POLICY OF THE FEDERAL REPUBLIC OF GERMANY IN THE SPHERES OF HIGHER EDUCATION AND SCIENCE (1950–1980s)

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INTRODUCTION

During the 1950s–1980s, the Federal Republic of Germany (FRG) underwent a series of higher education reforms that led to the emergence of mass universities, the implementation of the educational objectives of the welfare state, and exerted a significant influence on the labor market, economic development, and the socio-political and civic activity of German society. At the same time, in the second half of the twentieth century, science policy (Wissenschaftspolitik) in West Germany became increasingly active. As is well known, the 1950s–1980s marked a period of intensive modernization of the Federal Republic of Germany following World War II, and the science policy of the young state during this time became an important factor in the «economic miracle» (Wirtschaftswunder) and in the integration of the FRG into Western political and economic structures.

The study of the legal and organizational foundations of science policy and higher education reform makes it possible to understand the state's strategy in forming innovation systems that contributed to reconstruction and growth. The analysis of the historical experience of the FRG may be useful for contemporary countries, including Ukraine, which are reforming their systems of higher education and science, building institutional mechanisms for human capital formation, supporting research, and ensuring the integration of science with the economy and international scientific processes.

1. Reforming the Higher Education System in West Germany

The development of the higher education system in West Germany after World War II has long attracted the attention of German and other Western scholars. Among them, it is worth

highlighting the works of J. M. Mushaben[1], C. Oehler[2], C. Führ[3], K. H. Jarausch[4], B. M. Kehm[5], G. Turner[6], and B. M. Puaca[7], in which the democratic nature of the reforms carried out in the field of education as a whole was emphasized, and their socially oriented character was underscored. A more critical assessment of the transformations in the higher education system of the FRG was offered by E. Göztepe-Çelebi, F. Stallmann, and A. Zimmer, who pointed to the shortcomings and failures of the reform process[8]. O. Anweiler, H.-J. Fuchs, M. Dorner, and E. Petermann compiled documentary materials on educational policy in the GDR during 1945–1990[9]. G. Baldi conducted a comparative analysis of postwar educational policy in Germany and Britain[10]. S. Hnilica analyzed the architectural development of universities in the FRG since the

[1] Mushaben J. M. Reform in three phases: judicial action and the German Federal Framework Law for Higher Education of 1976. *Higher Education*. 1984. Nr. 13. P. 423–438.

[2] Oehler C. Hochschulentwicklung in der Bundesrepublik Deutschland seit 1945. Frankfurt am Main and New York, Campus, 1989. 273 s.

[3] Führ, C. The German university: basically healthy or rotten? Reflections on an overdue reorientation of German higher education policy. In *Phillips D. (Ed). Education in Germany. Tradition and Reform in Historical Context*. London and New York: Routledge, 1995. P. 80–91; Führ C. The German Education System since 1945: Outlines and Problems. Bonn, 1997. 335 p.

[4] Jarausch K. H. (1997). The Humboldt syndrome: West German universities, 1945–1989. In *Ash M. G. (Ed.). German Universities Past and Future: Crisis or Renewal?* New York: Berghahn Books, 1997. P. 33–49

[5] Kehm B. M. Higher Education in Germany. Developments Problems, Future Perspectives. Bucarest: CEPES, 1999. 145 p.

[6] Turner G. Hochschule zwischen Vorstellung und Wirklichkeit. Zur Geschichte der Hochschulreform im letzten Drittel des 20. Jahrhunderts. Berlin: Duncker & Humblot, 2001. 294 s.

[7] Puaca B. M. Learning Democracy: Education Reform in West Germany, 1945–1965. New York: Berghahn Books, 2009. 236 p.

[8] Göztepe-Çelebi E., Stallmann F., Zimmer A. Looking back: Higher Education Reform in Germany. *German Policy Studies*. 2002. Vol 2. No 3. P. 1–22.

[9] Anweiler O., Fuchs H.-J., Dorner M., Petermann E. Bildungspolitik in Deutschland 1945–1990. Ein historisch-vergleichender Quellenband. Bonn: Bundeszentrale für politische Bildung, 1992. 574 p.

[10] Baldi G. Ideas, Institutions, and the Politics of Schools in Postwar Britain and Germany. Springer International Publishing, 2022. 372 p.

1960s[1]. Researchers such as K. Mause[2], H. A. Welsh[3], R. Pritchard[4], G. Buck-Bechler[5], and others have examined higher education reforms at the end of the twentieth and the beginning of the twenty-first century, offering historical excursions and comparisons with the reforms of the 1960s–1980s. The sociologist H. Schomburg investigated the employment of higher education graduates in Germany[6]. Among the studies of Ukrainian scholars, particular attention should be paid to the article by O. Ohiienko, which outlines the reform of higher education in Germany at the end of the twentieth and the beginning of the twenty-first century[7]. The stages of development of German universities in the second half of the twentieth century were proposed by H. Oleksiv and O. Shyika[8]. Of general theoretical significance for this study are the works of Å. Gornitzka and P. Maassen[9], M. Kwiek[10], D. Müller-Böling[11], as well as M. Haliv and V. Ilnytskyi[1].

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[1] Hnilica S. Experiments with Megastuctures and Building Systems. University Building in the Federal Republic of Germany in the 1960s and 1970s. *Architectural Histories*. 2022. Issue 10(1). Nr. 1. P. 1–34.

[2] Mause K. Transformations of the Educating Leviathan: The Restructuring of German Higher Education in the Noughties (October 1, 2011). *Austausch – German Studies Online Journal*. 2011. Vol. 1. No. 2. P. 13–35.

[3] Welsh H. A. Higher Education Reform in Germany. Advocacy and Discourse. *German Politics and Society*. 2009. Issue 90. Vol. 27. No. 1. P. 1–23.

[4] Pritchard R. Trends in the Restructuring of German Universities. *Comparative Education Review*. 2006. Issue 50(1). P. 90–112.

[5] Buck-Bechler G. Hochschule zwischen fremdgesteuertem Veränderungsdruck und selbstgesteuerten Entwicklungstendenzen. Anmerkungen zu einem unerledigten Thema. *Beiträge zur Hochschulforschung*. 2000. Nr. 1/2. P. 31–45.

[6] Schomburg H. Higher Education and Graduate Employment in Germany. *European Journal of Education*. 2000. Issue 35(2). P. 189–200.

[7] Огієнко О. Реформування вищої освіти Німеччини у 90-х роках XX – початку XXI століття. *Освіта дорослих: теорія, досвід, перспективи*. 2012. Вип. 5. С. 252–259.

[8] Олексів Г., Шийка О. Розвиток університетів Німеччини у другій половині XX століття. *Педагогічні науки. Збірник наукових праць*. 2019. Вип. 87. С. 27–32.

[9] Gornitzka Å., Maassen P. Analyzing organizational change in higher education. *Comparative Social Research*. 2000. Issue 19. P. 83–99.

[10] Kwiek M. Globalization and higher education. *Higher Education in Europe*. 2001. Issue 26. P. 27–37.

[11] Müller-Böling D. Die entfesselte Hochschule. Gütersloh: Verlag Bertelsmann Stiftung, 2000. 256 s.

After World War II, higher education in West Germany, which was occupied by the United States, France, and Great Britain, required renewal, primarily the restoration of university autonomy, rebuilding of human resources, and the implementation of denazification. The Western Allies generally supported the revival of German universities. After the establishment of the Federal Republic of Germany in 1949, German governments focused considerable attention on economic reconstruction, relying on international assistance, domestic resources, and human capital. Higher education, however, was not among the primary governmental priorities in the 1950s. Nevertheless, already in 1957, higher education experts recommended structural and institutional reforms of German universities, which were characterized by insufficient democracy in decision-making procedures and administrative structures, as well as by the dominance of professors in governance, creating a form of academic autocracy[2].

The situation changed in the 1960s. Leading German intellectuals increasingly pointed to serious problems in the field of education in general and higher education in particular. In 1964, a series of articles by the educator and philosopher Georg Picht was published, in which he described the state of German education using the concept of an «educational catastrophe». He argued that the FRG's education system was in a neglected state, since only 6–7% of secondary school graduates were sufficiently prepared to enter universities (a significantly lower rate than in neighboring countries), and there existed a considerable disparity in educational opportunities between urban and rural children, as well as between children from wealthy and poor families. Consequently, he emphasized the insufficient development of human potential on a national scale and warned of threats to the economy, noting that

[1] Галів М., Ільницький В. Вища освіта в Боснії і Герцеговині (кінець XX – початок XXI ст.): між реформами і традицією. *Актуальні питання гуманітарних наук*. 2025. Вип. 86. Том 1. С. 19–28; Галів М. Освітня політика в Хорватії (кінець XX – початок XXI ст.): стратегія післявоєнної відбудови і європейського розвитку. *Проблеми гуманітарних наук*. Серія Історія. 2024. Спецвипуск. С. 147–159.

[2] Göztepe-Çelebi E., Stallmann F., Zimmer A. Looking back: Higher Education Reform in Germany. *German Policy Studies*. 2002. Vol 2. No 3. P. 4.

without a sufficient number of qualified workers, the FRG would not be able to remain competitive in the global economy[1].

