BUILDING CAPACITY FOR PALESTINE RESEARCH AND INNOVATION

Prof. Dr. Ghaleb Natour 28. October 2021

ZEA-1 | Central Institute of Engineering, Electronics and Analytics | ZEA

Engineering and Technology | ZEA-1

Technology for Excellent Science

Faculty of Mechanical Engineering | RWTH AACHEN UNIVERSITY

Foto: Forschungszentrum Jülich

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Ghaleb Natour
Palestinian
Citizenship: German & Israeli
Since 1979 in Germany

Education in Physics,
Physical Chemistry
PhD from University ofHeidelberg

Since 1989 work in R&D
Scientist and Manager

Since 2010 at Forschungszentrum Jülich
Director of the Central Institute of Engineering, Electronics and Analytics - Engineering and Technology

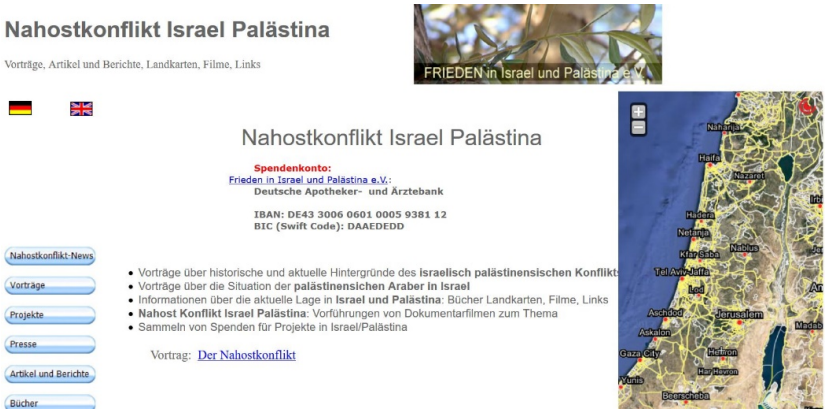
Since 2015
Full professor at the RWTH Aachen University
Faculty of Mechanical Engineering

Member of the German Palestinian steering group for cooperation in science and technology of BMBF

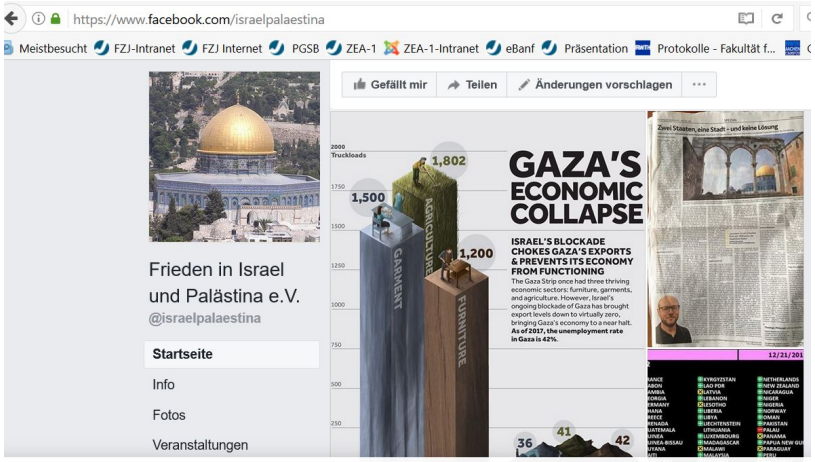
Initiator and scientific director of the PGSB

Founder and CEO of the German-Arab Bridge for Innovation in Science and Technology

