

INTERNATIONALIZATION STRATEGY 2017–2022

Helmholtz Association of German Research Centres



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FOREWORD



Dear readers,

Science is globally networked. This means that internationalization is of tremendous importance to the Helmholtz Association. It is only through lively cooperation across national borders that we can fulfil our mission of helping provide answers to important societal questions. In the coming years, we will therefore continue to promote internationalization with the greatest possible emphasis.

Our internationalization strategy is closely linked to the goals of the German Joint Initiative for Research and Innovation and the German federal government's strategy for internationalizing education, science, and research. We make a decisive contribution to Germany's further development as a hub of research and innovation. The further development of strategic partnerships with excellent international partners is one of our major goals. To this end, we have introduced new funding instruments aimed at international cooperation and will soon open our fourth international office in Israel. In times of turbulent foreign policy, science takes on special significance. One of our tasks as a research organization is to take science diplomacy seriously and vigorously champion values such as scientific freedom. While remaining aware of the global perspective, we will increasingly advocate for European cohesion, contributing to the strengthening of the European Research Area.

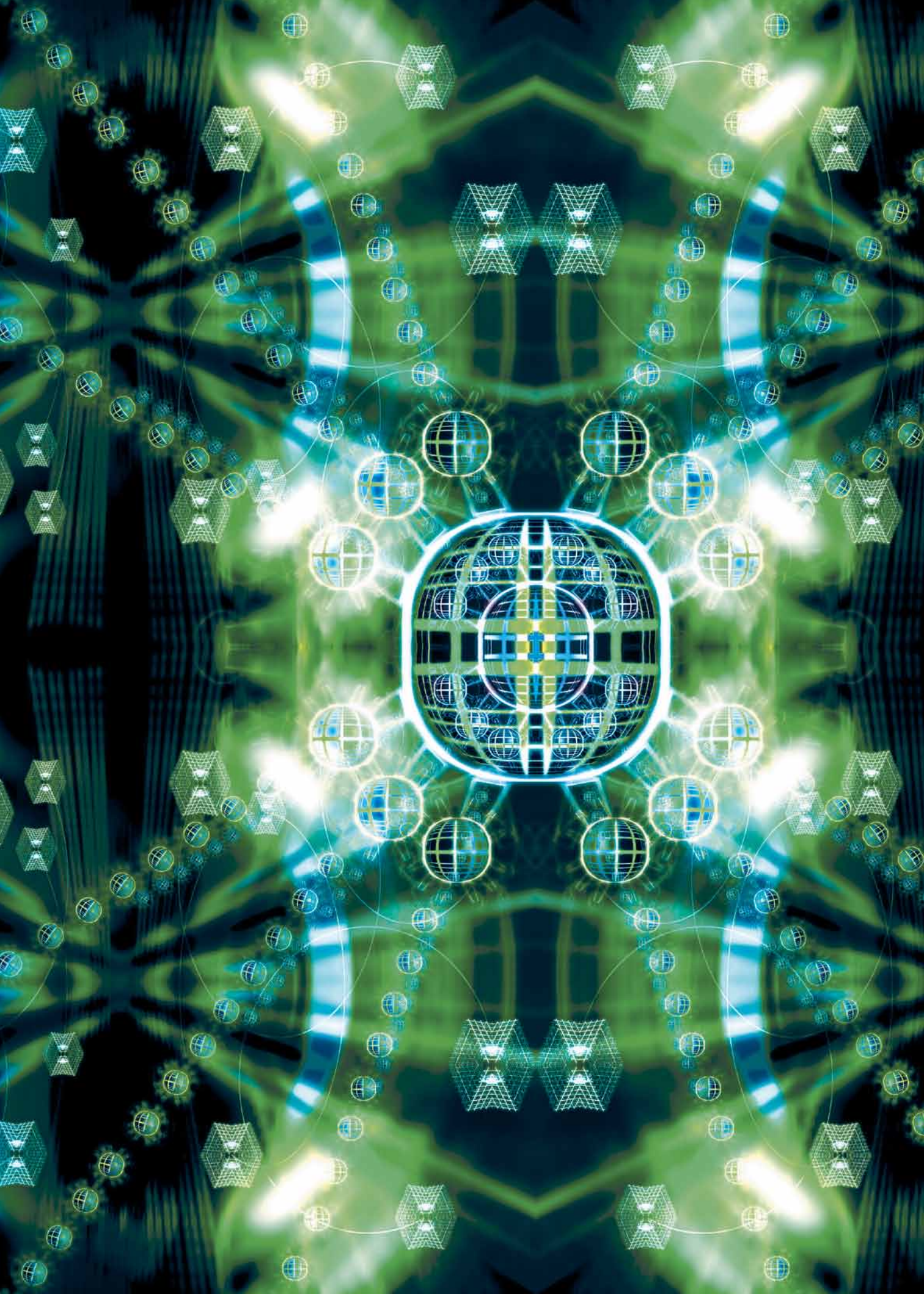
Excellent scientific cooperation ultimately occurs when people come together. I know from personal experience how exceptionally important the international perspective is for successful science and for each scientist's individual career path. International recruitment and talent management as well as lively international exchange among young scientists are of central importance to the success of our work. That is why we create outstanding conditions for creative collaboration between the greatest minds in the world.

This internationalization strategy addresses the central areas of activity for the coming years. All of the Helmholtz Centers were involved in its development. I would like to express my sincere thanks to all who participated for their work, and wish you, dear readers, a fascinating read.

Sincerely,



Otmar D. Wiestler





INTRODUCTION

As a research organization with a national mission, the Helmholtz Association develops solutions for the pressing problems of our time. Great societal challenges such as climate change, future energy supply, combating widespread diseases, and dealing with Big Data are of international relevance. They can only be addressed globally, with long-term commitments and a coordinated, systematic provision of resources.

The 18 Helmholtz Centers are already highly active in international cooperation and are globally renowned research institutions, attracting scientists from all over the world. Their research infrastructure – a distinguishing feature of the Helmholtz Association – plays an important role in making them so attractive and offers an outstanding platform for international collaboration at the highest level. Around 5,500 visiting scientists from all over the world are currently using the Helmholtz Association's large-scale facilities and research infrastructure.

The objective of German science organizations and grant authorities is to deepen international, and particularly European, collaboration. Internationalization takes a central position in the Joint Initiative for Research and Innovation (Pact for Research and Innovation). In early 2017, the German federal government also published its strategy for internationalizing education, science, and research, providing an important boost to the further development of international collaboration. The Helmholtz Association's internationalization strategy specifically addresses the areas of activity formulated by the federal government and will actively contribute to their implementation.

Scientific collaboration across borders is an essential part of the Helmholtz Association's mission, as it is an indispensable condition of scientifically excellent and strategically relevant research. The Helmholtz Centers are world-renowned research institutions in their respective fields. They attract talented scientists from around the globe and provide creative minds with outstanding conditions for their work and research. Moreover, they create numerous international cooperation opportunities for them using the excellent Helmholtz research infrastructures and the unique interdisciplinary environment at the Helmholtz Centers. The Helmholtz Association's international cooperation makes an important contribution to strengthening Germany's position as a globally renowned hub of scientific excellence.

