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The High-Tech Strategy for Germany



Igniting ideas!

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The High-Tech Strategy for Germany



Germany is a land of ideas. The German government's High-Tech Strategy shows how we can continue to be a land of ideas in the future as well: By putting ideas into action, by igniting ideas! There is a wealth of good ideas in Germany just waiting to be translated into processes, products and services. There is a wealth of patents that have been developed in Germany but go into production in other countries. There is a wealth of talent waiting to be discovered so that the knowledge and expertise we already have can be put to full use. For me, the High-Tech Strategy for Germany means that Germany is and will "in deed" remain a land of ideas!

A handwritten signature in black ink, appearing to read "Annette Schavan". The signature is fluid and cursive, written in a professional style.

Dr. Annette Schavan
Federal Minister of Education and Research

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1 Our goal: Global excellence!

For the first time ever, the German government has developed a comprehensive national strategy for all its ministries with the aim of putting our country at the top of the world's ranks in tomorrow's most important markets. All political sectors that affect research and development will be geared to a clearly defined goal. This strategy puts innovation policy front and center in government activities.

Our vision is a country that respects and rewards achievement in science and industry. We want to encourage people to strike out on new paths. We want a curious, learning society. We want to foster talent in all spheres – from the natural sciences to the humanities, from small start-ups to sizable SMEs. We are capable of turning Germany into the most research-friendly nation in the world by the year 2020.

For Germany, outstanding achievements are not an end in themselves in this connection. Global competition means that we always have to be a shade better than the competition.

We need new ideas, new products and new system solutions in order to ensure our standard of living today and our children's standard of living tomorrow. We cannot win the competition over the lowest labor costs. However, we can certainly win the competition over the best ideas.

To achieve this goal, we are following up the High-Tech Strategy with concrete action: The German government is investing an additional €6 billion in research and development during the current legislative period. This represents the largest increase in research funding in the history of the Federal Republic of Germany. A total of some €15 billion will be allocated for cutting-edge technology through the year 2009. This will bring Germany's federal government, Länder (state) governments, trade and industry closer to achieving their common goal: Boosting research expenditure to three per cent of gross domestic product by the year 2010.



2 Our approach: More freedom for new ideas!

Germany's High-Tech Strategy has a clear policy: more freedom! We want to eliminate impediments to research and development in Germany wherever they arise. We are opening the door as far as possible for a free and competition-oriented knowledge society.

The path we are taking extends from the regional to the international level, from universities to small businesses. We are creating more freedom for new ideas, greater scope for collaboration between research and industry.

We are developing a receptive, objective eye for dealing with new technologies: We are doing away with the ideological blinkers and clearing the way for utilizing the strengths of and opportunities offered by the most important research fields.

We are also creating more freedom for talent and genius – from childhood through adulthood: Starting as early in life as possible, we want to foster and support people and their ideas and awaken their interest in research and science.



3 Our strategy: Ignite ideas – Set energies free!

More freedom for new ideas – Germany's High-Tech strategy sets the following three priorities for achieving this objective:

- We will do everything necessary to ensure that lead markets for tomorrow's cutting-edge fields develop in Germany: Markets that attract both investors and researchers, markets that stimulate new products, processes and services that are sold here in Germany and around the world.
- We will erase the boundaries between industry and research: Collaborative activities and joint ventures will receive more assistance and funding than ever before.
- We will jump-start ideas: Germany's High-Tech Strategy will generate new impetus for facilitating and speeding up the translation of research findings into products.

3.1 Ideas for new markets: Clear-cut paths to take us into the future

Germany's High-Tech Strategy establishes objectives for 17 cutting-edge fields of the future – fields that will generate new jobs and prosperity in Germany. A schedule and concrete campaigns have been set up for each of these objectives: For the first time ever, each area covered by innovation policy will have a clear timetable that takes into account both research funding and prevailing conditions.

The focus here will always be on opening up new markets or developing existing markets into lead markets. Logistics, security and health are examples of areas where this could be done within a short time.

Conducting a strength-weakness analysis for each field will give us a shared understanding for where Germany stands in various cutting-edge fields and where there is a

need for action. Based on this information, the participating specialists will decide on new strategic partnerships. In the process, these experts will provide on-going flanking support for the High-Tech Strategy's implementation and network more closely with one another.

Within the individual cutting-edge fields the High-Tech Strategy places the main emphasis on areas that are of pre-eminent national interest. These include security research and energy research. Not only do these two fields offer enormous economic and scientific potential, they are also of great importance for averting dangers to our country and for ensuring the security of our energy supply.

3.2 Ideas for industry and science: Strengthen networks

We will also create more freedom by fostering more competition along the interface between industry and science. We will abandon state-driven technology funding in favor of a performance-based research landscape where good ideas prevail and the majority learns from the success of the best.

