EVALUATION OF THE MAIN ACHIEVEMENTS OF COHESION POLICY PROGRAMMES OVER THE LONGER TERM IN 15 SELECTED REGIONS (FROM 1989-1993 PROGRAMMING PERIOD TO THE PRESENT)

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Case Study Sachsen-Anhalt

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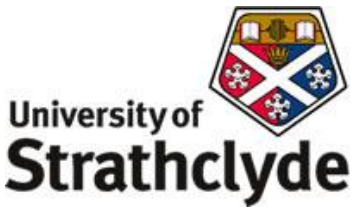

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PREFACE

This report presents the case study for Sachsen-Anhalt as part of the study 'Evaluation of the Main Achievements of Cohesion Policy Programmes over the Longer Term in 15 Selected Regions (from 1989-1993 Programming Period to the Present)', managed by the European Policies Research Centre and London School of Economics. The research in Sachsen-Anhalt was conducted over the period May to December 2012.

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List of Abbreviations

AIR	Annual Implementation Report
CADSES	Central European, Adriatic, Danubian, South-Eastern European Space
CI	Community Initiative
CIP	Community Initiative Programme
COMECON	Council for Mutual Economic Assistance
CSF	Community Support Framework
DM	Deutsche Mark
EAFRD	European Agricultural Fund for Rural Development
EAGGF	European Agricultural Guidance and Guarantee Fund
ERDF	European Regional Development Fund
ESF	European Social Fund
ESPON	European Spatial Planning Observation Network
EU	European Union
FIR	Final Implementation Report
GDR	German Democratic Republic
GDP	Gross Domestic Product
GRW	*Verbesserung der regionalen Wirtschaftsstruktur* (Joint Task GRW – Improvement of Regional Economic Infrastructure)
GVA	Gross Value Added
ha	hectares
ICT	Information Communication Technology
ISW	*Institut für Strukturpolitik und Wirtschaftsförderung* (Institute for Structural Policy and Economic Development)
IWH	*Institut für Wirtschaftsforschung Halle* (Halle Institute for Economic Research)
KfW	*Kreditanstalt für Wiederaufbau* (Reconstruction Credit Institute)
LSE	London School of Economics
MA	Managing Authority
NOP	National Operational Programme
NUTS	Nomenclature des Unités Territoriales Statistiques (Nomenclature of Territorial Units for Statistics)
OP	Operational Programme
R&D	Research and Development
RDTI	Research, Development, Technology and Innovation
ROP	Regional Operational Programme
RWI	*Rheinisch-Westfälisches Institut für Wirtschaftsforschung* (Rhine-Westphalia Institute for Economic Research)
SMEs	Small and Medium-sized Enterprises
TGZ	*Technologie- und Gründerzentrum* (Technology and Business Incubator)
UNESCO	United Nations Educational, Scientific and Cultural Organisation

EXECUTIVE SUMMARY

Sachsen-Anhalt's regional development has been heavily determined by the transition from a centrally planned economy to a market economy after German unification in 1990. The process of transition took place during the 1990s as the formal rules associated with a market economy system were adopted. Nevertheless, a number of structural peculiarities which have their roots in the transition period continue to have an impact. This feature is not specific to Sachsen-Anhalt; it concerns all East German regions.

Needs

Under the centrally planned economy of the GDR period, Sachsen-Anhalt's enterprise sector consisted of large, uncompetitive industrial trusts. These large units were oriented to the COMECON market and had low levels of productivity due to obsolete fixed assets. Over-industrialisation prevailed while the service sector was underdeveloped. The SME sector had been marginalised, and the communist ideology had weakened entrepreneurial instincts. R&D in the enterprise sector was strongly oriented towards imitation. The Sachsen-Anhalt economy was heavily specialised in the chemical industry and brown-coal mining sectors, causing considerable environmental damage. Fixed-asset investment in infrastructure had also been neglected during the period of the centrally planned economy.

When the Berlin Wall came down, the legacies of the communist past had led to low competitiveness, resulting in massive de-industrialisation. As a result, the labour market situation deteriorated, employment decreased considerably due to company closures and extensive rationalisation of production, and unemployment rates increased significantly. At the beginning of the transition, the negative social consequences were alleviated by large-scale job creation schemes, retraining programmes, early retirement schemes and short-time labour. Intra-regional disparities were relatively low: these challenges concerned the whole territory of Sachsen-Anhalt. Similar to the situation in the enterprise sector, infrastructure was obsolete in the early 1990s.

Development strategy and its implementation

The development since unification can, roughly speaking, be seen as consisting of two phases:

- In a first phase of about 10 years, following privatisation and a breakdown of the economic structure, the main effort was to address the need for investment in both infrastructure and assets.

- Since 2000 or thereabouts, the development of Sachsen-Anhalt has been characterised both by visible success in certain fields and persistent structural problems.

At the beginning of the 1990s, the ERDF programmes accurately identified the regional problems: uncompetitive industrial structures, a lack of a strong SME sector, and losses of traditional domestic and COMECON sales markets were identified as the main shortages. The region responded to these problems by focusing the programme strategy on support for fixed-asset investment in enterprises and enterprise-related infrastructure. This was regarded as a promising way to pursue the structural changes required for economic recovery. Against the background of rapid de-

industrialisation and massive job losses, a broad consensus existed among the regional partners to pursue this investment-oriented strategy which was expected to create new jobs. However, in hindsight, the programme was one-dimensional. It did not address other regional problems, especially weak R&D activities in the enterprise sector, partly due to restrictions set by GRW rules.

At the beginning of the 1994-1999 period, when the labour market situation continued to worsen, and catching up in terms of productivity slowed down, the programme continued to address the regional needs by interpreting them exclusively as further evidence of need to modernise fixed assets in the enterprise sector and in enterprise-related infrastructure. At the same time, there was increased awareness in the region that further economic progress depended on more than fixed-asset investments. Regional partners understood that ERDF had the capability to support a wider range of subjects, especially in R&D and environmental protection. The examples of Brandenburg and Sachsen, which had begun to use ERDF decoupled from GRW, stimulated debate in Sachsen-Anhalt. Moreover, the growing scarcity of public budgets at the Land level mobilised all departments of government to claim for ERDF resources. Nevertheless, the government decided to continue the investment-oriented approach practised in the previous period. To meet wider regional problems, the Sachsen-Anhalt government pursued an implicit strategy by utilising the GRW scheme in as flexible a way as possible in order to meet needs in urban development or environmental protection, while also partly meeting the requests of other departments. The environmental problem was addressed in the strategy either indirectly, by installing environmentally friendly technologies in enterprises (a side-effect of the modernisation of fixed assets), or directly, by modernising enterprise-related wastewater treatment.

The programme for the 2000-2006 period was a strategic breakthrough, when the regulatory limitations of the GRW were overcome. More attention was directed in the programme strategy to R&D and innovation, networking and advisory services for SMEs. Moreover, the programme understood infrastructure in a more comprehensive manner, and the allocation of funding was changed in favour of infrastructure. At the same time, the programme continued to address needs with respect to modernising fixed assets in enterprises and enterprise-related infrastructure, because high unemployment persisted, and enhancing export-oriented industries was still a challenge. The need to strengthen the development of urban agglomerations in Sachsen-Anhalt did not become an explicit strategic priority, even though their economic weakness was evident.

In the 2007-2013 period, the programme continues to pursue the strategic approach introduced in the previous period, and it focuses on a wide range of regional problems. In contrast to the previous period, the set of measures aimed at addressing regional needs has expanded. The current programme places greater emphasis on the weaknesses of cities in terms of growth, which are still very evident despite the fact that these problems have existed since the 1990s. In summary, the 2007-2013 strategy properly identifies the wide range of regional problems, the focus on R&D, innovation and human capital has been strengthened and, thus, the programme addresses the continuing regional needs in these fields in an appropriate way. The proportion of innovation support in the total programme allocation is the largest in comparison with previous periods. Nevertheless, the translation into actions needs to be improved, because shortages in private R&D have remained almost unchanged since 1991 while public research has experienced improvement. With this in mind, regional stakeholders continue to emphasise the importance of on-going support for fixed-assets investment in enterprises to enable them to grow and thereby create more favourable conditions for R&D.

Principal achievements

Thanks to support from ERDF and national programmes, Sachsen-Anhalt has experienced progress in numerous fields of economic development. Though fixed assets in enterprise and infrastructure were modernised considerably, several weaknesses persist and new challenges have emerged. The enterprise sector has shifted from large units to a very fragmented pattern of small-scale enterprises. Larger units that conduct their own R&D remain rare. Compared to other regions, levels of business start-up activities have been lower. Industrial structures have changed. After a phase of substantial de-industrialisation, the manufacturing sector has recovered to a certain extent, but without achieving previous levels of employment. The importance of the service sector has increased. Productivity has increased substantially at the expense of employment. However, it is still below the German average. Lower productivity is, at least in part, a consequence of weak R&D activities in the enterprise sector. The latter stems from the small firm size, the absence of large companies conducting own R&D, and an intra-industry structure which lacks technology-intensive sub-sectors. The public R&D sector is strong, but this cannot fully compensate for the shortcomings in the private R&D sector. The environment has improved considerably and is no longer a disadvantage in terms of development prospects. Since 2005, the unemployment rate has decreased, but the labour market situation remains unfavourable in comparison with the German average. The rate of long-term unemployment is the highest among the German States and, as a result, the risk of poverty is above the national average. Furthermore, Sachsen-Anhalt has experienced outmigration of young people and birth-rates dropped sharply after 1990. Hence, skill shortages are expected to increase in the future. Although spatial inequalities are relatively low, Sachsen-Anhalt's large cities show a greater productivity gap than the rural areas, compared to the national average in these regions. Infrastructural endowment has improved considerably. The greatest progress has been made in enterprise- and environment-related infrastructure, where basic needs were met and only specific shortcomings remain. Nonetheless, especially in transport, R&D and education, there is still further need for improvement.

Lessons and implications for future Cohesion policy

To ensure that regional strategies for programmes reflect the needs of the region, a clear position must be taken on which needs to address. Recent programmes and discussions with experts make it clear that needs may vary within the region and between areas of support. Moreover, the situation can change over the time during which the programme is being implemented. Thus, programmes must be flexible to meet the different needs and to adjust to macroeconomic changes. But there is also a necessity to gain consensus on regional priorities. To address the most important challenges, a bottom-up approach to programming is generally regarded as appropriate. Given the reduced resources, the choice of regional priorities can become politically difficult, and transparency is essential.

The effectiveness of large-scale projects has been demonstrated in the past, but other approaches to project design can also be beneficial. In many cases, it is important to achieve critical mass to make the desired changes. The overall impact of large projects can also be more significant in the long term. However, large size does not guarantee the success of a project.

In assessing targets and achievements within the region, there has been a degree of learning regarding appropriate indicators and measurements and what might be expected from ERDF-

supported projects. Assessment of the feasibility of projects and the development of appropriate indicators for the respective measures is progressing well. There is also more awareness of the qualitative aspects of measures that influence the degree to which overarching programme objectives are met. For example, in the areas of urban development or infrastructure, the importance of developing 'soft' indicators that assess the sustainability of achieved results is acknowledged. Another crucial issue that has been raised is the shift from the current thinking of measuring 'end' results of an intervention towards a more process-oriented appraisal of effectiveness in ERDF funding. Merely calculating the numbers of schools, jobs created or business start-ups does not draw the full picture of real achievements. Beyond measureable outputs and results, there should be a clear logic of long-term development that concerns not simply individual projects but also long-term effects on desired changes.

The region faces great challenges in the completion of the current programme and the development of the new programme. One of these is linked to the fact that the southern part has become phasing-out region, although many of the region's problems are not yet resolved. An additional challenge will come from the limited regional budget in the next programme period. Both these factors may contribute to an increase of intra-regional disparities in future. Many of the lessons learnt from the past programmes will be useful in tackling current and future problems. One of them is that the past programmes were tied to employment and direct business support issues, whereas in future more attention will be paid to targets that indirectly influence performance, such as demographic development or environmental sustainability.

1. INTRODUCTION

Sachsen-Anhalt is located in the eastern part of Germany. Its northern and eastern areas border on the State of Brandenburg. The south of Sachsen-Anhalt adjoins Sachsen and Thuringia. On the west, Sachsen-Anhalt has a border with the former western part of Germany, the Land of Niedersachsen.

Sachsen-Anhalt covers a territory of 20,400 km^2, and it had 2,848,600 inhabitants in 1991. Thereafter, the population number decreased because of a sharp decline in births immediately after 1990 and considerable out-migration, mainly to the western part of Germany. According to EUROSTAT data, 2,345,600 people lived in Sachsen-Anhalt in 2010. The most populous cities in Sachsen-Anhalt are Halle (2010: 232,600 inhabitants), the State's capital Magdeburg (231,000) and Dessau Rosslau (87,300). Sachsen-Anhalt's manufacturing industries are mainly concentrated in the southern part of the State, close to Halle. In particular the chemical industry shows a strong concentration in the southern part, in and around Bitterfeld, Leuna, Schkopau and Spergau. In the northern part, Magdeburg and the surrounding territories host various manufacturing industries. However, the majority of the State's territory is rural, where agriculture shapes economic activity.

