# B CORE TOPICS 2011

## B 1 FEDERALISM

One of the Federal Republic of Germany's most important structural characteristics is its federal state system. The German *Länder* are responsible for fulfilling state tasks, except where the country's Basic Law makes other provisions.[111] Autonomy in matters of education and culture is considered one of the most important aspects of the autonomy of the *Länder*.[112] And that area includes both education and research. In Germany, a country poor in natural resources, both of those areas have always been centrally important. What is more, since the 1950s, and with the country's development into a knowledge society in global competition, those areas have been growing even more important, by leaps and bounds.

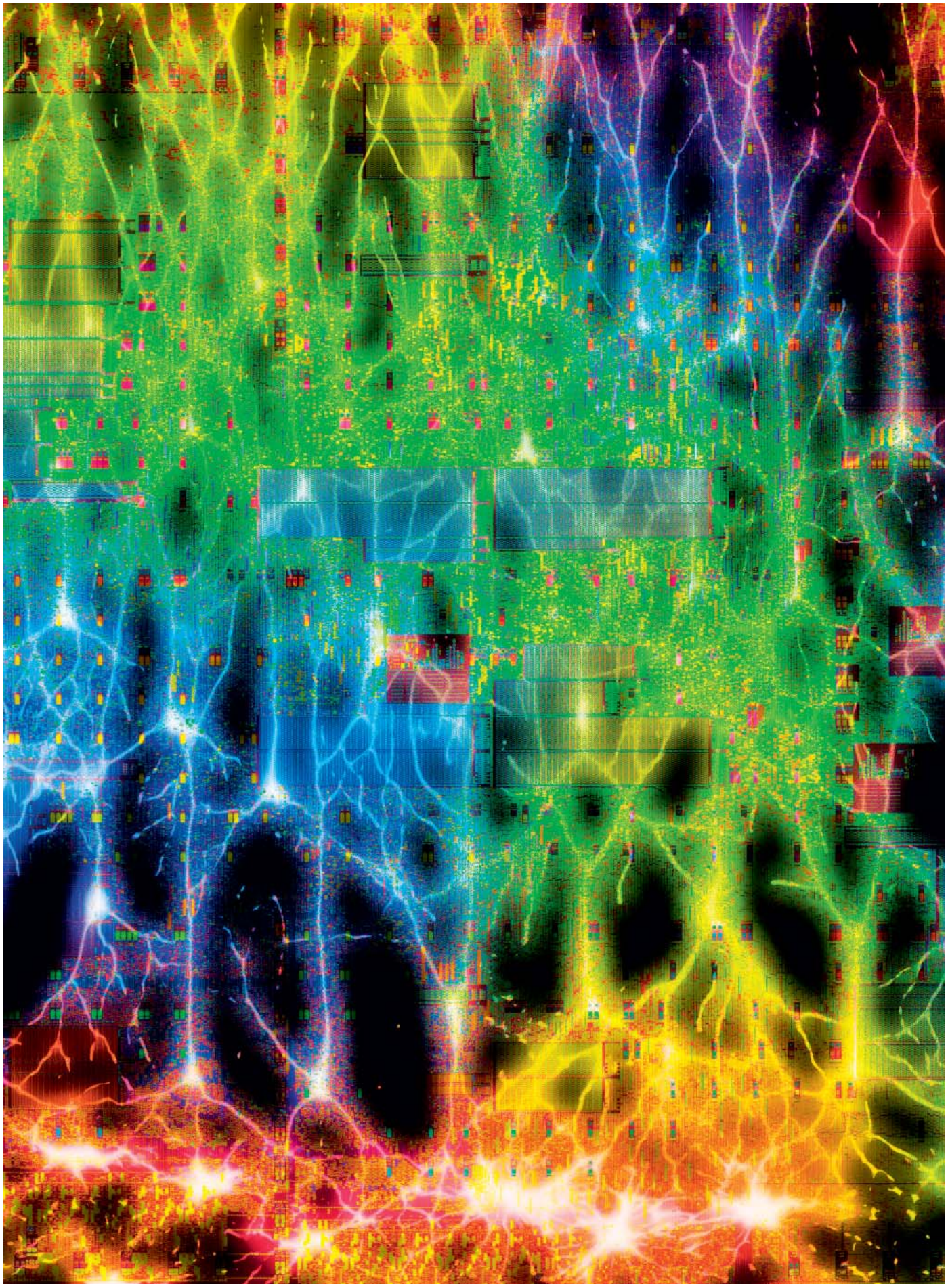
In the years following World War II, Germany was poorly prepared for the rapid market transformation and globalisation that ensued. Internationally, (West) Germany's research system lagged significantly behind that of the U.S. and those of European neighbours such as the UK, France, Switzerland and Sweden. Germany had also lost ground in the area of education. Too few of its pupils earned their higher education entrance qualifications (*Abitur*) and were able to study at a university. Young girls' talents and abilities often went unrecognised, and children from socially disadvantaged families rarely received an opportunity for higher education even when they did well in school. Overall, too little use was made of the population's real educational potential, and that neglect, in turn, constrained Germany's potential for innovation.

In the 1960s, domestic criticism of Germany's education and research sectors began to grow. With reference to the international competition, critics warned of a German "education catastrophe"[113] and a "technological gap"[114]. In addition, they noted that other countries were moving more rapidly than Germany in expanding and improving their education and research systems. Again and again, the main reasons cited for the sad state of Germany's education and research sectors included a lack of suitable federal authority, fragmentation of responsibilities, "egoism" on the part of the *Länder* and inadequate financial support.[115]

### The Federalism reform of 1969

The inauguration of the grand coalition of 1966 brought a paradigm change, in education and science policy, that was supported and even promoted by the *Länder*. For it was the *Länder* themselves – represented by the Conference of Ministers of Education and Cultural Affairs (KMK) – who, in the early 1960s, began pushing for greater co-ordination between the *Länder* and the Federal Government. At their initiative, the German Educational Council (*Deutscher Bildungsrat*) was established in 1964.[116]

