

BERLIN'S RESEARCH, BERLIN'S FUTURE

Berlin Research Policy Strategy

BERLIN



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Executive Summary

Research is Berlin's greatest opportunity for the future. Locations around the world are competing for the best researchers, investments and scientific progress. At the same time, pressure on science is growing in many places, whilst cross-border challenges demand research-based solutions. In this situation, Berlin must take a clear stance. The present strategy is firmly based on the principles of concentration and focus. In doing so, the State of Berlin is establishing a binding framework for its research policy through to 2040. The vision: Berlin will become the leading destination for researchers in Europe. It is here that they will find the ideal conditions to conduct excellent research, produce ground-breaking innovations and have a far-reaching impact.

Berlin offers unique conditions for this. Excellent universities and internationally renowned research institutions form an ecosystem of exceptional **density**. Interdisciplinary and transdisciplinary collaboration, combined with short pathways from idea to application, create a **dynamism** that enables new fields of research to emerge even more quickly and drives developments forward. Career paths spanning different phases, institutions and sectors foster **permeability**. As the federal capital, Berlin offers the opportunity for a unique **integration** of science in politics, business, culture, the media and civil society. The strategy focuses state-level action on areas where academic excellence, societal relevance and specific locational advantages converge. It distinguishes between two **areas of strength** in which Berlin is already internationally leading and where the state is ensuring continuity, and two **areas of opportunity** in which it is systematically building new strengths.

The area of strength **Societal Transformation** brings together Berlin's capacity not only to analyse profound change, but also to shape it, thanks to its unique proximity to political decision-making processes and a vibrant urban community. By 2040, Berlin will be the European hub for researching and shaping transformation - locally rooted, internationally connected and globally oriented.

The area of strength **Future Health and Medicine** represents an internationally outstanding ecosystem in which biomedical research, clinical application and the health economy are so closely interlinked that new findings consistently lead to improved care. By 2040, Berlin will further expand its role as a leading international hub for medicine, health research and health tech - as a place where the medicine of tomorrow is already being developed today.

The area of opportunity **Resource and Material Sustainability** addresses the point at which the future of our prosperity is determined: how resources can be used intelligently and sustainably. By 2040, Berlin – closely linked to the industrial transformation landscape in eastern Germany – will be a reference site for materials and processes that bring together sustainable resource use, lower-energy production methods and economic capacity in a forward-looking way.

The area of opportunity **Sovereign and Responsible Artificial Intelligence** ensures the capacity to masterfully conduct research in a technology that is fundamentally transforming science and society, to shape it responsibly and embed it within society. By 2040, Berlin will be one of Europe’s leading centres for AI research – with the ambition to develop high-performance and trustworthy systems, apply them responsibly and critically monitor their impact.

The strategy has been deliberately designed as the counterpart to the Deep Tech Berlin Agenda research policy. While the latter strengthens the innovation pathway from research to market, the former secures the scientific foundation upon which technological and societal innovation is built.

The State of Berlin acts as a strategic enabler for the research location. It will create the legal, financial and organisational conditions necessary for research of the highest standard to flourish.

It sets out concrete strategic objectives across six action pathways:

1. **Positioning Berlin for impact:** The state will make Berlin’s research strengths visible and play an active role in shaping federal and EU funding strategies.
2. **Expanding scope for action:** The state will broaden scope for action through innovative governance and streamlined processes.
3. **Creating opportunities for researchers:** Together with the research institutions, the state will make Berlin the most attractive career destination in Europe, offering optimal starting conditions for researchers from around the world at all career stages, reliable career prospects and transparent pathways within academia as well as between academia and industry.
4. **Deploying funds strategically:** The state will ensure stable core funding and deploy strategic state funds in a way that maximises leverage and mobilises additional resources.
5. **Building future infrastructures:** The state will build future-oriented infrastructures and concepts, ranging from the shared use of buildings and large-scale equipment to digital infrastructure.

6. **Delivering impact:** The state will strengthen the conditions necessary for scientific knowledge to generate impact: in the economy, in politics and in society.

The strategy is designed to be dynamic. Its implementation will be reviewed and refined in regular exchange with Berlin's academic community. Areas of opportunity may develop into areas of strength, and new areas of opportunity may be added. Ongoing monitoring ensures an impact-oriented approach.

Researchers are at the centre. The strategy gives their work direction and support. In this way, research becomes a key factor for the location as a whole - as a driver of innovation and value creation, as an impetus for public discourse, and as a magnet for international talent and investment. The strategy makes the importance of science for Berlin visible - and makes it a declared political objective. It is an invitation to researchers and institutions from all over the world to help shape the future of Berlin - in a city that not only promotes science but sees it as part of its identity.

Berlin's Research, Berlin's Future

Berlin Research Policy Strategy

Research is Berlin's greatest opportunity for the future. This strategy strengthens Berlin as a centre of science, creates a reliable framework, and makes Berlin a place where knowledge makes a difference.

Today, science is an internationally connected, highly competitive system. Around the world, locations are competing for scientific progress, visibility, investments and researchers. At the same time, science is facing growing pressures in many places, whilst cross-border challenges must be understood and addressed.

In this situation, Berlin must clearly position itself as a science metropolis. With its excellent universities, internationally renowned non-university research institutions and an open, inquisitive urban community, Berlin is exceptionally well-placed to do so.

However, political direction is also required. The state will concentrate its research policy efforts where the greatest benefits for the city and society can be achieved, and create the framework conditions under which research can flourish at the highest level and have a real impact.

For Berlin as a city, this means strengthening research as a key locational factor - as a driver of innovation and value creation, as an impetus for political and societal debate, and as a magnet for international talent and investment.

This strategy therefore focuses on raising Berlin's profile and ensuring reliability. It is an invitation to researchers and institutions from Berlin and around the world to help shape and define the future from here. Researchers are at the heart of the strategy. They generate knowledge, forge collaborations and shape Berlin's international reputation. The strategy ensures they have greater freedom to shape their work, reliable resources and high-performance infrastructure, so that they can realise their full potential.

1 A vision for 2040: Why Berlin will become the top destination for researchers

Berlin is a science location of exceptional strength and diversity. This breadth creates ideal conditions for researchers, their new ideas and unexpected breakthroughs.

Distinctiveness emerges through strategic concentration where Berlin brings together existing strengths, locational advantages and exceptional potential for the future.

Berlin attracts researchers from around the world, because it offers conditions that enable cutting-edge research, foster career development and increase the likelihood of impact in science, business and society. This must be strengthened. By 2040, Berlin will be a science metropolis that stands out internationally through a sharpened profile, even stronger collaborations, and excellence in both scientific and artistic research.

This vision for the future provides direction for the strategy. To realise it, the state is selecting specific areas from the breadth of Berlin's research landscape. In these areas, scientific excellence, societal relevance and special locational advantages converge - areas in which state-level action can make the greatest difference. This selection represents a deliberate prioritisation, not an exclusion of other fields. In this context, the strategy distinguishes areas of strength - in which Berlin is already an international leader and the state ensures continuity - and areas of opportunity, in which the state provides targeted impetus to further expand Berlin's research profile. Four areas form the strategic core.

In the **area of strength Societal Transformation**, Berlin is bringing together the conditions necessary to understand and shape change. Digitalisation, the climate crisis, demographic change, migration and new forms of public life, work and knowledge are transforming our societies at a speed and on a scale that is almost without historical precedent. Whether technological progress strengthens social cohesion, whether democratic institutions remain resilient, and whether ecological transformation succeeds in a just manner - all of this depends on whether we understand the dynamics of social and cultural change in a transdisciplinary way and translate them into strategies that enable meaningful action. Societies that understand change are societies that can shape it.

This is precisely where Berlin's humanities, cultural studies and social sciences demonstrate their indispensable strength. They make complexity comprehensible, change interpretable and the future shapeable. They explore historical realms of experience, analyse cultural systems of meaning and reflect on normative, economic and legal foundations. Berlin's international character - the diversity of perspectives, backgrounds

and networks among its researchers – is not merely a locational characteristic but a strength in its own right. Anyone wishing to understand global transformations needs global perspectives.

This research is firmly rooted in Berlin and, at the same time, serves as a catalyst for a vibrant dialogue with politics, culture and civil society – a point of departure for social impact and a decisive advantage for researchers who seek not only to analyse society but also to help shape it.

By 2040, Berlin will be the European centre for researching and shaping transformation – locally rooted, internationally connected and globally oriented.

In the **area of strength Future Health and Medicine**, Berlin is creating the conditions for medical innovations to reach people more rapidly, effectively and equitably. The vision: a society in which people live active, self-determined and healthy lives well into old age. An ageing population and the rise in chronic diseases are challenging healthcare systems to rethink prevention, care and health promotion in a more integrated way. Digital innovations and new therapies help to detect diseases at an earlier stage and strengthen health in the long term.

Berlin is shaping an integrated innovation ecosystem in which biomedical research, clinical application, transfer into the public healthcare system as well as data-driven technologies and commercial exploitation are all interlinked. As a result, medical innovations will reach patients quickly and effectively – and create sustainable value for the location. Together with the healthcare industry, from the pharmaceutical industry to research-intensive medical technology companies, a unique life sciences hub will emerge with the aim of detecting diseases such as cancer, dementia and cardiovascular diseases at an earlier stage, treating them with more precision and, ideally, preventing them altogether.