Sachsen-Anhalt is one of the five East German *Länder*. Germany was formally reunified in 1990. Until then, the area forming today's Land of Sachsen-Anhalt was part of the German Democratic Republic (GDR). Administratively, the GDR consisted of 15 districts (*Bezirke*). As the GDR was centralised, the districts had far less autonomy then a Land. The legacy of forty years within the GDR strongly determined the conditions at the formation of Sachsen-Anhalt in the 1990s: economically, both structure and enterprises were uncompetitive, and politically the state structure and procedures had been completely changed. The whole of society had undergone very profound changes affecting not only the economy, but also the education system, healthcare, and housing; in practice, all aspects of everyday life and all sectors of society were affected.The early 1990s were characterised by a threefold challenge: first, the transformation from a centrally planned economy to a market economy; second, becoming *de facto* 'overnight' a part of the European Economic Community; and, third, re-establishing the Federal State of Sachsen-Anhalt that existed in the period from 1947-52. In 1952, the state structure was replaced by the division of the GDR into 15 districts (*Bezirke*) pursuing a rigid centralisation of political and administrative power (Tullner, 1996: 148).

In contrast to the other transformation countries in Eastern Europe, East Germany's transformation followed a very specific path: unification allowed the merger of the former GDR and the Federal Republic of Germany. Although different alternatives were discussed in 1989, unification was finally organised as the accession of the former GDR to the Federal Republic of Germany: the institutional arrangements of the former western part of Germany remained mostly unchanged and were transferred to the eastern part. Although the consequences of the transfer of institutions are still disputed, they certainly facilitated a comparatively quick start within a new structure.

In terms of regional development, the starting conditions in nearly all fields were complicated: economy proved to be uncompetitive, research and innovation required complete reorganisation, most of the infrastructure was in a bad condition or even missing (e.g. wastewater treatment), and the environment was severly damaged in some parts of the Land. Politically, unificiation was justified with the promise of creating 'flourishing landscapes' within a few years. However, this promise has proven to be illusionary. The processes of adaptation and change took decades rather

than years, and the consequences of the GDR legacy are still apparent in some aspects of the current structure (e.g. the lack of central units of larger enterprises, or the economic structure dominated by rather small units).

The way that the support of the transformation process was organised is also a distinctive feature of the East German development path compared to the rest of Eastern Europe: an enormous transfer of resources was launched under the heading of 'Aufbau Ost' (Blum *et al.*, 2009). Substantial amounts of money have been spent on upgrading infrastructure and managing the transformation of the economic structure. Accordingly, although Sachsen-Anhalt and the rest of East Germany became eligible for the highest category of EU support, the relative importance of these resources differed from other East European transformation countries that subsequently joined the EU.

Sachsen-Anhalt became a beneficiary area for support by EU Structural Funds when German unification occurred. This happened during the 1989-1993 funding period. Based on an initiative of the European Parliament, Structural Funds were made available from 1991 to support economic restructuring in Sachsen-Anhalt as well as in the other East German Federal States. During the first part of 1991-93, the East German States were treated separately due to the exceptional transition situation. ERDF resources were used exclusively to co-finance a single national regional policy programme, the Joint Task 'Improvement of the Regional Economic Structure' (German abbreviation: GRW). The process of 'decoupling' ERDF and GRW led to difficult and intense conflict between some of the East German Länder and the federal level.

Sachsen-Anhalt and the other East German Länder were eligible under EU Objective 1 during the 1994-1999 and 2000-2006 periods. The support status of Sachsen-Anhalt changed for the 2007-13 period: Sachsen-Anhalt's northern part (the former *Regierungsbezirke*, incorporating Government Districts Dessau and Magdeburg) represents a 'Convergence Region', whereas the southern part (the former Government District Halle), has 'Phasing-Out' status. The proportion of allocation is 70:30 in favour of the northern part.

This case study of Sachsen-Anhalt is structured in seven chapters. Following this introduction, an analysis of the regional context (Chapter 2) forms the starting point for the case study. Chapter 3 provides an analysis of programme evolution and relevance. Its function is to identify the needs to which ERDF support responds. The analysis of programme evolution and relevance is followed by an analysis of allocation and expenditure of ERDF co-financed programmes (Chapter 4). Chapter 5 provides an analysis of the achievements of ERDF support. It investigates achievements at the programme level, followed by an assessment of achievements according to the themes specifically developed for this project. Chapter 6 comprises a comparison of achievements with the objectives of support (effectiveness) and with the existing regional needs (utility). Chapter 7 draws conclusions from the whole work.

The case study methodology consists of a mix of qualitative and quantitative methods. The analysis of regional context and needs in Chapter 2 is based on work by the London School of Economics (LSE) and the Halle Institute for Economic Research (IWH). It is mainly based on statistical data and existing literature. If applicable, the results of fieldwork complement the exploration of data and documents (Annex IV provides a list of interviewees). The information for Chapter 3 is mainly derived from the Community Support Frameworks (CSF), Operational Programmes (OP), Final

Implementation Reports (FIR), Annual Implementation Reports (AIR), and other programme documents (Annex V: Overview of sources used for the case study) summarises the main documents explored and comprises a list of references) and, if applicable, from fieldwork. Chapter 4 was prepared by LSE and accompanied by IWH comments. The database was gathered by IWH with valuable support from the Sachsen-Anhalt Investment Bank, the EU Managing Authority Sachsen-Anhalt, the Federal Ministry of Transport, Building and Urban Development and the Ministry of Spatial Development and Transport of the State of Sachsen-Anhalt. Documentary analysis and the results of fieldwork inform Chapter 5. An online survey was undertaken to complement fieldwork and desk research, and enhance triangulation. This questionnaire was directed at 314 email addresses, comprising the interviewees, plus representatives from local authorities, firms, regional and local socio-economic partners and interest groups. The questionnaire returned an overall response rate of 28.3 percent and a completion rate of 15.9 percent. The questions and a summary of responses are presented in Annex VII: Summary of survey results, which provides insights into how stakeholders of ERDF support assess its effects. Chapter 6 brings together quantitative and qualitative work, and assesses the achievements of Cohesion policy against imputed objectives derived from both fieldwork and quantitative expenditure analysis. Moreover, achievements are assessed against needs identified in Chapter 2.

2. REGIONAL CONTEXT AND ANALYSIS OF NEEDS

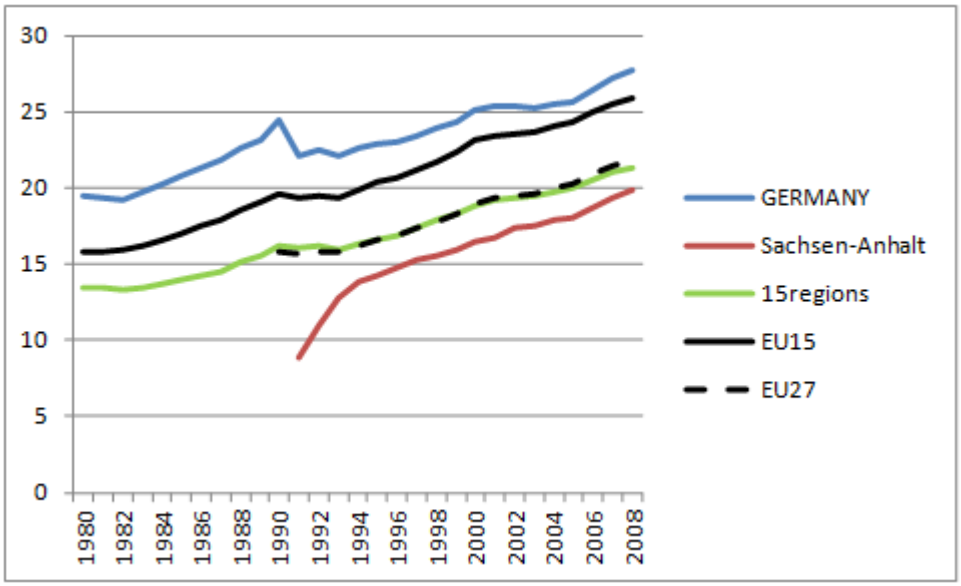
Sachsen-Anhalt is situated in the western part of former East Germany. Many of the regional development problems that still characterise the situation in the Land stem from the legacy of the GDR. The starting conditions in the 1990s were very difficult: a vast de-industrialisation and the need for very extensive restructuring lead to a breakdown of competitiveness and sharp decrease in employment. Roughly speaking, the development since unification consists of two phases:

- In the first phase of about 10 years, following privatisation and a breakdown of the economic structure, the main effort was to address the need for investment in both infrastructure and assets.
- Since 2000 or thereabout, the development of Sachsen-Anhalt has been characterised both by visible success in certain fields and persistent structural problems.

Sachsen-Anhalt has a very low population density (almost half that of Germany), and much of its land is agricultural (with sizeable woodlands and some mountainous areas).

Its economy has changed significantly since German reunification, but its GDP per capita remains below the German average (see Figure 1). Over the 20-year period, however, the overall performance has been good: Sachsen-Anhalt achieved declining unemployment, increasing employment rates, and productivity progress in the manufacturing sector. Nevertheless, the Land still faces demanding challenges for further development.

Figure 1: GDP per capita



Source: EUROSTAT.

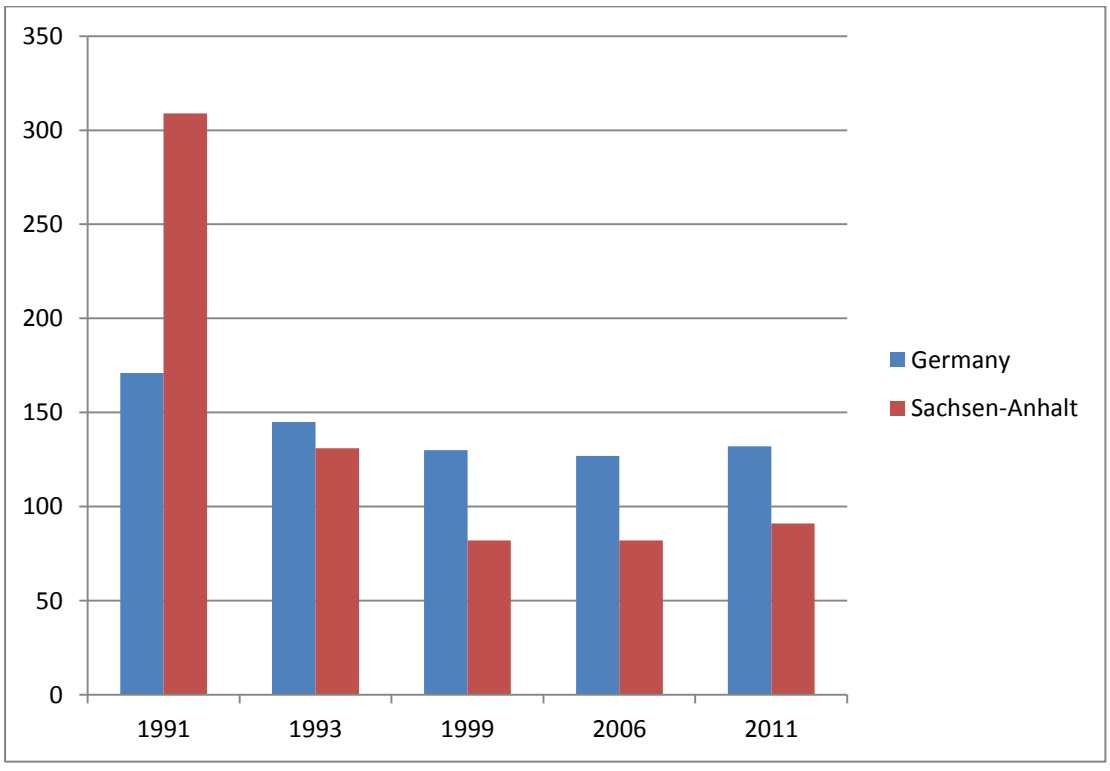
The following text discusses the main development trends, the achievements, and the remaining challenges in more detail for selected issues.

Enterprise. The initial situation with respect to the enterprise structure in Sachsen-Anhalt was characterised by the existence of *'Kombinate'*. Those structures were created in the GDR's state-

directed economy and represented large industrial trusts combining vertical or horizontal integration of enterprises. These large entities dominated the enterprise-sector landscape, and they were oriented to the Soviet or COMECON market. Following unification, and directly exposed to the world market without the protective function of the GDR's monetary policy, these structures became uncompetitive overnight. The centrally planned cooperation networks were dismantled, but establishing new linkages did not happen so rapidly. The Kombinate were characterised by an obsolete capital stock and, especially in the chemical industry, by contaminated sites. Productivity was low due to the long-lasting neglect of fixed-asset investments, and the political will to create large industrial trusts had led to a lack of SMEs. Consequently, the entrepreneurial basis of the economy was largely missing.

Thus, the enterprise structure in Sachsen-Anhalt needed to change considerably from 1989, and this did occur: whereas it was once dominated by large firms, mainly from the chemical, mining and mechanical engineering industries, the regional economy diversified substantially after reunification and firm sizes shrank (EUROSTAT, 2004a and 2012). Firm size has shrunk in mining and manufacturing by three-quarters between 1991 and 1999, a development that characterises the first decade of transformation. It then remained unchanged between 1999 and 2006 (see Figure 2). Only recently did firm size slightly increase up to 91 employees per enterprise; however, this is still below German average. Generally speaking, a small firm size is associated with lower potential for increasing productivity, as well as barriers for entering foreign markets and for the development of own R&D activities. Nowadays, there is a lack of large companies, and especially of headquarters that conduct their own research and development (R&D) on a continous basis.