According to G. Picht, overcoming this lag required a substantial increase in the number of graduates, particularly at higher levels of education. The federal states, which had previously been responsible for this sphere, were unable to cope independently with the necessary planning and financing. Together with the federal government, they needed to launch an «emergency program» to significantly increase the number of university graduates within the shortest possible time. To this end, Picht proposed the establishment of an Education Council (analogous to the Science Council), the abolition of the «dead-end system of sharply divided types of schools», the opening of universities to graduates without traditional secondary education qualifications, the shortening of study duration in higher education institutions by dividing it into a lower level of professional training and a higher, research-oriented level, as well as the continuous updating of scholars' knowledge in line with the latest research achievements through ongoing professional development[2].

The conclusions and proposals of G. Picht sparked a broad public discussion, which was taken up by the media, politicians, and civic organizations. Consequently, the issue of educational reform became a matter of national debate, and the attention of both federal and state governments to these problems increased. Already in 1964, debates on the FRG's educational policy unfolded in the Bundestag[3]. Relevant signals also came from abroad: as early as 1962, British scholars presented statistical data indicating the extent to which the FRG lagged behind most Western European countries in terms of expenditure on higher education and enrollment rates. The shortage of qualified school graduates and teachers was perceived as a threat to Germany's economic future and prosperity[4].

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[1] Picht G. Die deutsche Bildungskatastrophe: Analyse und Dokumentation. Walter-Verl, 1964. S. 16–42.

[2] Ibid. S. 65–85.

[3] Ibid. S. 102–181.

[4] Göztepe-Çelebi E., Stallmann F., Zimmer A. Looking back: Higher Education Reform in Germany. *German Policy Studies*. 2002. Vol 2. No 3. P. 4.

Ultimately, with the coming to power of the coalition government headed by Kurt Georg Kiesinger (1966), and subsequently the Social Democratic government of Willy Brandt (1969), the reform of higher education in the FRG was initiated. In 1969, amendments were introduced to the Basic Law of the FRG, granting the federal government the authority to establish framework legislation in the field of higher education. In the same year, the Federal Ministry of Education and Research was created. At this time, a new type of higher education institution was established–universities of applied sciences (Universitäten für Angewandte Wissenschaften / Fachhochschulen). The formal decision to establish these institutions was adopted on October 31, 1968, in the «Agreement between the Federal States of the FRG on the Integration of Fachhochschulen into the Higher Education System». The first universities of applied sciences opened in August 1969 (in the cities of Flensburg, Lübeck, and Kiel) following the signing of the relevant agreements by the federal states. Universities of applied sciences differed from traditional German universities in several respects. First, they were oriented toward practical training. These institutions prepared practitioners, especially in the fields of engineering, economics, management, administration, and design. Their educational programs included extended practical semesters or internships, and the training focused on professional skills in real production and professional contexts. Second, they paid less attention to theoretical and research work. Universities of applied sciences did not have a strong foundation in fundamental research and instead concentrated on developing applied competencies in students. These institutions did not have the right to award academic degrees. Third, the teaching staff of universities of applied sciences consisted largely of practitioners. Professors at such institutions were traditionally required to have substantial professional experience rather than exclusively academic careers, which distinguished them from professors at classical universities. Fourth, studies at universities of applied sciences were often shorter in duration and had a clearer connection to labor market needs[1].

[1] History of the the universities of applied sciences. 2025. URL: https://www.hochschulkompass.de/en/higher-education-

Legislative changes were also of great importance. On September 1, 1969, the Bundestag adopted the Act on the «Expansion and Construction of Higher Education Institutions» (Hochschulbauförderungsgesetz)[1]. The government recognized that increasing the number of students required the creation of an appropriate material base: modernization of existing institutions and construction of new higher education institutions. At that time, the university infrastructure in the FRG faced a number of problems, including a shortage of lecture halls (leading to overcrowding), outdated buildings, and insufficient laboratories and scientific equipment. There were also regional disparities in the distribution of universities among the German federal states, as most institutions were located in the southern and western regions (Bavaria, Westphalia). In addition, policymakers were influenced by other factors: the student movement of 1967–1969, the advocacy by Social Democrats of education as a means of achieving social equality, and the desire of the German bureaucracy to coordinate educational development and manage related funding.

The Act on the promotion of university construction established joint responsibility between the federal government and the governments of the federal states in the field of university infrastructure development. Essentially, funding for the reconstruction and construction of universities was to be carried out on a parity basis. Funds were allocated for teaching buildings, research facilities, libraries, medical faculties, and university hospitals[2]. The law did not interfere with the content of education but focused on material infrastructure.

The importance of this law is difficult to overestimate. On its basis, in the 1970s–1980s, a large-scale modernization of higher education infrastructure in the FRG was carried out: dozens of new universities and campuses were established (for example, in Bremen, Hagen, Kassel, Passau, Trier, Ulm, and others), existing classical universities were expanded, and modern laboratories and libraries were created. As a result, access to higher education for

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institutions/history/history-of-the-universities-of-applied-sciences

[1] Gesetz über die Gemeinschaftsaufgabe "Ausbau und Neubau von Hochschulen" (Hochschulbauförderungsgesetz). *Bundesgesetzblatt*. 1969. Teil I. S. 1556–1559.

[2] Ibid.

German youth was significantly expanded, as higher education institutions were able to accommodate a much larger number of students. Importantly, regional disparities between federal states in terms of the number and capacity of universities were reduced. Of course, there were also certain negative aspects, including slow decision-making, complex coordination procedures between the federal center and regions, and an emphasis on quantity rather than quality.

It is known that in 1970–1994, the federal and state governments jointly invested approximately 66.2 billion German marks in the construction and expansion of universities and campuses. The federal share amounted to 29.9 billion marks, while the states contributed 36.3 billion[1]. Only for buildings (excluding equipment), 37.7 billion marks were spent in 1970–1985[2]. By the mid-1980s, 38 new universities had been opened in the FRG alongside 27 already existing ones[3]. For most of the newly established institutions, new buildings in a modern style were constructed. The most intensive construction activity took place in North Rhine–Westphalia, where 14 new universities were built at a cost of nearly 11 billion marks. Their academic facilities together comprised 1.5 million square meters. Over approximately 30 years (approximately 1960–1989), the usable space of German university buildings increased sevenfold, laying the material foundation for a tenfold increase in the number of students[4].

At the initiative of the Social Democrats, on August 26, 1971, the Federal Training Assistance Act (Bundesausbildungsförderungsgesetz, BAföG) was adopted[5]. According to this law, students of universities, higher vocational schools, and secondary vocational institutions were entitled to receive grants, provided that their own income and that of their

[1] Führ C. The German Education System since 1945: Outlines and Problems. Bonn, 1997, P. 45.

[2] Hnilica S. Experiments with Megastructures and Building Systems: University Building in the Federal Republic of Germany in the 1960s and 1970s. *Architectural Histories*. 2022. Issue 10(1). Nr. 1, P. 6.

[3] Ibid. S. 2.

[4] Ibid. S. 6.

[5] Bundesgesetz über individuelle Förderung der Ausbildung (Bundesausbildungsförderungsgesetz – BAföG). URL: https://www.gesetze-im-internet.de/baf_g/BAf%C3%B6G.pdf

parents were insufficient to cover the costs of education. Essentially, these grants were provided in the form of non-repayable stipends, the amount of which was determined after a thorough assessment by state authorities of parental income, the student's place of residence, and family status[1]. The maximum grant could reach 420 marks per month. As early as 1972, 44.6% of West German students received educational grants. However, in 1974, due to financial constraints, the government introduced a mandatory loan component within the grant structure, ranging from 70 to 150 marks. Despite widespread student protests, part of the grant thus became a debt that had to be repaid to the state after graduation. This development somewhat reduced the number of grant recipients. By 1981, approximately 33% of students were receiving financial support[2]. Overall, the grant system ensured a minimum standard of living for students and contributed to an increase in the number of higher education participants from working-class and low-income families.

In 1976, the Framework Law on Higher Education (Hochschulrahmengesetz) was adopted[3]. Prior to this, higher education in the FRG had been regulated by state laws, which led to significant differences in standards, admission procedures, and assessment practices. Ultimately, there were not only legal but also social and political prerequisites for the introduction of a federal framework law, as during the rule of the Social Democratic governments of W. Brandt and H. Schmidt, particular attention was given to expanding access to higher education for children from working-class and rural backgrounds, as well as to the effective use of human capital for further economic and scientific-technological development of the country.

The 1976 Higher Education Act defined the structure of universities, their functions, and governance, affirmed university autonomy, while also emphasizing the need for cooperation with

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[1] Ibid.