SEE ALSO



www.israel-palaestina.de or
www.nahostkonflikt.org

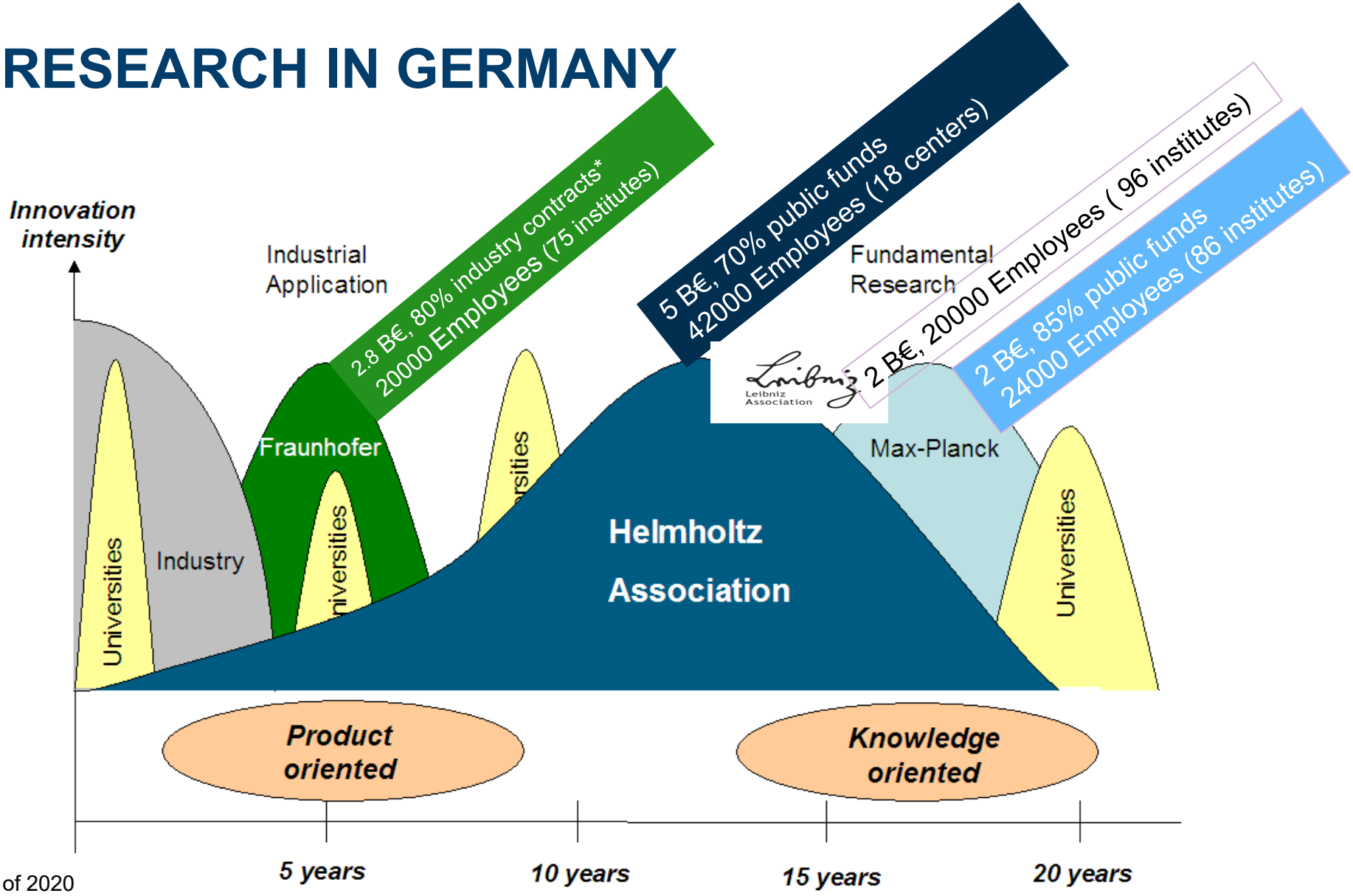


www.facebook.com/israelpalaestina

http://innovation-bridge.com/

JÜLICH Forschungszentrum

RESEARCH IN GERMANY



* as of 2020

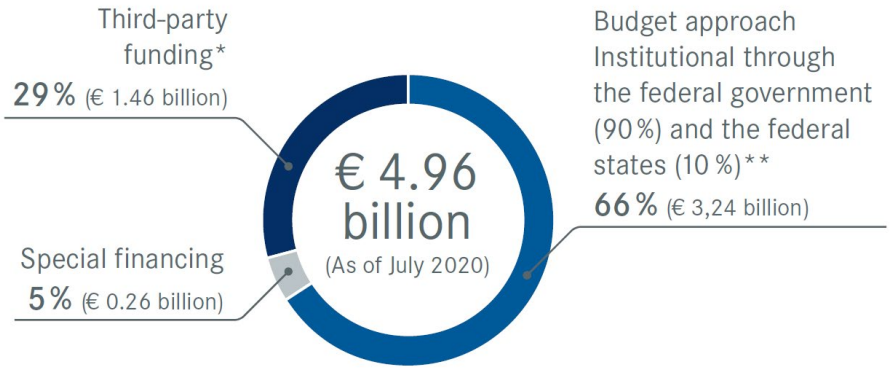
HELMHOLTZ RESEARCH FOR GRAND CHALLENGES

Mission

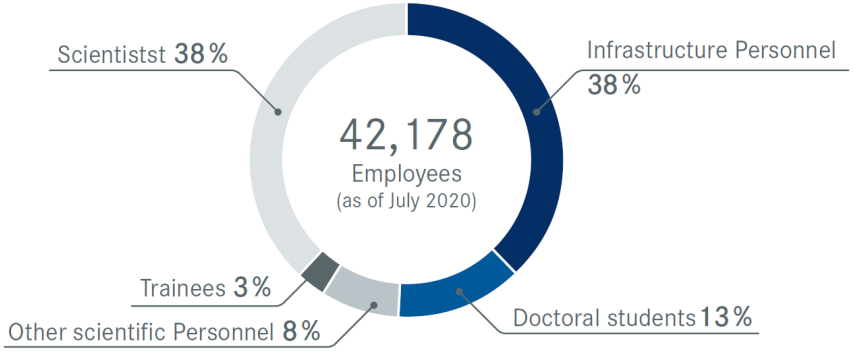
Helmholtz Association of German Research Centres