By 2040, Berlin will further expand its role as a leading international hub for medicine, health research and health tech – as a place where the medicine of tomorrow is already being developed today.

The two areas of strength are internationally recognised fields of expertise that already serve as the scientific driving force and business card for Berlin as a location. This strength brings responsibility. The state will improve conditions to secure their leading position over the long term.

At the same time, the state is taking proactive measures. Across the wider Berlin research landscape, strengths are emerging that have the potential to profoundly expand Berlin's

profile. The state will strategically develop two areas of opportunity – areas that combine societal relevance with distinctive local conditions in particularly compelling ways.

The **area of opportunity Resource and Material Sustainability** combines ecological responsibility with economic capacity. Sustainability and economic success are not opposites; they are mutually dependent and strengthen social stability. The future of our prosperity will also be determined by how intelligently, fairly and sustainably we use resources. A rapidly changing world presents major challenges, but also creates enormous opportunities for new technologies, production methods and resource-efficient economic activity.

The transformation of the chemical industry, green chemistry approaches, access to new energy materials and storage systems, as well as interdisciplinary materials research, make precisely this combination possible. They make economic systems more resilient, protect the natural environment and unlock both technological and societal potential. Berlin possesses the necessary cutting-edge research, a powerful innovation ecosystem and opportunities to take political action. The state will use this potential to develop Berlin – closely linked to the growing research landscape in the East German chemical cluster – into an internationally recognised centre for sustainable materials and resources research.

In doing so, Berlin is sending a clear signal. Whilst sustainability-related research is coming under pressure in many parts of the world, the state will strengthen its advancement. **By 2040, Berlin will be a reference location for the research and development of materials and processes that bring together sustainable resource use, lower-energy production methods and economic capacity in a forward-looking way.**

The **area of opportunity Sovereign and Responsible Artificial Intelligence** ensures Berlin's capacity to masterfully conduct research in a technology that is fundamentally transforming science, the economy, culture and society, and to shape and apply it responsibly. For Berlin, artificial intelligence (AI) is more than just a technology – it is a key area for shaping the future. As an internationally recognised research location, Berlin will drive innovation through pioneering fundamental research, through applications its areas of strength, and through responsible engagement with the societal, legal and ethical implications.

Berlin has strong foundations: Berlin's broad-based research landscape drives AI forward as a fundamental field with technological and methodological depth. It has developed applied expertise across disciplinary boundaries, and it analyses societal impacts in a nuanced manner. Particular potential lies in the connection with the areas of strength, where AI plays a decisive role in developing viable solutions and scientific breakthroughs.

These strengths need to be strategically linked and expanded so that existing cutting-edge research can develop into a coherent, internationally visible ecosystem.

By 2040, Berlin will be one of Europe's leading centres for AI research - with the ambition to develop high-performance and trustworthy systems, apply them responsibly and critically monitor their effects.

By 2040, Berlin will be internationally distinctive and outstanding in these four areas, because four qualities will interact in a unique way: the density of a closely interwoven research ecosystem; the dynamism of short distances from ideas to application, permeability across institutions, sectors and career stages, and the integration of science in business, politics and urban society.

To strengthen these four qualities in the areas of strength and opportunity, Berlin is pursuing six action pathways:

1. **Positioning Berlin for impact:** The state, in a coordinated and visible manner, will proactively bring Berlin's strengths as a capital city and science hub to bear in federal and EU strategies, and participate in the relevant bodies in an aligned and targeted way.
2. **Expanding scope for action:** The state will create freedoms through service-oriented, digital and lean governance and actively advance science-friendly regulations also beyond its own borders.
3. **Creating opportunities for researchers:** Together with Berlin's scientific institutions, the state will make Berlin a reliable career destination into which outstanding international talent at all career stages can come, find prospects and work across institutions. Berlin is committed to making career pathways between academia and industry more permeable in both directions, so that researchers and businesses can benefit more from one another.
4. **Deploying funds strategically:** The state will secure stable core funding and deploy strategic state funds in ways that maximise leverage, mobilise additional federal, EU and private funding, and advance the state's objectives.
5. **Building future infrastructures:** The state will make shared research equipment and platforms, digital infrastructure and reliable operating models standard practice across the city, so that Berlin's researchers can work faster, more collaboratively and resiliently.

6. **Delivering impact:** Through a joint Berlin Transfer Bridge - as the central interface between the Senate Department for Higher Education and Research and the Department for Economic Affairs - the state will bridge the gap from research to valorisation and scaling, while simultaneously strengthening its influence on policy, society and public discourse.

This creates an environment in which research at the highest level can flourish. **Berlin - a centre that makes an impact: in Germany, in Europe, and around the world.**

2 Berlin: A science metropolis – what makes the location stand out

Berlin ranks among the most competitive research spaces in Europe. As an international metropolis, a globally visible cultural hub and the federal capital, Berlin possesses a unique appeal within the German science system. Four structural qualities shape the performance of the location – they represent both existing strengths and levers for further development:

Density. Berlin's science system enjoys an outstanding international reputation, high visibility and thematic breadth. This potential can be further strengthened when geographical proximity – including to Brandenburg's leading research institutions – turns into a closer cooperation and shared resources.

Dynamism. New inter- and transdisciplinary fields of research and technological developments are emerging rapidly. Targeted collaborations across institutional boundaries can support this dynamism. To achieve this, fragmented responsibilities must be overcome and coordination improved.

Permeability. Transitions between universities, non-university research and industry are possible, but not yet systematically embedded in structural planning. Common standards, new formats for institutional links, including between companies and higher education institutions, transparent career paths and reliable access to infrastructure are prerequisites for international appeal.

Connectivity. Berlin is characterised by short distances between science, politics, culture, media, business and civil society. This potential for innovation, knowledge transfer and social impact must be harnessed and recognised more systematically.

These four qualities serve as the yardstick against which the further development of Berlin as a centre of excellence can be measured. Their underlying strengths become evident when examining the institutional substance, disciplinary diversity, and technological capabilities that characterise Berlin's science and research ecosystem.

2.1 Institutional density and collaborative structures

Berlin is home to four universities, the Charité, four universities of applied sciences, two denominational higher education institutions, three art colleges and over 70 non-university research institutions. The latter include six institutions of the Max Planck Society (MPG), two centres of the Helmholtz Association (HGF), 15 institutes of the Leibniz Association (WGL) and four institutes of the Fraunhofer-Gesellschaft (FhG), as well as a

range of federal departmental research institutions. This institutional density is a defining feature of Berlin as a location. It creates critical mass, enabling specialisation and interdisciplinary collaboration within a compact area.

Another defining feature is the cooperative structure, which systematically embeds cross-institutional collaboration. With the Berlin University Alliance (BUA), the location boasts a nationally leading excellence consortium with a shared strategic focus, an increasingly integrated career space, and shared infrastructures. Complementing this, Berlin Research 50 (BR50) brings together a large number of non-university research institutions and strengthens coordination within the science and research ecosystem. Berlin is closely integrated at international level, for example through the Oxford Berlin Partnership or the European University Alliances, in which Berlin's higher education institutions work with partner institutions to address societal challenges. Science and technology hubs such as Adlershof, Buch, and Schöneeweide consolidate research, transfer, and entrepreneurial activity in one place. Initiatives such as the startup factory JUNI (Just Unite to Innovate) strengthen the link between scientific excellence and innovative value creation. Together with the universities of applied sciences, these structures form the backbone of a cooperation-oriented science and research ecosystem.

Another key factor is Berlin's role as the federal capital of Germany and a global metropolis. As the seat of federal ministries, the Bundestag and international organisations, it provides unique interfaces between science, politics, culture, and society. Researchers are in close proximity to political decision-making processes, and Berlin's scientific community becomes a sought-after partner in addressing major societal challenges. A strong international research community, an urban environment with a vibrant culture, civic engagement, and a high quality of life, as well as a large pool of students, together create a unique setting for attracting skilled professionals to science and industry.

2.2 Disciplinary breadth and competitive strength

Building on this institutional foundation, Berlin has developed a research landscape of exceptional breadth and depth. In comparison with other German research regions, Berlin's humanities, cultural studies and social sciences generate a disproportionately high publication output and attract a significantly above-average share of funding from the German Research Foundation (DFG). In the life sciences, above-average citation impact and high levels of patent activity attest to the strength of the research location; the Charité is a prime example of international visibility. Strengths are also evident in mathematics, as well as in the fields of computer science, electrical engineering and

environmental biotechnology, as reflected in international citation impact and success in securing competitive national and European research funding.

The multitude of prestigious awards, the substantial volume of grants awarded by the European Research Council (ERC) and a strong presence in funding programmes run by the Alexander von Humboldt Foundation and the German Academic Exchange Service (DAAD) underscore the individual excellence of the location. Berlin is highly competitive in European research funding, and by national standards, the location boasts a high density of coordinated collaborative research. The Berlin universities and the Charité also form what is, to date, Germany's only University Alliance of Excellence. The successes achieved under the federal government's Excellence Strategy demonstrate that pooling institutional strengths and combining disciplinary depth with transdisciplinary approaches yields exceptional results. This is reflected in the shared strategic priorities of the BUA and BR50.