[2] *BAföG. 2025. URL: https://grokipedia.com/page/BAf%C3%B6G#bafög; Geschichte und Statistik zum BAföG. 2025. URL: https://www.studierendenwerke.de/themen/studienfinanzierung/bafoeg/geschichte-und-statistik*

[3] Hochschulrahmengesetz. Vom 26. Januar 1976. *Bundesgesetzblatt*. 1976. Teil I. Nr. 10. S. 185–206.

relevant state authorities. It was stressed that universities, in accordance with their mission, serve the development of sciences and the arts through research, teaching, study, and continuing education. They prepare students for professional activities requiring the application of scientific knowledge and methods or the capacity for artistic creativity. The law also outlined the tasks of universities in fostering the development of young scholars and artists, providing continuing education for their staff, and supporting the social development of students (taking into account the special needs of students with children and students with disabilities). Universities were required to participate in international, particularly European, cooperation in higher education and exchanges between German and foreign higher education institutions, while also addressing the specific needs of international students. The law emphasized the necessity of cooperation with other state and state-funded research and educational institutions[1].

All types of German higher education institutions were integrated into a unified system of higher education in the FRG. Existing universities could be expanded or merged to form so-called comprehensive (integrated) universities. If they wished to maintain their legal independence, they could cooperate through the establishment of joint bodies, thus becoming cooperative comprehensive universities. When forming a comprehensive university, it was necessary to ensure that, given its structure and the geographical distribution of its units, it could effectively perform its functions and implement the required range of educational programs[2]. The introduction of a unified system of higher education was undoubtedly a positive development, as it eliminated the structural fragmentation that had existed among different types of higher education institutions across the federal states.

The 1976 law also established rules for admission, membership in the university, and the organization and governance of universities. It defined the rights and responsibilities of professors, students, academic staff, and other employees, as well as the

[1] Ibid. S. 187.
[2] Ibid. S. 188.

principles of student participation in university governance. In particular, it specified that students had the right to representation in collegiate bodies such as the senate, faculty councils, and committees. At the same time, it emphasized that primary responsibility for academic matters rested with professors, which somewhat limited the influence of students, especially in issues related to educational programs and regulations. The law also guaranteed students the right to establish self-governing bodies, independently address issues related to the protection of student interests, social and cultural matters, and to participate in governance within the university[1].

Naturally, the federal government, in cooperation with the governments of the federal states, monitored the implementation of the Higher Education Framework Law. In January 1984, a commission appointed by the Federal Minister of Education and Science to evaluate the effectiveness of the law presented a report that prompted legislators to introduce amendments to the main legal framework governing higher education. These amendments were enacted through a separate law in March 1985[2]. First and foremost, university autonomy in student selection procedures was expanded. Alongside centralized admission for certain fields, local admission interviews at universities were introduced or expanded as part of the admissions process, giving institutions greater influence over their own selection procedures. At the same time, the 1985 amendments strengthened the role of professors and internal university bodies. The law introduced the possibility of choosing between two models of university governance – the rectoral model and the presidential model – thus allowing institutions to shape their governance structures more flexibly.

Furthermore, the law removed certain provisions concerning curricula and study programs from the list of requirements requiring governmental approval, thereby reducing the necessity for mandatory state approval of a number of internal university regulations (particularly those related to curricula and study plans). As a result, higher education institutions gained greater autonomy

[1] Ibid. S. 196.

[2] Zweites Gesetz zur Änderung des Hochschulrahmengesetzes. *Bundesgesetzblatt*. 1985. Teil I. Nr 18. S. 605–607.

in developing and approving their own academic regulations and internal procedures. The 1985 legislative changes also strengthened the legal status of professors in managing external funding (third-party funds) for research projects, granting them greater freedom and responsibility in the use of such resources[1], which contributed to enhancing research activity within universities.

It should be noted that the 1976 Framework Law on Higher Education served as a guideline for the adoption of new or the amendment of existing state laws, which specified particular issues. Thus, in 1978, amendments were introduced to the Bavarian Higher Education Act of 1973[2]. These changes concerned the organization of university life in accordance with the framework law, the legal status of universities, student participation in administrative life, and structural issues related to academic bodies and governance. The Bavarian law of 1973 stipulated that universities possess a dual legal nature – they are both public corporations and state institutions. Universities manage their own affairs as corporations (corporate matters), while the state exercises only legal supervision in this regard. In both corporate and state matters, the university acts through its elected bodies and administration, headed by the chancellor (the principle of unified management).

Regarding the key issue of university structure, namely parity in governance, the Bavarian legislature, taking into account the jurisprudence of the Federal Constitutional Court, provided that the professoriate should hold a majority of seats in all university bodies. Professors, distinguished by their academic achievements, knowledge, and experience, bear decisive responsibility for the future of the university. In the assembly and senate of the university–which also include the president, vice-presidents, and chancellor–various groups (professors, associate professors, full-time teaching staff, academic and artistic personnel, students, and non-academic staff) were to be represented in the ratio 6:1:1:2:1. The functions of the assembly were essentially limited to adopting decisions on the university statute and electing the president, vice-presidents, and members of the presidential council. In the new

[1] Ibid.

[2] Bayerisches Hochschulgesetz (BayHSchG). *Bayerisches Gesetz- und Verordnungsblatt.* 1973. Nr. 26. S. 679–707.

organizational structure, the traditional faculty model («faculty of full professors») was replaced by the department as the primary organizational unit of the university. Academic institutions and operational units could be established under its authority. At the same time, a departmental council was created as an elected body, in which, alongside professors and associate professors, students were also represented. Within the departmental council, the number of professor representatives was increased to seven. According to the law, the university was headed by a president or a presidential council. Thus, the rector – who had previously led the university on a voluntary basis alongside his professorial duties – was replaced by a president or chair of the presidential council, who was typically a full-time employee[1].

The Bavarian Higher Education Act of 1973 also established and expanded students' rights to participate in university life. Students were recognized as members of the university and were granted the right to participate, through their representatives, in governing bodies and other committees. All elected student representatives in departmental councils and the senate formed the so-called Student Convention, which elected from among its members a Speakers' Council (up to four persons). The activities of the Student Convention and the Speakers' Council were financed from the state budget[2]. Considerable attention in the Bavarian law was devoted to regulating educational programs and examinations. Study programs had to be designed in such a way that educational objectives could be achieved within the standard period of study. It was prohibited to base the assessment of an examination solely on coursework evaluation. The law also established the obligation of universities to support students through continuous academic advising[3].

In 1978, Bavarian legislators introduced minor amendments to the state higher education law, aligning it with the 1976 federal framework law. Overall, adaptation was carried out in relation to provisions concerning the reorganization of higher education (§ 4

[1] Störle J. Die Entwicklung des Hochschulrechts in Bayern. 25 Jahre Bayerisches Hochschulgesetz. Journal of Higher Education Research. 2000. Issue 1–2. P. 49–50.
[2] Ibid. S. 50.
[3] Ibid. S. 50–51.

of the framework law), study reform commissions (§ 9), voting rights in academic matters (§ 38), third-party funded research (§ 25), and compliance with the standard duration of studies (§ 16, para. 3)[1]. Subsequent amendments were linked to the changes introduced into the Higher Education Framework Law in 1985. Three years later, the adaptation of Bavarian legislation to federal norms addressed issues of third-party funded research, expanded participation rights of professors in governance, the promotion of equal opportunities for women, the replacement of government approval requirements for academic regulations with notification procedures, and the introduction of a choice between rectoral and presidential governance models[2].

Among the most notable developments in the field of higher education in the FRG resulting from legislative changes, the expansion of universities, diversification of educational programs, and the allocation of significant funding, the following should be highlighted.

First, the growth in the number of students in the FRG. In 1960, nearly 247,000 students were enrolled in 131 universities and other higher education institutions (including art colleges), and five years later, the number exceeded 308,000. Between 1970 and 1975 alone, the number of students doubled – from 422,000 to 836,000. By 1980, there were already more than 1.2 million students in the FRG, and by 1989, more than 1.5 million[3], studying both at traditional universities and at universities of applied sciences and various specialized colleges.

It should be noted that the number of graduates in general universities and other higher education institutions (including art colleges) was not particularly high. In 1960, 16,458 individuals passed diploma or equivalent examinations (6.6% of the total number of students), in 1975 – 33,669 (4.8%), and in 1990 – 81,524 (6.7%). Thus, over 30 years, the number of graduates increased more than fivefold in absolute terms, but not in relative terms. The number of students who passed certified teacher

[1] Ibid. S. 51.

[2] Ibid. S. 52

[3] Development of Higher Education in East and West Germany (1960–1990). URL: https://germanhistorydocs.org/en/two-germanies-1961-1989/development-of-higher-education-in-east-and-west-germany-1960-1990.pdf?utm_source=chatgpt.com

examinations initially increased and then declined: 11,143 in 1960, 40,349 in 1975, and 10,231 in 1990[1]. In contrast, universities of applied sciences and colleges of public administration demonstrated a somewhat higher proportion of graduates relative to the number of students. In 1975, 144,713 students were enrolled in 97 such institutions, and 31,865 individuals passed diploma or equivalent examinations (23.4%). By 1990, enrollment had reached 370,988 students, with 55,852 graduates (15%)[2].

Second, the vast majority of graduates from universities and colleges of various levels and specializations entered the labor market. During the period under study, West Germany maintained a low level of unemployment among higher education graduates due to high demand for qualified personnel in industry, education, and administration. Consequently, higher education was generally considered a worthwhile investment. Even despite the rapid expansion of higher education in the 1960s–1980s, and thus the increase in the number of graduates, they generally found employment in their professional fields or in positions corresponding to their level of education at the early stages of their careers[3].