We contribute to solving the major challenges facing society, science and the economy by conducting top-level research in strategic programmes within our six research fields: Energy, Earth & Environment, Health, Aeronautics, Space and Transport, Matter, and Information.

BUDGET INCLUDING THIRD-PARTY FUNDS



EMPLOYEES



Member of the Helmholtz Association

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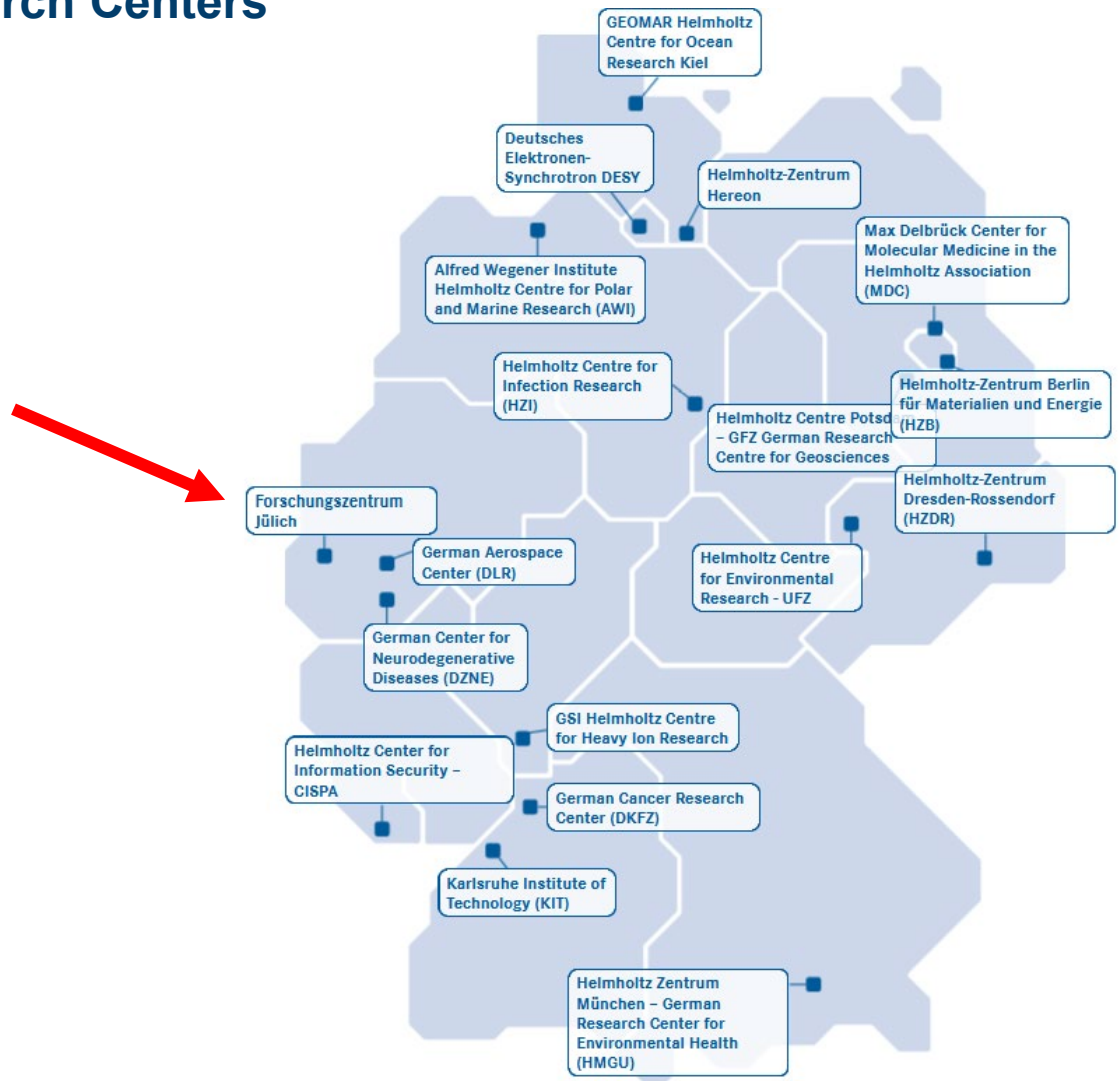
HELMHOLTZ RESEARCH FOR GRAND CHALLENGES