2.3 Technological performance

Technologies are a key structural feature of Berlin's science system – both as research topic and as a catalyst for innovative methods. This structural feature must be strengthened. Berlin's technological strength is based on close cooperation across institutional boundaries and on a dynamic startup high-tech and deep-tech landscape. It is a prerequisite for Berlin's scientific excellence and economic competitiveness and has a direct impact on the city's key areas of strength and opportunity.

Berlin ranks among Europe's leading centres for health research, particularly in **biotechnology and medical technology**. Its distinctive strength lies in the close integration of basic biomedical research with data-driven analysis, as well as a vibrant start-up environment that translates scientific findings into clinical and commercial applications. The Charité, the Berlin Institute of Health (BIH) and the Max Delbrück Center for Molecular Medicine (MDC) exemplify this connection and form the institutional backbone of the area of strength **Future Health and Medicine**.

In **microelectronics, optics and photonics and quantum technologies**—fields that build on a wide range of approaches in the physical-chemical basic sciences—Berlin benefits from a high concentration of leading players from research and a growing business environment. Through the Research Fab Microelectronics Germany (FMD), Berlin is involved in Germany's most significant collaborative network for microelectronics. The Berlin Quantum Alliance connects universities, non-university research institutions and companies, strengthening the location's profile across a broad spectrum of theoretical and experimental research—from quantum photonics and sensing to quantum computing and communication, which complement other German research centres in these fields.

Berlin also enjoys high international visibility in satellite and space research. Research institutions such as the Institute of Space Research at the German Aerospace Center (DLR), as well as university and non-university partners, are involved in key international missions and are developing key technologies for Earth observation, navigation and exploration. Berlin's universities further strengthen this profile through expertise in avionics, satellite systems and propulsion technologies, with growing links to AI and quantum technologies. The newly established Cluster of Excellence Centre for Chiral Electronics (CCE) in Berlin is laying the foundations for the electronics of the future in the field of ultrafast spin dynamics. The renewed Cluster of Excellence MATH+ advances applied mathematics for quantum technologies. The breadth of Berlin's research in this area encompasses technologies that bolster the areas of strength as well as serve as key enablers for the two areas of opportunity.

Technologies for transformation - including energy, water and environmental technologies, green chemistry, advanced manufacturing, as well as mobility and construction technologies - benefit from Berlin's disciplinary diversity. Insights from chemistry, physics, electrical engineering, materials science and engineering converge to form innovative solutions. At the same time, key technologies for industrial transformation are gaining importance, in particular additive manufacturing, automated production systems and lightweight construction concepts that combine material efficiency with energy savings. Inter- and transdisciplinary materials research acts as a catalyst and systemic link, with a direct connection to the area of opportunity **Resource and Material Sustainability**.

These technological fields are closely aligned with national and European policy priorities such as the forthcoming EU Research Framework Programme FP10, the High-Tech Agenda Germany and the Deep-Tech Berlin Agenda. They represent critical future competencies in digital and technological sovereignty, climate neutrality and the resilience of critical infrastructure.

2.4 Methodological and data competence: AI as cross-cutting technology

Research involving AI will transform scientific practice to an extent that is only beginning to become apparent. Beyond research on AI itself - addressed in the area of opportunity **Sovereign and Responsible Artificial Intelligence** - AI marks a fundamental methodological shift in science. It is becoming a core cross-cutting technology that is reshaping the generation, analysis and use of knowledge in almost all disciplines.

Berlin brings together leading expertise in machine learning and data management with applied mathematics and algorithmic foundations for a wide range of application contexts. AI-supported methods function not only as tools within individual disciplines but

also as bridges between fields of research, and open up new forms of collaboration across disciplinary boundaries. This generates impetus for knowledge transfer into application and society, while simultaneously advancing neighbouring fields of research.

Berlin has the potential to play an active role in shaping this transformation – as a hub where disciplinary breadth and methodological innovation converge. Realising this potential requires access to reliable, legally secure usable data, alongside the availability of collaborative information infrastructures and data-intensive high-performance computing. Their availability, quality and interoperability will increasingly determine which scientific questions can be asked and answered.

Institutional density, disciplinary breadth, technological strength and methodological innovation form the foundation on which Berlin, as one of Europe's most efficient research hubs, is systematically fleshing out its scientific profile. These areas of strength and opportunity define Berlin's priorities and prospects for development.

3 Strengths and opportunities: Where Berlin sets priorities

Berlin is strategically strengthening its leading role in research and innovation by concentrating its efforts on key areas of strength and opportunity. These are organised thematically rather than by discipline. They represent focal points within the research landscape and meet three criteria. Firstly, they demonstrate proven scientific excellence with critical mass and international visibility. Second, they address key societal challenges that are decisive to the future of the city, society and the economy. Third, they build on the distinctive features and advantages of Berlin as a location for science and research. They focus attention, facilitate cooperation, provide impetus. They also serve as areas in which initiatives arising from the six action pathways are prioritised and piloted.

The identification process followed a systematic four-step approach. An analysis of research performance examined publication output, third-party funding and knowledge transfer activities, and assessed them in relation to national and international funding trends. In addition, the outcomes of competitive funding programmes and awards were evaluated. Personnel and structural data provided insights into institutional capacities and research-relevant infrastructure. Finally, an analysis of collaborative relationships made visible cross-institutional links and existing research ecosystems. The findings were cross-referenced with institutional profiles, enabling a structured mapping of the research landscape across all institutions and disciplines.

3.1 Areas of strength

The areas of strength are Berlin's academic flagship. Here, the state is committed to continuity and reliability. Existing productivity is structurally secured and maintained at the highest international level. Funding creates the conditions under which critical mass, international visibility and institutional networking can be sustained and further consolidated.

3.1.1 Area of strength: **Societal transformation**

Berlin's transdisciplinary research into social change, cultural dynamics and future-oriented society

Berlin is the national leader in the humanities, cultural studies and social sciences, and ranks among Europe's strongest research hubs. The exceptional density and excellence of these disciplines, complemented by contributions from the educational sciences, design sciences and scientific-artistic research, enable the critical analysis of society and the

development of orientational knowledge in times of profound technological, ecological, economic, cultural and political transformation, particularly through the Cluster of Excellence Contestations of the Liberal Script (SCRIPTS). The unique combination of top-level research, a vibrant academic and urban culture, and close proximity to political decision-making processes makes Berlin particularly attractive to researchers who wish not only to analyse society but also to shape it.

Central to this is the extensive institutional network. Humboldt Universität zu Berlin (HU), Freie Universität Berlin (FU), Berlin University of the Arts (UdK) and Technische Universität (TU) work closely with renowned non-university research institutions, including the Berlin Social Science Centre (WZB), the German Institute for Economic Research (DIW Berlin), the Weizenbaum Institute, Wissenschaftskolleg zu Berlin (Institute for Advanced Study Berlin), the Max Planck Institutes for the History of Science and for Human Development, the Humanities Centers Berlin, the Berlin Forum Transregional Studies, the Berlin-Brandenburg Academy of Sciences and Humanities (BBAW) and the institutions of the Stiftung Preußischer Kulturbesitz (Prussian Cultural Heritage Foundation, SPK). In addition, there are important private actors such as the Hertie School and the European School of Management and Technology (ESMT). Together, they form a research ecosystem of international renown.

In this area of strength, Berlin institutions address the key transformation challenges of the 21st century. They examine the causes and effects of social disparities, and the conditions for democratic resilience and social cohesion. They analyse migration and markets, diversity and knowledge systems. Through transdisciplinary exchange, they investigate the societal impacts of technological innovations, as well as the normative and cultural implications of global crises such as the climate and biodiversity crises. This also includes research into the social conditions and possibilities for adapting to climate change in urban areas. Building on this, interdisciplinary research approaches to urban climate resilience – essential for societal transformation – can be further developed. Berlin-based institutions carve out the ambivalences of progress and transformation and provide insights into disruptive developments – whether geopolitical of nature, drawing on broad regional expertise, or of a technological nature. In the context of the digital transformation of society, they conduct research on platform economies, algorithmic systems and the societal implications of AI. Berlin's legal scholarship complements these efforts with expertise in constitutional law and the law of digital transformation.

AI is also changing the working methods of the humanities, cultural studies and social sciences themselves – from the analysis of large text corpora and datasets, to the access to and curation of collections, and to new forms of knowledge production and storage. Furthermore, these disciplines are uniquely positioned to critically reflect on the

transformation of science and the arts brought about by AI. They scrutinise AI-enabled methods in terms of their normative foundations, societal effects and cultural implications. The integration of expertise from the humanities, cultural studies and social sciences with fundamental research in informatics holds the potential to provide analytical insight into the impact of AI on the academic system as a whole.