Third, the increase in the number of university laboratories and research activities. In the 1960s–1980s, universities in the FRG actively expanded their research activities, receiving funding from federal and state budgets, as well as from third-party sources such as private companies and national and international foundations. However, it should be noted that university-based research in West Germany still lagged behind independent research institutes in terms of scale and productivity[4].

Fourth, the growth in the number of young researchers. In 1960, 5,874 individuals in West German universities passed examinations (defended dissertations) for the degree of Doctor of Philosophy

[1] Ibid.

[2] Ibid.

[3] Klein M. The association between graduates' field of study and occupational attainment inWest Germany, 1980–2008. *Journal for Labour Market Research*. 2016. Issue 49. P. 53–55.

[4] Dusdal J., Powell J. J. W., Baker D. P., Fu Y. Ch., Shamekhi Y., Stock M. University vs. Research Institute? The Dual Pillars of German Science Production, 1950–2010. *Minerva*. 2020. Issue 58. P. 319–342.

(PhD). By 1970, this number had risen to 10,515; in 1980 – to 12,222; and in 1990 – to 18,494[1]. The majority of these young scholars gradually replaced the older generation of professors, lecturers, and researchers.

Of course, reforms in the field of higher education in the FRG did not always produce positive outcomes and were therefore subject to criticism by experts and researchers. Thus, Ece Göztepe-Çelebi, Freya Stallmann, and Annette Zimmer, largely relying on the research of Georg Turner (2001), pointed to a sharp increase in bureaucracy and the growing dependence of universities on the state and political forces. «The new power structure led to a situation in which state bureaucracy, namely governmental agencies for science and education of the German federal states, became very important political actors, thereby largely depriving universities of their former autonomy»[2], the scholars noted. In their view, the idea of comprehensive universities also failed to justify itself. Instead of democratizing decision-making processes by shifting power from the professoriate to broader corporate representation of university members–including students, young researchers, teaching staff, and auxiliary personnel–negative tendencies emerged. The dissonance among faculty, as well as the economic and political diversity of the growing number of students, led to a sharp politicization of factions within universities, making consensus-based decision-making difficult. Under such conditions, it became challenging to ensure long-term strategic development and effective planning of higher education institutions[3].

Moreover, beginning in the late 1970s, funding for higher education gradually declined. Although the need for broader access to higher education remained widely recognized, federal and state budgets did not keep pace with the increasing number of students. At the same time, federal-level policy planning predicted a decline in student numbers in the coming years, basing such forecasts solely on birth rates and failing to anticipate the growing interest of

[1] Development of Higher Education in East and West Germany (1960–1990). URL: https://germanhistorydocs.org/en/two-germanies-1961-1989/development-of-higher-education-in-east-and-west-germany-1960-1990.pdf

[2] Göztepe-Çelebi E., Stallmann F., Zimmer A. Looking back: Higher Education Reform in Germany. *German Policy Studies*. 2002. Vol 2. No 3. P. 5.

[3] Ibid. S. 5–6.

young people in higher education[1]. The mismatch between rising student numbers and shrinking higher education budgets led to chronic underfunding of German universities[2]. This situation was also influenced by the economic recession of 1981–1983. The new conservative-liberal coalition that came to power in 1983 gradually revised and partially neutralized the results of earlier reforms. For instance, the student grant program introduced in 1971 was transformed into a loan-based system. Long-term educational planning programs initiated in 1969 were discontinued[3]. In 1988, the Science Council (Wissenschaftsrat) reported that although the number of students continued to grow, expenditures on higher education had actually decreased by 2.4% since 1975[4]. As a result of budget reductions, the proportion of students receiving financial support declined from 27% in 1982 to 23% in 1988, while the share of students from working-class backgrounds decreased from 23% in 1982 to less than 7% in 1986[5].

2. Science Policy of the Federal Republic of Germany

Science policy in the Federal Republic of Germany became the subject of scholarly research as early as the 1970s. Thus, in 1973, the analytical work of Klaus König was published, which examined the relationship between the scientific sphere and political authority in West Germany after World War II. From the perspective of his time, the author demonstrated how science shapes political decision-making in a democratic society, revealed the structures and mechanisms of interaction between the scientific sphere and state institutions in the FRG, and showed the influence of political life on the financing and prioritization of scientific development[6]. In 1976, Otto Keck analyzed the science policy of West German

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[1] Katzenstein P. Y. Policy and politics in West Germany. The Growth of a semisovereign State. Philadelphia, 1987. P. 307.

[2] Göztepe-Çelebi E., Stallmann F., Zimmer A. Looking back: Higher Education Reform in Germany. *German Policy Studies*. 2002. Vol 2. No 3. P. 7.

[3] Turner G. Hochschule zwischen Vorstellung und Wirklichkeit. Zur Geschichte der Hochschulreform im letzten Drittel des 20. Jahrhunderts. Berlin: Duncker & Humblot, 2001. S. 26.

[4] Ibid. S. 27.

[5] Ibid. S. 148.

[6] König K. *Wissenschaft und Politik in der Bundesrepublik*. Opladen: Westdeutscher Verlag, 1973.

governments, providing numerous comparisons between the FRG and countries of Europe, the United States, and Japan[1]. A philosophical article on the politicization of science in the FRG was published in 1983 by Peter Weingart[2]. In 1985, Arthur Benz published a study on the influence of German federalism on the organization of science and research in West Germany[3].

The interaction between state authorities, scientific organizations, and the autonomy of science in the FRG was examined by Hans-Willi Hohn and Uwe Schimank[4]. Gerhard Ritter provided a comprehensive overview of the development of large-scale («big science») research institutes in the FRG[5]. A thorough analysis of political influence on science in West Germany was conducted by Dietmar Braun[6]. Susanne Lütz characterized the functional aspects and conditions of maintaining public funding for industrial research[7].

Stefan Laffin, Albrecht Cordes, and Barbara Kuhn addressed the issue of constructing German science policy abroad, using the example of the development of the German Research Centre in Venice (1965–1985)[8]. A comparative analysis of science policy in the FRG and the GDR in the 1950s–1980s was carried out by Gernot Gutmann and Siegfried Mampel[9]. The relationship between

[1] Keck O. West German science policy since the early 1960's: trends and objectives. *Research Policy.* 1976. Vol. 5 (2). P. 116–157.

[2] Weingart P. Verwissenschaftlichung der Gesellschaft – Politisierung der Wissenschaft. *Zeitschrift für Soziologie*, Jg. 12, Heft 3, Juli 1983, S. 225–241.

[3] Benz A. *Föderalismus und Wissenschaftspolitik*. Bonn: Verlag Neue Gesellschaft, 1985.

[4] Hohn H.-W., Schimank U. *Konflikte und Gleichgewichte im Forschungssystem*. Frankfurt am Main: Campus Verlag, 444 s.

[5] Ritter G. A. Big science in Germany. Past and present. London: German Historical Institute, 1994. 35 p.

[6] Braun D. *Die politische Steuerung der Wissenschaft.* Ein Beitrag zum "kooperativen Staat". Frankfurt am Main: Campus Verlag, 1997. 450 s.

[7] Lűtz S. Die Steuerung industrieller Forschungskooperation: Funktionsweise und Bfolgsbedingungen da staatlichen Förderirutruments Verbundforschung. Frankfurt am Main: Campus, 1993. 251 s.

[8] Laffin S., Cordes A., Kuhn B. (Hrsg.). Deutsche Wissenschaftspolitik im Ausland und gelebtes Patriarchat Gründung und Aufbau des Deutschen Studienzentrums in Venedig, 1965–1985, 2023. 352 s.

[9] Szöllösi-Janze M. *Wissenschaftspolitik im geteilten Deutschland*. Frankfurt am Main: Campus Verlag, 2024.

science in Germany and politics, the economy, and the mass media was outlined by Peter Weingart[1].

Andreas Stucke identified the functions of state actors in science policy[2]. The short-lived functioning of the German Research Council was examined by Catherine Carson and Michael Gubser[3]. Ulrich Teichler and Rudolf Stichweh analyzed the role and place of scientific research within the higher education system of the FRG[4]. Dagmar Schipanski described the structure of the German research system at the turn of the 1980s–1990s[5]. Regional aspects of the development of «non-university science» in the Land of North Rhine–Westphalia were examined by Michael Farrenkopf[6]. The system of science funding through intermediary organizations in the FRG was analyzed in the dissertation of Felix Streiter[7]. A number of studies are devoted to well-known scientific public organizations that unite hundreds of German research institutes[8].

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[1] Weingart P. Die Stunde der Wahrheit? Zum Verhältnis der Wissenschaft zu Politik, Wirtschaft und Medien. Weilerswist: Velbrück Wissenschaft, 2001. 397 s.