Figure 2: Employees per enterprise in mining and manufacturing

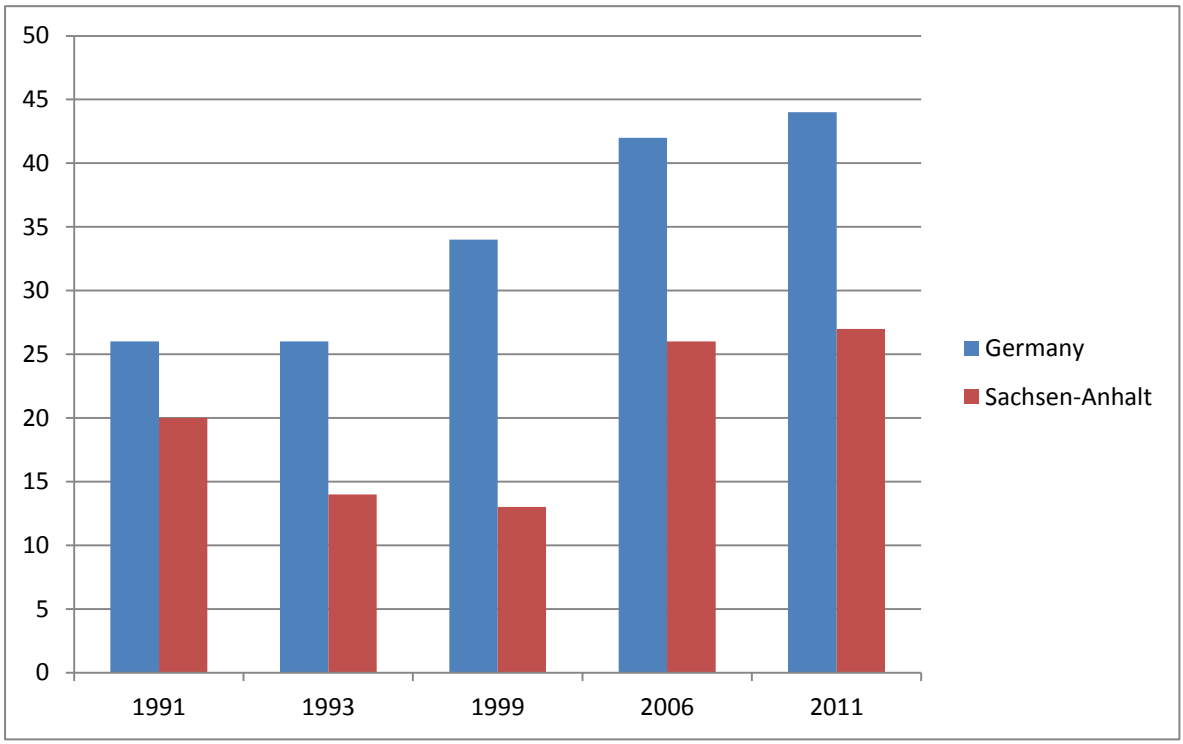


Enterprises >=20 employees, comparison between periods is restricted due to changes in Classification of Economic Activities.

Source: Own calculations based on data from Federal Statistical Office.

The shortcomings in terms of export intensity have persisted. Starting with a lower share of exports in the 1990s, the economy of Sachsen-Anhalt is still less export-oriented than Germany as a whole. Despite a considerable improvement between 1999 and 2006, the distance recently increased again (see Figure 3). However, it is worth noting that the underlying reason changed: in the early years, the competitive deficit of the large industrial trusts led to a breakdown of exports; currently, the issue relates more to the small-scale structure of enterprises, as export intensity is normally lower in smaller enterprises.

Figure 3: Share of exports in total turnover in mining and manufacturing



Enterprises >=20 employees, comparison between periods is restricted due to changes in Classification of Economic Activities.

Source: Own calculations based on data from Federal Statistical Office.

Self-employment levels, according to EUROSTAT data, have increased from around 5 percent in the early 1990s to 8 percent currently, a figure that is still lower than the national average, which amounts to 11 percent.

Moreover, industrial clustering, which is a 'bearer of hope' for regional development across Europe, is less well-developed in Sachsen-Anhalt and most of the East German States in comparison to West Germany (Titze *et al.*, 2010: 251-270, especially 264). According to one interviewee, the internationalisation of clusters, where they exist, is rather poor. If signs of clustering exist, there is a need to strengthen their international connectivity.

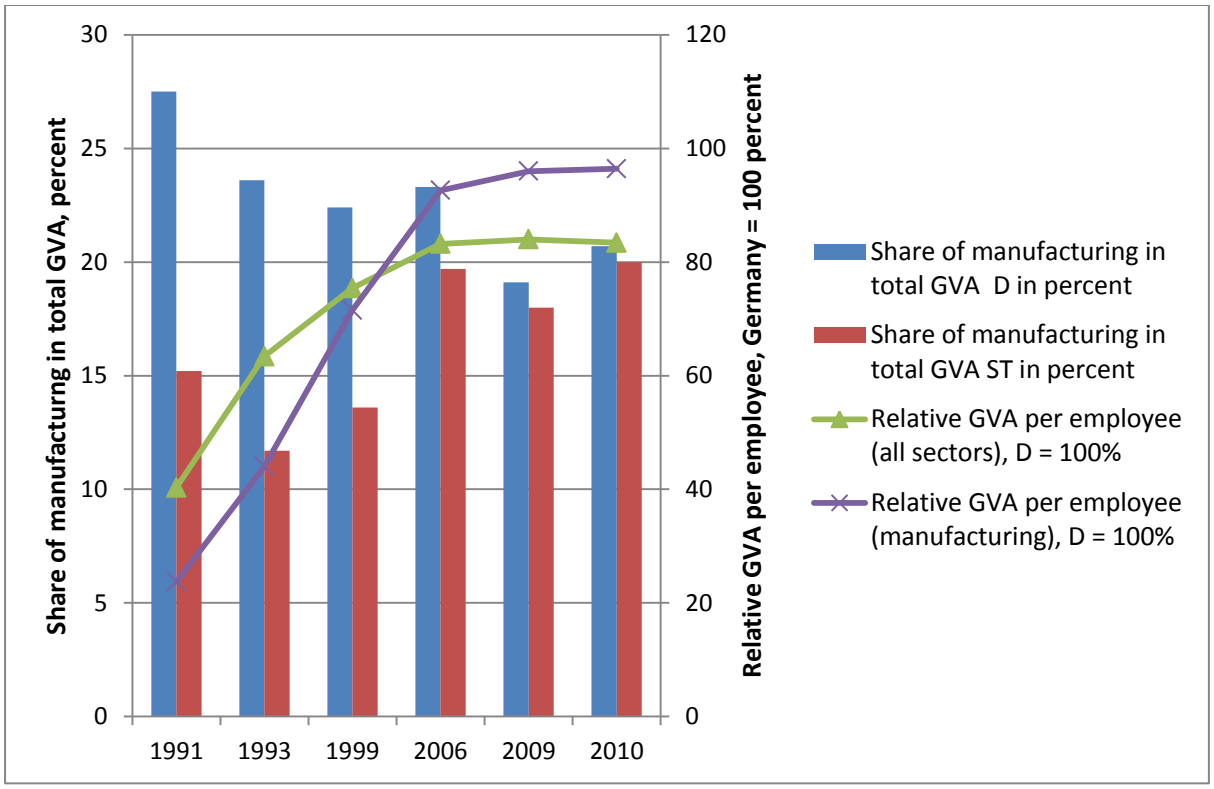
Structural adjustment.[1] Due to the artificially-created structures in the GDR period, the development of Sachsen-Anhalt began with over-industrialisation and an underdeveloped service sector, which are typical characteristics of a centrally planned economy. Given its industrial

[1] All information on modified indicators derives from the European Regional Prospects database (Cambridge Econometrics), unless otherwise stated.

structure under communism, in the early 1990s Sachsen-Anhalt was one of the most specialised regions in Germany (in chemicals, mining and mechanical engineering). Immediately after German unification, a significant process of de-industrialisation took place. The manufacturing sector was uncompetitive, due to obsolete machinery and equipment, old-fashioned infrastructure and a one-sided orientation to Eastern European markets. As a result of de-industrialisation, the proportion of the manufacturing sector in Sachsen-Anhalt in GVA was 12 percentage points lower than the respective average value in Germany. Productivity was particularly low in the manufacturing sector, where the gap from the national average was 77 percentage points in 1991. The average productivity gap across all industries was 60 percentage points in 1991 (own calculation based on Regional Accounts VGRdL, 2011c).

Since unification, however, the economy has diversified significantly, and after the first decade of basic restructuring, the extent of sectoral specialisation at the beginning of the 2000s was only 10 percent higher than the German average (6 percent in the late 2000s). Concerning broad sectors, Sachsen-Anhalt is close to the national profile. The proportion of the manufacturing sector in total GVA decreased during the first period as a result of de-industrialisation, and was only half of national average in 1993 (see Figure 4). Recently, the manufacturing sector is, in terms of value-added, close to the German average. The closure of this gap was mainly achieved until 2006. The progress in the manufacturing sector also found expression in considerable progress in terms of productivity (see Figure 4). At the beginning of the 1990s, manufacturing in Sachsen-Anhalt was less productive than the rest of the economy – compared to national averages. The periods until 2006 reveal considerable convergence, which is one of the major achievements of transformation. The convergence of overall productivity is less impressive than in manufacturing. Recently, the catching-up came to a halt: there was no progress between 2006 and 2010 either for the economy as a whole or for manufacturing. Overall labour productivity (as with per capita incomes) remains below the national average (by some 17 percent in the late 2000s), albeit catching up (especially in the early 1990s). Productivity is lower in the construction industry and services. However, the manufacturing industry has made greater progress in terms of productivity in comparison to the other industries mentioned. In agriculture, productivity is in fact higher than the national average.

Figure 4: GVA per employee and share of manufacturing in total GVA



GVA: current prices.

Source: Own calculations based on Regional Accounts VGRdL, 2011c.

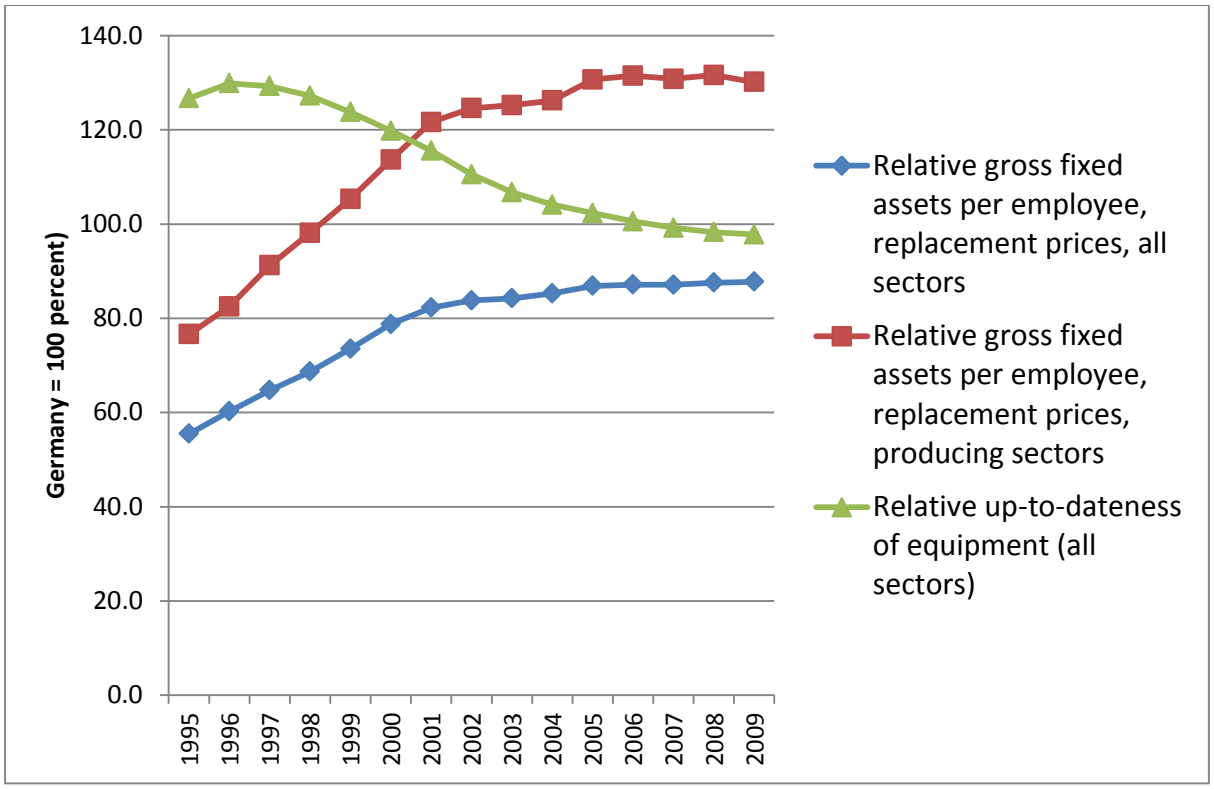
Nevertheless, the intra-industry structure of Sachsen-Anhalt's manufacturing is different. Sachsen-Anhalt shows a lack of technology-intensive industries, whereas the proportion of labour-intensive industries and capital-intensive industries is above the West German average (Heimpold, 2009: 425-434). Employment has shifted more to the service sector (from 52 percent in 1991 to over 70 percent in 2010), but the structure of services remains rather unfavourable: Sachsen-Anhalt has a comparatively low share in both financial and non-financial services (trade, communications) and instead has above-average shares of public-sector employment. Tourism evolved as part of the service sector. Some of Sachsen-Anhalt's architecture emerged as tourist attractions, and whole towns (Quedlinburg, Eisleben, Wittenberg) were classified by UNESCO as part of 'world cultural heritage'. Local cultural events are internationally known and its literary heritage is vast.