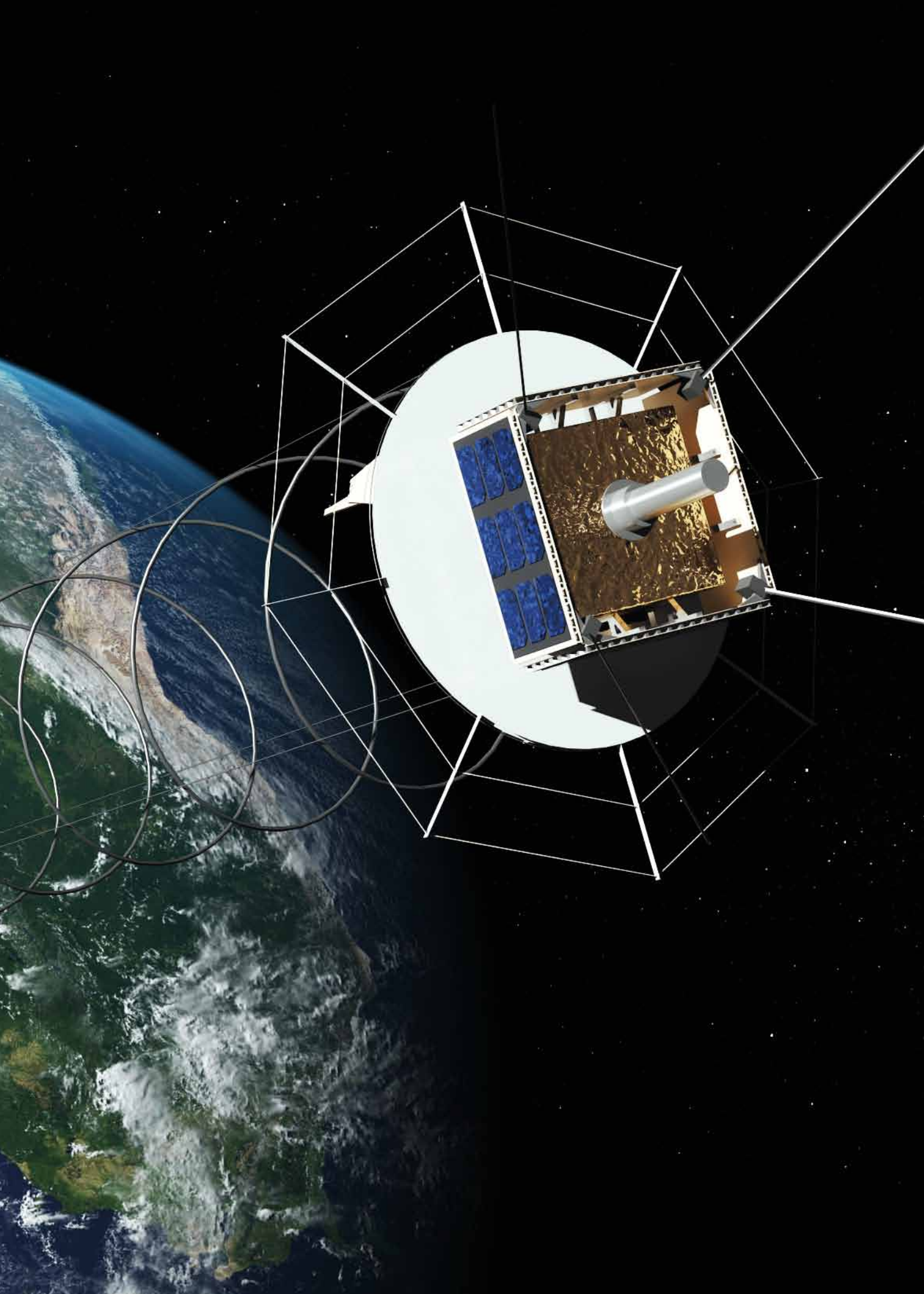
In order to expand its international position, the Helmholtz Association has defined four strategic objectives that are supported with new measures and funding instruments.

- Expand international strategic partnerships
- Conduct cutting-edge research at the European level
- Attract talent from all over the world
- Science diplomacy – building bridges through research

The new strategy has initially been planned for a term of five years (2017-2022). However, the Helmholtz Association regularly analyzes dynamic developments at the European and international levels and adapts its existing strategy to changing requirements and needs as necessary.

The Helmholtz Association's Executive Committee will evaluate this strategy on a regular basis and will continuously discuss and develop it with the 18 research centers, using also the expertise of the "working group on international affairs".





OBJECTIVE 1: EXPAND INTERNATIONAL STRATEGIC PARTNERSHIPS

The Helmholtz Association maintains scientific cooperation of strategic relevance with numerous top-flight institutions abroad. It is systematically expanding these efforts in order to work with the best researchers and provide them with access to a unique infrastructure.

The Helmholtz Association develops and maintains international research cooperation all over the world. The aim is to complement these efforts in a targeted manner at the overarching Helmholtz level through partnerships with top-flight international institutions. In addition to scientific excellence, our large-scale research infrastructure offers unique institutional features that enhance international profile development. International cooperation also provides vital impulses and contacts for talent promotion. Strategic focus countries include the US, Israel, Canada, Japan, Russia, France, the United Kingdom, and China, where many of the Helmholtz Centers are involved in long-standing and intensive, successful cooperation projects with outstanding research institutions. In order to coordinate such cooperation projects in important partner countries for the long term, tailored strategies for selected countries, such as China, have been planned. The implementation of these country-specific strategies will be supported and supervised by experts from the Association.

International cooperation: Collaboration with the Chinese Academy of Sciences

In 2012, the Helmholtz Association initiated a program to fund joint research groups together with the Chinese Academy of Sciences (Helmholtz-CAS Joint Research Groups – HCJRG). A total of 15 joint groups were funded for three years respectively by the Initiative and Networking Fund to the sum of 5.36 million euros. The research conducted by the HCJRG covered all six of the Helmholtz Association's Research Fields.

The GSI Helmholtzzentrum für Schwerionenforschung in Darmstadt and the Deutsches Elektronen-Synchrotron DESY in Hamburg have been working closely with partners at institutes from the Chinese Academy of Sciences for more than 40 years: For instance, GSI has been working with the CAS Institute for Modern Physics in Lanzhou, and DESY primarily with the Institute of High Energy Physics (IHEP) in Beijing. A group of about

70 Chinese scientists forms a permanent research group at DESY. Forschungszentrum Jülich is also involved in numerous collaborations with CAS. One outstanding example is the “Joint Institute for Functional Materials and Electronics”, run by Forschungszentrum Jülich and the Shanghai Institute of Microsystem and Information Technology, at which five research groups conduct research and provide training under a scientific board made up of an equal number of members from each partner institution.



Science and research are highly dynamic in both the national and international contexts. That is why the Association continuously engages in developing further strategic opportunities for cooperation. New alliances generally arise from existing successful interactions. Targeted Helmholtz activities, such as delegation visits, scientific events, and joint initiatives with German consulates and embassies abroad, make a significant contribution to initiating these alliances. In this context, greater coordination of activities with other German science and mediating organizations around the world plays an important role. For example, the Helmholtz Association plans to intensify its cooperation with the German Houses of Research and Innovation (DWIH). It will use DWIH's event and information formats as platforms to increase visibility abroad and network with important partners at the relevant DWIH locations.

Joint publications as an indicator of international networking

Besides the great many bilateral and multilateral collaborations, the number of international co-publications underlines the high degree of internationalization at the Helmholtz Centers. In 2016, the Helmholtz Association's research centers published more than 14,000 papers, 60% of them jointly with foreign partners. Colleagues from more than 150 countries contributed to Helmholtz publications. Of these, the US was particularly prominent, with US institutions involved in 31% of international publications. The United Kingdom was second at 23%, followed by France (19%), Italy (13%), the Netherlands, and Spain (each at around 11%). China and Russia continued to be strong publication partners as well; they were involved in 10% and 9% of international publications, respectively. This performance indicator is regularly tracked within the Helmholtz Association.