[2] Stucke A. Staatliche Akteure in der Wissenschaftspolitik. In: Simon, D., Knie, A., Hornbostel, S. (eds) Handbuch Wissenschaftspolitik. VS Verlag für Sozialwissenschaften, 2010. https://doi.org/10.1007/978-3-531-91993-5_25

[3] Carson C., Gubser M. Science Advising and Science Policy in Post-War West Germany: The example of the Deutscher Forschungsrat. *Minerva.* 2002. Vol. 40. P. 147–179. https://doi.org/10.1023/A:1015708903590

[4] Teichler U. Hochschulsysteme und Hochschulpolitik. Frankfurt am Main, Germany: Campus Verlag, 1988; Teichler U. The future of higher education and the future of higher education research. *Tertiary Education and Management*. 2003. Vol. 9(3). P. 171–185. https://doi.org/10.1080/13583883.2003.9967102; Stichweh R. Wissenschaft, Universität, Professionen: Soziologische Analysen. Frankfurt am Main, Germany: Suhrkamp, 1994.

[5] Schipanski D. Structures of the German Research System. In Detlef Müller-Böling, Evelies Mayer, Anne J. MacLachlan, Jutta Fedrowitz (eds.). *University in Transition Research Mission – Interdisciplinarity – Governance*. Gütersloh: Bertelsmann Foundation Publishers, 1998. P. 103–113.

[6] Farrenkopf M. Außeruniversitäre Wissenschaft in NRW am Beispiel der Leibniz-Gemeinschaft und ihrer Forschungsmuseen. *Der Anschnitt 74.* 2022. H. 5–6. S. 210–225.

[7] Streiter F. Wissenschaftsförderung durch Mittlerorganisationen. Inaugural-Dissertation zur Erlangung der Doktorwürde der rechtswissenschaftlichen Fakultät der Albert-Ludwigs-Universität Freiburg. Bonn, 2008. 519 s.

[8] *History of the Max Planck Society*. Berlin: Max Planck Society, 2008; Fraunhofer-Gesellschaft. *Anwendungsorientierte Forschung in Deutschland*. München: Fraunhofer IRB Verlag, 1999; Parthier B. Die Leopoldina. Bestand und Wandel der ältesten deutschen Akademie. Halle: Druck-Zuck, 1994.

After the establishment of the independent West German federal state in 1949, the government of Konrad Adenauer focused primarily on the reconstruction of Germany after World War II, the development of its economy and social sphere, and the building of international relations. Issues of education and science did not always receive sufficient attention. In these areas, the government largely limited itself to minor denazification measures. In general, economic recovery relied on the scientific personnel who remained after the fall of the Third Reich or who returned from emigration.

It should be noted that former émigrés played a significant role in the revival of research traditions in universities and scientific associations. Within the framework of the deliberate policy of «integration with the West» (Westbindung), the return of scholars from exile was seen as an ideal opportunity to reorient German liberal thought toward the Western intellectual sphere and to provide theoretical justification for the new political order. Particular importance was attached to the return of German sociologists, who had been forced to leave Germany during the Nazi period due to the persecution of sociology as a «Jewish science» (jüdische Wissenschaft)[1]. Among the well-known sociologists who returned from emigration were René König, Max Horkheimer, Helmuth Plessner, and Arnold Bergstraesser.

At the same time, many sociologists who had previously served the Nazi regime continued to work in universities and research institutions. Among them were Arnold Gehlen, Helmut Schelsky, Hans Freyer, and Karl Valentin Müller[2]. Other former supporters of the Nazi regime initially also found employment at the Center for Social Research of the University of Münster in Dortmund[3]. As researchers note, well-known Nazi sociologists were only rarely permanently dismissed from public service. On the contrary, in the early postwar years, it was often easier to become a member of the

[1] Strote N. B. Emigration and the Foundation of West Germany, 1933–1963. A dissertation submitted in partial satisfaction of the requirements for the degree of Doctor of Philosophy in History in the Graduate Division of the University of California, Berkeley, 2011. P. 81–82.

[2] Moebius S. Sociology in Germany. A History. Cham, Palgrave Macmillan, 2021. P. 57.

[3] Rehberg K.-S. Auch keine Stunde Null. Westdeutsche Soziologie nach 1945. In Walter H. Pehle & Peter Sillem (eds). *Wissenschaft im geteilten Deutschland. Restauration oder Neubeginn nach 1945?* Frankfurt/M.: Fischer, 1992. Pp. 26–44.

German Sociological Association as a sociologist with a National Socialist past than as a left-wing sociologist persecuted by the Nazis[1].

This situation resulted from government policies of the early 1950s. Laws introduced by the government under Federal Chancellor Konrad Adenauer shortly after the establishment of the FRG benefited many individuals previously associated with the Nazi regime. In essence, they guaranteed impunity to former supporters of the regime and broadly interpreted the legal status of former officials. This contributed to the fact that a number of individuals who had built careers during the Nazi period occupied high positions, including in universities[2].

Only in the second half of the 1950s did the government take its first steps toward regulating the scientific sphere and defining its priorities and objectives. On September 5, 1957, Chancellor K. Adenauer signed an Administrative Agreement establishing the Science and Humanities Council (Wissenschaftsrat) as an advisory body to the federal government and the governments of the federal states. According to this agreement, the Science Council was to provide recommendations to both levels of government on the development of science, research, and universities; promote the international competitiveness of German science; evaluate research institutions, higher education institutions, and research programs; and prepare recommendations for reforms in higher education. Federal and state governments were expected to take these recommendations into account when drafting their budgets within available resources. Relevant federal and state institutions were obliged to support the work of the Science Council by providing continuous information and consultation. The newly established body was to consist of 54 members – scientists or recognized public figures. The Federal President was granted the authority to appoint 32 members, including 24 nominated jointly by major

[1] Baur N., Castillo Ulloa I., Mennell S., Million, A. The Refiguration of Spaces and the Refiguration of Epistemic Cultures: The Changing Balance of Involvement and Engagement in Fundamental and Applied Research. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research.* 2021. Vol. 22(3). Art. 21 (pp. 1–61). https://doi.org/10.17169/fqs-22.3.3810

[2] Stephan M. Sociology in Germany. A History. Cham, Palgrave Macmillan, 2021. P. 57.

scientific organizations and 8 nominated jointly by the federal and state governments. These members were appointed for three-year terms, with the possibility of reappointment. In addition, the federal and state governments appointed 22 members (six from the federal government and one from each federal state), with a permanent deputy assigned to each member[1].

In his speech at the opening of the Science Council on September 5, 1957, Chancellor Adenauer stated: «For the first time in Germany, an institution is being created that will provide a comprehensive overview of scientific work in the Federal Republic and submit proposals to the federal and state governments regarding the development of science. Representatives of science and public life will cooperate with representatives of the federal and state governments within this body»[2]. At the same time, he emphasized that the Administrative Agreement establishing the Science Council «will not initiate a centralized science policy. The centers of German scientific life, which have developed differently across the federal states throughout history, will be preserved and further developed. However, this agreement will demonstrate that science and research, wherever they are conducted, serve not only individual regions but the entire nation, and therefore the entire community must intervene where necessary»[3].

At the beginning of 1958, the first meeting of the Science Council took place, chaired by the renowned German legal historian, Rector of the University of Frankfurt am Main (1955–1956), and former reserve captain of the Wehrmacht, Helmut Coing[4].

It should be noted that the powers of the Science Council were, to some extent, influenced by the Königstein Agreement of March

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[1] Verwaltungsabkommen zwischen Bund und Ländern über die Errichtung eines Wissenschaftsrates vom 5. September 1957. *Wissenschaftsrates*. https://www.wissenschaftsrat.de/DE/Ueber-uns/Grundsatzdokumente/grundsatzdokumente?utm_source

[2] Wissenschaftsrat 1957–1982. Köln: Herausgegeben vom Wissenschaftsrat, 1983. S. 5.

[3] Wissenschaftsrat 1957–1982. Köln: Herausgegeben vom Wissenschaftsrat, 1983. S. 5–6.

[4] Coing H. Für Wissenschaften und Künste Lebensbericht eines europäischen. Rechtsgelehrten Herausgegeben, kommentiert und mit einem Nachwort von Michael F. Feldkamp. Berlin: Duncker & Humblot, S. 59, 171–174, 182.

31, 1949, which regulated the financing of German research institutions and organizations, including the German Research Foundation, the Max Planck Society, and others[1]. In his speech, Adenauer pointed out the limitations of financing research institutions under this agreement, as such tasks exceeded the capabilities of individual federal states. From that point onward, the federal government assumed half of the subsidies that the states were required to provide to research institutions, allowing the savings (approximately 22 million marks) to be redirected toward the development of engineering schools[2].

As early as June 1958, the Science Council presented its first recommendations to the federal government regarding the allocation of funds (85 million marks). It also issued recommendations to state governments concerning construction projects in higher education[3]. Subsequently, it regularly submitted financial proposals. In November 1960, the Science Council prepared a comprehensive expert report with recommendations on the expansion of higher education institutions, faculties, departments, and the increase in the number of professors[4]. These recommendations applied to all classical and technological universities in the FRG. In the field of university research, the Council recommended, in particular, maintaining the unity of research and teaching, ensuring each university had a basic set of professorial positions and equipment, and establishing specialized areas in certain universities for the development of specific disciplines[5]. Considerable attention was also given to research in university hospitals[6]. Overall, this document demonstrates the active role of the state, universities, and research institutions in shaping science policy (Wissenschaftspolitik) in the FRG.

