



# India and Germany – Strategic Partners for Innovation



The relationship between India and Germany has been strong for many years and close cooperation in the areas of political and economic development is enhanced by a diverse cultural exchange. The two nations continue to benefit from partnerships between institutions of science, research and technology in both countries. The growing number of joint projects and academic exchanges strengthens this collaboration. The German Federal Ministry of Education and Research (BMBF) facilitates the Indo-German collaboration by realising common goals and bringing their results to fruition. This is embodied by their initiative “India and Germany – Strategic Partners for Innovation”. During a visit by Indian Prime Minister Manmohan Singh to

Germany on 23 April 2006, both he and Chancellor Angela Merkel acknowledged the importance of the Scientific and Technological Collaboration (STC) to promote the dialogue between scientists from both countries. Based on agreements signed by the two nations in 1971 and 1974, the collaboration continues to fund and support joint research projects, workshops, seminars and exchanges between universities and scientific organisations in India and Germany. To date the collaboration has enabled 1,000 joint Indo-German research projects, involving 4,000 scientists from both countries. With input from both sides, a total of 100 workshops have been completed and 1,500 scientific publications produced.



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# India and Germany – strong and reliable partners



**Welcome!  
Namaste!**

India and Germany are strong and reliable partners. This is particularly true in the field of research and development as demonstrated every day by the close cooperation between Indian scientists and their German colleagues, the large number of collaborative projects and the transfer of knowledge between our two countries. This cooperation has many potentials for both sides. We therefore intend to expand it still further and establish even closer ties between our two countries.

The new Indo-German Science and Technology Centre in New Delhi is a good example of this heightened cooperation. It will make an important contribution towards strengthening collaboration between science and industry and accelerating the translation of research results into new products, processes and services. With its High-Tech Strategy, the Federal Government has set the course in Germany for further innovative company start-ups, sustainable growth, greater international competitiveness and additional highly qualified employment. The new Science and Technology Centre will play an important role in developing this strategy to also involve Indian and German partners, to the advantage of both countries. We

therefore intend to expand the Centre over the coming years in close cooperation with science and industry. It will conduct joint projects and become one of the main pillars of our cooperation.

The Centre will contribute to extending the “Strategic Partnership” between Germany and India announced by Chancellor Merkel and Prime Minister Singh to include the field of research and development. It will help us to jointly master the challenges of the future for the benefit of both our countries.

A handwritten signature in black ink, appearing to read 'Annette Schavan'.

**Dr. Annette Schavan**  
Federal Minister of Education and Research

# Cooperative research and development projects in India

Scientists from leading German universities are currently involved in many projects with Indian institutions. The aims of these include technological development, the improvement of healthcare facilities and enhance scientific progress.

A significant example is the foundation of telemedicine outreach stations in countrified areas. Seventy percent of people live rurally in India, yet the vast majority of medical facilities and specialised doctors are in the cities. Telemedicine takes advantage of the fact that the cellular phone network covers 80 percent of the country by using its technology to link people in separate locations. The German project partner, the University of Karlsruhe, is working together with the Indian Institute of Technology, Madras, to develop affordable and easily operated machinery that can transmit medical data from rural healthcare stations to medical doctors in the city. The name of this project is "Telemedicine station for rural health monitoring and the diagnosis of epidemic diseases". It will enable rural healthcare workers to be guided in treatment by medical doctors or even specialists, and therefore provide their patients with higher quality primary, secondary and tertiary care. Another form of technological development gaining from the Indo-German partnership is Internet technology. The Internet is the most efficient medium of worldwide communication. It is therefore necessary to create strong foundations in India – specifically, a solid routing infrastructure and a stable safety network. The Amrita University (Ettimadai) and the Technical University Berlin are the current partners working on the project "Next Generation Secure Internet Technologies for Globally Distributed Enterprises". The Helmholtz Association (HGF) is Germany's largest scientific organisation with many different research

