two largest German states, Free Democrat science ministers have in recent years introduced sweeping reforms such as allowing universities to hire professors without ministry approval.

If Merkel's proposed coalition forms after the election, the post of science minister —

currently held by Annette Schavan of the Christian Democrats — might go to a Free Democrat. Flach says they will argue that the science ministry should take charge of technology-related budgets, including space and Germany's contribution to Galileo, the multi-billion-euro European global positioning system that is currently the responsibility of Germany's transport ministry.

But money remains the main concern of many researchers. Germany's biotechnology industry fears that a Christian Democrat-Free Democrat government might reduce support for high-tech industries in favour of more traditional technologies such as automation. "There is no wave of insolvency yet," says Viola Bronsema, managing director of Berlin-based BIO Deutschland, an association of Germany's small biotechnology companies. "But government support will be vital to keep the young industry alive."

The Greens also argue that support for environmental technologies and research into renewable energies must not fall behind. "There is still too much support for controversial branches, such as plant genetic engineering and nuclear research, which promise little benefit to society," says Hans-Josef Fell, the Green party's spokesman for energy and technology.

Germany's target for reducing annual greenhouse gases, by 40% of 1990 levels by 2020, is likely to remain unchanged. ■