Research infrastructures as platforms for international cooperation

The Helmholtz Association's outstanding research infrastructures serve as a crystallization nucleus and platform for international cooperation and cutting-edge research. Examples include Helmholtz-Zentrum Berlin's EMIL laboratory, Karlsruhe Institute of Technology's Energy Lab 2.0, the earth observation satellites of the German Aerospace Center and the GFZ German Research Centre for Geosciences, and the IPP's Wendelstein 7-X stellarator. The number of international visiting researchers who use the Helmholtz Centers' large-scale research facilities and infrastructure is currently at about 5,500 per year. We assume that this trend will continue into the future, greatly assisted by the Association's new internationally operated large-scale facilities.

The Helmholtz Centers' participation both in Germany and abroad in facilities such as the European XFEL at DESY, FAIR at GSI, and Forschungszentrum Jülich at the European Spallation Source in Lund is a further example of the international reputation-building effect and appeal of large research infrastructures. At all these facilities, Helmholtz scientists actively participate in the conceptual design and development of the research infrastructures and benefit from exchange with colleagues from all over the world.

Supporting international cooperation through international offices

The international offices are important anchors of international cooperation for the Association. The offices in Brussels, Moscow, and Beijing support the Helmholtz Centers in the initiation and maintenance of their contacts and partnerships. They provide information about politics, the labor market, academic offerings, and research projects in their respective countries. Through their important role as representatives of the Helmholtz Association, they enhance the visibility of the Association abroad.

The offices also have specific tasks which are derived from their local contexts. The Moscow office created the "Helmholtz-Wintergespräche" ("Helmholtz Winter Discussions") event format in order to initiate and establish new strategic networks in the areas of science and politics. The annual event brings together high-ranking representatives of the sciences, politics, and business to discuss current issues and innovative cooperation

concepts concerning the two countries. Helmholtz's Brussels office represents the Association and its Research Fields in Europe. The Brussels office advises regarding the EU Research Framework Programme, work programs, and tenders at the various EU levels (Commission, Council, and Parliament). It also supports the Helmholtz Centers in obtaining EU funding. The Beijing office, together with the Office of China Postdoctoral Council (OCPC), currently coordinates a new program to fund young scientists. The attractive framework conditions of the program convince some of the best young Chinese scientists to conduct research visits to Helmholtz Centers. Moreover, sustainable cooperation structures are to be established with leading Chinese universities and research institutions through this program.

In 2018, a fourth Helmholtz international office is to be opened in Israel. Israel has always been an important partner country for the Helmholtz Association. For years, numerous Centers have maintained successful cooperation projects with outstanding research organizations and institutions there. The new office in Tel Aviv is intended to intensify cooperation with this impressive research hub, create optimal framework conditions for joint research projects with partners in Israel, and generally enhance the Helmholtz brand there.

Financing international cooperation through the Initiative and Networking Fund

At the Helmholtz Association level, the instruments of the Initiative and Networking Fund make an important contribution to funding cooperation with top-level international scientists and institutions. For instance, these funds are used to establish and continue strategic partnerships with outstanding international research institutions. The funding also supports young scientists and enhances the transfer of knowledge and technology to business and society. In this way, the Helmholtz Association also promotes progress towards achieving the objectives of the German Joint Initiative for Innovation and Research.

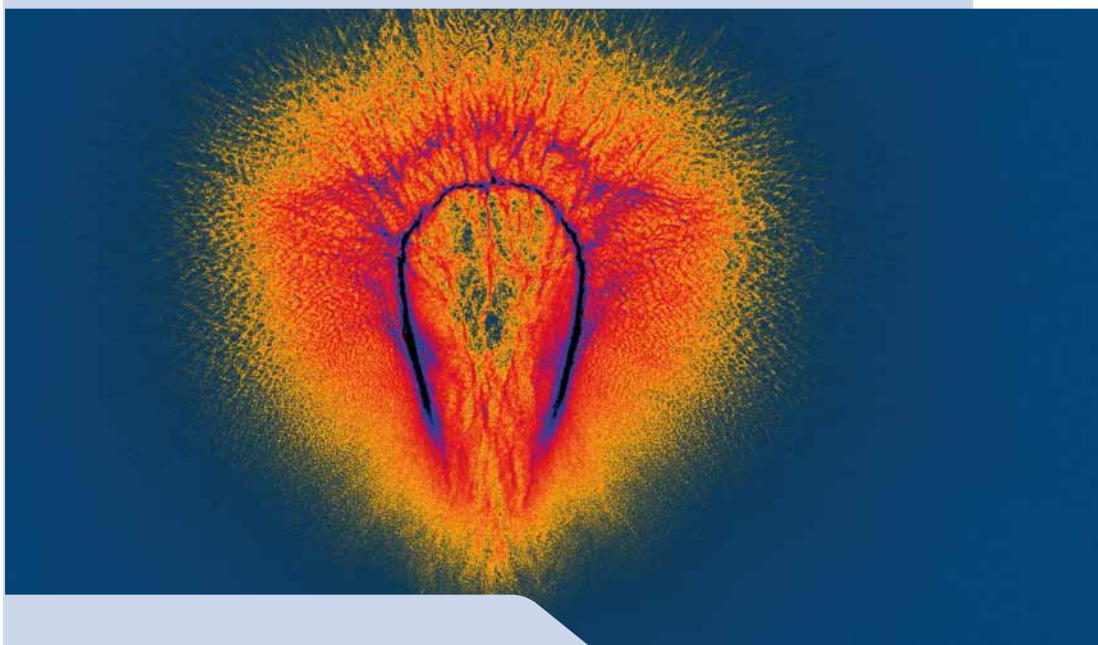
The set of instruments in the Initiative and Networking Fund can be flexibly adapted to the needs of the Helmholtz Centers. As a cross-cutting topic, internationalization is of particular strategic relevance to all four pillars of the current Initiative and Networking Fund (2017-2021).

International Labs

A new funding instrument will be added to the Initiative and Networking Fund in 2017 in order to set up "international labs" with strategic partners all over the world. The labs are to sustainably enhance strategic international cooperation regarding highly innovative, forward-looking research topics with excellent partner institutions. It is desirable that multiple Centers or even entire Research Fields participate in the respective projects. The joint use of research infrastructures is an essential element in the international labs, as is promoting talent and young scientists.

Helmholtz International Lab: WHELMI

One example of an international lab is the Weizmann-Helmholtz Lab for Laser Matter Interaction (WHELMI) pilot project in Israel. It was founded in a joint effort with Israel's Weizmann Institute of Science and the Helmholtz-Zentrum Dresden-Rossendorf (HZDR) and opened in Rehovot in April 2017. It is financed using funding provided by the Initiative and Networking Fund, the HZDR, and the Weizmann Institute. WHELMI is characterized by the ideal complementary interaction of the Weizmann Institute's expertise in electron acceleration and the HZDR's competencies in proton and ion acceleration. The project creates a bridge between basic and applied research. The results will have applications in cancer research (in radiation therapy, for example). The exchange of scientists within mobility programs and the promotion of young scientists are further cornerstones of the cooperation efforts.