For this reason, the Federal Ministry of Education and Research and the Donors' Association for the Promotion of Sciences and Humanities in Germany are launching a competition that will single out outstanding examples for the exchange between science and industry.

"Strengthen strengths" is the motto for the funding provided for leading-edge clusters that represent research excellence. The best minds from industry and science in each field are networked in these clusters. The High-Tech Strategy helps them raise their international profile and boost their attractiveness to investors. A competition that welcomes all fields will mobilize the "best of the best" and help them position themselves even better in the global arena.

Universities and non-university facilities that win research contracts from small or medium-sized businesses will receive research grants. Such grants will serve as an incentive for researchers to gear their work more to the needs of industry.

3.3 Ideas for fast application: Turning research into products, processes and services

Freedom for new ideas means first and foremost creating latitude so that ideas can become products, processes and services. New ideas should not only be developed in Germany but also be implemented in Germany. For this to happen, the road from development to marketplace must become shorter and faster.

The most important prerequisite for this: The High-Tech Strategy puts research funding and general conditions into context with one another. When we assist players, we always improve the playing field as well. This is the case with areas

such as green biotechnology, communications technologies and the health-care sector. Products in these areas succeed only when government also establishes the conditions necessary for their application.

It is often difficult for researchers to judge whether money can be made with their research findings. As part of Germany's High-Tech Strategy, new funding instruments will be developed for determining the applicability of ideas in unbureaucratic ways. These instruments will make it possible to ascertain quickly whether research findings are marketable.

Norms and standards ensure that products can be successfully sold around the world. Germany's High-Tech Strategy will help industry establish such standards faster and thus make its products and developments more competitive.

City halls, government agencies and ministries throughout Germany are also to become motors for new ideas. Every year, these bodies award contracts worth some €260 billion – a total of 12 percent of Germany's gross domestic product. The High-Tech Strategy additionally provides for reorganizing the public procurement system so that it systematically takes new products and technologies into consideration – not only in requests for bids but also in procurement activities.

3.4 Ideas for SMEs: Funding excellence among Germany's job machines

Not only do small and medium-sized businesses generate the greatest number of jobs in Germany, they are often highly creative as well. The High-Tech Strategy helps companies establish contacts with the scientific community and turn their own research findings into products. It also facilitates market entry for start-ups.

One important step will be the streamlining of government funding policy for small and medium-sized businesses: Offerings will be standardized, terms and conditions for proposals will be eased and information for firms will be made available more rapidly and in better ways.

The general parameters will also be improved: Measures that will be taken to help start-ups and small businesses include a reform of Germany's corporate tax system and the steady dismantlement of bureaucracy. Financing for research projects that is provided by banks or investors will be facilitated and the conditions for venture capital will be improved.

All in all, funding to support research and development work conducted by small and medium-sized businesses will be increased by 40 percent to more than €850 million by the year 2009.



4 Ideas for the future: Working together to make the strategy a success!

The High-Tech Strategy has moved research and innovation way up the German government's political agenda. Its progressive development and concrete implementation will incorporate all important players from the political sector, industry, research and – most particularly – Germany's Länder.

The "Forschungsunion Wirtschaft-Wissenschaft" (industry-science research alliance) established by the Federal Ministry of Education and Research will serve as the pacemaker here. Experts from both science and industry represent the individual cutting-edge fields in the Research Alliance. Together with the respective ministries, they will supervise the implementation of the High-Tech Strategy. The progress made will be documented in annual reports.



5 Igniting ideas: Examples from the High-Tech Strategy

Here an overview of six of the strategy's 17 cutting-edge fields:

Health research:

In addition to its leading role in medical technology, Germany is also striving for a top position in the area of regenerative medicine. The High-Tech Strategy will bundle individual campaigns and projects for introducing new medical technologies. Modern information technologies such as the electronic health card will improve medical care for the individual.

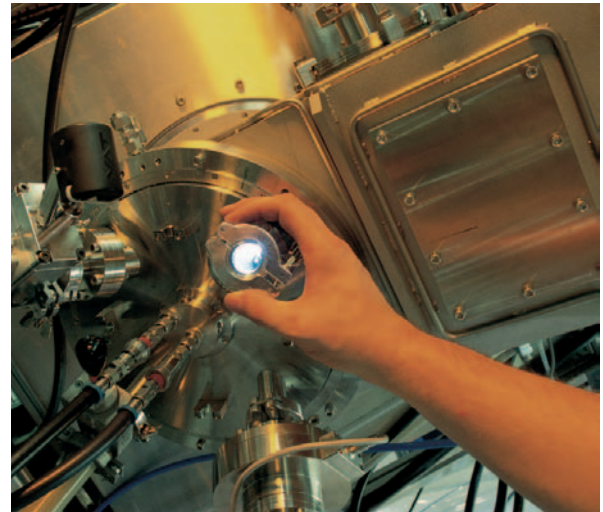


Security technologies:

The German government will launch a national security research program. The establishment of joint research platforms will end the previous fragmentation of suppliers and operators. Funding will be provided for interdisciplinary projects to protect against terrorism and also against biological and chemical attacks.