Research Centers



FORSCHUNGSZENTRUM JÜLICH

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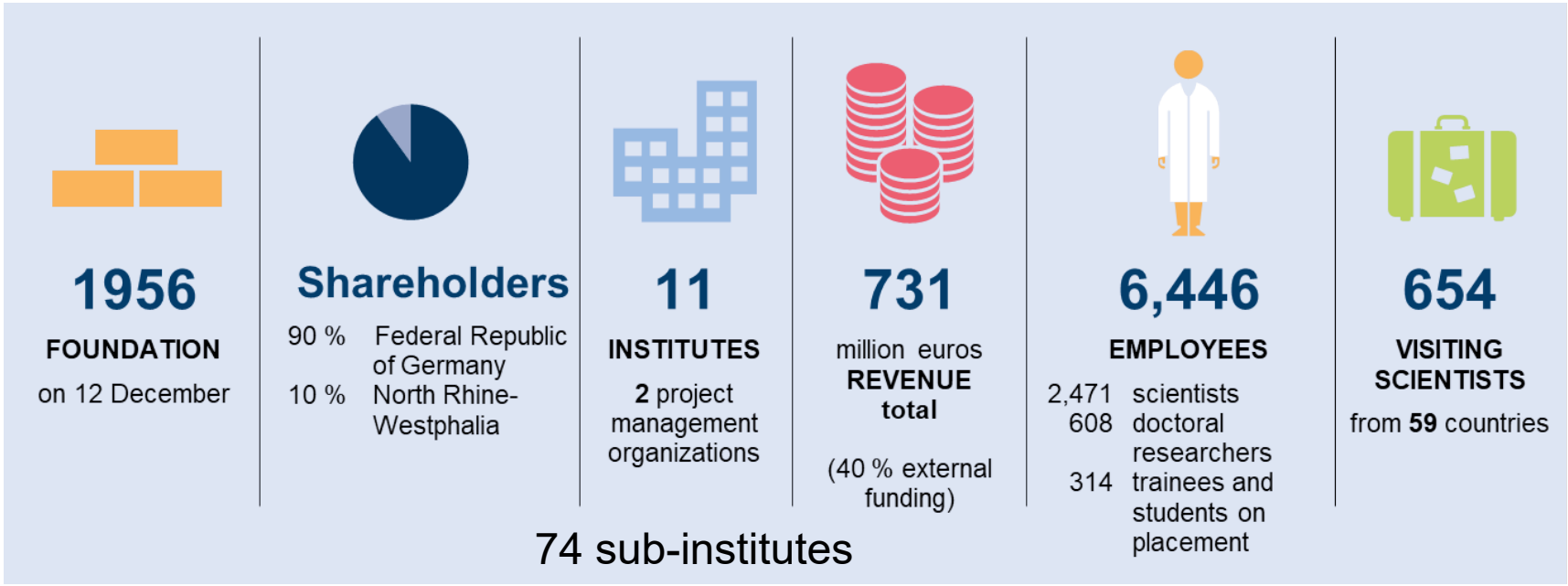
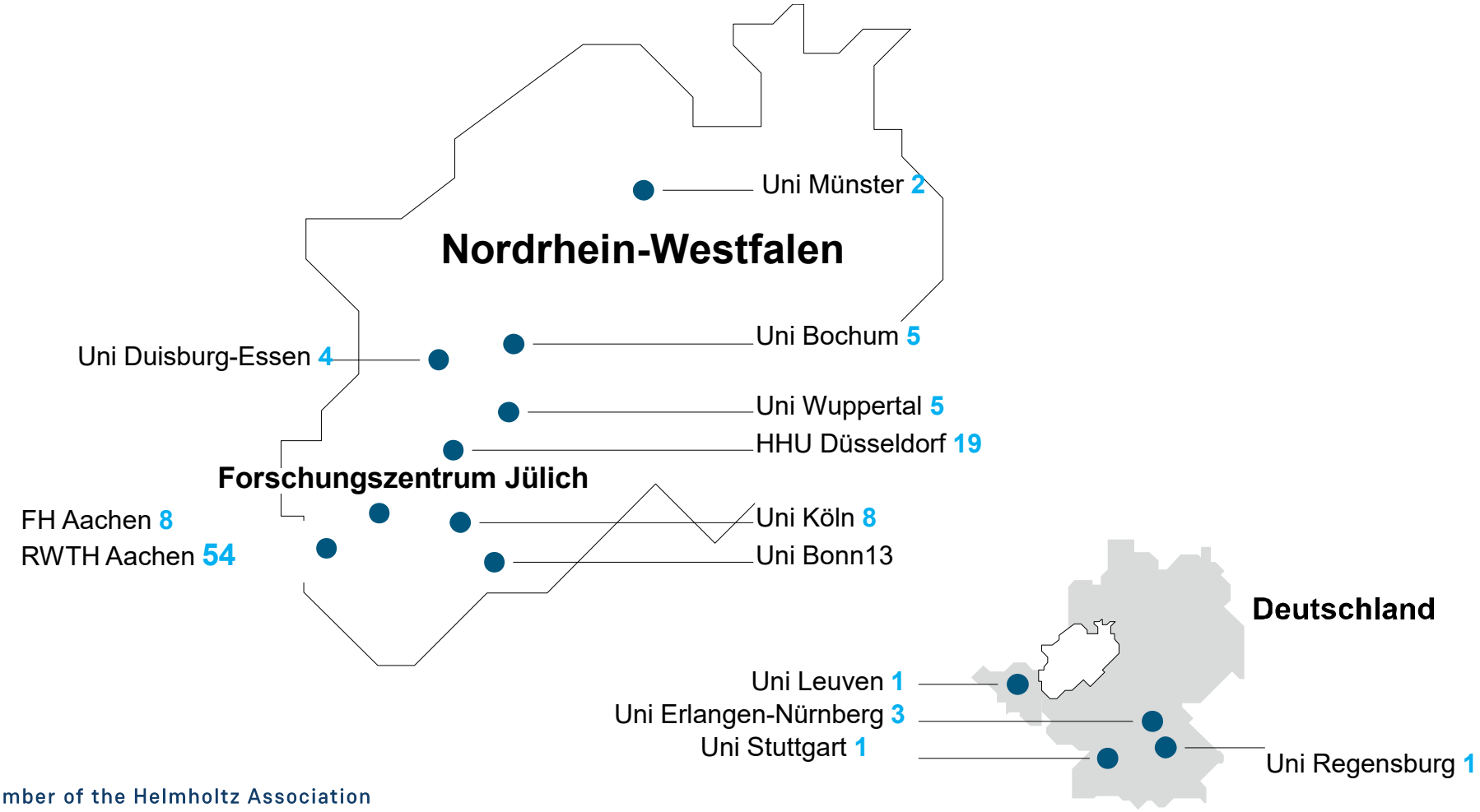