AT A GLANCE

New measures, initiatives, and funding instruments for Objective 1:

- Targeted initiation and expansion of partnerships with top-flight institutions all over the world
- Tailored country strategies, starting with China
- New Helmholtz international office in Israel
- New “International Labs” funding instrument in the Initiative and Networking Fund



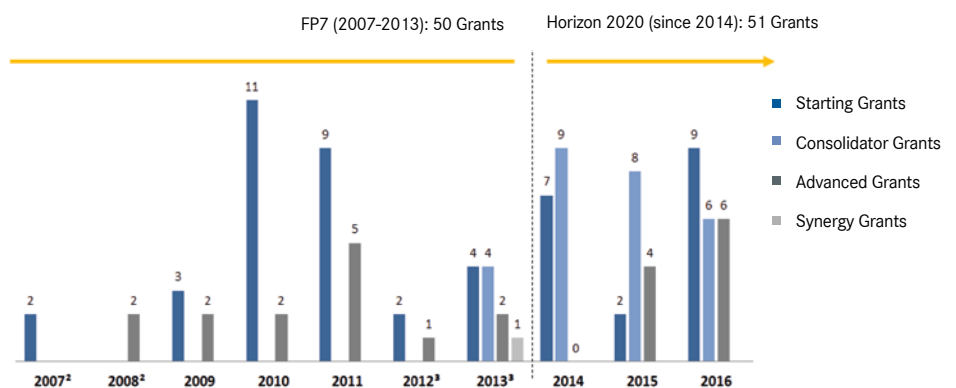
OBJECTIVE 2: CONDUCT CUTTING-EDGE RESEARCH AT THE EUROPEAN LEVEL

The Helmholtz Association actively engages in European partnerships. Its Centers use the synergies created through working with European research institutions and coordinate strategically important joint and flagship projects. The Helmholtz Association uses innovative ideas, outstanding minds, and powerful infrastructures to enhance the efficiency and cohesion of the European Research Area.

A dense network of collaborations connects the 18 Helmholtz Centers to their European partners. The multifaceted instruments for European research funding bring them to life, especially through the joint projects of the EU Research Framework Programmes and infrastructure projects that support cooperation between Europe’s most important research infrastructures. The objective is to create an even stronger thematic networkingsystem with outstanding partner organizations in Europe over the coming years. In particularly relevant areas, joint research programs are to be developed and synergies used in a more targeted manner. Examples of this include Cancer Core Europe, the European Energy Research Alliance, and the EU’s “Joint Programming” initiative on the issue of neurodegenerative diseases, which the German Center for Neurodegenerative Diseases is part of.

The European Research Council (ERC) provides the Helmholtz Centers with an important opportunity to compete and assert themselves on the European market:

Development Helmholtz ERC-Grants 2007-2016¹



¹ This overview takes into account only those grants acquired directly through Helmholtz.

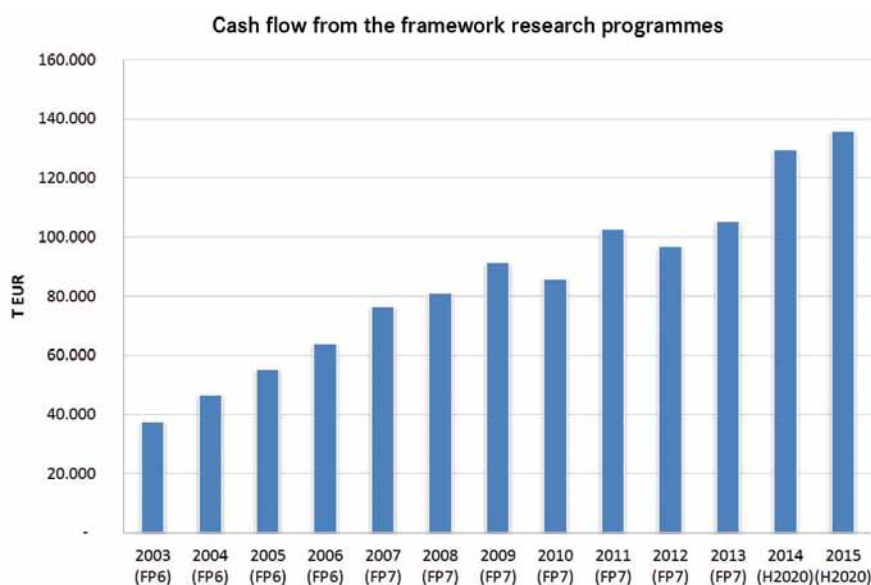
² No call for Advanced Grants in 2007. / No call for Starting Grants in 2008.

³ First call for Synergy Grants in 2012 (and none from 2014-2016), first calls for Consolidator Grants in 2013.

The ERC Recognition Award allows the Initiative and Networking Fund to give Helmholtz applicants for ERC Starting and ERC Consolidator grants the opportunity to re-submit their applications. Since 2011, the Brussels office has offered internal ERC interview coaching to systematically prepare candidates for the selection process. Some Centers also provide their own ERC training and offer incentives to structure the grant in a more sustainable way, making the application process more attractive. For example, the Helmholtz-Zentrum München offers the recipients of ERC grants a tenure-track option in order to establish a long-term commitment to the Center on the part of the researchers.

Participation in the European Research Framework Programme

European cooperation is gaining in importance for the Helmholtz Centers. This is evidenced by the ever-growing participation of Helmholtz Centers in EU projects as well as their increasing income from EU funding:



As a whole, the Helmholtz Centers are among the strongest participants in the EU Framework Programme and maintain a position in the top three. In order to further enhance their visibility at both the European and the international level, the Helmholtz Centers intend to intensify their role as coordinators of important joint projects and ESFRI and FET flagship projects. To support this development, it is of high importance that the Helmholtz Research Fields strategically identify EU priorities. The Association will also use its Initiative and Networking Fund to provide financial support for researchers planning to submit an application for coordinated projects.

In order to further enhance the impact of EU Framework Programmes, the Association is to work towards a more efficient involvement of international partners by strengthening international co-financing agreements with countries such as the US and Canada.

EU-POLAR NET: An international consortium funded by Horizon 2020

EU-PolarNet – “Connecting Science with Society” pools the scientific and operational competencies of 22 research institutions from 17 European countries for the very first time. This makes the consortium the largest of its kind anywhere in the world in the field of polar research. One objective of the program is to enhance cooperation between participating institutions and international partners in the two Polar Regions and pave the way for joint projects. Another is for the consortium to develop an integrated European polar research program for the Arctic and the Antarctic. Representatives of politics, business, science, and local populations were involved in the conceptual design of this polar research strategy from the very beginning. This gives rise to a research program whose scientific results are of immediate relevance and benefit to European society and its economy. Another hugely important task for EU-PolarNet is advising the European Commission on all questions concerning the Polar Regions and working closely with the relevant departments. Cooperation with non-European countries involved in polar research is important to the consortium as well. The EU Horizon 2020 research framework program supports the initiative with a total funding amount of two million euros for its five year duration. The Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, is tasked with the coordination of EU-PolarNet.



Helmholtz presence in Brussels

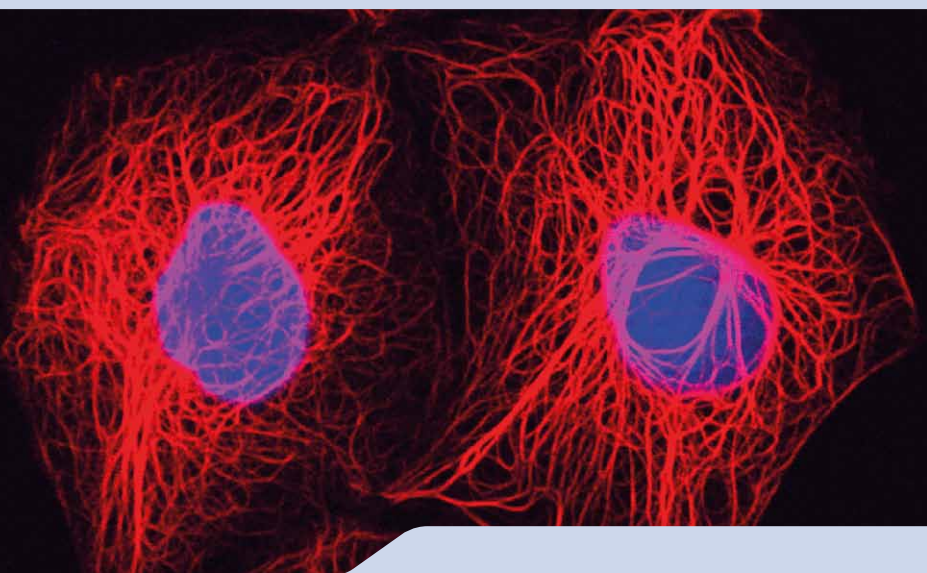
The office in Brussels plays a central role in the coordination and enhancement of the Helmholtz Association’s European cooperation. The office works to increase the Centers’ opportunities to optimally use the European Research Framework Programmes. It also works to ensure that the programs’ framework conditions and the Helmholtz Association’s research are ideally compatible. Another objective of the Brussels office is to create stronger linkages between the most important European initiatives and Helmholtz activities. Its goal is also to further intensify exchange with European institutions and enhance the presence of Helmholtz representatives in European committees.