Just a few years later, in 1969, a constitutional reform was adopted. In the main, the reform was designed to obligate the *Länder* to apply standardised economic and budgetary policies. Introduction of joint tasks (*Gemeinschaftsaufgaben*), via Articles 91a and 91b of the Basic Law (GG), and of Federal authority to issue framework laws for higher education institutions, then decisively changed the distribution of responsibilities in the area of education and research, however. Article 91b of the Basic Law made it possible for the Federal Government and the *Länder* to co-operate in the areas of



Neural network
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education planning and research.[117] National co-ordination, and joint financing, of education and research became possible.[118] As a result, competitive federalism gave way to a form of co-operative, solidarity-oriented federalism with the normative aim of applying "active, society-shaping policy"[119] and the ideal of achieving consistent living conditions throughout all *Länder*.[120]

In 1970, as part of the change in the Basic Law, the *Bund-Länder* Commission for Educational Planning was established. In 1975, that commission's area of responsibility was expanded via the Framework Agreement on Research Promotion (*Rahmenvereinbarung Forschungsförderung*), and in 1976 the body was renamed *Bund-Länder* Commission for Educational Planning and Research Promotion (BLK).[121] In the years that followed, the BLK then provided key impetus for education and research.

The following section considers the area of education. Long before the change in the Basic Law, a *Länder* body for horizontal co-ordination had been in place: the Conference of Ministers of Education and Cultural Affairs (KMK), which had been founded in 1948. With the arrival of the BLK, another federative body came to this arena. The newly founded BLK differed from the KMK in terms of both orientation and tasks. Conceived primarily as a body for developing Germany's education and research systems, it engaged the assistance of experts in scientific and educational policy, initiated and evaluated relevant programmes and model tests and, in many cases, applied such programmes and tests on a large scale. In addition, the BLK reinforced ongoing dialog between the Federal level and the *Länder*. That, in turn, led to greater transparency on both sides, and it gradually brought the Federal and *Länder* sides closer together in this area. In 2000, in response to publication of the results of the Trends in International Mathematics and Science Study (TIMSS), in 1998, and of the Programme for International Student Assessment (PISA), in 2000, concrete programmes were launched for raising educational levels in Germany and jointly addressing obvious inequalities of educational opportunities, inequalities tied to social background.[122] A wealth of model programmes were initiated and carried out.[123] Outside of the BLK framework, the Investment Programme for the Future, Education and Childcare (IZBB) is an especially noteworthy example. That programme, which was approved in 2003, comprised two programme areas: quantitative expansion of, and qualitative improvement of, programmes in all-day schools.[124] The programme provided some EUR 4 billion of funding for establishment of a total of nearly 7,200 all-day schools, including schools in all *Länder*. Furthermore, the programme ran first from 2003 to 2007 and was then extended, on a cost-neutral basis, until 2009.[125] A second programme, Ideas for more! learning all day (GTL), began in 2003 and was extended until 2014.[126] Its purpose is to develop content for all-day-school programmes. The GTL programme is supported by the German Children and Youth Foundation (GCYF), reflecting the fact that in 2003 the Federal Government still had no responsibility for the area of school policy, and a mediated form of financing was needed.[127] It is Germany's only school-development programme in which all *Länder* and the Federal Government participate and in which regular horizontal exchanges between the *Länder* take place.[128] As a result of the further constitutional (Basic Law) amendments adopted in 2006, and of the resulting dissolution of the BLK, other relevant programmes, such as programmes for promoting language skills of immigrants, were not able to be implemented on the scale originally planned.

In the area of research funding, Federal-*Länder* cooperation developed prior to the constitutional reform of 1969 – i.e. considerably earlier – and developed more solidly.[129] In 1955, research into civilian use of atomic energy, which fell within the Federation's genuine scope of responsibility, led to the founding of a ministry of atomic energy. In 1963, aerospace technology, another major technology area, emerged; later on, it was the focus of key areas of responsibility of the Federal Ministry of Research that was subsequently founded. In 1964, several departments of the Ministry of the Interior that were involved with science funding were moved out of that ministry and incorporated within the Ministry of Research. In that same year, following six years of preparation, a Federal-*Länder* agreement on "funding of science and research" was adopted.[130] The Troeger Commission, which was appointed in 1966, developed proposals that ultimately led to the constitutional reform of 1969, oriented to financing, and strengthened the Federation's scope of responsibility. That reform was required because the *Länder* needed Federal assistance in financing an enormous,

rapid programme of new university construction. As a result, a veritable thicket of agreements, forms of co-operation and modes of financing developed, all of which were ultimately covered by the constitutional amendments Articles 91a and 91b GG (Basic Law). In the area of research, the 1969 reform of Germany's federal system was thus "nothing other … than constitutional institutionalisation, legalisation and intensification of co-operation practices that previously had been unconstitutional".[131]

In the following years, Federal-*Länder* co-operation continued to develop apace. Prior to the constitutional reform of 1969, Federal investments had been concentrated on funding of application-oriented and cost-intensive large-scale research. As early as the 1969/70 fiscal year, however, the Federal Government initiated a range of programmes for development of new and innovative technologies, including technologies outside of the bounds of existing large-scale research.[132] Those programmes included efforts in the areas of environmental protection and environmental management, biotechnology, biomedicine, traffic and transport technologies, new communications technologies and health-care technologies, and a social-sciences research programme on humanising the workplace.[133] Among the key changes that now applied, the Federation and the *Länder* jointly financed selected research institutions – the institutions of the so-called Blue List (*Blaue Liste*).[134] The number of Blue List institutions, which now belong to the Gottfried Wilhelm Leibniz Science Association (WGL), increased continually since 1969, and it nearly doubled when many research institutions in the new German *Länder* were added following German reunification.[135]

**The Federalism reform of 2006**

The aims of the constitutional reform of 1969 had included addressing the threat of an "educational catastrophe" and the "technological gap". Since then, much had been achieved in the area of research. Major challenges remained in the area of education, however. Nonetheless, Article 91b (2) GG was eliminated, without replacement, as part of the federalism reform of 2006.[136] For the education sector, that move meant the elimination of the joint task on education planning and of the joint financing of that task.[137] Now, the Federal Government and the *Länder* can co-operate only on the basis of agreements concerning the assessment of the education system's performance in international comparison. In addition, education monitoring is included in the joint task on educational reporting. Even the Federation's financial assistance to the *Länder*, for especially important investments in the education sector, has been eliminated. Pursuant to Article 104b GG, the Federal Government can provide the *Länder* with such financial assistance only insofar as the Basic Law gives the Federal Government relevant legislative authority. In the area of school policy, the Federation no longer has such authority (prohibition of co-operation).[138] What is more, since the Federalism reform, authority for regulation of provisions pertaining to civil-service careers and to remuneration of *Länder*-level civil servants (and thus also of teachers) lies with the *Länder*.[139] As a result, in the education sector, the co-operative federalism in place prior to 2006 has been supplanted by a competitive or "shaping" federalism.[140] In the area of research funding, on the other hand, the structures for Federal-*Länder* co-operation have remained largely intact.