Energy technologies:

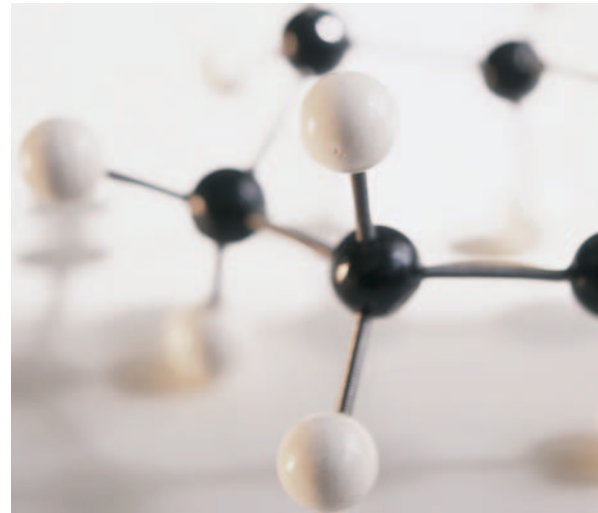
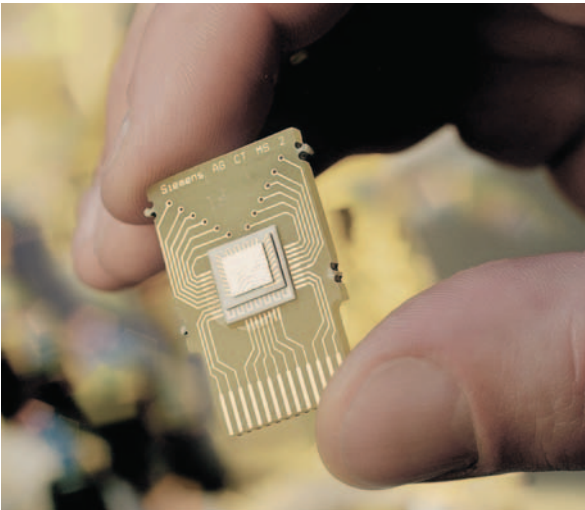
A comprehensive energy policy concept for Germany will bundle all measures being taken to ensure a sustainable energy supply. Germany will demonstrate its excellence in the area of environmental engineering and energy technology with beacon projects such as the CO₂ Building Restoration program or the COORETEC project aiming at a power plant with zero CO₂ emissions.

**Optical technologies:**

The High-Tech Strategy aims to make the 21st century the "century of the photon". The German government is supporting this vision with its Optical Technologies funding program in order to make it possible to harness light and all its properties. The strategy's objective here: Grow the number of jobs in this sector by more than 40 percent by the year 2010.

Information and communication:

The technological and legal parameters for the IT and electronics industries will be brought up to date. As part of this, the German government will bundle all activities in its Information Society Germany 2010 program. The High-Tech Strategy will foster the use of new IT products in, for example, the automobile industry and the mechanical engineering field.

**Nanotechnology:**

This leading-edge technology makes it possible to alter structures that are one million times smaller than a pin head. The High-Tech Strategy will make the benefits of nanotechnology available to small and medium-sized businesses too. In late 2006, the 2010 Nanoinitiative campaign will start bringing all players in this sector together and foster the transfer of knowledge between them.



6 In a nutshell: Germany's High-Tech Strategy in seven points

- **Translate ideas into practice:** The High-Tech Strategy places innovation policy at the heart of government action. It is the first national strategy to show how Germany can become and remain a global leader in the most important cutting-edge technologies.
- **Create more freedom for new ideas:** This central policy thread has been woven into all parts of the High-Tech Strategy. More freedom for research and industry means that research findings will become products faster.
- **Foster and support good minds:** Germany wants to become the most research-friendly country in the world. To achieve this goal, we will foster and support talent and capability as early in life as possible and work to ensure that performance and accomplishments receive greater recognition.
- **No ideological blinkers:** We will be open and receptive to new technologies. In areas such as green biotechnology and security technology we will seek opportunities and market potential.
- **Goals for the markets of the future:** To create lead markets, the High-Tech Strategy has laid down clear-cut goals and developed a timetable complete with concrete activities for each of its targeted 17 cutting-edge fields. New strategic partnerships will arise as a result of the close coordination between the players involved.
- **New ideas for SMEs:** Support for small and medium-sized businesses and collaboration between science and industry take center stage in the High-Tech Strategy. All funding instruments and political reforms will be geared to this.
- **Push the strategy forward:** The "Forschungsunion Wirtschaft-Wissenschaft" will provide flanking support during the implementation of the High-Tech Strategy. The experts in the Research Alliance will issue regular reports to document the strategy's progress.

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