“Helmholtz European Partnering”

The Helmholtz Association has made a long-term commitment to cooperation with the new EU member states and European countries and regions lacking in research infrastructure. The Association will actively pursue the systematic use of the structural fund and support Helmholtz cooperation with these countries through a new instrument in the Initiative and Networking Fund. The program “Helmholtz European Partnering” was launched in 2017. It is aimed at partnering activities with Southern, Central, and Eastern Europe. The idea behind this is to establish a strategic partnership between a Helmholtz Center and a research institution with a complementary focus in one of these countries. This will contribute significantly to the further development of the scientific system in question, and ultimately increase performance for Europe as a whole in the areas of research and innovation, creating the foundation for international competitiveness in the future.

HELMHOLTZ EUROPEAN PARTNERING

The Helmholtz European Partnering Program’s pilot project is a collaboration between the German Cancer Research Center and the Greek National Hellenic Research Foundation (NHRF). The German Cancer Research Center and the National Center for Tumor Diseases, which is its translation center, provide their partners in Greece with support during the construction of the Athens Comprehensive Cancer Center (ACCC). Joint oncological research projects with colleagues at various Athens clinics and institutes form the heart of the cooperation, which includes extended visits to the German Cancer Research Center by scientists from Greece. At the same time, the German Cancer Research Center will send experts to Athens to assist with the development of management and governance structures, for instance. Furthermore, structures for translational and clinical research are to be developed, including a Center for Clinical Studies, a national cancer register, various biobanks, and a national cancer information service. These efforts will result in the joint establishment of the first integrated cancer center in Greece.





AT A GLANCE

New measures, initiatives, and funding instruments for Objective 2:

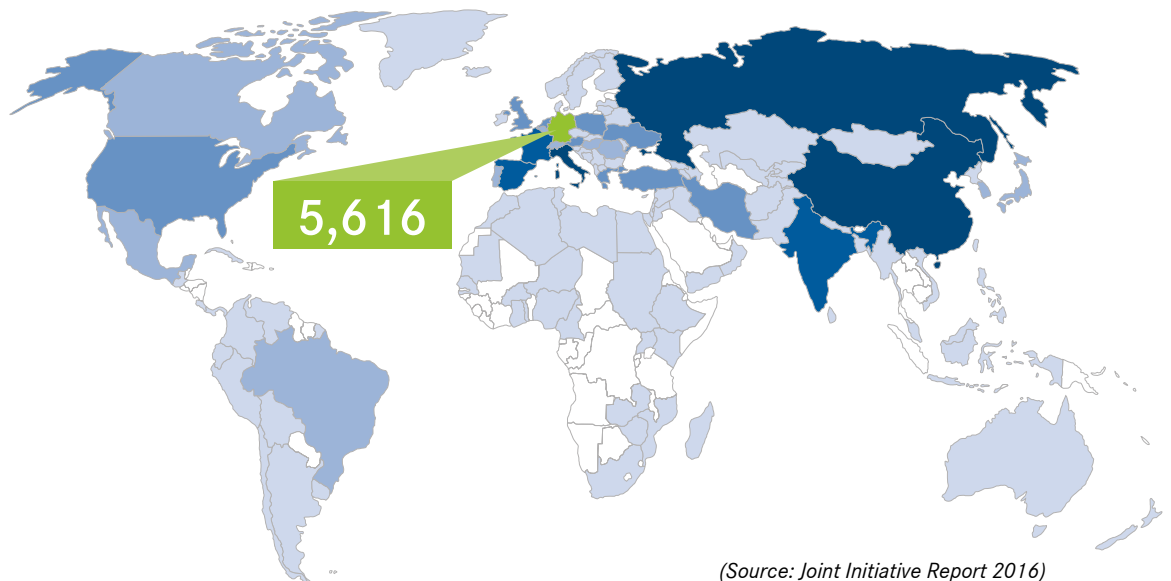
- Expansion of the position of Helmholtz Centers in the European Framework Programmes
- Enhanced support for Centers submitting applications to EU funding programs (ERC, joint and flagship projects)
- Development and expansion of thematically focused European excellence networks
- Intensification of EU networking efforts on the part of the Brussels office
- New “Helmholtz European Partnering” instrument in the Initiative and Networking Fund



OBJECTIVE 3: ATTRACT TALENT FROM ALL OVER THE WORLD

The Helmholtz Association positions itself as an attractive cooperation partner and employer for talent and top-flight researchers from all over the world, especially outstanding female scientists.

The international exchange of ideas and technologies drives progress and continued high-level research performance. In order to systematically support and foster this, diversity in personnel is an explicit goal of the Association. The contributions of international talent help to enhance Germany's position as an internationally renowned innovation hub. In 2016, around 14.5% of Helmholtz scientists came from abroad (a total of 5,616):



- 1 - 50
- 50 - 100
- 100 - 200
- 200 - 400
- 400 and more

The number of foreign scientists within the Helmholtz Association is to continue to increase over the coming years. An important prerequisite for such an increase, in addition to the Helmholtz Centers' scientific excellence, is the interdisciplinary, international environment and the welcoming culture at the Centers. Supporting measures are, amongst others, the "Welcome Offices/Guest Offices" and "Dual Career" opportunities already present at many locations, as well as the "Helmholtz Career Development Centers for Researchers", for which the Initiative and Networking Fund issued a first call in 2017.

The Potsdam Welcome Center at Telegrafenberg

In addition to the Helmholtz Center Potsdam GFZ German Research Center for Geosciences and the Alfred Wegener Institute in Potsdam, other research institutions and universities are also based at this location. Together, they attract scientists from all over the world. In order to assist incoming international researchers in adapting to their new environment, the research institutes jointly operate a Welcome Center with offices at the Potsdam campus and at Telegrafenberg. There, foreign scientists and their families have access to extensive information, personal consulting, and extensive support services to make their transition into life in Potsdam/Berlin as smooth as possible. For example, the experts at the Welcome Center assist in finding housing, registering children for school, filling out forms and visiting government offices. Moreover, the Welcome Center introduces the visiting scientists to a new social network through excursions and contact with other researchers. International staff is thus sustainably integrated into the respective research center.



Recruiting talent and promoting young scientists

Within the Initiative and Networking Fund, exchange programs and recruiting instruments are given top priority in an effort to attract international talent to the Association on a long-term basis. One of the focuses of the Helmholtz talent management strategy is the active diversification of staff, especially with respect to gender and origin.

In 2012, the Recruitment Initiative was launched with the support of the German Federal Ministry of Education and Research, with the aim of attracting outstanding researchers from abroad. Primary attention is given to excellent female international scientists, who are to assume leadership positions. Over the last few years, the Helmholtz Recruitment

Initiative has attracted 25 highly qualified female researchers, accounting for 61% of the Helmholtz Association's appointments. A new call cycle for the Recruitment Initiative will start in 2018.