In the following section, the Expert Commission considers the current situation of federalism in the area of research funding. The focus of the present report is on joint Federal-*Länder* funding for research institutions in the non-university sector. A study of research funding in the area of universities and universities of applied sciences will follow in the 2012 report; the present report only touches on that topic, with regard to the (constitutional) legal bases for co-operative federalism in research funding.[141] Analysis of institutionally oriented research funding leads the Expert Commission to recommend that the already successful co-operation between higher education institutions and non-university research institutions be expanded and that a common financing key be used for all non-university research institutions.

The Expert Commission then comments on the situation of federalism in the area of education. For innovation depends not only on suitable research funding; it also depends on well-trained people who have the opportunity to develop their potential. Good education policy is a necessary basis for good innovation policy. The Expert Commission calls for balanced Federal-*Länder* co-operation that can help solve central problems in the education sector. Specifically, it recommends that the prohibition on Federal-*Länder*

co-operation be eliminated. In addition, it calls for a renewal of the sort of co-operative federalism in place prior to the federalism reform of 2006. At the same time, however, the goals to be pursued should be considerably more ambitious than earlier goals, and reforms in the education sector should be moved forward on a solid scientific basis.

### Federalism in basic funding provided to institutions

The fundamental distribution of responsibilities between the Federation and the *Länder*, in the area of basic funding provided to institutions, remained largely unchanged following the Federalism reform of 2006. The amended Article 91b GG also calls for Federal-*Länder* co-operation in funding of institutions and projects for scientific research.[142] To be sure, with the elimination of the Federal framework authority for higher education, and greater autonomy of the *Länder* with regard to the construction of buildings for higher education, the primary responsibility of the *Länder* in the higher education sector was strengthened. In matters of supra-regional importance, however, responsibility for funding research projects at higher education institutions continues to lie with both the Federation and the *Länder*. In addition, the amended version of the article now also allows for co-operation in research and teaching.[143] On the other hand, in this area, in contrast to the situation prevailing in the non-university sector, any Federal involvement is subject to the explicit consent of all *Länder*.[144]

The new aspects that have resulted from the federalism reform include the Joint Science Conference (GWK) of the Federation and the *Länder*, which began its operations in 2008, on the basis of the new Article 91b GG. The entities represented in the GWK include the Federal and *Länder* ministers/senators responsible for science and research and for finances. A successor organisation to the BLK, the GWK considers all issues of research funding, of science and research policy and strategy, and of the science system, that affect both the Federation and the *Länder*. In addition, the GWK develops task and financing structures in the area of basic funding provided to institutions.

### Federal-*Länder* co-operation in basic funding provided to institutions

The research funding that the Federation and the *Länder* jointly provide to research institutions is provided via agency organisations. The financing mechanisms for such organisations are set forth in the so-called GWK agreement[145] and in separate "execution agreements" oriented to the specific research institutions concerned.[146] Separate organisations are responsible for managing research funding for a) universities and b) non-university institutions. This separation is a characteristic of the German system that results from the persisting clear separation between research at universities and research at non-university institutions. The German Research Foundation (*Deutsche Forschungsgemeinschaft, DFG*) plays a central role in research funding for the higher education sector. Its funding resources are provided jointly by the Federation and all *Länder*, in keeping with the Königstein key[147]. The DFG, the largest self-governing science organisation in the German science sector, is charged primarily with selecting, via competitive processes, and with financing of, research projects at higher education institutions and research institutions.[148] In the area of non-university research funding, which accounts for the majority (about three-fourths) of total joint Federal-*Länder* funding for research institutions, a total amounting to about EUR 6.3 billion,[149] the Federation and the *Länder* co-operate primarily via the country's major research organisations, most notably the *Fraunhofer-Gesellschaft* (FhG), the Helmholtz Association of German Research Centres (HGF), the Gottfried Wilhelm Leibniz Science Association (WGL) and the Max Planck Society (MPG).

The poor co-operation between the university-research and non-university-research areas has increasingly been criticised as a constraint on the competitiveness of Germany's science sector, and there have been repeated calls for this deficit to be overcome.[150] The Initiative for Excellence and the Pact for Research and Innovation have provided important impetus in that direction. Via targeted incentives, they have triggered a trend toward greater networking and co-operation between universities and non-university research institutions.[151] Undoubtedly, improvement of such co-operation is influencing co-operative federalism's established (financing) practice in research funding.

TAB 01 **Forms of co-operation between universities and non-university research institutions**

| Model | Form of co-operation | Degree of institutionalisation of the co-operation |
|---|---|---|
| GRC | Co-operation in the framework of a joint co-ordination body, with autonomy of the co-operating institutions left intact | Low |
| JARA | Co-operation in the framework of joint subject-oriented sections, and of partnership-based management structures | Medium |
| KIT | Institutional merger producing a single legal entity | High |

**Source: own depiction**

In the following section, three comprehensive models for co-operation are described, as a means of illustrating currently existing forms of co-operation between universities and non-university research institutions. As the illustrative models show, higher education institutions, financed by the *Länder*, and non-university research institutions, jointly financed by the Federation and the *Länder*, are co-operating successfully. On the other hand, differences between the financing keys applied to non-university institutions are hampering the establishment of efficient models for co-operation.

## New models for co-operation between universities and non-university research institutions

Good illustrative examples of the development outlined above include the Göttingen Research Council (GRC), the Jülich-Aachen Research Alliance (JARA) and the Karlsruhe Institute of Technology (KIT). While these organisations differ significantly in specific aspects, they all exhibit a new quality of institutionalised co-operation.