During the 1990s and early 2000s, the region underwent an extensive restructuring and industrial modernisation programme. The overall investment rates were twice as high as those seen nationally until 1998. They subsequently decreased, and recently (2006-2008) they were below the national average. As a result, gross fixed assets per employee reached around 87 percent of the national average. The assets available per employee in the producing sector even exceeded the national average (see Figure 5).

Nonetheless, the relative up-to-dateness of equipment (share of net fixed assets in gross fixed assets) has recently worsened (see Figure 5). It was significantly above the German average in 1999, due to the rapid modernisation of fixed assets, but later it worsened and fell below the national average in 2009. So, while the substantial investment in the 1990s gave a boost to the capital stock, recent investment rates were not sufficient to keep it up to date.

Although investment rates went down, as an outcome of successful restructuring, the region has retained its specialisations and regained its historically good export performance, especially in chemicals and metal products (Investment and Marketing Corporation of Sachsen-Anhalt, no date of publication; Regional Innovation Monitor, no date of publication).

Figure 5: Relative gross fixed assets per employee and relative up-to-dateness of equipment (Germany = 100%)



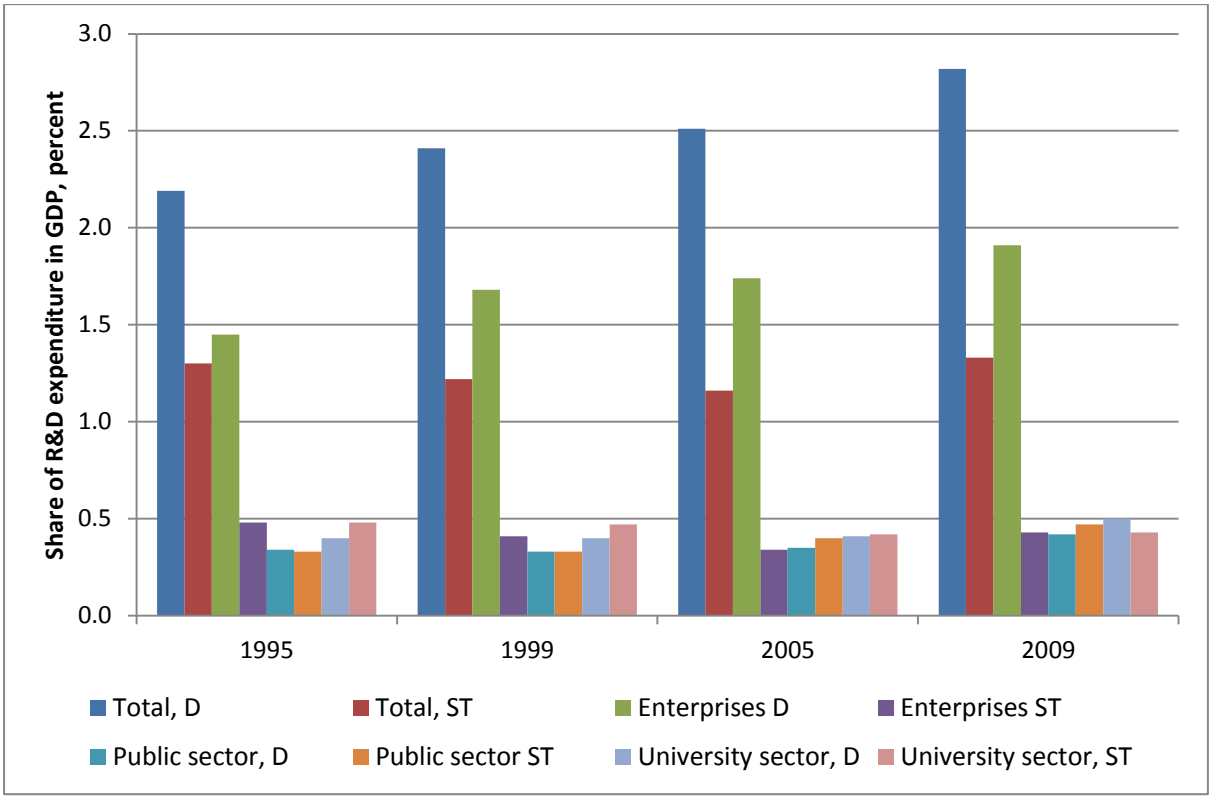
Source: Regional Accounts VGRdL 2011a, calculation and diagram by IWH.

Innovation. During the GDR period, R&D was integrated in the large industrial trusts in the centrally planned economy, including a considerable number of researchers. These capacities could not be maintained in the same way after German unification, which was initially characterised by closures of many R&D departments in the course of privatisation, because only pure production facilities were of interest. R&D was designated to take place in the parent companies outside East Germany and Sachsen-Anhalt. In other cases, R&D units were split up and became separate service firms which had to find new customers and fields of activity. This was not an easy task. Under the centrally planned economy, the intellectual and material resources in R&D were, to a large extent, for imitation purposes. This was partly due to lack of hard currency and partly due to wrong specialisation and separation from international markets.

R&D outside the company sector took place either at universities or at the research institutes of the Academy of Sciences of the GDR. Sachsen-Anhalt hosted two universities, a medical academy, and two technical, one agricultural and two pedagogical academies (Kreckel, 2000: 208f.) The institutes of the Academy of Sciences of the GDR were mainly located in East Berlin, whereas only four institutes were located in Sachsen-Anhalt (Wolf, 1996).

R&D expenditure as a share of GDP (EUROSTAT data available only from 1995 onward) was 1.3 percent, which was well below the German average of 2.2 percent in 1995. Despite its significant restructuring and re-industrialisation, Sachsen-Anhalt maintains a weak record of R&D activity especially in the enterprise sector. According to EUROSTAT data, total R&D expenditure as a share of GDP has been persistently below 1.4 percent since the mid-1990s. The gap from the national average has become even greater (see Figure 6).

Figure 6: Share of R&D expenditure in GDP, percent



Source: EUROSTAT.

This deficit is mainly attributable to the business sector, where the share of R&D amounted to 0.5 percent of GDP compared to the 1.5 percent national average (1995). The relative position of the enterprise sector has worsened in terms of R&D expenditure as a share of GDP across the first three periods, until 2005. A slight relative improvement has been achieved recently, but the gap from the national average remains great (77.5 percentage points).

Public R&D spending is largely directed to targeted support for research activities not only in the university sector (two universities and four polytechnics – universities of applied sciences) but also via a network of government-sponsored research institutes, e.g. the Max Planck Institute for Dynamics of Complex Technical Systems, the Institute of Plant Genetics and Crop Plant Research and others (Investment and Marketing Corporation Sachsen-Anhalt, no date, and WZW, no date). Universities' expenditure on R&D was above the national average until 2005, but later it was below it (the difference was 14 percentage points in 2009), i.e. the relative position of the university sector in terms of R&D expenditure has worsened recently.

By contrast, in the enterprise sector, the share of public (non-university) R&D was slightly below the national average in 1995, but it improved and was well above national average after 1999 (see Figure 6). Public R&D expenditure as a share of GDP was approximately equal to state-sector R&D expenditure as a share of GDP in 1995 (0.33 percent to 0.34 percent), and was even more than the equivalent in the university sector (0.48 percent compared to the 0.4 percent national average).

Therefore, the innovation system of Sachsen-Anhalt is characterised by a striking weakness of R&D in the private sector.

The weakness of R&D activities can also be identified from the output indicators: although Sachsen-Anhalt has made considerable efforts to strengthen R&D in the public sector relative to the country as a whole, the overall focus and potential of these initiatives in innovation terms is not strong enough to compensate for weaknesses in R&D in the enterprise sector. The number of applications per one million inhabitants was, according to EUROSTAT data, 17 in 2009, compared to 132 in Germany. Sachsen-Anhalt's 'peak' was in 2003, with 56 patent applications per one million inhabitants. Sachsen-Anhalt's relative performance in terms of patent applications per capita gradually improved in the 1991-2006 period, but it subsequently worsened and fell below the position in 1999 (see Table 1). A substantial difference remains. In 2009, the patent applications in Sachsen-Anhalt amounted to only one-eighth of the national level. Employment in R&D activities and high-tech sectors was also low, although it had increased in the 2000s relative to previous years. This is despite the fact that the overall level of education of the workforce is only marginally lower than that of the national average (about a quarter of the workforce holds a tertiary education degree). According to EUROSTAT data, the number full-time equivalents (FTE) in R&D was 6,912 in 2009 compared to 5,928 in 2005, which reveals an increase of about 1,000. However, compared with the initial situation in 1991, when 7,052 FTE worked in R&D, employment in R&D has decreased.

Table 1: Patent applications to the EPO by priority year and R&D personnel (number, FTE)

	1991	1993	1995	1999	2005	2009
Patents per million inhabitants						
Germany	140.6	144.3	159.4	255.6	288.6	132.2
Sachsen-Anhalt	5.1	11.6	18.3	35.3	42.9	17.0
R&D personnel (number, FTE)						
Germany	516,331	475,018	459,138	479,599	475,278	534,565
Sachsen-Anhalt	7,052		7,456	6,562	5,928	6,912

Source: EUROSTAT, own calculations.

Environmental sustainability. The initial environmental situation suffered from the legacies of an extensive use of natural resources, especially in brown coal mining, and the long-lasting failure to modernise fixed assets in the company sector prior to 1989. Up to the 1990s, Sachsen-Anhalt had been the location for the majority of chemical industries in the former GDR. Consequently, the environmental situation was one of the heaviest burdens for economic recovery following German unification. Soil at industrial sites was often contaminated, especially at locations of the chemical

industry on which Sachsen-Anhalt's economy had been heavily specialised. Altogether, 13,997 sites were registered (as of December 1992) as potentially contaminated (Junkernheinrich *et al.*, 1993: 210). Air and water were considerably polluted and fell far short of European standards. For instance, dust emission was 28t per km^2 in Sachsen-Anhalt compared to 1.2 in West Germany (Junkernheinrich *et al.*, 1993: 207). A specific shortcoming concerned the access to public wastewater treatment, which was only available for 54 percent of the population in 1990 (Statistisches Landesamt Sachsen-Anhalt, 1993: 302). As a consequence, water qualiy was very low. Only 14 percent of flowing waters possessed an non-critical water quality in 1991 (Ministerium für Landwirtschaft und Umwelt, no date of publication: no pagination). Although not displayable through comprehensive data, it can be stated that the region underwent a process of 'clean-up', removing large deposits of hazardous waste, purifying groundwater and launching environmental protection programmes for industries. This led to a dramatic reduction in air pollution and damage to woodland, an improvement in the quality of water, and a large decrease in water consumption (for this and the following: EUROSTAT, 2004b; ADE 2009a, b; Sachsen-Anhalt, no date of publication: no pagination, f). The proportion of the population with access to public wastewater treatment increased to 74.4 percent in 1998 (Ministerium für Raumordnung und Umwelt, no date of publication: 4), 89.9 percent in 2006 (Ministerium für Landwirtschaft und Umwelt, no date of publication, a: 3) and recently reached 93.9 percent (Ministerium für Landwirtschaft und Umwelt, no date of publication, b: 4). The progress in wastewater treatment was accompanied by significant improvements in water quality: the proportion of flowing waters with adequate water quality was initially 14 percent and, thus, very low; in 1993, it increased to 30.2 perent, in 1999 to 69 percent (Ministerium für Landwirtschaft und Umwelt, no date of publication: no pagination), and in the mid-2000s it slightly exceeded the 70 percent margin (Landesamt für Umweltschutz, 2009: no pagination).