As a capital city and international metropolis, Berlin brings together a unique historical and societal set-up. The experience of political upheavals, the diversity of cultural perspectives, a vibrant international research community with a global network of partnerships, and proximity to political decision-making processes create an environment in which social change is not only researched but immediately tangible. The humanities, cultural studies and social sciences, together with economics and law, thereby lay the foundations for shaping the present and the future in a manner that is historically informed, culturally reflective and ethically grounded. Berlin's research brings together transnational perspectives and expertise spanning North and South, East and West. In this context, Berlin serves as a historically evolved hub, particularly between Western and Eastern European academic spheres.

Academic, cultural and civil society actors – such as academies, museums and cultural spaces, archives, libraries, collections and other infrastructures that provide information, think tanks, foundations, non-profit associations and non-governmental organisations (NGOs) – work together with universities and non-university institutes to ensure a vibrant exchange between research, politics and society. Berlin is not only a place of knowledge transfer, but also a space for shared knowledge production. Through open exchange, academia, politics and civil society develop the know-how needed for democratic resilience, social understanding and modernisation.

Only those who understand the transformative processes of our time can shape the future. The state will position Berlin as a leading centre for social analysis, problem-solving expertise and future-shaping action. It will strengthen this area to ensure that the humanities, cultural studies and social sciences continue to serve as an indispensable resource for a democratic, more just and sustainable society.

3.1.2 Area of strength: **Future health and medicine**

Berlin's innovative strength in prevention, personalised therapies, and equitable care

Berlin boasts an internationally outstanding and highly interconnected ecosystem in medicine and health research, covering the entire spectrum from basic medical research, through clinical research and development, to patient care. The close interlinking of cutting-edge research, the health sector and clinical practice (“translation”) is a structural

principle throughout. Medical technology manufacturers, biotech companies, and pharmaceutical firms located in Berlin are not merely recipients of research outcomes, but active partners in their development. Furthermore, with the Charité and Vivantes, the state operates a broad-based patient care system. Health research in Berlin is distinguished by its exceptional breadth and depth and addresses four priority areas:

Preventive healthcare and early detection: In Berlin, prevention is seen as a strategic lever for strengthening the resilience of the healthcare system. Data-driven medicine, AI-enabled diagnostics and systems medicine approaches make it possible to detect diseases at an early stage and address them in a targeted manner, even before they manifest. This helps reduce the need for costly late-stage treatments, improve the quality of care and save resources within the healthcare system in the long term. This understanding of prevention encompasses not only clinical-technological approaches but also social, structural and environmental approaches.

Interdisciplinary basic biomedical research and translational medicine: The combination of organ-specific areas of focus (including neuroscience, cardiology, oncology and gastroenterology) with cross-cutting, disease-related processes in immunology and regenerative medicine (including haematology) generates new knowledge about fundamental mechanisms of disease in line with the principles of systems medicine. Great importance is also attached to new technologies in the fields of imaging, single-cell analysis, medical data science and, in particular, artificial intelligence. These findings are used in Berlin to develop novel treatment methods. The Charité acts as a central interface and ensures that findings are systematically transferred into translational process.

Personalised therapies: By taking individual disease mechanisms and causes into account, personalised therapies help reduce overtreatment and inappropriate care, improve treatment outcomes and lower costs over the long term. Berlin possesses particular structural strengths in gene and cell therapies as well as immunotherapies. Large-scale research infrastructures with production facilities compliant with Good Manufacturing Practice, together with close industrial collaboration between Charité and Bayer AG, enable the development, clinical testing and scaling of novel therapies directly on site.

Health and healthcare in a local and global context (Public & Global Health): Research in Berlin not only strengthens healthcare provision in the capital, but also contributes internationally to the resilience of healthcare systems, pandemic prevention and equitable healthcare. In doing so, it assumes global responsibility for improving, promoting and safeguarding health. A growing priority is women's health. Berlin is systematically expanding its scientific expertise in this field and addressing the gender

health gap, with the ambition of taking the international lead. Research at the Charité on global women's health and gender studies provides an excellent foundation for this. Research in Berlin also addresses the resilience of health and care structures in the face of crises, hybrid threats and attacks, or failures of critical infrastructure, thereby making a vital contribution to the provision of essential public health services.

The diversity of these approaches is made possible by the high concentration and close networking of numerous leading research institutions. Charité, BIH, MDC and the Berlin sites of the German Centres for Health Research, as well as the German Rheumatism Research Centre Berlin (DRFZ), form a unique biomedical ecosystem that is firmly embedded in the overarching strategic, nationwide activities in health research. The involvement of non-university research institutions from the MPG, HGF, WGL and FhG, as well as the Robert Koch Institute (RKI), creates ideal conditions for interdisciplinary, impact-oriented research. Scientific excellence is underpinned by strong collaborative structures, joint appointments, numerous ERC grants, Collaborative Research Centres, DFG Research Groups and clusters, including the Clusters of Excellence ImmunoPreCept and NeuroCure. The central backbone of this ecosystem is the close integration of the Charité with the MDC. Together, they constitute an internationally recognised, translation-oriented research hub that systematically links basic research, clinical trials, data-driven innovation and health services.

Berlin is already a leading location in the European health sector and offers ideal conditions for developing the city into a global leader for medical technology and pharmaceutical products—particularly in combination with artificial intelligence. Even today, cooperation between research institutions and innovative biotech and pharmaceutical companies enables the effective transfer of research findings into practice. Berlin aims to become a leader in personalised precision medicine and AI-supported diagnostics and therapy. Achieving this requires high-performance algorithms, secure data infrastructures and reliable modelling. Collaboration with non-university research institutions such as the national AI centre of excellence - the Berlin Institute for the Foundations of Learning and Data (BIFOLD) - as well as advancements in medical technology, enable data-driven precision medicine and accelerate translation. Through targeted expansion in fields such as gene and cell therapies, inflammation research and immunotherapies, through investment in digital health infrastructures and regulatory sandboxes, Berlin is making medical innovations rapidly available - for patients here worldwide.

By 2040, Berlin will set new benchmarks for how quickly and reliably scientific findings are translated into better healthcare. Findings will be consistently transformed into tangible improvements in healthcare delivery - in the capital and far beyond. The close interaction between science and industry is a structural principle and a key competitive advantage of the location. Leading research institutions and companies in the healthcare sector will jointly develop improved therapies, innovative medical technologies, and new active substances, thereby addressing patients' needs more quickly, more targeted and with greater reach. Berlin is thus assuming responsibility for more resilient healthcare systems and will ensure that civil infrastructure, particularly in the provision of healthcare, is immune to crises.

3.2 Areas of opportunity

Areas of opportunity follow a different logic to areas of strength. The focus here is on development, pace and targeted investment. The state is providing impetus in areas where scientific expertise aligns with locational advantages and where policy measures are particularly effective. These areas of opportunity are designed to be dynamic. They may evolve into areas of strength, new ones may be added, and existing ones may lose relevance. Their regular reassessment is an integral component of the strategy.

3.2.1 Area of opportunity: **Resource and material sustainability**

Berlin's innovations for circular economy, green chemistry and climate-neutral technologies

Berlin boasts a continuously growing, increasingly interconnected research landscape spanning green chemistry, catalysis research and materials science, through to the circular economy and sustainable biomaterials, and on to climate-neutral energy technologies. Universities, universities of applied sciences, non-university research institutions and research-driven companies combine innovative research approaches with practical applications, creating an interdisciplinary ecosystem for sustainable technologies, lower- energy production and resource saving processes. The goal is to develop solutions to global challenges such as resource scarcity, geopolitical dependencies and climate change.

TU, FU and HU, the joint doctoral centre of the University of Applied Sciences (HTW Berlin) and the Berliner Hochschule für Technik (BHT), and non-university research institutions such as the Zuse Institute Berlin (ZIB), the Federal Institute for Materials Research and Testing (BAM), the Physikalisch-Technische Bundesanstalt (PTB), the Max

Born Institute for Nonlinear Optics and Short Pulse Spectroscopy (MBI), the Fritz Haber Institute (FHI) and the Helmholtz-Zentrum Berlin für Materialien und Energie (HZB) are working to transform resource systems from predominantly fossil and mineral raw materials towards sustainable, circular and emission-reducing models. The focus is on integrative system solutions that intelligently link materials, energy, water, nutrients and urban material flows. Digital modelling, data-driven process control, AI-supported material development and simulation-based optimisation serve as cross-cutting technologies in this context. Non-university research institutions such as the German Research Center for Artificial Intelligence (DFKI), BIFOLD and the Hasso Plattner Institute (HPI) are pursuing two complementary goals: reducing the digital footprint of AI itself and harnessing AI as a tool to solve environmental problems. Innovative production processes such as additive manufacturing and lightweight construction make an essential contribution, paving the way towards climate-neutral production through material savings and function integration.

Berlin is also making strides in innovations relating to battery materials and, through accelerated technology transfer, can lay the foundations for sustainable battery technologies based on non-critical raw materials. Overall, this research makes a valuable contribution to climate adaptation, to strengthening the bioeconomy, to minimising pollution and to securing the resource foundations for future generations.