The Helmholtz Centers are also heavily engaged in making professional and family life compatible. For example, they assist with finding child care, either through cooperation contracts with child care facilities near the Center in question or by operating their own child care facilities (as is the case at HZG, KIT, MDC, Helmholtz-Zentrum München, and Forschungszentrum Jülich).

Recruiting at KIT

KIT has already successfully tested the Helmholtz Recruitment Initiative and used it effectively to attract highly qualified scientists. Two women and four men were appointed to professorship positions covering a wide range of research topics with an interdisciplinary orientation. KIT intends to develop and establish an international recruiting strategy modelled on the Helmholtz initiative for 2018/19.

In recruiting top-flight international researchers, the Helmholtz Centers find themselves in competition with other scientific institutions. KIT is meeting this challenge with strategic personnel marketing that uses central services to support KIT's scientific and administrative institutions in attracting personnel. This approach includes systematic participation in regional, national, and international recruiting fairs, offering graduate, doctoral, or postdoctoral scholarships, and providing internships and qualification work.

Helmholtz International Research Schools, jointly run by the Helmholtz Centers and foreign research institutions, are an important instrument for promoting international talent and recruiting young scientists. They offer structured doctoral training in areas of joint scientific interest. The doctoral researchers receive outstanding subject-matter training and, at the same time, personal development and qualification training that further polishes their qualification profile. One example is the "SignGene" German-Israeli Helmholtz Research School, established as a result of cooperation between the Max Delbrück Center and two outstanding universities in Israel. This school currently trains 17 doctoral researchers from Germany and Israel.

Enhanced networking

The Helmholtz International Fellow Award contributes to intensifying existing cooperation efforts between Helmholtz Centers and foreign research institutions. Since 2012, the award has been conferred on outstanding scientists from abroad who have distinguished themselves with their work in Helmholtz-relevant fields or in science management. Many Helmholtz International Fellow Award winners have already worked closely with Helmholtz Centers. Along with the award, Helmholtz International Fellows receive an invitation to visit one or more Helmholtz Centers for an extended period of time. Their task is to initiate new cooperative efforts or expand existing ones. The Helmholtz International Fellows assume the role of ambassadors and intermediaries. They also make valuable contributions to enhancing the

Association's visibility and strengthening the international Helmholtz network in their countries of origin and at their home institutions.

Foreign scientists who have visited a Helmholtz Center or have returned home following a longer term of employment with Helmholtz are also important target groups for the Association's efforts to develop an international "ambassador pool". The benefits are multifaceted: At their home institutions, the "Helmholtz alumni" can act as points of information and contact for (young) scientists who are considering spending time in Germany generally or at a Helmholtz Center in particular. They can also initiate new cooperation projects with Helmholtz partners or continue to expand existing ones. Thus, the development of a specific "Helmholtz alumni" program for these groups is an important goal.

Enhancing the 'Helmholtz brand'

In order to recruit the brightest minds from around the world, Germany must be perceived as an outstanding research environment – and the Helmholtz Association as an attractive employer. Over the next few years, marketing campaigns focused on different target groups will therefore contribute to a continued increase in Germany's international attractiveness as a hub of research, as well as the visibility of and familiarity with the 'Helmholtz brand'.

Moreover, Helmholtz Association experts serve in various capacities on the scientific committees of international consortia, as quality assurance reviewers and coordinators for European and international networks and multilateral projects, or as members of top-level advisory and decision-making committees. The Helmholtz Association's presence at international conferences (science fairs, etc.), networking events, and career fairs – such as GAIN's annual meeting in the US – also contributes to enhancing the Helmholtz brand and should thus be intensified. In this context, it is also of great importance that the Association is placed among the top positions in internationally recognized research rankings.



AT A GLANCE

Specific new measures, initiatives, and funding instruments for Objective 3:

- Program to expand the ambassador role of Helmholtz International Fellows and enhance networking with international (visiting) scientists leaving Germany (Helmholtz alumni program)
- Development of International Research Schools
- International Recruitment Initiative for excellent female researchers
- Target group-oriented marketing campaigns and accompanying measures to enhance the “Helmholtz” brand





OBJECTIVE 4: SCIENCE DIPLOMACY – USE RESEARCH TO BUILD BRIDGES

The Helmholtz Association supports the development of effective scientific systems worldwide. Its global networking and its position as an intermediary enables the Association to make an important contribution to German science diplomacy.

The Helmholtz Association stands for excellent science in the service of society. International cutting-edge research offers many opportunities for cooperation with both scientific and diplomatic aspects: In times of political tension in particular, science can build valuable bridges, establish trust and credibility, and serve as an important connecting element. For instance, the development of long-term research projects with partners abroad and in particular the promotion of young scientists provide evidence of mutual trust. Scientific partnerships can contribute significantly to keeping diplomatic channels open and supporting dialogue. Science thus operates in a pre-political space. It makes decisive contributions to the training of future scientific experts and the development of resilient long-term (political) relationships. This is in the interest of Germany in many ways and for the long term.

Bringing science and foreign policy closer together

Research and diplomacy have a close, multifaceted relationship. Germany's internationally influenced research landscape offers optimal conditions for expanding the interplay between science and foreign policy. Existing diplomatic relationships can make decisive contributions to arranging effective cooperation between researchers at home and abroad ("diplomacy for science"). Scientific partnerships can also become springboards for improved diplomatic relations ("science for diplomacy").

The Helmholtz Association will, in the future, assume greater responsibility in this area of foreign policy with appropriate measures and instruments. Outstanding research with systematically selected partners abroad will create opportunities for both challenging scientific work and diplomatic connections. Building on experiences such as those in Central Asia and the Middle East, scientific partnerships will be used to create trust and open new opportunities for cooperation. A current example is the SESAME project in Jordan.

SESAME

SESAME stands for “Synchrotron-light for Experimental Science and Applications in the Middle East”. It is a synchrotron radiation source in Jordan, constructed, among other things, from former components of Berlin’s BESSY I storage ring, and inaugurated in May 2017. The system is the first of its kind in the Middle East. Under the auspices of UNESCO, Egypt, Iran, Israel, Jordan, Pakistan, the Palestinian territories, Turkey, and Cyprus joined together to build and operate it. This means that, in addition to performing its scientific tasks, it also aims to promote international understanding in the Middle East. The establishment of the first large-scale research institution in the region will create outstanding opportunities for natural and life sciences research in the Middle East. SESAME’s goal is also to develop suitable solution approaches to many of the region’s pressing questions, such as the search for improved renewable energy system materials. This means that SESAME will make an important contribution to sustainable economic and social development in the Middle East and promote political stability in the region. DESY is the Helmholtz Center primarily involved in this project.



Freedom of knowledge can be enhanced through international research collaboration. Its neutrality allows research to counteract anti-democratic and anti-scientific trends at non-political levels. This is to the advantage of science and scientific organizations, which rely on open social structures and ways of living. Politics and society also benefit, as the scientific principle of transparency enhances the fundamental principles of liberal constitutional systems in other countries.

In order to facilitate a convergence of science and foreign policy, the Helmholtz Association plans to contribute to developing science knowledge in the diplomatic corps and for Helmholtz researchers to participate increasingly in foreign policy discussions.