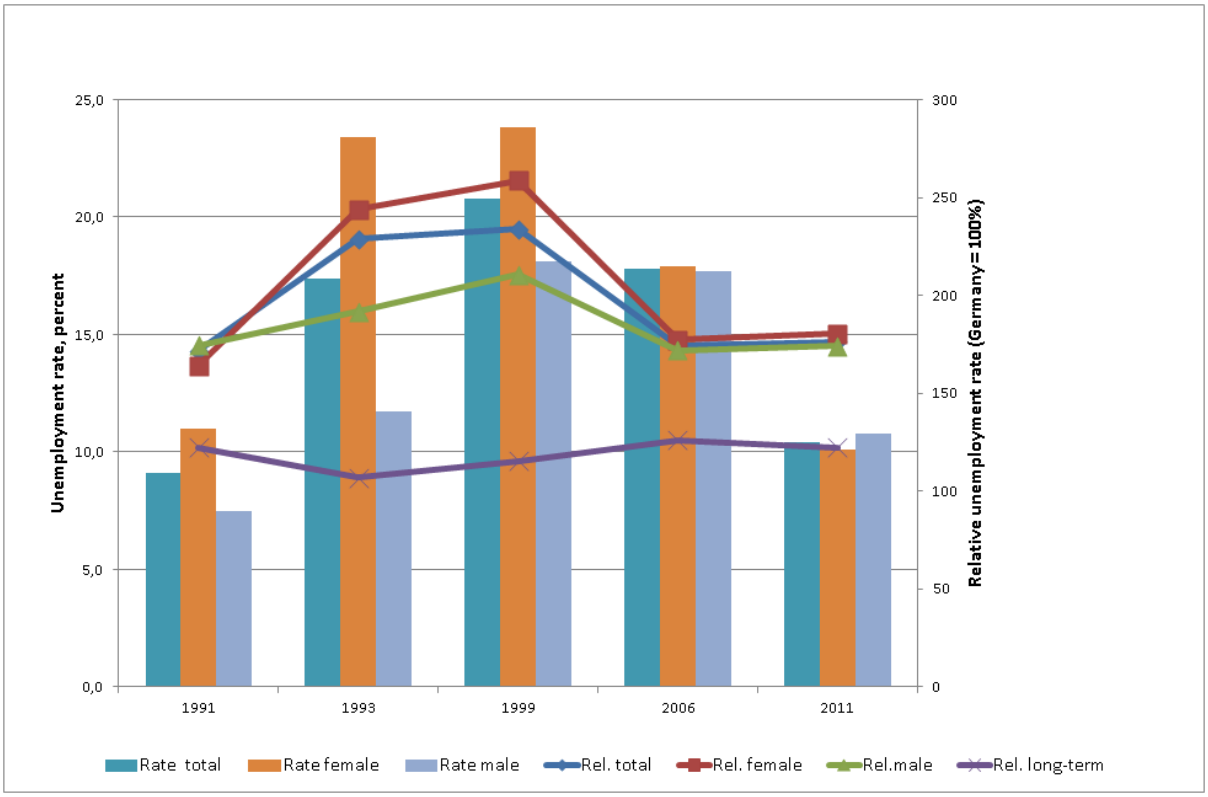
Overall, the region does not currently suffer from environmental pressures. With only three urban agglomerations in the centre and south of the region, two-thirds of the land is used for agriculture, and the region is rich in natural resources. The banks of the river Elbe, together with several natural reserves and landscape protection areas in the region – equivalent to a third of the total area - make it favourable for different types of flora and fauna. Maintaining the reduction of environmental pressure which has been achieved since 1991 requires further specific efforts over the long term. Former sectoral specialisation in mining and the on-going importance of agriculture require further initiatives to meet environmental needs in terms of risk prevention and water quality. Another remaing challenge is respirable dust.

Labour market. Together with the breakdown of the economic structure in the 1990s, a considerable decrease in employment took place after 1989. Whereas 1.56 million persons were employed in September 1989 in Sachsen-Anhalt (Junkernheinrich *et al.*, 1993: 177), by June 1992 employment had decreased so that nearly one-third of employees had lost their jobs.

As a result of job losses, unemployment was, similar to other East German Länder, considerably above the German average. EUROSTAT data, which only considers unemployed from the age of >=25 years old, noted an unemployment rate of 9.1 percent which exceeded the national average by more than two-thirds (see Figure 7). The situation for women was more unfavourable than for men (11.0 percent to 7.5 percent). The female unemployment rate in Sachsen-Anhalt was the third-largest in Germany in 1991. Labour force participation (ratio of employed and job-seeking persons to population >=15 years old) was significantly above the German average in 1991 (66.3 percent to

58.7 percent on average in Germany). Female labour force participation in Sachsen-Anhalt was 60.1 percent at that time, and the male quota was 12.5 percentage points higher. However, female labour force participation in Sachsen-Anhalt was significantly above the German average. This was also the case in the other East German Länder.

Figure 7: Unemployment rates (percent) in Sachsen-Anhalt and relative position (Germany = 100 percent)



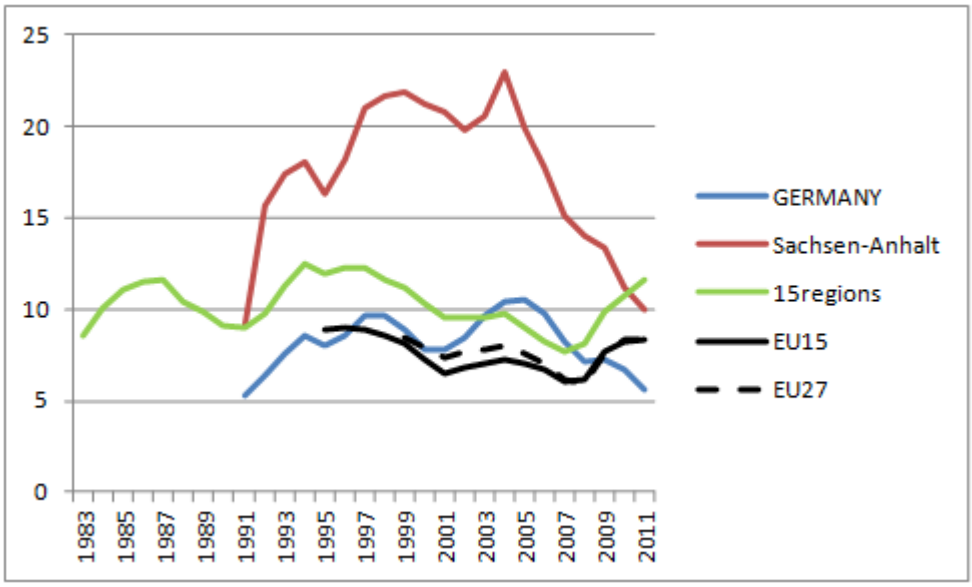
*Unemployment rate 1991, 1993: >= 25 years old; 1999, 2006, 2011: >= 15 years old. Data are not comparable. For methodological reasons, data for 1991/1993 and data for 1999/2006/2011 are not comparable.
Source: Own calculations based on EUROSTAT.

Unemployment in the labour market of Sachsen-Anhalt increased dramatically. The unemployment rate in Sachsen-Anhalt was 130 percent higher than the national avergage in 1993, and this remained unchanged during the second and third periods, until 2005. The steep increase in unemployment in the 1990s was induced by further rationalisation of production, as well as by the decline of the construction sector. It also resulted from the reduction of short-time labour and the reduction of publicly-funded job-creation schemes and training programmes. Later, in parallel with the reforms in labour market regulations in Germany, unemployment decreased in Sachsen-Anhalt. In 2011, it was half of the 1999 rate. Thus, the gap from the national average became smaller compared with the situation in the second and third periods. The trend was apparent in most measures of unemployment, with the exception of long-term unemployment. Its proportion within total unemployment increased from 55 percent at the end of the 1990s to 61 percent in 2011, the highest in Germany. The disadvantage of Sachsen-Anhalt increased. The share of long-term unemployment is 22 percent higher than on average in Germany. Greater female unemployment compared with male unemployment persisted during the first two periods. Later, in the mid-2000s, the female and male rates converged, and recently the female rate has ben below the male rate. Emerging part-time and mini-jobs contributed to this change. However, the female unemployment

rate was the second-highest in Germany in 2011, only Berlin was higher. As a result of significant decline in the last five years, the unemployment rate in Sachsen-Anhalt converged to the 15-regions average. Despite the global and Eurozone crises, it stood at 11.4 percent in 2010 (see Figure 8).

However, the underlying employment growth of the last few years was influenced to a large extent by increases in temporary and part-time employment.

Figure 8: Unemployment rate



Source: EUROSTAT.

Owing to substantial youth out-migration and industrial restructuring (which favours new skills), youth unemployment has always been significantly lower than general unemployment, ranging between 10-12 percent in the late 1990s (data for the early 1990s could not be found), rising to close to 20 percent in the mid-2000s before falling, quite dramatically, more recently.

The employment situation in Sachsen-Anhalt, measured by economic activity rate, was initially above the national average (especially the female rate), but it decreased during the first period (see Table 2). The decrease can be explained by generous early retirement regulations that were in practice after German unification to avoid social tensions.

Table 2: Relative economic activity rates >= 15 years (Germany = 100 percent)

	1991	1993	1999	2006	2011
Total	112.9	103.8	103.1	100.0	100.5
Female	126.3	115.8	109.9	103.7	102.1
Male	103.4	95.0	97.9	97.0	99.2

For methodological reasons data for 1991/1993 and data for 1999/2006/2011 are not comparable.

Source: Own calculations based on EUROSTAT.

During the second, third and first four years of the fourth period, the activity rate remained almost unchanged. The advance in terms of the female activity rate given initially (a quarter higher than the national average) went down in each period and, thus, converged to the German average. Recently, both the female and male rates slightly increased in 2011. The female rate is slightly higher in comparison with Land Sachsen neighbouring Sachsen-Anhalt (54 percent in 2011). The employment rate, i.e. the proportion of the population which actually has a job, was below the national average across the entire period. It decreased from 45 percent initially to 40 percent in 1993 and remained unchanged until the mid-2000s. Recently, it increased slightly up to 43 percent, but the across the entire period the difference from the average national value has become greater.

Progress in restructuring the Sachsen-Anhalt economy and impressive performance more recently in terms of the labour market suggest that the region has very good entrepreneurial potential. Much of the progress in employment is attributed to the inflow of investments from outside the region (Investment and Marketing Corporation Sachsen-Anhalt, no date of publication), while start-up activity in Sachsen-Anhalt and in other East German States remains lower than in the western part (Sternberg, 2012: 28-39). Demographic change hampers the development of entrepreneurial potential (Schneider and Eichler, 2007: 102-109). The pattern of youth emigration suggests a less-than-optimal exploitation of local opportunities in entrepreneurial terms (based on information provided by EURES, no date of publication).

Due to demographic changes, skill shortages have begun to emerge in recent years. Interviewees expressed the opinion that the skills shortage might be linked to the level of wages. Moreover, companies have to pay more attention to the needs of their senior employees and to health protection measures.

Social cohesion. The steep increase in unemployment in the early 1990s led to emerging social problems. Initially, these problems were mitigated by public spending for short-time labour, early retirement schemes, active labour market policy and retraining programmes. The quota of persons who received social welfare was 35.1 per 1,000 inhabitants in 1991. This was well below the national average of 52.7 persons in 1991 and below West German Länder (own calculation based on Statistisches Bundesamt, 1993: 27, 33). However, it was higher in Sachsen-Anhalt in comparison with Länder Sachsen and Thuringia neighbouring Sachsen-Anhalt.

Over time, the levels of public funding for active labour market policy were substantially reduced. In addition, labour market reforms created conditions for a growing number of part-time and mini-jobs. As a result of these trends, the risk of poverty emerged. According to EUROSTAT, Sachsen-

Anhalt had an 'at-risk-of-poverty rate' in 2005 which was almost double the national average (22 vs. 12 percent), one of the highest levels in the country (earlier data were not available). Despite a decrease in the rates by 2.6 percentage points in 2010, the problem is still salient.

Spatial distribution of economic activity. Although the region is relatively sparsely populated by national standards, population density is especially low in the north (Magdeburg) and east (Dessau), while Halle represents the major urban agglomeration. However, Sachsen-Anhalt's core cities, compared to the national average, play a less important role in the creation of value-added. Their share in total GVA was 27.7 percent compared with 41.1 in core cities in Germany on average in 1992 (data for 1991 are not available). The opposite relationship is evident in the rural hinterland. It has a proportion of 39.2 percent in total GVA in Sachsen-Anhalt, whereas the respective value is 9.5 on average in regions which belong to Germany's rural hinterland (see Table 3). The difference can be explained by Sachsen-Anhalt's specific location pattern in favour of the rural hinterland.

Over the study period, the relative importance of core cities decreased, while that of the rural hinterland increased. Sachsen-Anhalt's core cities do not play the same role as cities in other German regions as 'engines' of economic development, and they have lost relative importance. In part, the relative strength of the rural hinterland has its origins in location decisions taken during the last 100 years; it is also partly a result of restructuring after 1990, when 'suburbanisation' not only of private households but also of enterprises took place. Locations along large transport corridors became particularly attractive.

Table 3: Relative contribution to GVA by types of regions

	1992	1994	1996	1998	2000	2002	2004	2006	2008
Sachsen-Anhalt									
Core cities	27.7	27.7	25.7	25.0	23.9	24.0	24.2	23.3	22.6
Densely populated hinterland	8.0	7.9	8.0	8.1	8.3	8.2	8.2	8.0	8.1
Rural hinterland	39.2	39.6	40.8	42.0	43.1	42.9	42.9	43.6	43.6
Rural space	25.1	24.7	25.6	24.8	24.8	24.9	24.7	25.1	25.7
Germany									
Core cities	41.1	40.5	39.9	39.6	39.1	39.0	39.0	38.6	38.5
Densely populated hinterland	39.3	38.8	38.9	39.3	39.6	39.6	39.6	39.9	40.0
Rural hinterland	9.5	10.1	10.4	10.4	10.5	10.5	10.6	10.6	10.7
Rural space	10.1	10.6	10.8	10.7	10.8	10.9	10.8	10.8	10.8

Source: Own calculation based on data from Regional Accounts VGRdL, 2011b, district typology 2008 by Bundesinstitut für Bau-, Stadt- und Raumforschung (BBSR) (http://www.bbsr.bund.de/cln_032/nn_1112664/BBSR/DE/Raumbeobachtung/Raumabgrenzungen/SiedlungsstrukturelleGebietstypen/Kreistypen__zus/Download__ref__krs09__kty08__xls,templateId=raw,property=publicationFile.xls/Download_ref_krs09_kty08_xls.xls).