centres. Similar to other German institutions, it is proud on a longstanding relationship with India, and joint research activities are currently in progress in several of its divisions. One example is an STC-supported project entitled "Adaptation of bacteria capable of degrading chlorinated nitrophenols; biochemical and molecular studies". This was started in March 2008 by a team of scientists from the Helmholtz Centre for Environmental Research (UFZ) and the Indian Institute of Microbial Technology (IMTECH), Chandigarh. Professor Mlynek, the president of the Helmholtz Association, visited India in April 2007 to open the Indo-German Science Centre for Infectious Diseases (IG-SCID), which is testament to the Helmholtz Association's commitment to working in partnership with India. The IG-SCID binds together the Indian Council of Medical Research (ICMR), the Helmholtz Centre for Infection Research (HZI) and the Hanover Medical School (MHH) and aims to foster cooperation through joint workshops and exchange programmes to develop novel strategies for vaccines and anti-infectives.

Scientists from the Indian Institute of Microbial Technology, Chandigarh, are collaborating on a joint project with partners from the Helmholtz Centre for Environmental Research in Germany.



## The spice of life: Bollywood in Berlin

Bollywood films have captured the heart of Germany. The musical love stories, their glamorous stars and elaborate dances have a loyal following, particularly in the country's capital. The German-Indian Film Club in Berlin is one of several groups that organises screenings of major Bollywood releases. Mainstream cinemas have integrated Indian classics into their programmes and DVDs and soundtracks of the films are sold around the town. The 2006 book *Hindi für Bollywoodfans* provides enthusiasts with information about their favourite films and celebrities as well as key Bollywood vocabulary. The shops "Bollywood Fun" and "Out of India" in Berlin sell saris, music and jewellery to devotees, who can now learn the dance moves of Aishwarya Rai in one of many dance classes held across the capital. They can then perform them at regular Indian-themed parties, such as India Club, or at one of the city's Asian-themed festivals.



## Trading places: Research across the borders

### Indian culture in Germany: from Ayurveda to Yoga

Indian culture has had an exotic influence on modern Germany. You can now eat in a range of Indian restaurants in most German cities, take part in a yoga course or indulge in some Ayurvedic alternative therapy – all are much-loved Indian imports. Indian people can therefore feel at home in Germany, not least because Indian religious groups are also provided with places of worship. Hindu temples are found in cities such as Berlin, Frankfurt am Main, Essen, Hamburg and Hanover – the Sri Kamadchi Ampal Temple in Hamm is the biggest Hindu temple in Europe. The annual 14-day festival celebrating the goddess Sri Kamadchi Ampal includes a procession of her statue around the city and each year attracts 15,000 worshippers and visitors alike.

In order to link activities between the two countries, the German-Indian Society (DIG) was founded in 1953. One of its cultural incentives is to teach young people from either country about the other in seminars and workshops. The DIG established the India Foundation in 2002 to further strengthen links in the areas of culture, politics, science and economics.

### Indian scientist: Dr Krishnaraj Rajalingam

Dr Krishnaraj Rajalingam is a perfect example of an Indian scientist who has successfully integrated into life in Germany both socially and professionally. He first visited Berlin in 1998, while studying for a degree in Life Sciences at Bharathidasan University, to work under Professors Thomas Meyer and Thomas Rudel at the Max Planck Institute for Infection Biology (MPIIB). “Things worked out,” he says, and he stayed at the MPIIB for six years, completing a doctorate and postdoctoral training. He was then invited to move to Würzburg, where at only 28 he started his own research team at the Institute for Medical Radiation and Cell Research (MSZ). He was subsequently selected for the German Research Foundation’s (DFG) highly competitive and prestigious Emmy Noether programme, which enables young scientists to establish their own research teams anywhere in Germany. Rajalingam names Professors Meyer and Rudel and MSZ’s Professor Ulf R. Rapp as his mentors and attributes much of his professional satisfaction in Germany to their support and the level of professionalism in their institutions. He recently moved with his research team to the Institute for Biochemistry II, part of the University of Frankfurt. Rajalingam finds the cooperation between Germany and India positive. “There is a long list of German scientists, Nobel laureates, who are role models for Indian students. India has a

huge pool of talented youngsters – it is important to maximise the interaction between the two countries.”