COOPERATION

National Research Center with Universities - the Jülich Model

120 JOINT PROFESSORIAL APPOINTMENTS

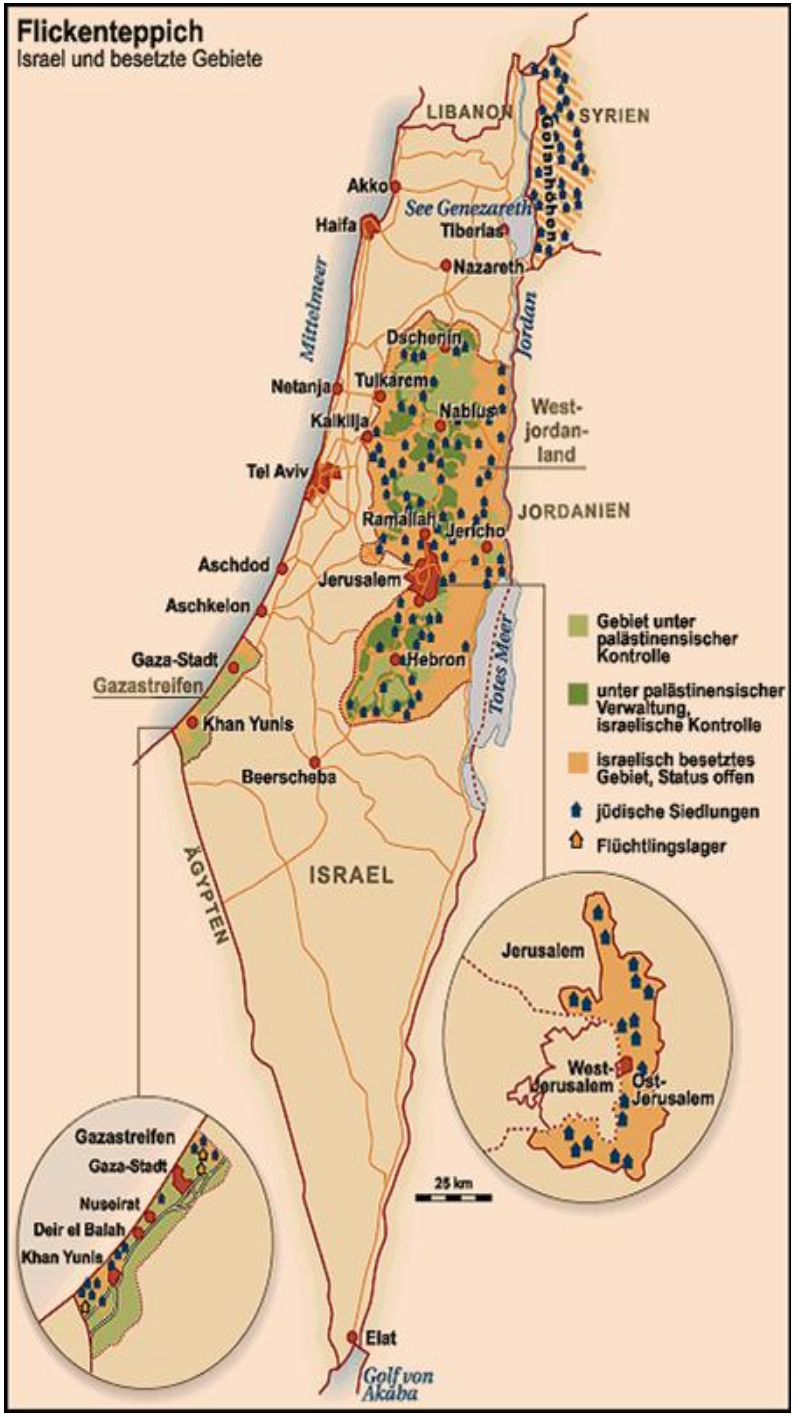


SUMMARY RESEARCH CENTER JÜLICH

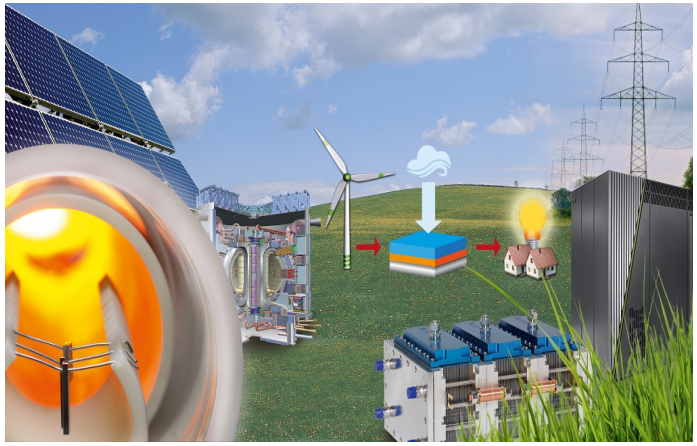
- National Research Centre with substantial budget
- Mission to address major challenges facing society
- World class science and technology
- Affiliated with German universities
- Worldwide networks and partnerships with
  - research institutions
  - large multinational projects
- Need for motivated and well-educated Bachelor, Master and PhD candidates

SITUATION IN PALESTINE

- Occupation with many restrictions
- Lack of infrastructure for experimental research
- Limited possibilities for instrumentation and scientific technical work
- Sound basic and theoretical education
- Highly motivated students and faculty members



VISION FOR PALESTINE



Build R&D infrastructure in science & technology

- Establish a national research centre
- Establish a national technology services centre
- Establish PhD programs (common at 3-4 Universities)
- Based on the diaspora`s experience and the successful models e.g. in Germany
  - to serve the community
  - to absorb/keep Palestinian graduates
  - to develop the country
  - to support just peace in Middle East