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[1] Königsteiner Staatsabkommen. URL: https://dewiki.de/Lexikon/K%C3%B6nigsteiner_Staatsabkommen?utm_source

[2] Wissenschaftsrat 1957–1982. Köln: Herausgegeben vom Wissenschaftsrat, 1983. S. 5.

[3] Wissenschaftsrat 1957–1982. Köln: Herausgegeben vom Wissenschaftsrat, 1983. S. 66.

[4] Empfehlungen des Wissenschaftsrates zum Ausbau der wissenschaftlichen Einrichtungen. Teil I. Wissenschaftliche Hochschulen. Bonn: Bundesdruckerei, 1960. 535 s.

[5] Empfehlungen des Wissenschaftsrates… S. 408.

[6] Empfehlungen des Wissenschaftsrates… S. 415–417.

The formation of science policy acquired an institutional foundation in the early 1960s with the emergence of a specialized Federal Ministry for Scientific Research. Its origins lay in the Federal Ministry for Special Affairs, established in October 1953 under the leadership of Franz Josef Strauss. In 1955, it was renamed the Federal Ministry for Atomic Affairs. In view of the emergence of new fields of technological development, such as space research and electronic data processing, on December 14, 1962, the ministry was renamed the Federal Ministry for Scientific Research. Following an amendment to the Basic Law in 1969, the federal government obtained new competencies in the field of educational planning and research funding (a joint task enshrined in Article 91b). Accordingly, on October 22, 1969, the ministry was transformed into the Federal Ministry of Education and Science. At the end of 1972, this ministry transferred its departments III (research planning; technological research and development), IV (nuclear technologies, data processing), and V (space research and technology; aeronautical research) to the newly established Federal Ministry for Research and Technology (BMFT)[1].

The Federal Ministry for Research and Technology was created through the division of the Federal Ministry of Education and Science in order to promote fundamental and applied research as well as technological development. From the outset, its priorities included the aerospace and transport sectors, environment and energy, data processing, biotechnology, and health research. As part of these organizational changes, the new ministry assumed the following responsibilities: (a) from the Federal Ministry of Education and Science – fundamental and coordinating responsibility for information technologies; coordinating responsibility for civilian and military aerospace research and development; general funding of research (excluding the German Research Foundation (DFG) and Joint Research Centres); planning and coordination of research (technological research, development, and innovation in life sciences and biomedicine; data processing; nuclear technologies and nuclear research; space research and technology; aeronautical research); (b) from the Federal Ministry of the Interior – responsibility for the

[1] Bundesministerium für Forschung und Technologie (Bestand). URL: https://www.archivportal-d.de/item/7NAR24PI4O222IJEKKX4BMWPDCIERGMI

working group on database systems; coordination of federal information systems; (c) from the Ministry of Economics – responsibility for the promotion of electronic data processing[1].

Further responsibilities of the Federal Ministry for Research and Technology in the field of research were assumed on the basis of written agreements with other ministries. In particular, under an agreement of July 25, 1973, with the Federal Ministry of Transport, responsibilities for conducting hydrological research and related projects, especially in the field of environmental protection, were transferred to the ministry[2]. Two years later (March 26, 1975), another agreement with the Federal Ministry of Transport was concluded, this time concerning cooperation in transport research and development. In April 1976, an agreement was signed with the Federal Ministry for Economic Cooperation and Development regarding technology development and transfer in developing countries. On December 11, 1978, cooperation with the Federal Institute for Geosciences and Natural Resources was established on the basis of an agreement with the Federal Ministry of Economics. An agreement with the Federal Ministry of Labour and Social Affairs (November 1980) defined the content and forms of cooperation with the Federal Centre for the Humanization of Working Life, which operated under the Federal Institute for Occupational Safety and Health[3]. Of course, this is only a brief overview of the powers and interests of the Federal Ministry for Research and Technology in the 1970s–1980s, which were considerably broader

Another center of influence on the formation of West German science policy was the Federal–State Commission for Educational Planning and Research Promotion. As is well known, on June 25, 1970, the federal government and the Länder concluded an administrative agreement that established in Bonn a joint Commission for Educational Planning as a permanent forum for

[1] Bundesministerium für Forschung und Technologie (Bestand). URL: https://www.archivportal-d.de/item/7NAR24PI4O222IJEKKX4BMWPDCIERGMI

[2] Bundesministerium für Forschung und Technologie. Organisationsunterlagen. URL: https://www.deutsche-digitale-bibliothek.de/item/N6NWM22LHKQJCVE6FG6RTIEYT4QC2MEO?utm_source

[3] Bundesministerium für Forschung und Technologie. Organisationsunterlagen. *Deutsche Digitale Bibliothek*. URL: https://www.deutsche-digitale-bibliothek.de/item/N6NWM22LHKQJCVE6FG6RTIEYT4QC2MEO?utm_source

discussion, as well as a planning and advisory body for all educational matters concerning both the federal government and the Länder. According to the agreement, the Commission was tasked with developing a long-term framework plan for the entire education system, including subplans and funding proposals[1]. The Commission's powers in the field of research were defined by the Framework Agreement on Research Promotion of November 28, 1975[2], which primarily regulated the financing of scientific research. The Commission, composed of representatives of the federal and state governments, included four committees, one of which dealt with research promotion. After 1983, the Commission's powers were reduced due to political resistance to its reform (and funding) plans, and the number of committees was reduced to two: educational and research. Notably, each of them included a working group on the «Promotion of Women in Science»[3]. At the level of the Länder, ministries and commissions responsible for higher education, science, and research development also operated.

Scholars typically identify two pillars of the FRG's scientific landscape in the period under study: *universities* and *research institutes*. Universities, in the view of researchers, became the foundation for the revival of scientific life in postwar West Germany. «No matter how successful institutes may have been, universities nonetheless formed the foundation upon which Germany restored a significant part of its scientific recognition among highly competitive European and global scientific systems after the low point of 1945», researchers noted[4]. As mentioned above, the expansion of universities continued in the 1960s–1970s. Ultimately, German universities

[1] Bund-Länder-Kommission für Bildungsplanung und Forschungsförderung. *Deutsche Digitale Bibliothek*. URL: https://www.deutsche-digitale-bibliothek.de/item/6IULCCNAAEUTW6YYG3NAJGMJQQNNN5KI

[2] Rahmenvereinbarung Forschungsförderung (RV-Fo) – vom 28. November 1975. *Kultusministerkonferenz*. URL: https://www.kmk.org/fileadmin/pdf/foederalismus/Dok21.pdf

[3] Bund-Länder-Kommission für Bildungsplanung und Forschungsförderung. *Deutsche Digitale Bibliothek*. URL: https://www.deutsche-digitale-bibliothek.de/item/6IULCCNAAEUTW6YYG3NAJGMJQQNNN5KI

[4] Dusdal J., Powell J. J. W., Baker D. P., Fu Y. Ch., Shamekhi Y., Stock M. University vs. Research Institute? The Dual Pillars of German Science Production, 1950–2010. *Minerva*. 2020. Issue 58. P. 336.

(especially classical and technological institutions, and to a lesser extent universities of applied sciences) consistently demonstrated higher publication output in science, technology, engineering, and mathematics (STEM) than research institutes. From 1970 onward, when institutes began to generate significant publication output, and up to the early twenty-first century, for every publication authored solely by institute researchers, there were more than three publications authored solely by university researchers[1]. At the same time, it is necessary to acknowledge the close interaction between universities and research institutes (organized within the Max Planck Society, the Fraunhofer Society, or operating independently) in the implementation of various research projects funded both by the state (at federal and state levels) and by private actors.

A key factor in the development of science and research in the FRG was undoubtedly the growth of funding. The increase in financial expenditures on science in the FRG is illustrated in Table 1.

Table 1.

Science Funding in the FRG (1965–1990)

Year	Expenditures of the federal and state governments (million euros)*	Share (%) of the budget	Enterprises	Private non-profit organizations	Total R&D expenditures (million euros)*
1965	1915	2,7	2076	48	4 039
1970	3528	3,5	3891	97	7 516
1975	6153	3,4	6029	159	12 341
1980	8194	3,1	10 172	61	18 427
1985	10 587	3,4	15 896	68	26 551
1990	12 729	3,2	22081	182	34 992

* Financial indicators are presented as converted from German marks into euros.

Source: R&D expenditure of the Federal Republic of Germany and funding thereof (Federal Ministry of Research, Technology and Space; Federal Statistical Office; Stifterverband Wissenschaftsstatistik). 2025. URL: https://www.datenportal.bmftr.bund.de/portal/en/Table-1.1.2.html

[1] Dusdal J., Powell J. J. W., Baker D. P., Fu Y. Ch., Shamekhi Y., Stock M. University vs. Research Institute? The Dual Pillars of German Science Production, 1950–2010. *Minerva*. 2020. Issue 58. P. 331.

As can be seen, government expenditures on scientific research increased over 25 years from 1.9 billion euros to 12.7 billion euros, i.e., almost sevenfold. At the same time, they fluctuated within the range of 2.7% to 3.5% of total public expenditure (federal and state budgets). It is important to note that the majority of research funding was provided on a contractual basis by enterprises and non-profit organizations. Only in 1975 did public expenditure account for nearly 50% of the «German science budget», while in other years it was significantly lower than contributions from commercial and non-commercial organizations.