### German scientist: Prof. Dr Michael Kröning

Prof. Dr Michael Kröning is similarly emphatic about the Indo-German collaboration. He has been head of the Fraunhofer Institute for Non-Destructive Testing (IZFP) in Saarbrücken since 1990 and has worked together with leading scientific bodies in India for many years. This involvement earned him a Foreign Fellowship from the Indian National Academy of Science. The relationship between the countries is “a two-way street”, according to Kröning. “There are young people in India with great ideas and vision – both countries can learn a lot from each other.” His cooperation with India began on behalf of the BMBF on the topic of material technology. This led to an exchange of information and scientists from all sectors between the countries. Kröning himself spent much time in India, where he held lectures and events in conjunction with Indian partners on topics such as the progress of radio technology. He explains that in each cooperative research project “knowledge and application go hand in hand” toward the production of goods and services. An example is the IT-supported measurement technology firm (LUCID) he founded that currently has 55 members and is still growing.

▶  
Dr Krishnaraj Rajalingam has enjoyed a successful career as a scientist in some of Germany’s leading institutions. Prof. Dr Michael Kröning was commended for his involvement in science and research projects in India.





## The rate of exchange – India and Germany working and studying together

There are well-established scientific institutions working in tandem between India and Germany. They are involved in bilateral research and development projects and continue to invest in the next generation of leading scientists by championing exchange programmes between universities in both countries.

The number of Indian students enrolling in German universities in recent years has risen quicker than from any other country: by 50 percent between 1997 and 2006. More than 4,000 Indian students are currently studying and completing research at German universities; in 2006 alone the number of exchange students totalled 1,179. The DAAD (German Academic Exchange Service) is a leading educational organisation that promotes the transfer of young scientific minds by providing sponsorships and a cohesive support system. This is currently maintained in India through information centres in cities throughout the nation and a network of 27 personal tutors at 20 of the top universities. In a similar vein, the Alexander von Humboldt Foundation (AvH)

in Germany has funded a total of 1,531 promising junior scientists from India since 1953 – 19 of which have been awarded for their research achievements. The German Rectors' Conference (HRK) is involved with the Association of Indian Universities (AIU) to advance the educational exchange. The STC is also building on this Indo-German symbiosis. Institutions within its framework undertake joint projects in the following scientific areas: biotechnology, health, information technology, environmental technology, sustainable research, materials research, aerospace research, production technology and security research. Projects range in scope from the exchange of personnel between the international firms and educational institutions (PPP), to large-scale collaborations. German research institutions expanding their cooperation with India include the Max Planck Institute (which presently has 12 partner groups in India), the Helmholtz Association, the Fraunhofer Association, the Leibniz Association and the German Research Foundation, which is currently involved in increasing research efforts in nanotechnology.

### **“A New Passage to India”**

The initiative “A New Passage to India” is designed to encourage the exchange of students and academics of all subjects between Germany and India. Joint degree programmes will facilitate the exchange between the two nations, and include “double diplomas”, bi-national masters' programmes and “joint degrees”. Students will have contact with leading scientists and can receive guidance abroad through a support system. German graduates will have the opportunity to do internships in leading firms in India, to experience the Indian workplace and local culture. A Centre of Excellence in the field of engineering and environmental sciences will be set up in Madras at the Indian Institute of Technology (IIT), and there will be an exchange of students and professors between both countries. Annual funding of €4.3 million by the Federal Ministry of Education and Research will be allocated through the DAAD.