Intra-regional infrastructural endowment. Starting from a very low level of infrastructural quality, which was a legacy of the centrally planned economy, the situation has improved in all fields. Across the entire period, the greatest progress was made in enterprise-related infrastructure, where basic needs were met and only specific shortcomings remain. Supply and disposal

infrastructure also advanced, although wastewater disposal has remained a challenge in peripheral rural regions. Further need for infrastructural improvement still exists especially in transport, R&D and education. It is hardly possible to identify progress and remaining shortcomings through comprehensive statistical data. Accordingly, a qualitative assessment is presented in the following paragraphs.

With respect to enterprise-related infrastructure, numerous industrial sites were heavily contaminated when the centrally planned economy collapsed. Hence, they were not suitable for attracting new investors. Therefore, there was a pressing need to establish new 'greenfield' business sites, beyond the existing sites, including supply and clean-up and transport infrastructure. Hence, numerous industrial sites were built in the 1991-1993 period, which met the urgent needs of the enterprise sector (ROP 1994-1999, 1994: 57 f.). In addition, progress was made in infrastructure for tourism. In the second period, further industrial sites were built, increasingly using recultivated land (ROP 2007-2013, 2007: 34). Vocational schools were established to enhance human capital formation. Thus, the basic needs with respect to enterprise-related infrastructure were met in the 1990s (ROP 2000-2006, 2005: 16 f). Further improvements were regarded as necessary in the first half of the 2000s with respect to extensions at specific locations, particularly in large cities in Sachsen-Anhalt. Recently, in the fourth period, the need for extension is limited to individual locations where the demand for industrial sites exceeds supply. Moreover, a growing need has recently emerged for 'intangible' infrastructure, in the sense of enhancing local cooperation and networking of enterprises (ROP 2007-2013, 2007: 34). Across the entire period, the situation in enterprise-related infrastructure shifted from substantial quantitative shortcomings in terms of physical infrastructure to very specific and locally concentrated needs for further improvement which are often qualitative in nature.

Regarding transport infrastructure, the initial situation was characterised by a relatively dense network with a very low quality (for information on the initial situation, see Junkernheinrich *et al.*, 1993: 61-64, 133-140).

- Sachsen-Anhalt had access in the early 1990s to two existing motorways. Motorway A2, which crosses Sachsen-Anhalt in a west-east direction, connected Sachsen-Anhalt with the Hannover and Berlin regions (and further to Western and East Europe). Motorway A9 forms the northeast-southwest axis connecting Sachsen-Anhalt with Berlin and Nuremburg. However, the capacity of those motorways did not meet the requirements of rapidly increasing transport volume. Moreover, gaps existed both with respect to a north-south connection between the two largest cities in Sachsen-Anhalt, Magdeburg and Halle, and regarding an east-west connection between Halle and Göttingen. Accessibility was particularly low in the Altmark region which is a rural territory located in the north of Sachsen-Anhalt. Moreover, road infrastructure was particularly underdeveloped in districts and municipalities immediately located along the 'Iron Curtain'. The situation with respect to the railway network was similar to that of roads: it was quantitatively well developed, but of poor quality.

- During the 1990s, the interrupted east-west connections were re-established. Modernisation of motorways A2 and A9 as well as building the new Magdeburg-Halle motorway connection began (ROP 2000-2006, 2005: 16 f.). However, there were still shortcomings in terms of road quality and capacity, lack of bypass roads, and needs to modernise bridges at the

beginning of the third period. The third period brought further improvements. The building of the new motorway A14 connecting the two largest cities Magdeburg and Halle was finished in 2000, and the extension of motorway A9 was finished when the third period ended (ROP 2007-2013, 2007: 35). The length of motorways increased by more than a quarter between 2000 and 2005. In the fourth period, the motorway A38 was finalised, creating a new east-west connection between Halle and Göttingen. Shortcomings continue to exist with respect to bypass roads, roadway width and carrying capacity of bridges.

- The main railway tracks were modernised in the 1990s and the first half of the 2000s. However, closure of tracks which showed low degree of utilisation was unavoidable in the 1990s (ROP 2000-2006, 2005: 18). Apart from improving the tracks, organisational improvement occurred in the second and third periods by introducing regular interval timetables. Further significant improvements in train transport will depend on completing the projects of the National Transport Infrastructure Plan.

Despite significant improvements, transport infrastructure is characterised by disadvantages in terms of accessibility, which concerns all modes of transport except rail transport (Indikatoren und Karten zur Raum- und Stadtentwicklung [Elektronische Ressource], 2011).

R&D infrastructure was, similar to transport infrastructure, initially characterised by qualitative shortcomings. Investments were directed to the university sector in the 1990s to strengthen existing facilities and to found new universities of applied sciences. At the same time, non-university research institutes belonging to Fraunhofer-, Leibniz-, and Max-Planck-Associations were founded, partly based on competences of former institutes of the Academy of Sciences of the GDR. To enhance R&D in the enterprise sector, 11 technology and founders centres as well as specific technology-transfer units were established in the 1990s. However, despite improvements in transfer infrastructure, their impact on science-industry relations remained low in the 1990s compared with the needs. The efforts to enhance science-industry relations were continued at the beginning of the 2000s by building so-called science and research centres where universities and SMEs work together (ROP 2000-2006, 2005: 23). Though universities benefitted from investments in the 1990s, further needs in modernisation remained in the 2000-2006 period and also in the recent period (ROP 2007-2013, 2007: 31-33). Moreover, the need for further modernisation exists not only in the university sector, but also in schools at all levels, especially primary and secondary schools.

Supply and disposal infrastructure were initially underdeveloped and did not meet the existing standards. Access to public water was relatively high in 1990 (90 percent) and increased to 99.4 percent in 1995 und 99.9 percent in 2000 and has remained unchanged later (Landesamt für Umweltschutz Sachsen-Anhalt und Landesamt für Verbraucherschutz Sachsen-Anhalt, 2012: no pagination). Access to public water supply has recently equalled the West German level, whereby further investments are necessary in individual cases (ROP 2007-2013, 2007: 38). Access to wastewater disposal had been improved across all the periods (see above, rubric 'Environmental sustainability'). The population in urban regions has had almost complete access to public wastewater treatment since the mid-1990s, but this is not the case with the rural population. For the latter, especially in peripheral regions, decentralised solutions will be required.

3. PROGRAMME EVOLUTION AND RELEVANCE

3.1 Explicit and implicit strategies and their evolution

Sachsen-Anhalt has been eligible for ERDF support following German unification from 1991 to the present date. The region was eligible under Objective 1 during the first three periods. More recently, since 2007, the northern part (Magdeburg/Dessau) forms a Convergence region, whereas the southern part (Halle) is eligible as a Phasing-out region.

In the first years, ERDF was used to co-finance a single national programme designated to subsidise fixed-asset investment in companies and in infrastructure. At the beginning of ERDF interventions in 1991, the transformation process was just gaining speed, and this was also the case for the structures required to manage and implement regional policy (such as regional development banks, service providers, but also administrative capacity in the Länder governments). In this situation, the choice to use ERDF to co-finance the existing Joint Task 'Improvement of the Regional Economic Structure' (German abbreviation: GRW) was based mostly on practical grounds: the GRW had a blueprint for implementation structures available and thus could easily be used to guide implementation of the funds. The introduction of the GRW was supported by volunteers from the administration from West Germany who were familiar with this instrument. However, according to interviewees, support for infrastructure investment under ERDF/GRW faced the difficulty that it was not based on Regional Development Plans.

Joint Task 'Improvement of the Regional Economic Structure'

In 1969, regional policy in the Federal Republic of Germany was moved onto a new basis. The so-called 'Joint Task for Improving the Regional Economic Structure' was established (*Gemeinschaftsaufgabe Verbesserung der Regionalen Wirtschaftsstruktur*, GRW). The GRW is far more than a grant scheme. It contains regulatory elements that define the eligible area under the state aid rules as well as the maximum rate of support – not only for the GRW but for all subsidies. It also defines the concrete rules for spending the funds under the GRW. In practice, the federal level and the States pool their financial resources and co-finance the spending under the GRW in equal parts. The GRW aims at levelling regional disparities within Germany and focuses interventions on the least-developed parts. Its intervention logic is based on the so-called export-basis theory: interventions should help to develop those parts of the regional economy that can lead to additional income for the region due to strong export-orientation. Originally, the GRW interventions comprised only direct grants for investment in enterprises and investment in infrastructure very closely linked to industrial parks etc. However, the scope of GRW was subsequently broadened to include elements such as regional management of networks and support for services. Academically, the contribution of the discussion on decoupling ERDF and GRW to the development of the GRW in the 1990s is contested, but a certain influence of ERDF on the development of domestic regional policy is broadly accepted. The rules for support are commonly fixed by the federal level and by the Länder. The same is the case with funding to which both the federal government and the Länder each contribute 50 percent. ERDF can co-finance the GRW.

In a way, the introduction of the programming approach under the ERDF in 1989 can be seen as opening up regional policy and introducing (for the first time) a second strategic framework alongside the GRW. As ERDF was implemented as a responsibility of the States, due to their

fundamental competencies in regional policy, an explicit tension developed between ERDF and the GRW. The *Länder* could use the scope they gained through both the additional European financial resources and the responsibility for developing intervention strategies under the OPs to establish their own approaches to regional development policy. Consequently, in the 1990s a debate started between some of the *Länder* and the federal level in how far ERDF and GRW should be 'decoupled'. Whereas *Länder* such as Sachsen were driving this discussion, Sachsen-Anhalt remained conservative. Sachsen had already 'decoupled' a certain share of ERDF from the GRW in the 1994 to 1999 period. In Sachsen-Anahlt, the exclusive use of ERDF to co-finance the GRW was continued: the European Commission did not fully agree with this one-sided use of Structural Funds, but it was favoured by the federal authorities and by the State Government of Sachsen-Anhalt.

The strong link between ERDF and GRW in Sachsen-Anhalt partly explains the significant stability of the strategy over the first periods. During the first three periods, support for structural adjustment, enterprises and especially for SMEs prevailed. There were some developments in broadening the scope of GRW Interventions, but grants for investment in enterprises and business-related infrastructure were still the backbone of the strategy.

With decoupling starting, support for modernising physical capital continued throughout the third and the fourth programme periods, but using a broader concept of infrastructure which goes beyond enterprise-related infrastructure to include R&D infrastructure, transport infrastructure of inter-regional importance, support for clustering and networking, and services for SMEs. In parallel, expenditure for R&D gained an increasing role in the programmes, recognising both the shortcomings in private R&D and the emphasis placed on R&D by the Lisbon strategy.

Moreover, comparing the four periods, a shift towards support for endogenous potential is evident, taking into account the fact that the major 'wave' of investments coming from West Germany and abroad had come to an end. As a result, a stronger focus was placed on existing enterprises. The following sections analyse in more detail the explicit programme strategies, and – if relevant – the implicit strategies. Explicit strategies concern the version stated in programme documents, and implicit strategies show what the region was really doing with the money. Concerning Sachsen-Anhalt's labour market problems, explicit and implicit strategies are largely identical in the sense that creating and maintaining jobs had and still has the greatest priority in the respective strategies.

3.1.1 1991-93

The explicit strategy for the 1991-93 period was displayed in the CSF. For the first period from 1991-1993, it was not possible to obtain the Operational Programme. The information used in this sub-section stems from the Community Support Framework (CSF), which was elaborated as a common strategy covering all East German States including East Berlin. As *Länder* administrations were still under reform and reconstruction, this common strategy was actually developed by the Federal Ministry of Economics, and the unit responsible for the GRW was drafting the document. This strategy development is very exotic for the German federal system: regional policy is in principle under the competencies of the *Länder*, and the GRW as a joint instrument is the only link to the national level in this field. A federal ministry drafting regional strategies seems incongruous in this context and can only be explained by practical considerations in the years of change.

The CSF highlighted the following global development objectives: the modernisation of the agriculture, manufacturing and service industries, and the exploitation of human capital and environmental assets (Kommission der Europäischen Gemeinschaften, 1991: 17f). The CSF specified the global development targets of structural modernisation by pointing out the need to achieve a more balanced industrial and firm-size structure, to set a high priority on SME-related support, to regain shares in domestic markets, and to sell competitive products on international markets. The stated need to create a more balanced structure of company size in favour of small and medium-sized enterprises had arisen because SMEs were marginalised and entrepreneurial spirit degenerated during the communist period. Moreover, in the context of structural modernisation, developing goods and services which are complementary, and the need to become insofar as possible independent from public fiscal transfers, were highlighted. In the context of the agricultural sector, the ERDF targeted rural development. The mobilisation of human capital was covered by emphasising the training of the workforce in order to meet the requirements of enterprises. The strategy with respect to environment was to reduce the gap between the neglect of environmental standards under the centrally planned economy and the increasing European environmental standards.