Berlin benefits from its strong scientific landscape and its position within the East German chemical cluster. The Center for the Transformation of Chemistry (CTC) in Delitzsch serves as a strong link, with close cooperation maintained through the Center for the Science of Materials Berlin (CSMB), the Center for Sustainable Resources Berlin (CSR|Berlin) and the Green Chemistry East network. This locational advantage makes it possible to translate the interplay between scientific knowledge and the experience of social and industrial practice into forward-looking innovation, and to actively shape the profound transformation of the chemical sector, the “Chemiewende”. The close interlinking of research, start-ups and established companies accelerates the rapid transformation of results into marketable products and services, supported by the Innovate!Lab of the BUA.

Berlin will position itself as a location for resource efficiency and as a pioneer in innovative approaches to phasing out energy-intensive technologies that are harmful to the environment and climate. By bringing together various initiatives into a Berlin innovation network, one that is strongly networked regionally and linked to national flagship initiatives, a powerful platform for sustainable technology will emerge. By 2040, Berlin will be the preferred destination for researchers and businesses seeking to combine ecological responsibilities with economic competitiveness.

3.2.2 Area of opportunity: Sovereign and responsible artificial intelligence

Berlin's research into machine learning, mathematical foundations and high-performance AI systems

Berlin boasts a strong AI research landscape that combines fundamental research, application-oriented development and societal reflection. The focus is on machine learning, data-driven methods and AI systems, as well as their deployment in scientific and economic contexts where reliability, cyber security, explainability and accountability are of paramount importance. Berlin's focus is on the use of AI in complex, knowledge-intensive and regulated fields of application.

This area of opportunity is built on two mutually reinforcing pillars. With BIFOLD, Berlin is home to the largest national AI competence centre, which is driving forward the unique integration of machine learning and big data at an international level. This methodological depth is complemented by expertise in applied mathematics built up over the decades at FU, HU and TU, as well as at the Weierstrass Institute for Applied Analysis and Stochastics (WIAS) and the ZIB - now institutionally consolidated in the MATH+ Cluster of Excellence. Excellence in application-oriented basic research - the hallmark of Berlin's mathematics and already a profile-defining discipline for Berlin - is being transferred to the high performance of domain-specific AI research in Berlin. The field is further strengthened by a wide range of application-oriented institutions, including the joint doctoral centre "Machine Learning" run by BHT and HTW, and non-university research institutes such as the Fraunhofer Institutes for Telecommunications (HHI), for Production Systems and Design Technology (IPK), for Open Communication Systems (FOKUS), for Reliability and Microintegration (IZM), as well as the PTB and DFKI. It is precisely in this application-oriented environment that the unique potential at the interface between AI and physical systems becomes apparent. Robotics and autonomous systems in particular are acting as drivers here, fundamentally transforming industrial production, mobility, logistics and services. By combining AI with trustworthy software technologies, new standards are emerging for sovereign government action and secure digital infrastructures. Furthermore, Berlin's research landscape is active at the interface

between AI and quantum technologies, investigating, for example, how quantum computers contribute to artificial intelligence algorithms.

Berlin's distinctive strength lies in its ability to deploy AI effectively in areas where data is complex and requires protection, where regulation plays a central role, and where interdisciplinary problem-solving skills are crucial. Berlin excels in fields where these conditions converge. In the **area of strength Future Health and Medicine** the integration of AI with biomedical and clinical research is already driving innovative approaches in data-driven diagnostics, personalised therapies, and prevention. Here, clusters and initiatives are increasingly converging, giving rise to a shared AI-driven healthcare ecosystem. Berlin has already established a strong position in this area and, with more than 700 relevant start-ups, is regarded as a hotspot for digital health. In addition, BIFOLD brings together leading expertise in the development and application of data-driven methods and plays a key role in driving the close integration of fundamental AI research with medical challenges. Numerous other initiatives, including those at the Charité and at non-university research institutions, stand as evidence of the pioneering role played by Berlin researchers in combining AI with indication-specific health research. In the **area of strength Societal Transformation**, the normative, legal and cultural implications of AI come to the fore and are brought into public discourse. The Weizenbaum Institute plays a central role in this regard.

Sovereign and Responsible Artificial Intelligence stands for Berlin's ambition to develop AI on the basis of its own research expertise, to maintain control over data, models, and infrastructures, and to embed the use of AI systems within a societal framework. The ability to responsibly harness large and complex volumes of data – particularly in sensitive sectors such as health, energy and public administration – and to translate them into findings is a key competency of the 21st century. To this end, Berlin is deliberately expanding its research data infrastructures, computing capacities, interoperable data spaces and standards for responsible data use, thereby making a significant contribution to both research security and societal resilience. Sovereign and responsible AI is thus an AI that is reliable, transparent and socially accountable – a defining quality that actively shapes Berlin as a location.

A dynamic start-up and technology transfer ecosystem amplifies the impact of research and provides the foundation for cross-regional collaboration. Berlin ranks among Europe's leading hubs for AI start-ups. The cross-site platform AI Nation connects science, business and civil society, accelerates knowledge and technology transfer and supports international scale-up. With AI SQUARE, a powerful innovation hub is being established that facilitates collaboration and enhances international visibility.

The combination of technological excellence, interdisciplinary application and reflective research defines the profile of this area of opportunity. The strategic prioritisation of AI ensures Berlin's eligibility for national and European funding programmes and strengthens its position in the competition for researchers, investments and partnerships.

By 2040, Berlin will be a leading AI research location in Europe, bringing together cutting-edge research, practical application and societal responsibility. Berlin's AI research will be particularly strong where the demands are highest - in fields where reliability, transparency, and ethical standards are decisive for success. In this way Berlin will set standards across Europe for trustworthy and sovereign AI.

4 Approach and action: How the State of Berlin enables forward-looking research

4.1 Vision

Excellent research is produced by excellent researchers. Established leading researchers, aspiring scientists and students choose places where they can work freely, where they are offered the best opportunities and prospects for development, and where they live in an environment that inspires and supports them.

By 2040, Berlin will be the premier destination in Europe for scientists at all career stages, because here they will find the ideal conditions to conduct excellent research, produce groundbreaking innovations and create lasting impact.

4.2 Mission

The scientific community determines its own content, research questions and methods. This is its constitutionally protected freedom and its responsibility. As a strategic enabler, the state ensures the capacity to act by providing the legal, financial and organisational conditions for a high-performing research ecosystem. It strengthens collaboration within the research community and set targeted impulses for the further development of Berlin as a research hub. This will take place in close dialogue with universities, non-university research institutions and research-intensive companies, and in coordinated collaboration within the Senate as well as the federal government and the EU, where Berlin actively co-shapes the framework conditions.

4.3 How the State of Berlin will act

Six action pathways structure the state's activities. They address the framework conditions that determine the performance of the entire research ecosystem as a whole and form the binding framework of the strategy through to 2040: goals become plannable, priorities transparent and progress measurable.

The action pathways are inherently cross-cutting and benefit research across all disciplines. Their concrete implementation, however, begins within the areas of strength and opportunity. These are characterised by a high degree of institutional density, strong cooperation, and clear relevance to society—ideal conditions for piloting new approaches and, where successful, scaling them across the entire research landscape.

4.3.1 Action pathway 1: **Positioning Berlin for impact**

Berlin is all at once a leading centre of science and research, a cultural hub, and the German capital. An exceptional concentration of excellent institutions is coupled with immediate proximity to political decision-making processes and international forums. This combination is already a defining strength of Berlin as a location.

This action pathway makes the strategic positioning of Berlin the core responsibility of the state and ensures that Berlin's strengths become visible where priorities are set and funding frameworks are shaped - in the next EU Research Framework Programme (FP10) as well as in central federal initiatives such as the High-Tech Agenda Germany. In doing so, the state leverages the research policy impulses generated at other levels of government as strategic instruments to achieve its own objectives. **By 2040, Berlin will project a clearly defined profile externally and demonstrably co-shape key programme lines at federal and EU level.**

The state's strategic objectives

By 2040, the state will strengthen Berlin's strategic capacity to act in such a way that its interests are coordinated at an early stage and effectively represented within relevant federal and EU funding frameworks, and that Berlin plays a visible role in shaping key programme agendas.

The state will represent the interests of Berlin as a research location in key science policy bodies and networks without levelling out institutional profiles or restricting autonomy.

The state will raise Berlin's international profile as a science metropolis, one that consistently links research excellence, its role as the national capital, and its capacity to shape society. A clear location brand will bundle the diversity of Berlin's academic landscape as a recognised quality signal, and will complement the institutional communication of the organisations.

The state enables: coordination and visibility

Through the BUA and BR50, Berlin builds on the location's tried-and-tested cooperative framework. This provides a robust foundation for targeted, regular coordination. The state strengthens long-term coordination mechanisms that align with federal and EU timetables in a timely manner. The Senate Department for Higher Education and Research will refine its strategic routines in order to establish Berlin's positions right from the programme design stage, and to exert influence on developments in research policy over the long term - above all at federal level, but also at EU level through appropriate channels. Success will be measured by the extent to which programme drafts, priorities and implementation strategies will be shaped at an early stage, and by the degree to which

supra-regional funding lines will offer greater opportunities for Berlin's strengths to be incorporated. The city will prepare for emerging structural developments within the German science system. Where federal policy initiatives target regional cluster formation or national centres, Berlin will contribute its exceptional institutional density, collaborative experience and scientific excellence. In selected fields, the location already possesses the necessary conditions to assume such a hub role.