Policy consultation

Helmholtz provides evidence-based policy and system advice in the international context. Building on positive experiences, among them the conceptual design and implementation of a research institution in Oman, comparable formats are to be continued in the future. The systematic involvement of Helmholtz experts in national and international committees, such as science and technology meetings and G7 or G20 summits, is also an important goal. One example is Forschungszentrum Jülich, whose scientists participate in the activities of the UN's Intergovernmental Panel on Climate Change (IPCC), the German Ethics Council, and the European Economic and Social Committee; another is Helmholtz-Zentrum München, whose researchers assist at the World Economic Summit and the World Health Organization in an advisory capacity. Moreover, the Helmholtz Centers use their special expertise to play an important role in the implementation of scientific results within society. This has, for example, given rise to the Climate Services Center Germany (GERICS) at Helmholtz-Zentrum Geesthacht (HZG), which evaluates the results of climate research and develops adaptation concepts for many regions around the world.

Cooperation with developing and emerging countries

In compliance with the German federal government's strategy for internationalizing education, science, and research, the Helmholtz Association plans to expand its portfolio of cooperation projects in developing and emerging countries. The objective is to use cutting-edge research to which both sides contribute in order to apply scientific innovations to society, promote local talent, and expand capacity. To this end, the "Helmholtz European Partnering" funding instrument of the Initiative and Networking Fund is to be expanded in a second funding phase. As a "Helmholtz International Partnering" instrument, it will focus on target countries outside Europe, such as those in Africa, South America, and Asia. Research on issues such as health and the environment – infectious tropical diseases, climate change, and natural disasters, for example – creates solution approaches that can be implemented in sensitive regions and improve the living conditions of the people there. A current example is the water management work of the Helmholtz Center for Environmental Research (UFZ) in Jordan.

WATER MANAGEMENT IN JORDAN

In arid countries in particular, efficient management of groundwater is essential for economic development. Solution concepts for the improved management of scarce water resources cannot be limited to merely technological approaches. They must take into consideration issues relating to natural sciences, the economy, legal structures, the social sciences, and environmental protection. The Helmholtz Center for Environmental Research (UFZ), in cooperation and coordination with eight Jordanian ministries and government authorities, has developed measures for implementing sustainable waste water scenarios. Specific results of this cooperation, which was supported by the German Federal Ministry of Education and Research, include the national framework, which is the Jordanian policy for effective decentralized wastewater management passed by the country's cabinet in February 2016, and the associated planned measures for implementing this policy. These measures are a significant contribution to sustainably shaping water management in one of the world's most arid regions and enhancing agriculture, thereby buttressing political stability in the region.



Some of the projects within the framework of crisis prevention focus on humanitarian crises and their causes and effects. Such research is to be intensified and expanded in the future. For example, the Tsunami Early Warning System developed with the assistance of GFZ, AWI, and GEOMAR was fully transferred to Indonesian partners in 2014; the software GFZ developed to detect earthquake magnitudes and directions has become the standard in the region around the Indian Ocean. Moreover, Indonesian researchers are trained in their own country, which greatly increases Indonesian capacity. Helmholtz researchers also contribute to efforts aimed at preventing humanitarian crises, such as another outbreak of the Ebola virus in West Africa. SORMAS is a smartphone app jointly developed by the Helmholtz Center for Infection Research (HZI) and the Nigeria Field Epidemiology and Laboratory Training Programme. The app allows suspected cases of Ebola to be entered into a database in real time, so that measures aimed at containing an epidemic can be initiated as soon as possible. This can save lives directly in the affected areas and indirectly by preventing the virus from spreading to new areas such as Europe. The Helmholtz Association also provides valuable scientific resources when a

crisis occurs. For instance, the Center for Satellite Based Crisis Information (ZKI) of the German Aerospace Center (DLR) offers a round-the-clock service that, in coordination with political decision-makers and aid organizations, generates satellite information for use all over the world in humanitarian aid efforts and for civil security. In this manner, scientific and social perspectives combine to assist those in need.

Measures for integrating refugees

Internationally, Germany has taken a leading position with its dedication to receiving and integrating refugees. The Helmholtz Association contributes to this effort with its own refugee initiative, launched in 2015 with funding from the Initiative and Networking Fund. It gives people who have been forced to flee their home countries access to employment in the sciences or science-related areas. This initiative has opened up new prospects for more than 200 refugees in the form of internships, training programs, and jobs at the Helmholtz Centers. The aspiration is for the initiative to integrate up to 300 people into the Helmholtz Centers. Moreover, the Helmholtz Association offers refugees new places to work and train within the context of the Alexander von Humboldt Foundation's Philipp Schwartz Initiative, a Germany-wide program.

Integration of refugees into professional training at KIT

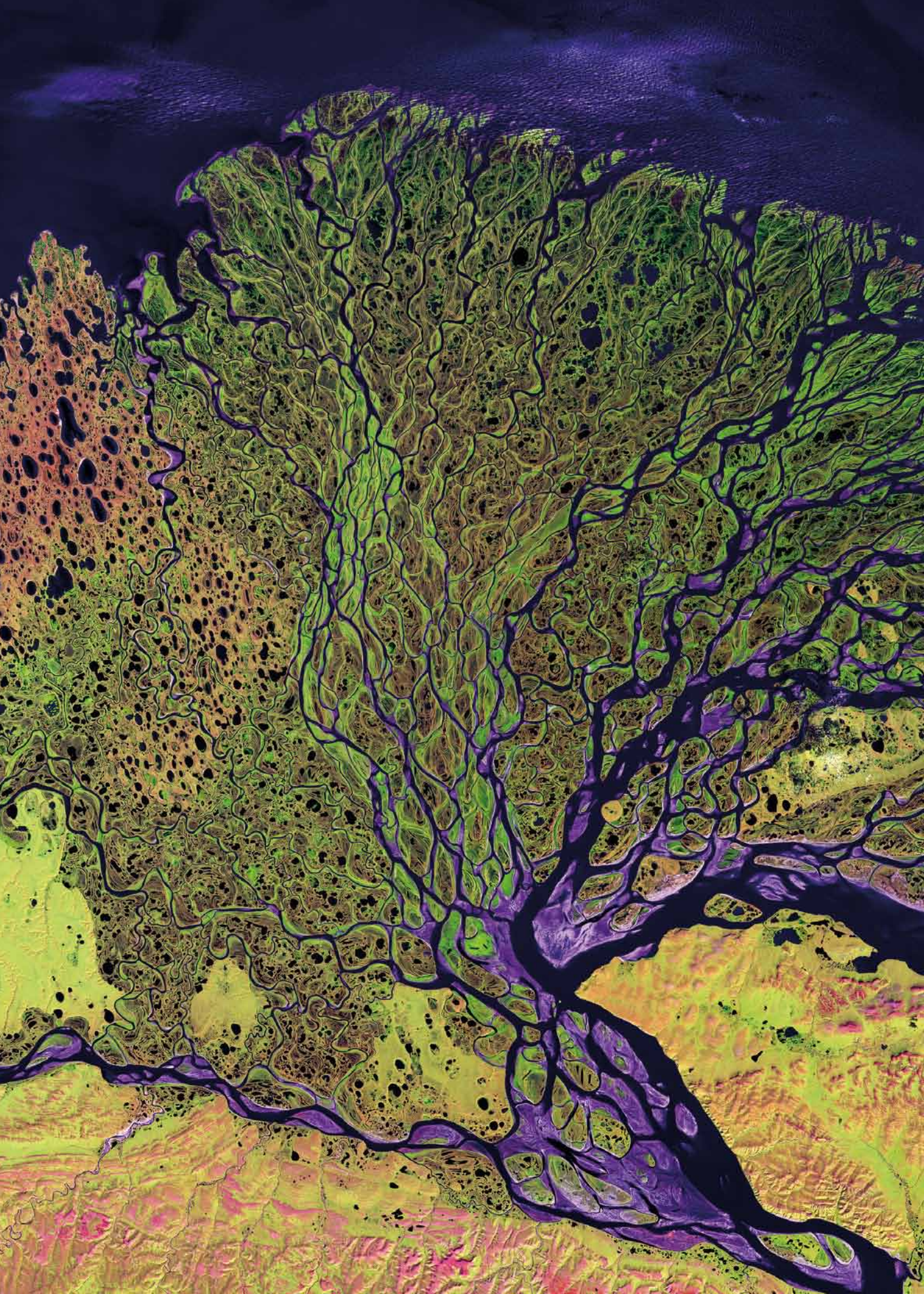
Since September 2015, Karlsruhe Institute of Technology (KIT) has been operating a training program for young refugees, which guides young people step by step towards skilled occupations that suit their talents. First of all, during a two-day trial internship, the candidates are provided with information on skilled occupations at KIT. If they express an interest, they can then participate in an in-depth course of one to six weeks, after which they transfer to introductory qualification courses. Depending on requirements, these courses last six, twelve, or even eighteen months. The young people receive their practical and theoretical training in a dual program at both the workplace and a vocational college. They attend German language courses during the same period. Having received their introductory qualification, graduates are then accepted to professional education and training. Since 2015, more than 40 refugees have participated in the KIT program at various levels. Two of them have been accepted to professional training, where they receive financial support from the Helmholtz refugee initiative. KIT's training program is thus adapted to the individual needs and talents of the refugees and contributes both to the promotion of young talent and to integration.