# Leading Indian and German firms are branching out across the continents

## Bosch in India

Bosch is one of Germany's best-known brands. For over a century it has been creating products and services that range from power tools and kitchen appliances to automotive development and industrial technology. The seed of Bosch India Ltd., the flagship of all Indian subsidiaries, was planted as early as 1922, but the foundation of a manufacturing section there in 1953 was when the growth of the company really took off. Bosch now has 11 manufacturing sites as well as four development centres in Bangalore, Jaipur, Ahmedabad and Nashik. It has around 18,000 Indian employees in all four main subsections: automotive technology, consumer goods and building technology, industrial technology, and engineering and IT services. The presence of the company in India has been beneficial to local employment in India as well as the environment. The managing director of Bosch India Ltd.,

Bosch India Ltd. is a subsidiary of a company that is a household name in Germany. It currently has around 18,000 employees in India.



V. K. Viswanathan, maintains this: "With this huge investment in technologies and products, we are committed to bringing clean, safe and economical technologies to the Indian market."

## SE Drive Technik GmbH (Ltd.) in Germany

The Indian company Suzlon is one of the leading developers and producers of wind turbine technology in the world. It started as a company of just 20 people in the Indian state of Gujarat in 1995, and now has state-of-the-art wind farms in Asia, North America and Europe, and an international team of employees that is 13,000 strong. The German subsidiary SE Drive Technik GmbH puts German scientific prowess to use in the development of this important environmental technology. Suzlon's main centre for development and production support is now based in Hamburg, where the firm's research and development activities are also coordinated. The manufacturing departments of the German branch are building wind turbine machinery, such as gears and engine parts, as well as offering maintenance services. The head of Suzlon, Tulsi Tanti, holds his German colleagues in high regard: "There are extremely well-qualified and experienced wind energy experts in Germany." Suzlon is a majority shareholder in the organisation REpower Systems, and together they started the joint venture "Renewable Energy Technology Centre GmbH" (RETC) in Hamburg, in order to cooperate strategically in the field of research and technical training. In addition to an international forum for development and education, an academy is planned. It will offer challenging technical courses and programmes in conjunction with current university curricula.



Indian Prime Minister Manmohan Singh, German Chancellor Angela Merkel and the German Federal Minister of Education and Research, Annette Schavan, were present in New Delhi on 30 October 2007 to witness the *Science Express* begin its journey.

## All aboard the *Science Express*

Winding its way through 56 Indian cities, the train called *Science Express* brought information about all forms of science to the people of India in an innovative, interactive way. Within seven months it covered 15,000 kilometres, from large cities such as Jodhpur across arid deserts to villages around Chennai. It attracted a total of 2.2 million visitors from all walks of life, rich and poor – the experience was open for everyone to enjoy.

On 30 October 2007, the German Chancellor Angela Merkel and Indian Prime Minister Manmohan Singh flagged off the *Science Express* train in New Delhi. The main purpose of the 400-metre-long moving exhibition, which chugged its way along railways the length and breadth of India, was to inspire interest in science and technology in the Indian people. It was also a physical representation of the ongoing cooperation between India and Germany in these areas, promoting what both countries had achieved

throughout the course of scientific history by celebrating the works of Albert Einstein and Indian mathematician Aryabhata, among others. The train was designed especially to inspire young people; it encouraged them to take interest in areas such as astrophysics, nano- and biotechnology through the fun, interactive multimedia displays in all of its 14 carriages. Scientists were on board to help engage people and explain the displays that ranged from images of the human brain to texts about black holes. They also provided aspiring scientists with information about the possibilities of studying and working in Germany. Government bodies and scientific organisations in Germany and India supported the project, namely the Max Planck Institute (MPG), the Indian Department of Science and Technology (DST) and the German Federal Ministry of Education and Research (BMBF).