In the GRC, which was founded in 2006, the University of Göttingen, along with seven non-university research institutions – the Göttingen Academy of Sciences, five Max Planck institutes and one Leibniz institute – have placed their existing co-operation on an institutional foundation. The GRC is a body for co-ordination and for consensual adoptions of resolutions. In it, the various institutions involved co-operate in central matters of significance affecting all of them. At the same time, each institution retains its own institutional autonomy, and existing internal governance structures are not affected. Among the co-operation models outlined here, the model applied in Göttingen exhibits the lowest degree of institutionalisation.

In KIT, and in JARA, a university and a major Helmholtz centre co-operate: in KIT, the University of Karlsruhe and the Karlsruhe Research Centre (FZK) work together, while JARA brings together RWTH Aachen University and the Jülich Research Centre. In each of these co-operation models, the university and the non-university research institution involved have established joint governance structures.

In JARA, no attempt was made to completely merge the university and the non-university research institution involved, and thus the foundation for its organisational structure is less complex, both legally and organisationally, than is the foundation for KIT's organisational structure. The "JARA agreement" simply provides a formal framework for establishment of joint topic-oriented sections. Each such "JARA section" is jointly managed by a director from the Aachen side and a director from the Jülich side. The four research areas currently in place in this framework comprise the heart of the co-operation between the two institutions involved. In addition, the management levels of RWTH Aachen and the Jülich Research Centre have been more tightly meshed.

Of the co-operation models outlined here, KIT exhibits the highest degree of institutionalisation, and thus its organisational structure is the most complex of the models' structures. In July 2009, the *Baden-Württemberg* state legislature (*Landtag*) passed the so-called KIT merger act (KIT-Zusammenführungsgesetz), thereby forging the country's first institutional merger between a university and a non-university research institution. Via a highly involved legal

**Financing mechanisms in basic funding provided to institutions[152]** TAB 02

| Federal-*Länder* key | Breakdown of the *Länder* share |
|---|---|
| **Fraunhofer-Gesellschaft** | |
| 90:10 | ⅔ in keeping with funding requirements for institutes of the Fraunhofer-Gesellschaft that are located within the given *Land*, and ⅓, for all *Länder*, pursuant to the Königstein key[153] |
| **Helmholtz Association of German Research Centres (HGF)** | |
| 90:10 | As a rule, the *Land* in which the centre is located (host *Land*); different provisions apply for some centres |
| **Max Planck Society (MPG)** | |
| 50:50 | 50 percent host *Land*; 50 percent, for all *Länder*, pursuant to the Königstein key |
| **Gottfried Wilhelm Leibniz Science Association (WGL)** | |
| Predominantly 50:50<br>Different arrangements apply for seven of 86 institutes | As a rule: 75 percent host *Land*; 25 percent, for all *Länder*, pursuant to the Königstein key<br>Institutes that carry out scientific-infrastructure tasks on a considerable scale: 25 percent host *Land*; 75 percent, for all *Länder*, pursuant to the Königstein key<br>Construction investments: Host *Land* (state) |

**Source: GWK (2010: 7).**

construction, the two institutions, which were previously independent and – as a result of the large Federal share of financing for the former Karlsruhe Research Centre – were financed in highly different ways, received a joint governance structure. Internally, however, KIT will remain divided into a university area and an area for large-scale research. The two areas are closely interlinked via joint areas of responsibility, centres and priorities.

The KIT, which has a high degree of institutionalisation, illustrates the current constitutional limits to co-operation between universities and non-university research institutions, in a special way: the provisions of Article 91b GG require that the two areas of KIT be financed from separate budgets.[154]

In spite of considerable differences in their institutional forms, the co-operation models are similar. The following occurs at all three locations:

- Strategic and research-relevant issues are jointly decided,
- Appointments of holders of academic chairs and heads of institutes are jointly planned or at least jointly co-ordinated,
- (Managerial) scientific staff of the non-university research institution are involved to a considerable degee in teaching at the relevant universities,
- In research priorities of relevance for all institutions, in research centres and in work groups, efforts are made to enhance integration of university and non-university research, and
- Greater co-operation is sought in training of young scientists and researchers.

The Expert Commission welcomes such forms of intensive institutionalised co-operation. It recommends that development of such models for co-operation between universities and non-university research institutions be intensified in future, in each case with retention of relevant regional or subject-specific characteristics. To date, in this area, universities have co-operated only either with non-university research institutions with 50:50 financing or with non-university research institutions with 90:10 financing. In future, however, institutionalised co-operation should be sought between universities and non-university research institutions with different financing keys. For example, in some regional centres, co-operation between Fraunhofer, Helmholtz, Leibniz and Max Planck institutes would be useful. Clearly enough,

an obvious way of facilitating such comprehensive forms of co-operation would be to simplify the financing mechanisms of the relevant non-university research institutions.

**Financing mechanisms for non-university research funding**

Applicable financing mechanisms differ strongly from research organisation to research organisation. Pertinent differences are found in the shares of total financing that come from the Federation and from the *Länder* (Federal-*Länder* key), and in the manner in which the *Länder* share is broken down by individual *Länder* (cf. Table 02). In the case of multilaterally financed research organisations, the host Land (state) of the jointly financed research organisation assumes only a certain percentage share of the *Länder* share (host Land share). The remainder is distributed, in accordance with the Königstein key, among all *Länder*. Each Land's share is calculated on the basis of population (weighted as one-third) and of tax revenue (weighted as two-thirds).[155]

**Need for reform of current financing practice**

The financing mechanisms for the different research organisations are complex, and they differ widely. Historically, Federal participation in financing of research institutions pursuant to Article 91b GG was called for in cases in which the institutions carried out research of "supra-regional importance". That differentiation criterion presents considerable problems when applied to current practice in financing research funding, however: in practice, regional and national interests are closely intertwined. Consequently, in relatively few cases will research actually have exclusively regional importance. What is more, the criterion of "supra-regional importance" in fact only determines whether the Federation is eligible to participate in financing of research institutions at all. And such eligibility provides no guidelines to the specific quantitative manner in which financing should be structured. The reasons why the Federation assumes 90 percent of the funding for some research organisations (FhG and HGF), and only 50 percent for others (MPG, WGL), cannot be derived from that criterion. The different keys applied to different research organisations and institutions, for distribution of costs between the Federal Government and the *Länder*, are historically founded and cannot always be logically justified. The vague justifications used for financing keys thus create considerable discretionary latitude.