Science funding was carried out by both public and private actors through a number of organizations, including the German Research Foundation (Deutsche Forschungsgemeinschaft), the Max Planck Society for the Advancement of Science, and the Fraunhofer Society for the Advancement of Applied Research. It should be noted that the General Education Plan submitted to the Bundestag in 1973 emphasized the need to develop methods and criteria for research planning within the overall scientific system of the FRG, as well as the need to coordinate overall research funding. Accordingly, it clearly highlighted the importance of supporting the Max Planck Society and the Fraunhofer Society as the principal bodies financing fundamental and applied research outside universities. Particular importance was attached to the German Research Foundation as «the principal organization for the promotion of research, especially in universities, and for the dissemination of research planning within its own sector»[1].

The German Research Foundation, established in 1951, was formally a private organization but in practice performed public functions by distributing funding received from the Länder among universities, research institutions, and scientific societies. Since its establishment, it has funded individual grants, research fellowships, research leave (since 1952), priority programs (since 1953), grants for fulfilling international obligations (since 1955), central research centers (since 1957), scientists' travel to conferences (since 1959), collaborative research centers (since 1968), international scientific

[1] Unterrichtung durch die Bundesregierung. Bildungsgesamtplan. Bundestag Drucksache 7/1474. 1973. S. 49. URL: https://dserver.bundestag.de/btd/07/014/0701474.pdf?utm_source

events in Germany (since 1972), the Heinz Maier-Leibnitz Prize (since 1977), the Heisenberg Program (since 1978), and the Gottfried Wilhelm Leibniz Program (since 1985), among others[1].

The Max Planck Society, founded in 1948, developed quite extensively. In 1948, it consisted of 25 institutes and research institutions with a total budget of approximately 7 million marks (about 3.6 million euros), while by 1960 it included 40 institutes and research institutions employing around 2,600 people, including 750 scientists, and its annual budget approached 80 million marks (about 40.9 million euros)[2]. The 1960s saw unprecedented growth of the Society. By 1966, the number of research institutions had increased to 52, and the number of newly established institutes had nearly doubled. By 1970, the Society's budget exceeded 400 million marks (about 204.5 million euros). Under these conditions, major new international-level research centers were established in biochemistry, biophysical chemistry, molecular genetics, immunobiology, biological cybernetics, and cell biology. New and costly research directions were initiated in physics and chemistry, and institutes were founded for radio astronomy, optical astronomy, space research, and solid-state research. The humanities and social sciences, which had previously received little attention, were now more closely integrated into the Society's research spectrum. In the field of law, institutes were established specializing in European legal history, criminal law, and patent, copyright, and competition law[3].

The expansion of the Max Planck Society slowed in the 1970s, when 20 institutes and departments were closed. New institutes could thereafter be established only through the reorganization or reorientation of existing ones. Greater attention was given to restructuring and adjusting the research focus of entire institutes, alongside an increased emphasis on adopting new and innovative research themes. Increased attention was also paid to participation in large-scale research projects, including BESSY (synchrotron

[1] Chronology of Funding Programmes. *Deutsche Forschungsgemeinschaft*. URL: https://www.dfg.de/en/about-us/about-the-dfg/history/funding-past-and-present/chronology-funding-programmes

[2] History of the Max Planck Society. URL: https://www.mpg.de/10423756/History_of_the_Max_Planck_Society.pdf

[3] History of the Max Planck Society. URL: https://www.mpg.de/10423756/History_of_the_Max_Planck_Society.pdf

radiation research), EISCAT (incoherent scatter studies in the auroral zone), and IRAM (millimeter radio astronomy research)[1].

The Fraunhofer Society was established at the end of March 1949 in Munich and, in the first years of its existence, operated primarily within Bavaria. In 1951, it participated for the first time in the allocation of research funding from the European Recovery Program (Marshall Plan). Already the following year, the Fraunhofer Society became the third major actor in the West German research landscape, after the German Research Foundation and the Max Planck Society. However, the Society's real expansion began in the second half of the 1950s, when, as a result of the FRG's economic growth, private-sector expenditures on research and development increased, reaching 600 million marks. In 1955, the Patent Office for German Research of the Fraunhofer Society was established, and new institutes were subsequently created (for example, the Institute for Hygienic-Bacteriological Work Processes in Munich, the Institute for Stone and Wood Research in Bonn, the Institute for Electrical Materials in Freiburg, and the Institute for Applied Physics in Stuttgart). From 1956 onward, the Society began receiving contracts from the Ministry of Defense, which covered up to 50% of its research budget. By 1959, the organization comprised nine institutes with 135 employees, and its budget had reached 3.6 million marks. By 1964, the Fraunhofer Society consisted of 19 institutes, with total revenues amounting to 16 million marks. Five years later, its budget had increased to 33 million marks[2].

In 1968, at the initiative of the Federal Ministry for Scientific Research, a Commission for the Promotion of the Expansion of the Fraunhofer Society was established, which represented one of the examples of science policy in the FRG. Two years later, the Commission presented its recommendations, which included proposals for the establishment of potential future institutes of the Fraunhofer Society, as well as for conceptual and organizational changes. In particular, these involved the integrated combination of

[1] History of the Max Planck Society. URL: https://www.mpg.de/10423756/History_of_the_Max_Planck_Society.pdf

[2] Geschichte der Fraunhofer-Gesellschaft. *Fraunhofer*. URL: https://www.fraunhofer.de/de/ueber-fraunhofer/profil-struktur/geschichte-fraunhofer.html

prior research, contract research, and commissioned research; a balanced regional distribution of institutes; the creation of spatial and thematic centers of excellence; and the introduction of performance-based remuneration. For the detailed planning of the Society's expansion, a «Joint Commission» was established, comprising members of the Federal Ministry for Scientific Research and the Fraunhofer Society. In 1972, the Joint Commission presented its project, which envisaged an increase in baseline public funding in accordance with the success of the Fraunhofer Society in acquiring contract research projects (the so-called «Fraunhofer model»). This was intended to strengthen the market orientation of research and development activities. In 1973, the government approved the basic structure of the «Fraunhofer model», which consisted of core funding largely based on research performance, as well as additional funds managed by the Society's Executive Board. This reflected the government's intention to transform the Fraunhofer Society into a leading umbrella organization for applied research institutes[1].

By 1974, the Fraunhofer Society comprised 27 institutes (nearly 1,700 employees), generating 100 million marks, and five years later already more than 180 million marks. A program to promote contract research for small and medium-sized enterprises was launched. In 1976, the Ministry of Defense required the organizational and financial separation of defense-related research departments within institutes from those engaged in civilian projects. As a result, the assets of the institutes were divided into three areas: defense research, contract research, and service facilities. The following year, a framework agreement on research funding for non-defense-related institutes was introduced. It provided for joint political responsibility of the Federal Ministry of Education and Research and the Federal Ministry of Defense for the development of the Society. The agreement stipulated that the civilian research sector would be funded by the federal government and the governments of the Länder in a ratio of 9 to 1. In 1978, the Fraunhofer Society's program for small and medium-sized

[1] Geschichte der Fraunhofer-Gesellschaft. *Fraunhofer*. URL: https://www.fraunhofer.de/de/ueber-fraunhofer/profil-struktur/geschichte-fraunhofer.html

enterprises was transformed into a comprehensive federal program, which became an important factor in the organization's growth and prestige. In the 1980s, the Society focused on the development of research in the fields of computer and laser technologies. Orders from the civilian sector gradually increased, while those from the defense sector declined. By 1984, more than 3,500 people were employed in 33 institutes of the Fraunhofer Society, and its budget amounted to 360 million marks. By 1989, nearly 6,700 employees were working in 37 institutes, and total revenues reached 700 million marks[1].

In addition to the aforementioned organizations and universities, numerous independent research institutes operated in the FRG throughout the 1950s–1980s, constituting a «third force» in German science. Among them, two groups of institutions should be distinguished: (a) national research centers in the fields of nuclear and space research, computer science, and biotechnology; (b) smaller institutes in the areas of economics, technology, and the social sciences.

The former of these were consolidated in the early 1990s into the Hermann von Helmholtz Association of German Research Centres (Hermann von Helmholtz Gemeinschaft Deutscher Forschungszentren, HGF). The first national research centers in Karlsruhe, Jülich, and Geesthacht were established in the mid-1950s for conducting nuclear research and developing nuclear technologies. In 1959, the Center for High-Energy Physics (Stiftung Deutsches Elektronen-Synchrotron, DESY) was opened in Hamburg. The next stage in the development of national research centers in the mid- and late 1960s was characterized by the establishment of centers for space research, data processing and computer science, heavy-ion research, cancer research, molecular biology, and biotechnology. By the end of the 1980s, 13 large federal research centers were operating in West Germany, and after the reunification of the country, three additional centers were established in the eastern part[2].