AT A GLANCE

New measures, initiatives, and funding instruments for Objective 4:

- Greater Helmholtz expert involvement in foreign policy discussions and consultancy activities
- “Helmholtz International Partnering” funding program with developing and emerging countries in the Initiative and Networking Fund





IMPLEMENTATION OF THE INTERNATIONALIZATION STRATEGY

The Helmholtz Association's internationalization strategy is implemented at three action levels: Center, Research Field, and President (together with the Head Office and the international offices). Within the framework of the internationalization process, all three levels are closely interwoven, but allow the flexibility necessary for individual needs and activities within the overall context.

Within the Helmholtz Centers, international research cooperation is often initiated and maintained at the level of individual groups or institutes as they have the necessary expertise related to the specific research area. In doing so, researchers receive a great deal of support from the relevant administrative departments within their Center. The Centers' international focus is thus organized in a varied, customized manner. Within the Helmholtz Research Fields, however, interdisciplinary starting points for coordinated internationalization efforts have been defined. These efforts will be expanded in the future to contribute to increasing the visibility and international performance of the Research Field as a whole. The President, the Executive Committee, and other Helmholtz Association committees, together with the Head Office and the international offices, monitor the Association's internationalization process. This is particularly true with respect to changes in science policy, the international marketing of the Helmholtz brand, and the provision of central funding programs to support strategic internationalization objectives.

The Helmholtz 'working group on international affairs', in which the 18 Helmholtz Centers and the Head Office are represented, plays an informative, advisory, and signaling role in the Helmholtz Association's internationalization process. As a link between the Centers and the Association level, it thus has an important bridging function for the overall process.

CONCLUSION

The Helmholtz Association's 2017 internationalization strategy has created a new foundation for future activities on the international stage, based on existing focuses of the Association. The new internationalization strategy thus sustainably supports and promotes the interests of the Helmholtz Association. Cutting-edge research, promotion of young talent, and science diplomacy provide important impetus for the further development of the Association as a whole, but also of the individual Centers, through the international initiatives and measures outlined here. The Association's work can focus dynamically on new developments within the international research landscape and on the constantly evolving priorities of the Centers. The international research work thus enhances the Helmholtz Association's mission of doing scientific work in the service of society. It creates the framework conditions for excellence at the levels of the researcher, the Center, the Research Field, and the Association.

LEGAL INFORMATION

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Hermann von Helmholtz-Gemeinschaft
Deutscher Forschungszentren e.V.

Helmholtz Association headquarters

Ahrstraße 45, 53175 Bonn
Phone +49 228-30818-0, Fax +49 228-30818-30
E-Mail info@helmholtz.de, www.helmholtz.de

Communications and External Affairs

Berlin office

Anna-Louisa-Karsch-Straße 2, 10178 Berlin
Telefon +49 30-206329-57, Fax +49 30-206329-60

Responsible according to the German press law

Franziska Broer

Coordination

Alexandra Rosenbach (project management), Franziska Roeder, Stephanie Lochmüller

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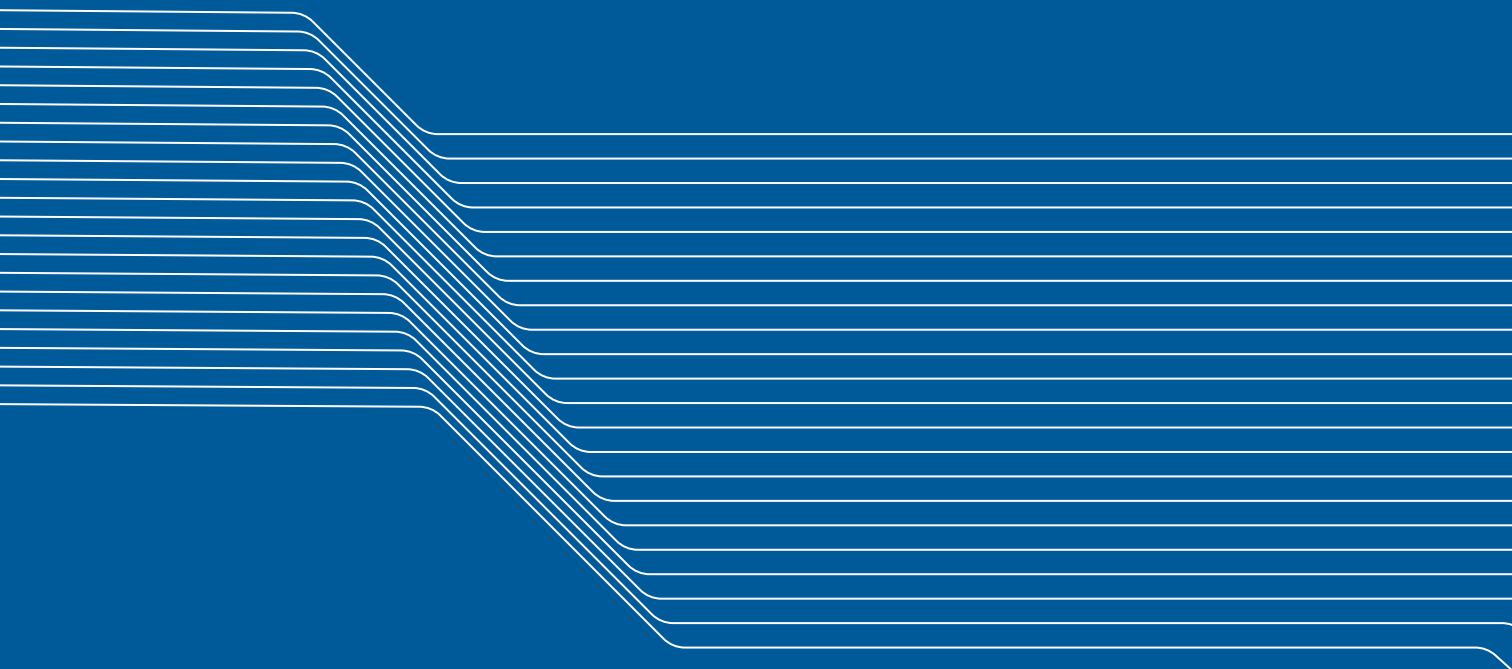
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