### **The Indo-German Science and Technology Centre (IGSTC) – promoting scientific collaboration**

The IGSTC is an initiative through which the German Federal Ministry of Education and Research (BMBF) and the Indian Ministry of Science and Technology (MST) provide financial resources for joint research and development projects. The ministries founded the Centre on the basis of a joint statement issued on 23 April 2006 by the heads of government of both countries. The IGSTC is intended primarily to provide support for so-called “2+2 technology projects” (with the participation of science and industry on both sides in each case) on the basis of joint German-Indian invitations to tender for various fields of research. In addition, it is also to conduct joint workshops and symposia for German and Indian scientists.



# Addresses and Links

## Germany:

**Federal Ministry of Education and Research**  
[www.research-in-germany.de](http://www.research-in-germany.de)  
[www.bmbf.de](http://www.bmbf.de)

**Max Planck Society**  
[www.mpg.de](http://www.mpg.de)

**Fraunhofer-Gesellschaft**  
[www.fraunhofer.de](http://www.fraunhofer.de)

**Leibniz Association**  
[www.wgl.de](http://www.wgl.de)

**Helmholtz Association**  
[www.helmholtz.de](http://www.helmholtz.de)

**German Rectors' Conference (HRK)**  
[www.hrk.de](http://www.hrk.de)

**German Research Foundation (DFG)**  
[www.dfg.de](http://www.dfg.de)  
[www.dfg.de/india/](http://www.dfg.de/india/)

**Alexander von Humboldt Foundation**  
[www.humboldt-foundation.de](http://www.humboldt-foundation.de)

**German Academic Exchange Service (DAAD)**  
[www.daad.de](http://www.daad.de)  
[www.daaddehli.org](http://www.daaddehli.org)

**International Bureau of the BMBF**  
[www.internationales-buero.de](http://www.internationales-buero.de)

**International Co-operation in Research and Education**  
[www.internationale-kooperation.de](http://www.internationale-kooperation.de)

**Kompetenznetze Deutschland**  
[www.kompetenznetze.de](http://www.kompetenznetze.de)

**Invest in Germany**  
[www.invest-in-germany.com](http://www.invest-in-germany.com)

**Embassy of India, Berlin**  
[www.indischebotschaft.de](http://www.indischebotschaft.de)

## India:

**Department of Science and Technology**  
[www.dst.gov.in](http://www.dst.gov.in)

**Department of Scientific and Industrial Research**  
[www.dsir.gov.in](http://www.dsir.gov.in)

**Department of Biotechnology**  
[www.dbtindia.nic.in](http://www.dbtindia.nic.in)

**Indian Institute of Science**  
[www.iisc.ernet.in](http://www.iisc.ernet.in)

**Indian Institute of Technology**  
[www.iitd.ac.in](http://www.iitd.ac.in)

**Global Innovation and Technology Alliance**  
[www.gita.org.in](http://www.gita.org.in)

**German Embassy New Delhi**  
[www.new-delhi.diplo.de](http://www.new-delhi.diplo.de)

**Goethe Institute (Max Mueller Bhavan) in India**  
[www.goethe.de/ins/in/lp/deindex.htm](http://www.goethe.de/ins/in/lp/deindex.htm)

**Indo-German Science Circle**  
[www.science-circle.org](http://www.science-circle.org)

## Imprint:

**Publisher and Editor:**  
Federal Ministry of Education and Research  
Hannoversche Strasse 28–30  
10115 Berlin  
Germany  
Tel: + 49 (0) 1888 570  
Fax: + 49 (0) 1888 575 516  
Email: [information@bmbf.bund.de](mailto:information@bmbf.bund.de)  
[www.bmbf.de](http://www.bmbf.de)

**Person responsible according to German Press Law:**  
Dr Christian Stienen

**Creative Conception, Copy and Layout:**  
Scholz & Friends Agenda

**Note:**  
Unless specified otherwise, all facts presented in these pages relate to the most up-to-date information available as of August 2008, the copy deadline. However, the publisher takes no responsibility for the accuracy of the information.

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