The extent that such latitude can assume is illustrated by a current case, involving conversion of the IFM-GEOMAR institute, located at the University of Kiel. Previously, that institute for oceanographic research was part of the Gottfried Wilhelm Leibniz Science Association (WGL), and thus the Federation and the *Länder* assumed equal shares of the relevant costs. Now, as an institute within the Helmholtz Association (HGF), the Federation assumes 90 percent of its financing. The case of IFM-GEOMAR illustrates the risks incurred in instrumentalisation of research funding for purposes of financial policy: neither the institute's management, nor the Leibniz Association, nor the Science Council (*Wissenschaftsrat*) were involved in the decision regarding the change of overarching research organisation. And no convincing justification, founded on science-sector policy, was given for the decision. This indicates that the decision was largely a political one, and it highlights how easily assignment criteria can be misappropriated for political ends. What is more, the entry into force of the debt brake (*Schuldenbremse*), and the expiry of the Solidarity Pact II, in 2019, will considerably complicate budgetary situations, especially in the new German *Länder*. In this light, it must be feared that the above case in Schleswig-Holstein could set a precedent for "Helmholtzification" of research institutions that are financed 50:50 by the Federation and the *Länder*, i.e. for use of such conversion as a budgetary tactic for offsetting financial constraints at least to some degree.[156]

"Helmholtzification" of research institutions, as a way of easing pressure on tight *Länder* budgets, is problematic not only because it can lead to undesirable political ends. It is also problematic because the pertinent financial advantages[157] for host *Länder* come at the price of palpable losses of autonomy for the affected research institutions. For unlike the research institutions of the Max Planck Society (MPG) and the Leibniz Association (WGL), which define their research priorities and topics largely by themselves (bottom-up), the research agendas of Helmholtz centres are dictated to a considerable extent by the involved funding providers (top-down).

**A common financing key can be applied – and should be applied**

For a wide range of reasons, a consistent, unified approach should be sought in research funding.[158] At a number of locations, close co-operation between *Länder*-financed higher education institutions and non-university research institutions has already emerged, with different financing keys being applied. A common financing key would facilitate such co-operation. Germany's non-university research sector is designed as a system of institution based division of work. Internationally, such division of work is seen as a strength of the non-university research system. The manifest trend in which some *Länder*, acting on the basis of budgetary constraints, have been carrying out financially motivated transfers between research organisations thus points in the wrong direction. And that wrong trend could intensify when the "debt brake" comes into force and the Solidarity Pact II expires.

The Expert Commission sees an urgent need for reform in this area, and it recommends that a common financing key be introduced, a key applying to all research organisations and research institutions. This would counter the above-outlined problems, and it would tend to make financing practice of non-university research institutions considerably more transparent and practicable.

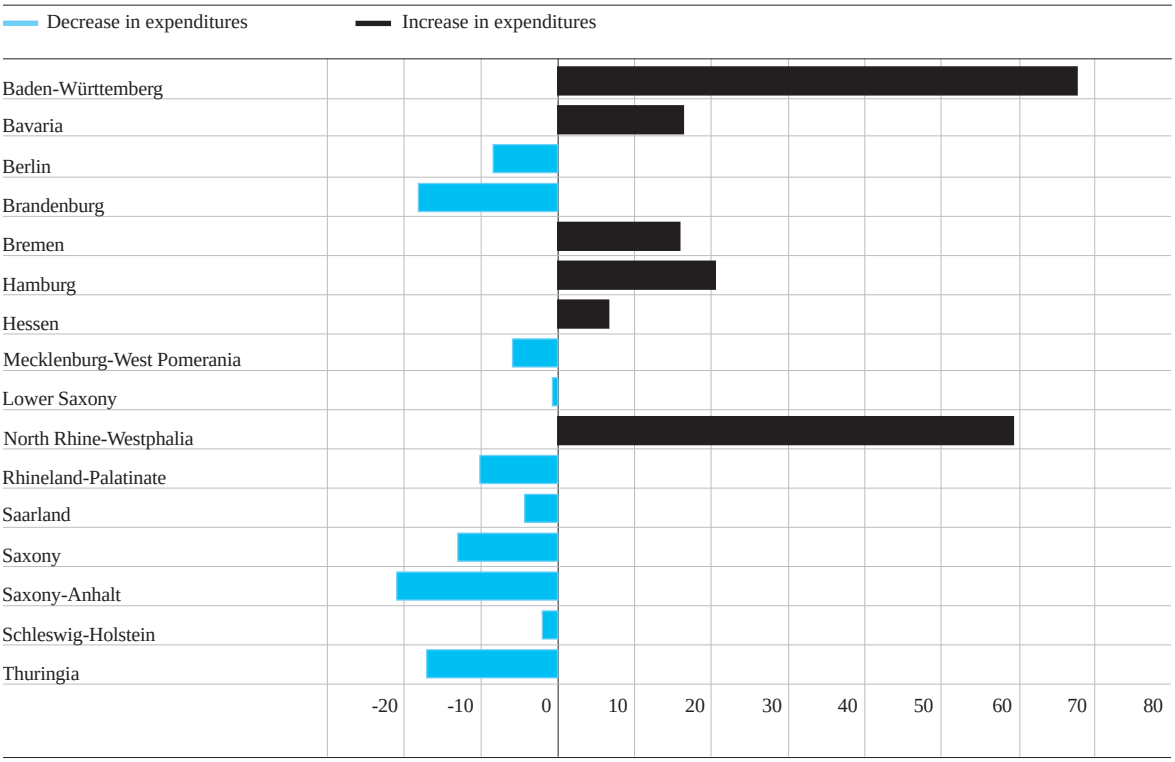
But what sort of common financing key should be used? Since the financing keys for non-university research institutions consist of two components – the Federal-*Länder* key and the breakdown of the *Länder* share between the host Land and all other *Länder* – answering that question must involve discussing the following two questions:

- In the common financing key, what should be the ratio between the Federal and *Länder* shares?
- What share should host *Länder* of non-university research institutions bear of the entire *Länder* share, i.e. how high should the standardised host-Land share be?