Collaboration between scientific institutions should in future be implemented more swiftly and in a more coordinated manner. To this end, the state will establish reliable coordination processes between the Senate Department for Higher Education and Research, the universities, and non-university research institutions so that they can jointly represent Berlin's interests more effectively in key research policy bodies. In addition, cross-departmental structures will be strengthened wherever this enhances Berlin's ability to assert its position, particularly at the interfaces with economic and innovation policy. This ensures that Berlin is represented in key bodies through carefully coordinated mandates.

Visibility is a key dimension in fostering collaboration and strategic influence, as well as strengthening Berlin's ability to attract researchers. The state complements the institutions' institutional communication with strategic location marketing, both internally and externally, to consistently highlight Berlin's combination of excellence, density and its role as the capital. A clearly managed, broadly supported place brand will make this profile internationally recognisable, serve as a trusted mark of quality and increase recognition value. At the same time, the Senate Department for Higher Education and Research will support the development of strategic partnerships and international alliances. Established flagship formats will serve as showcases and hubs, transforming visibility into a measurably increase in both number and quality of strategic partnerships.

4.3.2 Action pathway 2: Expanding scope for action

Through the amendment of the Higher Education Act, Berlin has established key prerequisites for modern academic governance. It has granted higher education institutions greater flexibility in personnel and financial matters, as well as the option to delegate the rights to appoint academic staff. The state builds on this approach. Precisely because Berlin boasts a uniquely concentration of academic institutions, there is considerable value in further simplifying administrative procedures and streamlining coordination processes. Particular potential lies at the interfaces between different fields of law, where coordinated administrative action brings tangible benefits for researchers.

This action pathway builds on the progress already achieved and establishes modern governance as a shared responsibility of the Senate Department for Higher Education

and Research and the institutions themselves, which make use of the scope granted to them independently and strategically. **By 2040, Berlin will be a metropolis of science, where the administration and legal framework consistently support research excellence, whilst allowing the interests of politics and society to flourish.**

The state's strategic objectives

Researchers and academic institutions should be noticeably relieved of administrative burdens, and universities should be able to fulfil their responsibilities more efficiently. Obstacles arise at all levels, both in the state's administrative practices and within universities and research institutions. The Senate Department for Higher Education and Research will work in a collaborative manner with Berlin's scientific institutions across all levels to promote administrative practices and processes that are solution-oriented and seamlessly coordinated. The state will streamline its procedures and consistently making full use of its scope for action in order to provide the best possible support for research and innovation.

The state will safeguard and expand the autonomy and scope for action of higher education institutions and non-university research organisations within a reliable and coherent framework, enabling decisions to be taken closer to scientific practice.

The state will also act as a driving force for science-friendly framework conditions beyond its own legislative competences by addressing the need for reforms at federal and EU level in coordination with other federal states.

The state enables: flexibility and streamlined processes

Berlin builds on the progress already achieved and continues to systematically refine its administrative procedures wherever they can strengthen the city's key locational advantages: density, dynamism, and permeability.

The Senate Department for Higher Education and Research

makes use of its discretionary powers wherever possible in a research-friendly, risk-aware and legally compliant manner. Processes will be designed to be service-oriented and digital by default, with clearly defined responsibilities and transparent requirements. By reducing uncertainties in recurring situations, researchers can fully devote their time and resources to their core work.

The state makes use of its legal scope for action to facilitate new forms of cooperation and governance, including legally compliant experimental spaces, innovation zones and living labs. Through experimentation clauses and temporary exemptions, with objectives and rules that are jointly agreed between policymakers and the scientific community, individual and situation-specific flexibility is created. This strategic leeway takes effect by

systematically identifying and removing administrative barriers, and replacing them with practical, reusable standards that reliably simplify procedures.

As much of the potential for improvement lies beyond the direct remit of the Senate Department for Higher Education and Research, the state will establish cross-departmental working structures. Where federal or European legislation calls for reforms, Berlin will initiate the relevant processes through coalitions with other federal states and political alliances. In this way, Berlin will play a significant role in shaping reform agendas at federal and EU level and drive forward science-friendly modernisation in a sustainable manner.

4.3.3 Action pathway 3: **Creating opportunities for researchers**

Berlin is already a magnet for researchers at all career stages. This action pathway makes the recruitment and retention of researchers a consistently designed aspect of the city's appeal. The institutions are responsible for recruitment, academic standards and profiles. Working in partnership with the research institutions, the state ensures that the onboarding process, procedures and career conditions are internationally competitive and operate across the research ecosystem within streamlined and enabling framework conditions. **By 2040, Berlin will become Europe's most attractive career destination, drawing in researchers and offering long-term prospects.**

The state's strategic objectives

The state will retain particularly outstanding researchers on a long-term basis in order to sustainably secure its international standing for the long term. It will also create optimal conditions for scientists to advance their careers in Berlin.

The state will strengthen diverse career paths and, in addition to professorial posts, provide legal and structural support – within the limits of state law – for transparent career prospects, attractive conditions of employment and predictable career development pathways. The recruitment and onboarding of international researchers will be carried out in a service-oriented, swift and reliable manner.

The state will support permeability within the research ecosystem. Mobility between universities, universities of applied sciences, non-university research institutions and industry is to be simplified, making interinstitutional career transitions in both directions a standard feature of careers at all stages. The option of a hybrid doctoral pathway provides an important first step in this regard.

The state reaffirms equal opportunities, diversity and internationality as quality dimensions of Berlin's career landscape in its key policy instruments, and makes progress transparent.

The state enables: reliability and mobility

The state builds on the city's international appeal, its cooperative structures and a modern higher education act. It will consolidate many good yet partly decentralised solutions into a reliable, city-wide career infrastructure.

The state makes use of its scope for action to support scientific institutions in attracting leading research personalities and outstanding researchers, while enabling faster appointments, including through the transfer of appointment powers to universities. Together with the institutions, the state will institutionalise a researcher-centred welcome culture. The Senate Department for Higher Education and Research will engage in dialogue with the relevant authorities to accelerate visa and residence permit processes. At the same time, onboarding services will be further developed in line with researchers' needs, and a service-oriented culture will be strengthened to reduce burdens for researchers and enable institutions to act more swiftly. This commitment to service does not end at the institute's doorstep. The Senate Department for Higher Education and Research will coordinate across departments to specifically improve arrival conditions, particularly with regard to international childcare and school places, as well as short-term housing solutions. Berlin Partner will be strategically involved to further expand the welcome and support services. Internationally appointed academics and new hires should in future experience the path from appointment to their first day at work as transparent, reliable and free from administrative ruptures.

The Senate Department for Higher Education and Research uses its levers to further embed transparent career paths and fair framework conditions, and to strengthen equal opportunity, diversity and internationality as hallmarks of an excellent research environment. The instruments established under the Berlin Higher Education Act – such as new staff categories and tenure-track positions – will be used as standard pillars of a modern staffing structure alongside the traditional professorship. The principle is as follows: the state sets the framework and incentives, while the institutions make the academic decisions. This makes career trajectories more transparent and predictable, shortens the duration of procedures in areas subject to state-level responsibility, and improves Berlin's ability to retain researchers on a long-term basis more frequently.

Berlin makes permeability across institutions and sectors a defining locational feature and strengthens mobility and collaboration across different types of institutions and sectors. Joint appointments and multiple affiliations are designed in a legally sound manner within the scope of state-level competences, from postdoc to professorships. Department structures and location-wide career programmes will be established as standards, while cooperative career models such as the "Berlin Track" or the "Thuringian Model" for

postdocs will be firmly established. Cross-sector career mobility between research and industry will be facilitated, whilst further opportunities for career development in partnership with industry and social institutions will be explored. New forms of association and cooperation will be created to enable researchers to move more easily into companies and, conversely, professionals from industry to enter research institutions. Through these structural measures, Berlin will evolve into an interconnected and cohesive career space for academia and business.

4.3.4 Action pathway 4: **Deploying funds strategically**

Berlin is committed to its research sector as a key area for investment. At the same time, the scope for public spending is limited, and competition for federal, EU and other third-party funding is intensifying.

This action pathway strengthens strategic financial governance. Berlin will combine reliable core funding with flexible incentives, systematically increase the leverage of state funds deployed, and modernise procedures so that funds reach those areas more quickly where they enable scientific excellence, collaboration and impact. **By 2040, Berlin will be recognised as a location renowned for a resource governance approach that provides stability while decisively seizing opportunities.**

The state's strategic objectives

The state affirms the necessity and great benefit of adequate core funding for Berlin's higher education system. It is a prerequisite for the freedom of science as enshrined in Article 5(3) of the German Basic Law and, as the foundation of academic freedom, secures breadth and institutional stability in the long term.

The state will systematically maximise the leverage of discretionary state-level funds by strengthening co-funding and actively supporting major federal and EU programmes. Strategically steerable funding instruments will be more closely aligned with the state's objectives.