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[1] Geschichte der Fraunhofer-Gesellschaft. *Fraunhofer*. URL: https://www.fraunhofer.de/de/ueber-fraunhofer/profil-struktur/geschichte-fraunhofer.html

[2] Schipanski D. Structures of the German Research System. In Detlef Müller-Böling, Evelies Mayer, Anne J. MacLachlan, Jutta Fedrowitz (eds.). *University in*

The number of research institutions in the second group was significantly larger. They relied primarily on financial support from the governments of the Länder. In 1969, amendments were introduced to the Basic Law of the FRG, according to which the federal government and the governments of the Länder obtained the constitutional right to cooperate on research projects of supraregional significance that constituted a «national science policy interest». After intensive negotiations involving more than 300 institutions, an agreement was finally reached in 1977 on the joint funding of 46 institutions included in the so-called «Blue List» (Blauer Liste – named after the color of the paper on which the list was printed). From 1979 onward, the institutions included in the Blue List were regularly evaluated by the Science Council in order to ensure a high level of scientific performance and to initiate targeted development. By 1989, five institutions had been removed from the list, while six new ones had been added. Through the Blue List, the federal government and the governments of the Länder created an instrument that enabled them to respond flexibly and rapidly to scientific innovations and the demands of science policy. At the same time, the Blue List project proved difficult to implement, and the number of institutions receiving public funding remained almost unchanged. Limitations on total expenditures for the Blue List led to the so-called «omnibus principle»: the funds required to include a new institution could only be made available by removing other institutes from the list[1]. As is well known, in 1997 most of the Blue List research institutes were consolidated into the Leibniz Association.

As Dagmar Schipianski aptly noted, the German research system is governed by three types of «organizing agents»: (a) research organizations (Max Planck Society, Fraunhofer Society, national research centers, «Blue List» institutions); (b) federal and state governments; (c) intermediary bodies that analyze systemic problems and provide recommendations (the Science Council, the

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Transition Research Mission – Interdisciplinarity – Governance. Gütersloh: Bertelsmann Foundation Publishers, 1998. P. 106.

[1] Die Geschichte der Leibniz-Gemeinschaft. *Leibniz-Gemeinschaft*. https://www.leibniz-gemeinschaft.de/ueber-uns/geschichte/leibniz-gemeinschaft

Federal–State Commission, the Standing Conference of Ministers of Education)[1].

At the same time, researchers point to a number of problematic aspects in the science policy of the FRG that accumulated over the period under study. The complex system of scientific institutions, societies, foundations, governing and auxiliary structures described above was characterized by several general gaps in coordination: 1) the governments of the Länder controlled the higher education system but did not always act in a coordinated manner, even despite the existence of framework legislation in the field of higher education (since 1976); 2) the institutional structure provided for a strong role of individual research organizations vis-à-vis the government, yet in the FRG no mechanisms were developed to achieve high-level consensus on general policy issues involving all key actors – scientific organizations, the governments of the Länder, and the federal government; 3) FRG legislation established a fairly clear division of responsibilities between the federal government and the governments of the Länder, but neither of these actors functioned as an independent player in science policy and could not operate without the support of the other; 4) the entire scientific system of the FRG was characterized by a pronounced bias toward fundamental research[2].

Nevertheless, it is undeniable that the research system of the FRG during the period under study possessed substantial institutional, human, and financial potential. The effectiveness of state policy in this field can be illustrated through regional examples. For instance, in a 1984 research report, the Ministry of Science and Research of the Land of North Rhine–Westphalia assessed the expansion of non-university research activities since the late 1970s as «highly successful». In the sphere of large research institutions, this primarily concerned the Nuclear Research Center in Jülich, the Society for Mathematics and Data Processing in Sankt Augustin, and the German Aerospace Research Center in Cologne, which together required funding amounting to 537

[1] Schipanski D. Structures of the German Research System. In Detlef Müller-Böling, Evelies Mayer, Anne J. MacLachlan, Jutta Fedrowitz (eds.). *University in Transition Research Mission – Interdisciplinarity – Governance*. Gütersloh: Bertelsmann Foundation Publishers, 1998. P. 107, 111.

[2] Schipanski D. Structures of the German Research System… P. 111.

million marks in 1984. Owing to the existing 90:10 funding ratio between the federal government and the Länder, North Rhine–Westphalia received approximately 54 million marks in subsidies in 1984. Institutes of the Fraunhofer Society and the Max Planck Society were also actively developing in this Land. Prior to 1980, there were only two Fraunhofer institutes in North Rhine–Westphalia: a branch of the Institute for Toxicology and Aerosol Research located in the Hochsauerland region and the Water Resources Documentation Center in Düsseldorf. Subsequently, these were joined by the Fraunhofer Institutes for Production Technology in Aachen and for Transport Technologies and Goods Distribution in Dortmund, and in the autumn of 1984, the Institute for Microelectronic Circuits and Systems began its work in Duisburg. Under the Königstein Agreement, the Ministry of Science and Research of North Rhine–Westphalia was required to allocate nearly 100 million marks to the Max Planck Society in 1984 alone. Thus, in the 1980s, the Institute of Mathematics in Bonn, the Institute for Plant Research in Cologne-Vogelsang, and the Institute for Neurological Research in Cologne-Merheim were established[1]. Undoubtedly, similar indicators were demonstrated in other Länder of the FRG.

CONCLUSION

Thus, in the 1950s–1980s, the FRG developed a comprehensive state policy in the fields of higher education and science aimed at ensuring economic growth and the implementation of scientific and technological progress. Higher education reforms – supported by the 1969 amendments to the Basic Law, the establishment of specialized federal institutions, and the adoption of key legislative acts (1969, 1971, 1976) – led to the expansion of the university network, an increase in the number of students and young researchers, the intensification of research activities, and the strengthening of links between education and the labor market. At the same time, an effective model of science policy was formed, combining state regulation with a strong self-governing component

[1] Farrenkopf M. Außeruniversitäre Wissenschaft in NRW am Beispiel der Leibniz-Gemeinschaft und ihrer Forschungsmuseen. *Der Anschnitt 74*, 2022, H. 5–6. S. 218.

and relying on substantial growth in funding, the development of both university and non-university research, and support for both fundamental and applied research. However, these reforms were also characterized by contradictions, including increased bureaucratization, limitations on university autonomy, and a reduction in financial support in the 1980s.

ABSTRACT

This chapter provides a comprehensive analysis of the policy of the Federal Republic of Germany in the fields of higher education and science during the 1950s–1980s. It examines the preconditions, content, and consequences of higher education reforms in postwar West Germany, including the restoration of university autonomy, the democratization of governance, the expansion of access to education, and the emergence of the mass university. Particular attention is paid to the role of key legislative acts, such as the University Construction Promotion Act (1969), the Federal Training Assistance Act (1971), and the Framework Act for Higher Education (1976), in modernizing the institutional structure and financing of the educational system. The chapter also highlights the establishment of universities of applied sciences as a new type of institution oriented toward labor market needs, as well as analyzes the growth in student numbers, the expansion of research activities, and the increase in the number of young scholars. At the same time, it identifies the contradictions of the reform process, including increasing bureaucratization, limitations on university autonomy, and underfunding amid expanding enrollment.

The second part of the chapter focuses on the development of science policy in the FRG, emphasizing the role of state institutions in regulating the research sector. It explores the activities of the Science Council, the Federal Ministry of Education and Science, and the Federal Ministry of Research and Technology in shaping research priorities. Special attention is given to the mechanisms of cooperation between the federal government and the Länder, as well as to the system of research funding. The study demonstrates that the combination of higher education reforms and an active science policy became a key factor in the economic growth of the FRG and the formation of an effective innovation system. The

findings may be useful for understanding contemporary educational reforms and the development of science policy in Ukraine.

АНОТАЦІЯ

Комплексно досліджено політику Федеративної Республіки Німеччини у сферах вищої освіти та науки в 1950–1980-х рр. Розкрито передумови, зміст і наслідки реформування системи вищої освіти Західної Німеччини після Другої світової війни, зокрема процеси відновлення університетської автономії, демократизації управління, розширення доступу до освіти та формування масового університету. Проаналізовано роль ключових законодавчих актів, зокрема Закону про сприяння будівництву університетів (1969), Федерального закону про сприяння освіті (1971) та Рамкового закону про вищу освіту (1976), у модернізації інституційної структури та фінансового забезпечення освітньої системи. Висвітлено створення університетів прикладних наук як нового типу закладів освіти, орієнтованих на потреби ринку праці, а також проаналізовано зростання кількості студентів, розвиток науково-дослідницької діяльності та збільшення чисельності молодих учених. Окреслено суперечності реформ, зокрема посилення бюрократизації, обмеження університетської автономії та проблему недофінансування в умовах зростання контингенту студентів.

Проаналізовано становлення наукової політики ФРН, зокрема роль державних інституцій у регулюванні наукової сфери. Висвітлено діяльність Наукової ради, Федерального міністерства освіти і науки, а також Федерального міністерства досліджень і технологій у формуванні пріоритетів розвитку науки. Розкрито механізми взаємодії між федеральним урядом і землями, а також особливості фінансування досліджень. Доведено, що поєднання реформ у сфері вищої освіти та активної наукової політики стало важливим чинником економічного зростання ФРН і формування ефективної інноваційної системи. Отримані результати можуть бути використані для осмислення сучасних освітніх реформ і розвитку наукової політики в Україні.

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