The first of these questions can be considered on two levels: on a programmatic level, taking account of principles of scientific freedom, and on a pragmatic level, taking account of the status quo for total Federal-*Länder* expenditures for research funding. Programmatically, a key has to be found in which pertinent decision-making bodies can feature equal representation from the Federal and *Länder* sides. That aim would tend to negate the idea of a key in which the Federation would bear a very high financing share. In light of the financial restrictions applying to the *Länder* and their financing of higher education, the Federation could well consider a key of about 70:30 to be compatible with the aim of allowing fully equal representation. A pragmatic approach would be oriented to the de facto distribution of costs between the Federation and the *Länder*. The currently applicable distribution ratio is 71.8:28.2.[159] This would suggest that the financing keys for all non-university research institutions could be standardised at about 70:30, since that figure would require only insignificant changes in the ratios between Federal expenditures and *Länder* expenditures.

The second question is best answered programmatically. A host-Land share should be chosen that, on the one hand, allows host *Länder* of non-university research institutions to retain a clear financing responsibility for such institutions. On the other hand, the host-Land share should be tailored to ensure that financially weaker *Länder* remain able to afford cutting-edge research in non-university research institutions. In its calculations below, the Expert Commission has thus worked on the basis of a host-Land share of 25 percent of the *Länder* share.[160] The remaining *Länder* share of 75 percent has been distributed among all *Länder*, in accordance with the Königstein key. Having all *Länder* jointly finance (i.e. via solidarity) three-fourths of the *Länder* share would be in line with the Expert Commission's view that research usually has national priority and importance, and that non-university research institutions should not be concentrated primarily in financially strong *Länder*. Applying the Königstein key to 75 percent of the *Länder* share thus seems useful, since that would give financially strong *Länder* a larger proportional share of total expenditures for research funding than they currently have. Moving to a standardised 70:30 financing key would yield the Federation annual savings of EUR 85 million. Such savings should be applied to research funding, i.e. should remain within the research-funding system. A common 70:30 financing key would enlarge the *Länder* share by the same amount (EUR 85 million).[161]

FIG 01 **Added and reduced expenditures of the *Länder* in connection with use of a common financing key of 70:30 and a standardised host-*Land* share of 25 percent (in millions of euros)[162]**




Reference years: HGF (including the Dresden-Rossendorf Research Centre, FZD), FhG: 2009; MPG: 2010; WGL: 2011)
Source: BMBF (2010e). Own calculations.

The Federal-*Länder* expenditures ratio depends on the number and type of research institutions present in the Land concerned, however. Consequently, the *Länder* would not all be affected in the same way by the added expenditures resulting from a common financing key. The added expenditures would be concentrated especially in those *Länder* in which institutes of the Helmholtz Association and Fraunhofer-Gesellschaft, subject to a 90:10 financing key, are located. *Länder* that primarily host Leibniz and Max Planck institutes with 50:50 financing would experience financial relief. As Figure 01 shows, the proposed change would translate into lower expenditures for ten *Länder* and higher expenditures for six *Länder*. The *Länder* with lower expenditures would include all new German *Länder*, including Berlin, and Lower Saxony, Rhineland-Palatinate, Schleswig- Holstein and the Saarland. The group of *Länder* with higher expenditures would include Bavaria, Baden-Württemberg, Hesse, North Rhine-Westphalia, Hamburg and Bremen. In light of the undisputable advantages of using a common key for funding of research at non-university research institutions, the Federation and the *Länder* should seek to find ways of buffering any consequences of the new breakdown and should work to find a mutually agreeable solution in the near future. Such efforts could include, for example, considering the idea of making the Federation's EUR 85 million savings available, for a transition period, to the *Länder* with higher expenditures.

In sum, the Expert Commission concludes that the benefits of using a common financing key in funding research at non-university research institutions are clear and that such a key needs to be introduced. The Expert Commission recommends using a common key with a Federal share of about 70 percent and a *Länder* share of about 30 percent. That key would reflect the fact that the *Länder* also have high expenditures to bear in the higher education sector. The Expert Commission also recommends that the financing key be de-coupled from decision-making authority.[163] To ensure that neither the Federation nor the *Länder* receive disproportionately large decision-making authority, voting rights have to be equally distributed between the Federal and *Länder* sides.

**Federalism in education, and the prohibition on co-operation**

As part of the Federalism reform of 2006, Article 91b (2) GG was eliminated, without replacement. For the education sector, that move meant the elimination of the joint task on education planning and of the joint financing of that task: a prohibition on co-operation between the Federal Government and the *Länder* now applies in the area of relevant investments. In the view of the Expert Commission, elimination of the joint task education planning has negative consequences for the development of an effective, efficient education system. While the results of the 2009 PISA survey were somewhat better than those of earlier such surveys, significantly better results still can be achieved – and need to be achieved. In the interest of providing the necessary basis for such improvement, the Federation should be permitted to work with the *Länder* in developing and implementing active, structuring education policy. Such an option would greatly benefit Germany's education system as a whole and Germany's overall innovation sector.

In the view of the Expert Commission, the following factors speak in favour of substantive Federal-*Länder* co-operation in education planning and in favour of eliminating the prohibition on Federal-*Länder* co-operation in the area of investments: inequality of life opportunities, and the mobility barriers resulting from the large discrepancies, between the various *Länder*, in structures and performance.

The education systems of the *Länder* differ widely. Some *Länder* provide a great deal of permeability in transitions to grammar school (*Gymnasium*) and to higher education institutions, while other *Länder* impose stronger limits on such transitions.[164] Pupil performance also differs significantly between *Länder*. Comparative studies carried out by the *Institut zur Qualitätsentwicklung im Bildungswesen* (Institute for development of quality in education, IQB) considering the average cognitive skills of pupils of various *Länder*, for example, reveal significant differences, between *Länder*, with regard to performance levels and their distribution.[165] What is more, *Länder* differ in terms of the requirements they impose on their pupils, as is clear from the poor correlation seen between average competence levels achieved and certifications awarded.[166] As a result, a child's educational opportunities depend not only on his or her own abilities and family background, they also depend on which Land the child grows up in (overall, this latter dependence is systematic). Such differences are likely to hinder the mobility readiness of parents with school-age children, and to hinder the mobility of adolescents seeking places for training or studies. Such barriers are highly detrimental for Germany's function as a centre for innovation.