In conjunction with relevant stakeholders such as the Einstein Foundation Berlin (ESB), the state facilitates the mobilisation of additional resources – from federal and EU sources, private partners, and philanthropy – thereby strengthening the financial clout of the research location.

The state enables: predictability and impetus

Core funding remains the foundation for excellent research. Berlin therefore upholds the principle of multi-year, predictable agreements through its higher education contracts. Beyond this, the state aims to expand its strategic room for manoeuvre. Funds over which

the state has discretion will be used more actively as a stimulus for shaping the profile of Berlin as a research location in line with this strategy and its areas of strength and opportunity.

The ESB, as a flexible, excellence-oriented foundation, remains an important partner for us. It ensures the quality of projects and enables the launch of new initiatives and the foundation for competitive success at federal and EU level to be expanded. The Foundation will be supported in further developing its formats in line with the needs of the location profile, so that a growing share of flexible funding is transparently linked to strengthening the locational qualities whilst the ESB's instruments continue to focus on excellence.

Berlin will organise its financial contributions in a way that increases the likelihood of securing external funding from federal and EU programmes, as well as from large collaborative projects. The Senate Department for Higher Education and Research will strengthen a reliable practice of co-funding. This will result in state contributions more frequently leading to successful large-scale applications and consortia, thereby improving the overall leverage ratio.

Berlin will strengthen the location's capacity to attract additional funds. This includes professional support for fundraising and philanthropy approaches, a clear framework for long-term industrial partnerships, and the targeted linking of private contributions with strategic locational objectives. In doing so, sustainable financing of the funded subject matter will be taken into account at an early stage. The state's role as a strategic enabler is crucial. It establishes appropriate regulatory conditions, raises visibility and facilitates cooperation without neglecting the involvement of public funding bodies. Scientific quality remains the benchmark and the responsibility of the institutions. The share of private and philanthropic funding will grow. Economic cooperation will also strengthen application-oriented research, whilst partnerships will become more long-term and strategically aligned with the areas of strength and opportunity.

4.3.5 Action Pathway 5: Building future infrastructures

Excellent research requires excellent infrastructure - both physical and digital. Berlin already has a strong foundation and has demonstrated, through the BUA's shared resources approach, how shared use raises scientific quality and enables more efficient use of resources. At the same time, demands on resilience, availability and technological sovereignty are growing. In competition with other locations, what counts is whether infrastructures are quickly accessible, reliably operated and usable across the location as a whole.

This action pathway makes infrastructure policy a strategic lever for the state. The state will not only invest in construction and procurement, but will also secure access, analyse utilisation and guarantee operation and digital sovereignty throughout the entire lifecycle.

By 2040, Berlin will be synonymous with a research infrastructure that accelerates cooperation, strengthens data-intensive research and operates independently and resiliently in critical areas.

The state's strategic objectives

The state will strengthen Berlin's digital sovereignty and establish a thematically differentiated Berlin Research Data Space as a key prerequisite for advancing data-driven research.

The state will enhance the performance of the research ecosystem by making research infrastructures accessible across Berlin and ensure that shared use is the default wherever State funding is involved.

The state will ensure transparency regarding existing large-scale equipment, core facilities and digital capacities, as well as their utilisation rates. This provides the basis for structural collaboration, informed investment decisions and the avoidance of duplicate structures.

The state will ensure resilience and long-term operation. Investments will be consistently planned in conjunction with sustainable processes for operation, maintenance and renewal ("full-lifecycle approach"), so that infrastructure will not merely be established but will also have a lasting impact.

The state enables: access and resilience

The Senate Department for Higher Education and Research creates the conditions to further develop the BUA's shared-resources approach into a standard model for cross-institutional collaboration. The scientific autonomy of the institutions is thereby preserved.

Data-intensive research is becoming a competitive factor in nearly all disciplines. The state therefore supports the development of a sovereign digital ecosystem. The Berlin research data space, secure data infrastructures and demand-driven high-performance computing and AI computing capacities, as well as research data infrastructures (including within the context of the National Research Data Infrastructure, NFDI), will be developed through cross-departmental coordination and made available across the entire location. Researchers will be thus better able to collaborate in a data-driven manner across institution types, whilst the location gains greater independence in critical digital areas.

The Senate Department for Higher Education and Research, together with the academic institutions, will establish a digital, location-wide infrastructure register that records publicly funded large-scale equipment and core facilities at universities and non-university research institutions, including their utilisation rates, will standardise access and promote shared use. Researchers will thus be able to find suitable resources more quickly, and the utilisation of shared infrastructure will increase demonstrably.

Berlin implements a uniform approach to new investments that places the principle of cross-location use at its centre. The BUA and its cooperation platform will play a key role in this regard. Shared-use models will be made the norm where appropriate, in particular where state funding is involved. A growing, uniformly regulated share of infrastructure that can be used across institutions will ensure that cooperation is no longer hindered by institutional boundaries or unclear procedures.

The state continues to support institutions in successfully delivering major infrastructure projects, particularly where federal and joint funding mechanisms, such as for research buildings under Article 91b of the German Basic Law, offer relevant leverage. The state acts as a reliable partner in unlocking this complex funding arrangement in order to make Berlin's research infrastructure visible through state-of-the-art buildings and upgrade existing infrastructure. The maintenance of existing infrastructure is ensured with due regard to spatial sufficiency.

Infrastructure policy does not end with construction – Berlin consistently views infrastructure as a life-cycle task. Together with the institutions, the Senate Department for Higher Education and Research will develop financing and regulatory frameworks that take operating costs into account as an integral component of investment support. Maintenance, qualified non-academic staff, replacement investments and contingency planning are systematically factored in. This ensures that strategic infrastructures remain permanently operational, whilst refurbishment and modernisation needs are identified at an early stage and addressed in a planned manner.

4.3.6 Action pathway 6: **Delivering impact**

As the federal capital and a location for research and innovation, Berlin is a place of short distances between science, politics, public administration, business, the media, culture and urban society are closely interconnected. This proximity is already having an impact today in terms of transfer and start-up activity, as well as in shaping public discourse. This locational advantage is to be further developed.

In an increasingly competitive environment, it is important to strengthen the impact orientation of research and to make impact more reliable, visible and compatible.

Innovation arising from research, commercialisation and marketability will be promoted and facilitated without calling into question the importance of basic research or reducing impact to commercial exploitability. Berlin therefore adopts a broad understanding of impact, which encompasses technological application, the strengthening of resilience, translation and social innovation, as well as transdisciplinary knowledge production, engagement in public discourse, evidence-based policy-making, alongside science communication as complementary dimensions. **By 2040, Berlin will be a location where excellent research is systematically translated into societal and economic impact, and where the societal contribution in research projects is recognised and actively incorporated.**

This action pathway is conceived as a unifying link between science policy and economic policy. Through the joint Berlin Transfer Bridge, which serves as a translation framework between research and innovation policy, the interplay between the two Senate Departments will be organised in such a way that the path from excellent research, through transfer and commercialisation to scaling and market penetration becomes consistently connective. The Senate Department for Economic Affairs will furthermore develop the Deep Tech Berlin Agenda for technology policy, as well as the new Berlin-Brandenburg Innovation Strategy (innoBB), which tie in seamlessly with the research policy strategy. Beyond this, the Senate Department for Higher Education and Research considers it as an independent goal to strengthen research as a social practice and to feed social knowledge back into research: through critical engagement with challenges, through the involvement of voluntarily engaged Berlin citizens in research, through scientifically grounded debates, and through the ability of researchers to be visible and effective as public actors.

The state's strategic objectives

The state will establish a cross-departmental action framework in order to systematically interlink funding and support schemes in the area of transfer, optimise structures and provide key stakeholders with reliable access.

The state will ensure that impact in terms of research performance is recognised as a factor in building reputation and advancing careers by structurally embedding transfer, collaboration and communication activities as well as transdisciplinary research approaches, into its incentive and recognition systems.

The state will strengthen public scientific discourse as an infrastructure of democratic resilience. Scientific expertise becomes more visible, accessible and effective in societal debates, with clearly defined roles, professional support and dialogue formats that build trust and open up new knowledge resources.

The state enables: transfer and dialogue

Berlin's research translates knowledge into impact. The state strengthens this dimension through clear responsibilities, coordinated instruments and a shared understanding of "impact" as a reliable locational quality.

Specifically, the city will implement the Berlin Transfer Bridge. Funding instruments will be harmonised, redundant structures removed and common strategic priorities defined for Berlin's innovation ecosystem. Transfer requires smooth transitions in the areas of cooperation and contracts, intellectual property (IP) and licensing matters, data access, start-up support, and at interfaces with public administration and public enterprises. The state will establish a reliable foundation for this and reduce transaction costs through model contracts, licensing frameworks, clear regulations and standardised procedures. Close interlinking with instruments such as the High-Tech Gründerfonds, the start-up factory JUNI, or the merger of the business incubators of the BUA partners Science & StartUps, systematically reinforces transfer dynamics. The Innovate!Lab of the Berlin University Alliance also supports the transfer of research findings to market. Thanks to this stable support ecosystem and reliably functioning interfaces, transitions into application become more predictable, whilst collaborations and spin-offs arising from Berlin-based research occur at a measurably higher rate.