Although it was not made explicit, the attraction of investors from outside the region in the course of privatisation of the formerly state-owned enterprises and in 'greenfield' investment was of central importance. So there was a certain implicit shift compared to the explicit strategy. This was mainly due to the dominant rationale of the GRW. Indeed, interviewees stressed the importance of the GRW and ERDF in the context of modernising capital stock in privatised enterprises. Interviewees also noted that an important aim was to retain people in the region through job-creation in order to avoid further out-migration. Experts interviewed mentioned a further reason for the exclusive use of ERDF funding to co-finance the GRW, namely that the rapid rises in unemployment required the launch of capital modernisation without delay.

To fulfil the global aim and the detailed development objectives, four development priorities were set up in the CSF:

- support for enterprise-related infrastructure;
- support for productive investment which meant corporate investment;
- measures to exploit human capital; and
- improving living and working conditions in rural areas/agriculture, forestry and the rural environment.

For the implementation of all four priorities, a real capital-orientated strategy was pursued with complete usage of ERDF to co-finance the GRW. This meant that each of the priorities was designated to be supported by subsidies for: fixed-asset investment in infrastructure; companies; human-capital development; and rural and environment-related infrastructure. The orientation towards fixed-asset investment resulted from a widely obsolete capital stock in infrastructure and the business sector, which was the legacy from the centrally planned economy.

In parallel to support for fixed assets by ERDF, numerous support schemes were implemented especially at the federal level. These included: financing for SMEs and start-ups and active labour

market policy (job-creation schemes, training and retraining measures). Moreover, the German privatisation agency (*Treuhandanstalt*) provided considerable funding to ensure companies' liquidity prior to privatisation.

3.1.2 1994-99

Whilst in the first years, ERDF was implemented under a strategic framework that had been drafted by the federal level in order to facilitate rapid implementation, the 1994-1999 OP was actually the first strategy developed at regional level.

In the early 1990s, massive job losses of 30 percent, and in the manufacturing sector of 50 percent, occurred in Sachsen-Anhalt (ROP 1994-1999, 1994: 61). Due to the crisis in the labour market resulting from massive de-industrialisation, the development strategy was targeted at improving the framework for establishing a modern manufacturing sector and the creation of competitive jobs. This involved creating and maintaining jobs through investment-related support, as had been pursued in the 1991-1993 period. On the level of objectives, the creation and safeguarding of jobs was emphasised more strongly.

However, as previously, ERDF was used exclusively to co-finance the GRW, and so the actual strategy remained quite stable. Continuing an investment-oriented development strategy meant that the detail of the strategy looked very similar to that of the previous period. It was targeted at: further diversification of the economy; a concentration on investment-related measures; the provision of incentives for corporate and infrastructural investment in order to improve the location quality in Sachsen-Anhalt; and enhancing important investment in the fields of R&D, environmental improvement and vocational training. Six priorities were derived from the strategic objectives listed:

- productive and infrastructural investment;
- SMEs;
- measures to support R&D and innovation;
- measures to protect environment;
- training and retraining; and
- investment in rural areas.

All of these were designed as support for fixed asset-investment. The structure of priorities shows two changes in comparison to the previous period. First, support to SMEs had become a specific priority axis, though the focus on SMEs had already been part of the explicit strategy in the previous period (Kommission der Europäischen Gemeinschaften, 1991: 17). Establishing an explicit priority axis can be explained, first, by the continuing need to overcome the legacies of the centrally planned economy which privileged large industrial trusts and marginalised private SMEs. Second, the privatisation of former state-owned enterprises ended in the second half of the 1990s, and an inflow of a large number of 'greenfield' investments was not a realistic expectation.

Therefore, the explicit focus on SMEs or, in other words, stronger emphasis on endogenous potential was reflected in the establishement of an SME priority axis.

As in the previous period, the priorities and objectives defined in the programme in a certain way exceeded what could be targeted and achieved by spending the funds closely linked to GRW. To achieve aims such as strengthening R&D or environmental protection would need types of investment that were beyond the scope possible under the GRW. There was a certain tension between too strong a focus on achieving an increase in the capital stock, as was actually followed under the GRW, and the broader strategy of the ERDF programme. In a way, the implicit strategy was quite a bit narrower than the explicit one.

The continuation of the investment-oriented strategy in the 1994-1999 period had been under debate. The ex-ante evaluation of the 1994-1999 Development Plan for the New German *Länder*, elaborated by the Rheinisch-Westfälisches Institut für Wirtschaftsforschung (RWI) Essen, criticised the Development Plan for failing to correspond with the Community's objectives in the fields of environment, trans-European transport and telecommunication networks and R&D (RWI, 1993: 84f.) The Sachsen-Anhalt evaluation report for the 1991-1993 funding period recommended maintaining the focus on investment-related support, but accompanying it with support through other means, e.g. cooperation projects and innovation (ISW, 1994/1995: 147). However, the decision-makers did not follow the advice on spending parts of ERDF for non-investment purposes, for example in the field of R&D, at that time. Sachsen-Anhalt had already responded to these pressures in the 1994 period, according to the interviewed experts. Up until 1999, the approach in Sachsen-Anhalt was a common, standardised approach to participation in ERDF across departments, for instance by the use of GRW funding for environment, transport and urban development requirements. All measures had to be investment measures qualifying for funding in accordance with the GRW *Rahmenplan*, i.e. with the regulation. Interviewees noted that this led to concerns by actors at the federal level in terms of non-effective funding usage.

SMEs received support not only from the ERDF OP, but also from the SME Community Initiative Programme (CIP).The CIP SME co-financed a total investment volume of DM128.9 million (€70.4 million, 2000 prices) in Sachsen-Anhalt, of which about 54 percent were contributed by European means. The rest was brought in by national public and private sources (see Sachsen-Anhalt, no year of publication: no page number a). ERDF contributed DM58 million (€31.7 million) and ESF DM11.6 million (€6.3 million). The overall target was to improve competitiveness and create jobs. The most important measures of CI SME concerned management in the fields of quality, organisation, personnel, environment, R&D, improvement of skills and technical support. CI SME in Sachsen-Anhalt showed commonalities with other East German States in terms of setting priorities, for instance on quality and environmental management (Friedrich *et al.*, 2000: 76). In another field, Sachsen-Anhalt tried to create innovative solutions. The evaluation report mentions teleworking and telecooperation as distinctive initiatives set up in Sachsen-Anhalt.

Apart from CI SME, Sachsen-Anhalt made use of ERDF co-financed Community Initiatives RECHAR II, RESIDER II, KONVER II AND URBAN, which were focused on spatially-concentrated needs for restructuring (see Sachsen-Anhalt, no date of publication, no pagination, a).

- CI RECHAR II was targeted at enhancing the economic restructuring of regions previously dependent on (brown) coal mining. CI support was provided for the former districts of

Oschersleben, Merseburg, Eisleben, Gräfenhainichen, Bitterfeld, Aschersleben, Zeitz and Hohenmölsen (Sachsen-Anhalt, no year of publication: no page number a). The main objectives were the improvement of the quality of location to raise attractiveness for investors and the improvement of environmental conditions and quality of life (Ministerium für Wirtschaft und Technologie, 2001: 15). A specific aim of RECHAR was to strengthen inter-municipal cooperation between coal mining areas in order to avoid destructive competition. The actual total investment amounted to about DM65 million (€35.5 million), of which ERDF contributed DM42.22 million (€23.07 million) (Sachsen-Anhalt, no year of publication: no pagination, a). RECHAR supported measures to improve the environment, modernise infrastructure, establish industrial sites, diversify economic activities, support tourism, and strengthen Managing Authorities for programme implementation and technical assistance.

- CI RESIDER was used to provide additional support to diversify economic activities in regions where the iron and steel industry had previously played an important role. Altogether, investment costs amounted to DM15.9 million (€8.7 million), to which ERDF contributed DM10.3 million (€5.6 million). RESIDER was used for reconstruction and diversification of economic activities, building and modernising education-related infrastructure and improving tourism infrastructure. Strengthening of infrastructure in the tourism sector occurred in two districts, Wernigerode and Quedlinburg, which hosted the iron and steel industry and where numerous jobs had been lost (Ministerium für Wirtschaft und Technologie, 2001: 7).

- CI KONVER supported investment totalling DM58.35 million (€31.89 million), to which ERDF contributed DM33.8 million (€18.5 million) and ESF DM4 million (€2.2 million) (Sachsen-Anhalt, no year of publication: no pagination, a). The CI targeted the redevelopment of former military sites to create preconditions for new job opportunities (see Ministerium für Wirtschaft und Technologie, 2001: 22f). The measures mainly involved support to attract enterprises, including site redevelopment, provision of technology and innovation-oriented services to SMEs, vocational training and skills enhancement, and technical assistance (Sachsen-Anhalt, no year of publication: no pagination, a).

- CI URBAN was designed to improve urban infrastructure. According to one interviewee, this CI can be regarded as a successful case of an integrated development approach. Operational Programmes were elaborated for Magdeburg Cracau and Halle Südost. The OP URBAN Magdeburg aimed to enhance economic development and employment by pursuing an integrated approach. The total investment volume amounted to DM39.2 million (€21.4 million), to which ERDF contributed DM23.84 million (€13.03 million) and ESF DM1.28 million (€0.70 million). The URBAN support for Magdeburg comprised the creation of economic activities, the establishment of units providing social services, and measures improving the environment, local development and networking as well as enhancing employment and training. CI URBAN Halle had a lower level of funding. ERDF contributed DM5.4 million (€3.0 million) to the total investment volume of DM10.22 million (€5.58 million). Interview evidence shows that the lower volume of support for Halle in comparison to Magdeburg forced the integration of URBAN Halle into a wider concept combining various sources of support. Therefore, CI URBAN Halle was chosen as a project example (analysed in more detail in Section 8.1).

3.1.3 2000-2006

For Sachsen-Anhalt, this is the first funding period in which the coupling of ERDF and GRW was discontinued. This allowed more scope to define an own regional strategy. The strategy was developed by the Land government in collaboration with economic and social partners and numerous regional stakeholders. In this context, a global objective was a shift toward 'self-sustaining economic development and, as a consequence, a gradual reduction of fiscal transfers' (working translation, ROP 2000-2006, 2005:121). Other global objectives were to avoid intra-regional and social disparities. The global objectives were itemised through more detailed objectives which actually represent in part a repetition of the global objectives (relating to growth and employment, and spatial disparities) but with more concrete aims. The latter aspect involved emphasising the need to increase the proportion of manufacturing and enterprise-related services in total employment. Generally, this objective has been relevant since 1991. Three priority axes were designed to fulfil the objectives: (i) enhancing the competitiveness of trade and industry, especially of SMEs, (ii) support for infrastructure, and (iii) environmental protection (*ibid.:* 27-137).

Though some continuity is visible, considerable changes occurred in the programme strategy in the 2000-2006 period. The exclusive use of ERDF to co-finance a single federal-*Länder* regional policy scheme (GRW) was ended. Instead, ERDF was used for a broader range of subjects beyond investment in the capital stock. In particular, ERDF began to promote application-oriented R&D as well as SME-related consulting and networking (Budde, 2002: 9). The conventional support of economic development by GRW was, however, continued in response to the persistent gap in terms of manufacturing and enterprise-related services and weak sales activities on supra-regional and foreign markets. This continuation concerned support to corporate investment and enterprise-related infrastructure. However, the emphasis was shifted in favour of infrastructure (ROP 2000-2006, 2005: 127).

Associated with a 'wave' of investment in the 1990s, which was accompanied by a considerable increase in public debts (Freye, 2010: 105-112), the thematic extension of ERDF support was also due to the urgent need to make ERDF funding available not only to the Ministry of Economics but also to other State departments in Sachsen-Anhalt. So there was a certain underlying implicit rationale for the decision to broaden the scope of ERDF spending.

Besides enterprise-related infrastructure, ERDF began to contribute to the establishment and upgrading of transport infrastructure of supra-regional importance in the 2000-2006 period. The latter was subject to the National Operational Programme (NOP) 'Transport Infrastructure' managed by the federal government (BMVBS, 2001). Its objective was to improve infrastructure as a development factor through accelerated development of transport routes of national importance in German Objective 1 regions, i.e. in East Germany (BMVBS, 2004: 4). Among the specific objectives, strengthening the links to the Trans-European Transportation Network was at the top of the list. The projects eligible under the NOP 'Transport Infrastructure' were part of the Planning Concept for the Development of Transport Infrastructure of National Importance (German notation: *Bundesverkehrswegeplanung*). The NOP 'Transport Infrastructure' comprised four priority axes: railways, roads, waterways of national importance, telematics in transport and intermodal transport.

In relation to the objective of avoiding intra-regional disparities, an OP CI URBAN II Dessau was implemented (Europäische Union, Sachsen-Anhalt & Stadt Dessau, 2004). Total expenditure amounted to €20.161 million to which ERDF contributed €15.12 million (75 percent). Following support for Halle and Magdeburg during the previous period, the third-largest city in Sachsen-Anhalt - Dessau – was eligible for CI URBAN. Dessau experienced a sharp decrease in the manufacturing sector after 1990. Against this background, URBAN II was primarily targeted at raising competitiveness, economic prosperity and employment in combination with social inclusion and infrastructural improvement. The largest proportion of CI URBAN II aimed to improve urban quality (about 42 percent), followed by contributions to economy-related measures (27.7 percent) and socio-cultural and leisure infrastructure (27 percent).