To date, development of educational standards has done little to change this situation. It is true that educational standards are an area – the only area – in which systematic, *Länder*-overarching activities that affect everyday school life in all *Länder* are seen.[167] The first educational standards were presented in 2003 and 2004. Definitions are in place for Germany, describing what knowledge fourth-year, ninth-year and tenth-year pupils should have, on average, upon successfully completing primary school, secondary modern school (Hauptschule) and secondary school (Realschule), respectively.[168] And yet implementation of educational standards is left up to the *Länder* and the schools. In one consequence of that status, North Rhine-Westphalia's curricula explicitly take account of the standards, while Bavaria's curricula take virtually no account of them.[169]

**Barriers to reform, resulting from growing financing problems of the *Länder***

Enforcement of the prohibition on co-operation creates enormous problems especially for financially weak *Länder*. This is even truer now, following the 2009 introduction of the debt brake (*Schuldenbremse*). It is not simply by chance that Schleswig-Holstein abstained from relevant voting in 2006, in the Bundesrat (upper house of parliament), and is now calling for elimination of the prohibition on co-operation.[170] Educational opportunities for children must not be allowed to depend on the financial situation of their home state (*Land*).

**Inefficiency in improvement of the education system, as a result of a lack of evaluations and of failures to transfer measures**

Germany's 16 *Länder* face highly similar challenges, and they set themselves highly similar goals. All *Länder* make efforts to ensure that the largest possible

numbers of pupils reach high levels of education; all battle educational poverty. All wish to improve early-childhood education and language teaching, to promote pupils with migration backgrounds and from socially disadvantaged families and to enhance permeability between different educational tracks.

And yet many measures are developed, and many reforms carried out, without any knowledge of whether, and how, the efforts will actually work. Relevant systematic comparisons between the *Länder* are lacking. As a result, successful models cannot be transferred (i.e. applied elsewhere). And the *Länder* are not even promoting such transfer. A wide range of different projects and regulations coexist. In one Land, kindergarten is fee-free for one year, while in another it is free for three years. In yet another, kindergarten fees are determined using a sliding scale oriented to parents' social situations. Germany's 16 *Länder* use a total of 24 different language tests in measuring children's language skills before children enter primary school. But which of the language tests involved is the best at predicting how children will actually do? A recent study has shown that the most frequently used language test has little success in identifying potential problems in language learning.[171]

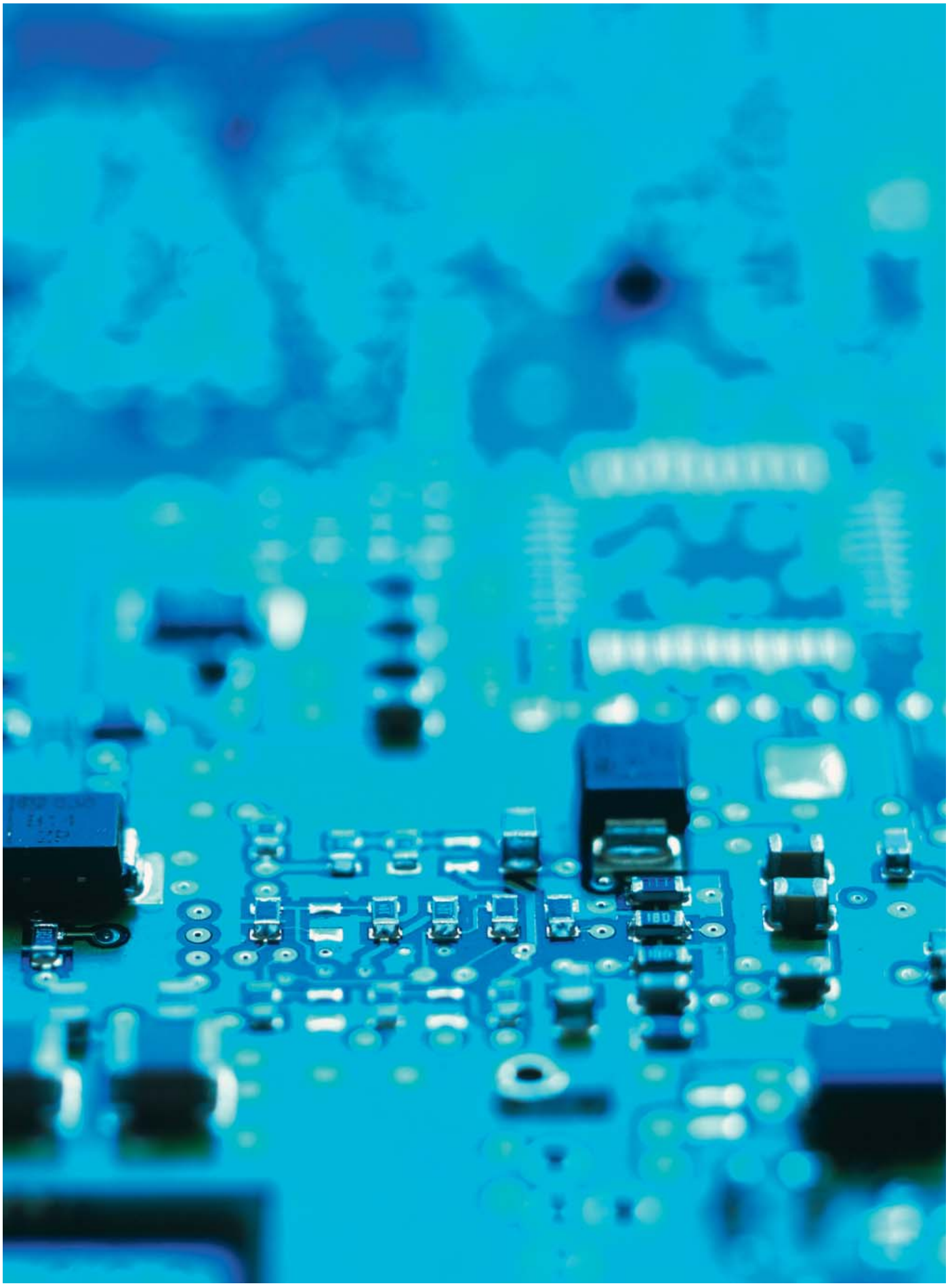
The lack of transparency in this area is constantly worsening. New structures emerge that are similar to existing structures but have been given different names. And different structures often have the same names. For example, secondary school (*Sekundarschule*) in Saxony-Anhalt comprises class levels 5 through 10 and leads to a secondary modern school (*Hauptschule*) or secondary school (*Realschule*) qualification. In Saxony, the corresponding school form is the middle school (*Mittelschule*). The secondary school (*Sekundarschule*) recently introduced in Berlin has its own senior grades (*Oberstufe*); it comprises class levels 7 through 13. In terms of structure and curriculum, Berlin's secondary school is similar to Hamburg's city-district school (*Stadtteilschule*). Such coexistence of measures and reforms has a detrimental effect on Germany's education sector and on innovation in Germany overall. The Expert Commission calls for greater transparency in this area. Measures need to be systematically evaluated, and it needs to be possible to transfer successful programmes from one Land to others. These aims could be achieved via intensified co-operation between the Federation, the *Länder* and the country's science sector.[172]