To facilitate collaboration, Berlin will establish vibrant transfer ecosystems. The Senate Department for Higher Education and Research will specifically promote places and formats where transfer takes concrete form: special innovation zones with reduced regulatory barriers, start-up-friendly framework conditions, shared technology infrastructures and open-topic living labs. These spaces are available to universities, non-university research institutions, companies, cultural organisations and civil society alike as an experimental ground - serving as testing areas for social innovations and cultural practices in a real-world setting, as well as for technological and industrial applications. They make the impact of research tangible in urban life, strengthen cross-sector cooperation and foster interaction between science, business, culture and urban society. Professional easy-access support services—from start-up advice to IP management—will be available to researchers. This allows new technologies and social innovations to move more rapidly into practical testing. Joint innovation will become increasingly the norm, as living labs and urban infrastructure successfully function as open testing grounds within the urban landscape.

Impact orientation becomes more attractive to researchers when it is integrated into quality and recognition systems. The state will anchor impact orientation in an appropriate form within its steering instruments — expressly without narrowing research to

short-term exploitation. Transfer and communication activities, as professional contributions that enhance reputation, will be given their rightful place in the understanding of scientific achievement. As a result, these activities will be widely recognised as an independent dimension of quality. A state-wide strategy for science communication will promote dialogue between science, politics and society, strengthen participation and raise the visibility of scientific expertise in relevant debates. Of particular importance is the dialogue with citizens about societal challenges.

Berlin cultivates a self-image in which researchers proactively bring their expertise into public debates in order to bring objectivity to discourse and counter disinformation. Participatory formats and transdisciplinary as well as hybrid research methods, citizen science, and societal dialogue are strengthened as hallmarks of modern research through incentives, networking, supportive infrastructures, and institutionalised exchange formats between science and politics. The Senate Department for Higher Education and Research acts as a role model. It systematically embeds scientific findings and evidence into its own decision-making and implementation processes, involves researchers at an early stage in policy development, and makes clear that scientific expertise serves as a binding reference not only for society but also for government action. The result is a measurably higher resonance of scientific expertise in public debates, accompanied by improved reach and quality indicators in science communication. This strengthens confidence in science as an institution and positions Berlin as a location where research operates responsibly - internationally visible and locally embedded.

5 Shaping Berlin: Delivering together

This strategy is designed to achieve impact. Its value is realised through its implementation. This requires clear responsibilities, robust processes and a willingness to stay the course whilst also making adjustments when the framework conditions change.

An effective research policy strategy for Berlin as a science location cannot be developed by the administration alone. It requires the expertise, involvement and commitment of the scientific institutions. At the same time, the role of policymakers is to shape the framework conditions as to enable excellent research and innovation. They create the legal, financial and organisational conditions necessary for science to make its contribution to tackling the challenges facing our society and to shaping our future. The scientific community drives forward basic and applied research, develops new research approaches, methods and technologies, and assesses their relevance and feasibility. The results form the foundation for innovative solutions that create added value for society, the economy and the public sector. Implementation will therefore be dialogue-oriented and will take place step by step through collaboration between the state, universities, non-university research institutions and other partners.

Governance: Who is responsible and who contributes

Overall responsibility for implementing the research policy strategy rests with the Senate Department for Higher Education and Research, in close cooperation with the scientific institutions, whilst respecting university autonomy. The Senate Department for Higher Education and Research steers the implementation of the state strategy, coordinates collaboration with other departments and represents the strategy in dealings with the federal government and the EU.

The state conducts **Strategy dialogues** for each of the four areas of strength and opportunity. These will bring together universities, research institutions, the BUA, BR50, and, where relevant, partners from industry, culture, healthcare, or civil society on a regular basis to identify needs, develop pilot initiatives and support implementation. These dialogues are the forum where scientific expertise and political strategy come together, and where the areas are given a voice of their own.

For each action pathway, a lead unit within the Senate Department for Higher Education and Research is designated to oversee its thematic and operational implementation. The lead unit will drive implementation forward, coordinate the respective departments, manage resources and report regularly to senior management on progress and areas requiring action. To this end, the unit will engage regularly through an expert forum with representatives from academia, politics and public administration. Together, they will

consistently assess the existing framework conditions within the respective action pathway, identify obstacles, and develop specific recommendations.

Both dimensions intersect where an action pathway meets an area of strength or opportunity. The lead unit brings in the operational perspective, whilst the strategy dialogue provides the specialist expertise and institutional insight. It is at these points of intersection that the concrete pilot projects are developed. A central coordination role within the Senate Department for Higher Education and Research oversees all implementation strands, organises the interfaces between them and ensures overall coherence.

Implementation: How the strategy takes shape

- **Pilot phase:** The state and the involved institutions jointly operationalise the areas of strength and opportunity. For each area, pilot projects are identified that draw on the interfaces between action pathways and areas and demonstrate, by way of example, how the state fulfils its role as enabler.
- **Scaling phase:** Successful approaches are expanded and rolled out across the entire science sector.
- **Consolidation phase:** The sustainability of the progress is secured and the strategy is adapted to changing conditions.

The following applies across all phases: not every field requires the same impetus. The selection of specific measures is guided by the specific needs of the respective fields.

Accountability: How progress becomes measurable

The state will establish a systematic monitoring framework to track progress across the action pathways and the areas of strength and opportunity. It will define appropriate indicators and data sources to this end. The monitoring supports strategic management within the Senate Department for Higher Education and Research, ensures transparency towards partners in the science sector, and accountability to the Berlin Senate and the House of Representatives.

Every two years, the Senate Department for Higher Education and Research will consolidate the results in a progress report. This will feed into the strategy dialogues and serve as a basis for refining and advancing the measures. In the event of fundamental changes to the framework conditions, the state may adapt individual areas or pathways without abandoning the overall strategic architecture.

This strategy sets out the direction and framework – how it is brought to life will depend on the collective efforts of all stakeholders. The state invites universities, research institutions

and partners to use the strategy as a common frame of reference, to contribute their own strengths, to negotiate priorities together and to advance Berlin as a centre of science with an ambition that matches its strengths.

Research is Berlin's greatest opportunity for the future - strengthening it is a long-term responsibility, one that the science metropolis of Berlin is committed to embracing.

Appendix

List of abbreviations

| | |
|------------|--|
| AI | Artificial Intelligence |
| BAM | Federal Institute for Materials Research and Testing |
| BBAW | Berlin-Brandenburg Academy of Sciences and Humanities |
| BHT | Berliner Hochschule für Technik |
| BIFOLD | Berlin Institute for the Foundations of Learning and Data |
| BIH | Berlin Institute of Health |
| BR50 | Berlin Research 50 |
| BUA | Berlin University Alliance |
| CCE | Center for Chiral Electronics |
| CSMB | Center for the Science of Materials Berlin |
| CSR Berlin | Center for Sustainable Resources Berlin |
| CTC | Center for the Transformation of Chemistry |
| DAAD | German Academic Exchange Service |
| DFG | German Research Foundation |
| DFKI | German Research Center for Artificial Intelligence |
| DIW Berlin | German Institute for Economic Research |
| DLR | German Aerospace Center |
| DREZ | German Rheumatism Research Center |
| ESMT | European School of Management and Technology |
| ESB | Einstein Foundation Berlin |
| FhG | Fraunhofer-Gesellschaft |
| FHI | Fritz Haber Institute |
| FMD | Research Fab Microelectronics Germany |
| FOKUS | Fraunhofer Institute for Communication Systems |
| FP10 | 10th EU Framework Programme for Research and Innovation |
| FU | Freie Universität Berlin |
| HGF | Helmholtz Association |
| HHI | Fraunhofer Institute for Telecommunications, Heinrich-Hertz-Institut |
| HPI | Hasso Plattner Institute |
| HTW | HTW Berlin - University of Applied Sciences |
| HU | Humboldt Universität zu Berlin |
| HZB | Helmholtz-Zentrum Berlin für Materialien und Energie |

| | |
|---------|---|
| IP | Intellectual Property |
| IPK | Fraunhofer Institute for Production Systems and Design Technology |
| IZM | Fraunhofer Institute for Reliability and Microintegration |
| JUNI | Just Unite to Innovate |
| MBI | Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy |
| MDC | Max Delbrück Center for Molecular Medicine |
| MPG | Max Planck Society |
| NFDI | National Research Data Infrastructure |
| NGO | Non-governmental organisation |
| PTB | Physikalisch-Technische Bundesanstalt (National Metrology Institute of Germany) |
| RKI | Robert Koch Institute |
| SCRIPTS | Contestations of the Liberal Script |
| SPK | Stiftung Preußischer Kulturbesitz (Prussian Cultural Heritage Foundation) |
| TU | Technische Universität Berlin |
| UdK | Berlin University of the Arts |
| WGL | Leibniz Association |
| WIAS | Weierstrass Institute for Applied Analysis and Stochastics |
| WZB | Berlin Social Science Center |
| ZIB | Zuse Institute Berlin |
| WIAS | Weierstraß-Institut für Angewandte Analysis und Stochastik |
| WZB | Wissenschaftszentrum Berlin für Sozialforschung |
| ZIB | Zuse Institut Berlin |

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