START OF THE PALESTINIAN GERMAN SCIENTIFIC COOPERATION

PALGER

SPONSORED BY THE

Federal Ministry of Education and Research

Joint innovative German-Palestinian application-oriented projects

Research proposals in areas of joint interest:

- Material Sciences
- Agricultural Science/ Natural Resources Management
- Renewable Energy
- Environmental issues including Climate Change
- Information and Communication Management and/or Digitalization
- Health Sciences
- Interdisciplinary and Applied Social Sciences including Cultural Heritage
- Educational and Pedagogical Sciences

Joint German-Palestinian application-oriented research projects with a maximum funding duration of 24 months

- € 40,000, € 50,000 or € 60,000 per project (depending on no. of partners)
- 3 calls: in 2015, in 2017 - 28 projects funded, 3rd call in 2020 being evaluated

Palestinian-German ScienceBRIDGE
CONNECTING PEOPLE AND KNOWLEDGE

THE PALESTINIAN-GERMAN SCIENCE BRIDGE

3rd Cooperation Workshop, Jülich, June 2018

- Development of a long-term joint research and education program
- Partners:
  - Forschungszentrum Jülich, with its network of partner universities
  - Palestine Academy for Science and Technology PALAST, representing all universities
- Funding of BMBF: 5.8 M€ over running period (2017 – 2025) – **Pilot project**

SPONSORED BY THE
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JÜLICH Forschungszentrum

DIRECT GOALS OF PGSB

- Provide access for Palestinians to Jülich‘s scientific infrastructure
- Assist Jülich in recruiting excellent students
- Develop sustainable long-term cooperation
- Strengthen the development of graduate and research programs
- Encourage Palestinian faculty members to develop cooperation with scientists in Germany

German and Palestinian Researchers during a scientific workshop in Hebron

CONTENT OF PGSB

- 2 Workshops per year
- Cooperation projects
- Regular visits of research teams
- BSc Projects, 3-month stay (graduation at Palestinian university)
- MSc Projects, 6-month stay (graduation at Palestinian university)
- PhD Projects, 3-year stay (supervision by Jülich professors at their universities)
  (short stay of 3-4 weeks before allocating a PhD project possible)

PGSB FELLOWSHIPS

	BSc	MSc	PhD
Duration	3 months	6 months	3 years
Initially planned	15 per year (2017 – 2021)	10 per year (2017 – 2021)	14
Attributed	20	24	41

(August 2021)

50% females

- Starting Post-Doc Fellowships
- Building clusters: Structural Biology, Sustainable Mobility, Nanoscience, Agricultural Sustainability, Neuroscience, Energy Materials, Photovoltaics

→ establish the nucleous of research centers

SUSTAINABILITY OF SCIENCE BRIDGE

Connect	Building scientific network nationally and internationally - Improves competitiveness, awareness, streamlines use of resources - Expand partner network
Inform	Sharing knowledge through faculty hospitations and student projects - Cooperations on a scientific level, including management and technical skills between partners - Flexibility for new topics, especially when locally relevant
Enable	Creating conditions under which research and STEM education in Palestine can thrive - Develop models for knowledge transfer that allow for research directly at Palestinian universities - Support the reintegration of PGSB alumni - Commitment from Palestinian universities/institutions necessary

24 JÜLICH INSTITUTES INVOLVED

Centre for Structural Systems Biology (CSSB), Hamburg, Heinz Maier-Leibnitz Zentrum (MLZ), Munich, Helmholtz Institute Erlangen-Nürnberg (IEK-11)

SUCCESSFUL MIDTERM EVALUATION

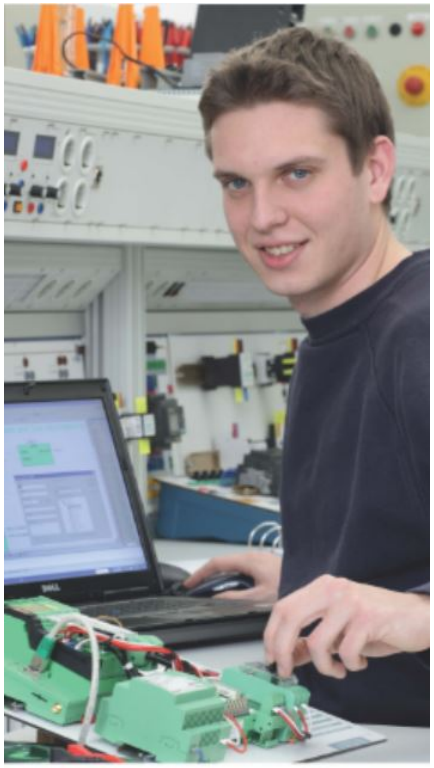
PGSB recently received positive results in a professionally conducted midterm evaluation based on the OECD-DAC criteria:

- ✓ **Relevance**: Is PGSB meeting the needs of stakeholders?
- ✓ **Coherence**: Does PGSB have unique selling points compared to similar programs?
- ✓ **Effectiveness**: Is PGSB making progress in achieving it's stated objectives?
- ✓ **Efficiency**: Is PGSB using its resources well?
- ✓ **Impact**: What difference does PGSB make?
- ✓ **Sustainability**: Will the benefits from PGSB last?

**Impact and sustainability cannot be fully determined at this stage and will rely on contributions outside the scope of the project

WHAT IS NEEDED FOR EXCELLENT SCIENTIFIC RESEARCH

1. Creative scientists
2. Technical equipment and instrumentation
3. Technical professionals (Dual studies programs)
4. **Research-enabling environment (political and institutional)**



Bachelor of Engineering
Elektrotechnik und Elektroniker
für Geräte und Systeme
(w/m)

OTHER BRIDGES AND INITIATIVES

- All will lead to
  - well-educated graduates
  - highly qualified capacities

- Who are able to
  - perform research and development
  - apply for external funds for R&D
  - deal with IPR and publications

➢ These are the seeds - now the healthy soil is needed.

NECESSARY STEPS

- Absorption of graduates from different bridges and initiatives
  - enabling them to establish their own research groups
  - have instrumentation & time for research

- Establish a system with a R&D friendly environment
  - issues to address: teaching load, faculty positions, cooperation with private sector, IPR, scientific publishing, collaborative approaches

- New policies by universities, academies, councils, ministries

➢ New ecosystem supporting research and innovation

REALISATION

- To realise the vision:

commitment to implement all necessary steps is needed

- Otherwise:
  we and other initiatives will have contributed to an increase in the number of unemployed academics

RECOMMENDATIONS

Let's make the most of all our experiences for the collective good

- Establish a national research center
- Develop win-win relationships among universities
- Develop relations between public and private sectors on R&D
- Focus on training for innovation
- Renew regulations and laws, consider new policies
- Adapt successful concepts with help from Palestinians in the Diaspora

SESAME

Synchrotron-light for Experimental Science and Applications in the Middle East

What is SESAME?

SESAME is a third generation 2.5 GeV synchrotron light source in Allan, Jordan, that will ultimately be exploited in up to 20 or more experiments operating simultaneously on independent beamlines.

It belongs to, and is governed by, its Members: Cyprus, Egypt, Iran, Israel, Jordan, Pakistan, Palestine, and Turkey. Observers are: Brazil, Canada, China, the European Organization for Nuclear Research (CERN), the European Union (EU), France, Germany, Greece, Italy, Japan, Kuwait, Portugal, Russian Federation, Spain, Sweden, Switzerland, the United Kingdom, and the United States of America.

BEAM LINES AT SESAME

Three Beamlines under Construction

BEATS – BEAmline for Tomoghraphy at SESAME (2022)

HESEB – Helmholtz-SESAME Beamline (2022)

TXPES – Turkish X-ray PhotoEmission Spectroscopy Beamline (2023)

Three Beamlines in Operation

Number of proposals received for the IR (2018), XAFS-XRF (2018) and MS (2020) beamlines:

SESAME

جسر العلوم الفلسطيني الألماني
Palestinian-German
ScienceBRIDGE
CONNECTING PEOPLE AND KNOWLEDGE

SESAME-PGSB Workshop

SESAME and the Palestinian-German Science Bridge are planning an Online-Workshop on 16th November 2021,

The scope of the workshop is to

- present SESAME and its experimental capabilities at existing (IR, EXAFS, MS) and future beamlines (BEATS, HESEB)
- Highlight the research opportunities at SESAME for Palestinian scientists
- Gather innovative research ideas of young Palestinian scientists

HIGHER EDUCATION IN PALESTINE

Universities, Colleges, Institutions,
Students, Staff
Academic Programs at
different Universities
Scientific Research

Dr. Muayad. M. Abusaa
Vice President for Academic Affairs

الجامعة العربية الأمريكية
ARAB AMERICAN UNIVERSITY

Forum International Physics (FIP) of the American Physical Society (APS)
December 9th 04:00 pm CET