**Barriers to reform, due to halting of existing investment programmes**

As a result of the prohibition on co-operation, and of elimination of Article 104a (4) GG, it is no longer possible to introduce new investment programmes in the area of education. Consequently, it is unclear, for example, how it will be possible to expand the all-day-school sector as of 2014 and to build and refine its curricula. Financing for establishment and expansion of all-day-school infrastructures ended in 2009. Since 2006, the Federation has been strongly constrained in its ability to finance school-policy measures. As the current reform of the *Hartz-IV* unemployment-benefit system shows, in providing the "education package for socially disadvantaged children", Federal Employment Agency offices are now organising and financing tasks that (all-day) schools should actually be carrying out for all children: warm lunches, remedial education and homework assistance/supervision, afternoon sports and music instruction. Having the Federal Employment Agencies (*Arbeitsagenturen*) carry out such tasks must be considered a last recourse, since the bureaucracy involved is inefficient and generates significant administrative costs. What is more, Employment Agencies offices are not likely to be able to match local schools and teachers in proper assessment of pupils' real needs. Schools and teachers are more familiar with pupils' everyday lives, and they have a better grasp of pupils' specific problems. In all likelihood, they can tailor remedial programmes much more precisely than Employment Agencies can. And all-day schools, with their afternoon remedial programmes, are especially able to carry out such tasks much more effectively. The Expert Commission thus urgently recommends that all-day schools be enhanced, both quantitatively and qualitatively. For that to be possible, however, the prohibition on co-operation will have to be suspended.

**Conference of the Ministers of Education and Cultural Affairs (KMK) decision-making structures hampering reform**

The reasons for the inertia in education-policy reform also include the manner in which the Conference of Ministers of Education and Cultural Affairs of the *Länder* (KMK) is organised and in which its tasks are defined. The KMK is a co-ordinating body; it



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is not an innovative body able to carry out scientifically based planning of innovation in the education system. The principle of unanimity still applies to its decisions, although that principle has been loosened somewhat for key decisions. With its annually changing presidency, and the ongoing shifting of partisan interests that that entails, the KMK was in need of reform even prior to the prohibition on co-operation. That need has become all the more apparent following the Federalism reform. The Expert Commission thus recommends that a body be established that has a longer-term focus and that has governance structures that are less subject to blockage, are scientifically founded and are able to move forward in improving the education system.

Germany's federalism has been a success. The prohibition on co-operation, however, has halted progress in improving Germany's overall educational standards and levels – and, thus, is braking the development of Germany's innovation sector. Efficiency and performance improvements are possible within a system of co-operative federalism, as the area of research funding has proven. For this reason, the Expert Commission urgently recommends that the prohibition on co-operation be suspended. As a central policy area, education policy must be seen as a multi-level task. Federal impetus could help trigger urgently needed reforms in the education sector.[173] At the same time, suspension of the prohibition on co-operation, and strengthening of co-operative structures, will not alone suffice to solve the problems involved. Such moves have to be followed by suitable education-policy measures. The German education system can be successfully improved only through decisive, concerted efforts, aiming toward specific education-policy goals.

## B 2 THE EUROPEAN DIMENSION OF R&I POLICY

Since the year 2000, an attempt has been underway, in the framework of the European Research Area (ERA), to improve Europe's performance as a centre for R&I. To that end, targets and support instruments have been developed, at the level of the Member States and of the EU, aimed at intensifying co-operation and co-ordination and at enhancing information exchange between actors in the R&I sector.[174]

As a result of this development, R&I policy in Europe is no longer being managed on the exclusively national basis that guided such policy until about two decades ago. The purpose of such measures is to establish Europe as one of the world's leading research regions. As part of such efforts, its quality standards in research and innovation, already high in some regards, are to be improved, and European economic growth is to be reinforced in a lasting way. R&I activities co-ordinated on an EU-wide basis are to become the heart of European growth policy.

The Expert Commission welcomes the ERA initiative, since it can help reinforce research and innovation in Europe in a lasting way. In this chapter, the Commission comments on the recent development of European R&I policy and provides proposals for its future structure and orientation.

### Origin, aims and instruments of the European Research Area (ERA)

Until the year 2000, R&I policy in Europe was nationally fragmented in the extreme. A few trans-boundary initiatives, along with the Framework Programmes (FP) for Research and Technological Development, which were launched in 1984, the EUREKA and COST programmes and a small number of joint research centres[175] were exceptions. Until the year 2000, intensive co-operation developed solely in the areas of nuclear research, aerospace and defence. Basically, R&I policy remained a national concern for each of the Member States, however.[176]

In the past ten years, the field of R&I policy has generated great dynamism at the EU level and grown considerably in importance. The initiative for establishment of the ERA, which was launched in 2000, brought a reorientation focused on a coherent European innovation policy. Figure 02 presents the steps taken to date within that initiative.

European R&I policy, in its reoriented form as of 2000, concentrates on three core areas:[177]

– Creation of a European Research Area with improved co-operation structures, livelier competition and optimised use of resources,
– Improvement of co-ordination between national research activities and strategies,