Because the internationalisation of economy and society in Sachsen-Anhalt had been underdeveloped thus far, several measures were designated to enhance international cooperation. The investment-oriented strategy aimed to strengthen international competitiveness. This approach was supplemented by non-investment approaches to enhance internationalisation based on the Community Initiatives INTERREG III B and C (Ministerium für Landesentwicklung und Verkehr des Landes Sachsen-Anhalt, Ministerium für Wirtschaft und Arbeit des Landes Sachsen-Anhalt, 2008). The Operational Programmes for INTERREG support were elaborated at European level. The OP INTERREG III B, which related to transnational cooperation, covered 18 countries, incorporating the Central Adriatic Danubian South Eastern European space (CADSES), to which the southern and eastern parts of Germany also belonged (INTERREG III B CADSES Neighbourhood Programme, 2005: 1). The programme emphasised the following objectives: transport, sustainable growth, environmental protection and cultural/historic heritage. Therefore, the eight projects pursued in Sachsen-Anhalt included a specific focus on flood protection, land rehabilitation, health tourism and cultural tourism (Sachsen-Anhalt, no date of publication: no pagination, b). The OP INTERREG III C, which focused on inter-regional cooperation, aimed to explore and bring together experiences and exchange best practice among European regions (North EAST South West INTERREG IIIC, 2007: 3, 6). Sachsen-Anhalt and the other East German States as well as Bavaria belonged to the Zone East. The aim of the OP was to improve policies at European and national levels. The Federal State of Sachsen-Anhalt had the opportunity to develop projects and launch them for a competitive selection procedure. Sachsen-Anhalt's intention was to combine its own regional policy approaches to development with European cooperation. In sum, stakeholders in Sachsen-Anhalt participated in 12 projects co-financed by INTERREG IIIC (Sachsen-Anhalt, no year of publication: no pagination, c).

The challenge of demographic change had not been included explicitly in the programme strategy in the 1990s, although it existed latently, as identified in fieldwork. At that time, politicians believed that job creation and infrastructural achievements would be sufficient to cope with the challenge of demographic change. At the turn of the millennium, the demographic challenge became important again because emigration, especially of younger people, increased and the public became aware of the reinforcing effect induced by a declining birth-rate after 1990. Nonetheless, the stronger perception of demographic change was not directly reflected in the Operational Programme of the Structural Funds in the 2000-2006 period. According to one expert, job creation acted as a means to counteract the emigration of young people.

3.1.4 2007-2013

The written programme strategy of the 2007-2013 OP ERDF in Sachsen-Anhalt sets the overall objective of achieving convergence through support for growth and employment, associated with the objective of sustainable development (ROP 20072013, 2007: 65). This stresses that the convergence objective is close to the global objective set in the previous period (sub-section 3.1.3).

The overall objective is broken down into three strategic priorities which are relevant for all Structural Funds: (i) R&D and innovation, (ii) education, and (iii) support for fixed-asset investment, training, and the reduction of barriers for corporate finance (especially with respect to SMEs). Moreover, the horizontal objectives of environmental protection, equal opportunities and urban development are highlighted. To achieve these objectives, the programme comprises five priorities:

- R&D, innovation;
- raising competitiveness;
- enterprise-related infrastructure;
- sustainable urban development including education infrastructure; and
- environmental protection.

The explicit introduction of an urban dimension represents a novelty in the programme strategy. It responds to the cities' weakness in contributing to growth. There is an obvious need for measures to foster the development of cities. Although there has been awareness of policy with respect to demographic factors since 2000, the demographic challenge is only mentioned marginally in the 2007-2013 ROP ERDF. However, experts direct attention to the so-called 'Demography Check' (German notation: *Demographie-TÜV*) (Wagner, 2008), which was developed to appraise infrastructure investments in the planning phase concerning their 'demographic stability'. Placing emphasis on R&D, innovation, education and training indicates the strong intention of using Structural Funds to achieve the Lisbon objectives.

The experts were basically affirmative with regard to the need for support for research and development and innovation. However, some of them expressed doubts because of the dominance of small companies in Sachsen-Anhalt, which raises the question of whether small enterprises are able to use the support provided. Another aspect concerns the diversification of support at the level of actions. According to the experts, 'Lisbonisation' is one reason for the stronger differentiation of funding by actions in comparison with the previous period. Moreover, interviewees noted that single funding measures are overburdened by too many policy objectives economically. A stronger focus in the sense of 'one objective - one fund' would be more favourable to keep the use of support manageable for potential beneficiaries. However, another interviewee's view revealed the opposite opinion: there was a complaint with respect to insufficient consideration of horizontal objectives in the context of traditional investment support, e.g. disregard of objectives such as minimum wage standards, binding state tariffs or health and safety provisions.

In addition to the ROP ERDF, Sachsen-Anhalt participated in the NOP Transport 2007-2013 (BMVBS, 2007). Even though progress has been made in terms of transport infrastructure since 1991, there is a continued need for support with respect to accessibility, endowment and quality of transport infrastructure. The NOP's overall objective is to develop transport infrastructure of inter-regional importance, which is regarded as a feature of sustainable development. The overall objective is broken down into three objectives: (i) development of the Trans-European Transport Network and other routes of inter-regional importance, (ii) improving connectivity with important economic agglomerations and strengthening gateways, and (iii) the shift of transport to environmentally-friendly modes. Each of the three objectives is further elaborated by sub-objectives. To achieve the objectives, three priorities exist which correspond to the three main transport modes: federal railways, roads and waterways. The ROP ERDF, implemented at the federal State level, also provides support for transport infrastructure. The latter provides funding for projects beyond federal transport projects.

There is a continued lack of internationalisation, measurable in terms of export intensity but evident in other fields of internationalisation. As a result, Sachsen-Anhalt participates in projects supported by the CI INTERREG IVB and IVC (see European Union, European Regional Development Fund 2011; European Union 2011). The OP INTERREG IV B sets the overall goal of 'strengthening territorial cohesion, promoting internal integration and enhancing the competitiveness of Central Europe' (European Union, European Regional Development Fund, 2011: 36). From this overall goal, two strategic strands are derived: (i) improvement of competitiveness through innovation and improving accessibility, and (ii) support for better and sustainable territorial development through enhancing attractiveness of cities and regions. The two strategic strands correspond to four priorities, which comprise aspects of innovation, accessibility, sustainability and regional attractiveness. Against this background, stakeholders in Sachsen-Anhalt participate in projects funded by INTERREG IV B which concern, for instance, risk prevention, cultural tourism/cultural landscapes, renewable resources and biodiversity and logistics (Sachsen-Anhalt, no date of publication: no pagination, d). As in the previous period, OP INTERREG IV C supports exchange of experience and common development of concepts in order to achieve improvements in terms of spatial development policy (European Union, 2011: 3). To achieve this objective, there was a prioritisation on innovation and knowledge-related themes and on environmental protection and risk prevention. In the current period, INTERREG-funded support measures to enhance internationalisation are accompanied by a 'low-threshold' funding offer for internationalisation activities of municipalities, associations, chambers and organisations. This scheme is managed by the State Chancellery of the federal State. Interviewees emphasised the need for a 'low-threshold' support scheme, because international networking at municipal level is weakly developed in comparison with the national average. According to one interviewee, for a range of actors the hurdles of the application procedure in large EU programmes supporting international cooperation are too high and the probability of being funded is too low.

3.2 Relevance of programmes to regional needs

This section provides a strategic assessment of whether the programmes met the needs that were identified within the regions by interviewees and in Chapter 2. Over periods from 1991 to the present, the programmes implemented in Sachsen-Anhalt have shown elements of continuity and change with respect to addressing regional needs. And partly, the needs changed significantly: despite improvements, high unemployment, small firm size, private R&D and productivity gaps have

persisted. Other problems have been better tackled, particularly the environmental situation, firms' endowment with fixed assets, and the modernisation of infrastructure, to which ERDF and national support schemes contributed. In any case needs to be kept in mind that ERDF sources have been invested together with sizeable transfers from other sources (see Chapter 4).

Table 4 provides an overview of regional needs as described by the programmes, and it shows strategic responses and project foci. It illustrates an emerging understanding that there is no mono-causality when it comes to enhancing the catching-up process. Awareness has grown that a wide range of factors cause the slowdown of convergence and the persistence of the labour market problems. This has led to a broader policy mix. Starting from a comparatively simple strategic approach, there is a development of differentiating the strategy and covering a broader range of challenges for regional development simultaneously. Table 5 reveals the degree to which imputed objectives (objectives followed in practice) meet regional needs.

Table 4: Comparison of regional needs and programme strategies in Sachsen-Anhalt

	Regional needs/ weaknesses	Response by programme strategy	Focus of projects
1991-93	Transition from a centrally planned to a social market economy, increase of competitiveness of industry and service, balanced corporate size	Capital-oriented funding approach	Corporate investment, enterprise-related infrastructural investment, especially sites for industrial and other enterprises
1994-99	Continuing modernisation, enlargement and consolidation of medium-sized enterprise sector	Continuation of capital-oriented funding approach, explicit focus on SMEs (including special Community Initiative SMEs); support for endogenous entrepreneurial potential, help for coal, steel, conversion and urban regions (Community Initiatives)	Corporate investment, enterprise-related infrastructural investment, including sites for industrial and other enterprises, technology and founders' centres, sewage plants, institutions of vocational education
2000-06	Weakness in integration in supra-regional/international markets, lack of companies in the manufacturing sector and in enterprise-related services, cooperation needs of companies, decreasing start-up dynamism	Strengthening competitiveness of firm sector especially SMEs, extension of support to infrastructure in education, science and inter-regional transport (federal programme)	Corporate investment, innovation, research and development, information and communication technology, development of medium-sized businesses and funding for SMEs, enterprise-related infrastructure

Table 4: Comparison of regional needs and programme strategies in Sachsen-Anhalt (continued)

	Regional needs/ weaknesses	Response by programme strategy	Focus of projects
2000-06 (continuation)	Few large companies, size-specific deficits of SMEs, unfavourable situation on the labour market, social cushion of structural changes	Urban development, supplementing capital-oriented funding approach with non-investment funding approach, internationalisation strategy in addition to strengthening export capability	Tourism infrastructure in the fields of research and development, information and communication, education, transport and urban water and wastewater, air monitoring, recycling, rehabilitation of brownfields, international cooperation and networking projects
2007-13	Gaps in income per capita, productivity, employment rate, financing problems of SMEs, need for action in education sector (schools, universities), weak research and development in the enterprise sector, need to strengthen regional impact of universities and research establishments outside the university, high unemployment and long-term unemployment, weak economic growth of cities, 'Lisbonisation' of European policy	Aims of growth and job-creation through supporting important convergence-influencing factors, especially in innovation, research and education and development of the entrepreneurial capital stock and infrastructure (in transport sector also federal programme), funding concentration conform with Lisbon strategy in human capital, knowledge, research and development sector, explicit addition of urban dimension in programme strategy, continuation of internationalisation strategy in addition to strengthening export capability	Innovation in SMEs, venture capital, research infrastructure, transfer of knowledge and technology, investment in climate protection, corporate investment, financing and consulting for SMEs, enterprise-, culture- and tourism-related infrastructure, road and rail infrastructure; urban development and urban redevelopment, urban educational establishments in pre-school and school sector, social and human capital-oriented urban infrastructure, environmental infrastructure investment, climate-friendly transport and associated research, recycling, flood prevention, risk provision, land recultivation (mining) and rehabilitation of brownfields

Source: Own elaboration based on information from Kommission der Europäischen Gemwinschaft, 1991 and ROP 1994-1999,1994; ROP 2000-2006, 2005; ROP 2007-2013, 2007.

The evolution of the ERDF-financed regional development strategy can be summarised as follows:

- At the beginning of the 1990s, the programme analysed the regional problems in an appropriate way: uncompetitive industrial structures, lack of a strong SME sector, and losses of traditional domestic and COMECON sales markets were identified as the main shortages. The region responded to these problems by focusing the programme strategy on support for fixed-asset investment in enterprises and enterprise-related infrastructure. This was regarded as a promising way to pursue the structural changes required for economic recovery. With the rapid deindustrialisation and massive job losses in mind, a broad consensus existed among regional partners to pursue this investment-oriented strategy from which new jobs were expected to be created. However, in retrospect, the programme was one-sided. It did not address other regional problems, especially weak R&D activities in the

enterprise sector, partly due to restrictions set by GRW rules.[2] Moreover, the ERDF strategy obviously underestimated the complexity of the challenges of achieving structural changes in favour of export-oriented industries. The growth achieved in the early 1990s mainly resulted from the construction sector and from consumer-related industries.

- At the beginning of the 1994-1999 period, when the labour market situation continued to worsen, and catching up in terms of productivity slowed down, the programme continued to address the regional needs by interpreting them from a one-sided perspective as a further need to modernise fixed assets in the enterprise sector and in enterprise-related infrastructure. At the same time, there was greater awareness in the region that further economic progress depends on more than fixed-asset investments. Regional partners understood that ERDF had the capability to support a wider range of subjects, especially in R&D and environmental protection. The examples of Brandenburg and Sachsen, which had begun to use ERDF decoupled from GRW, stimulated debate in Sachsen-Anhalt. Moreover, the growing scarcity of public budgets at the *Länder* level mobilised all departments to claim for ERDF means. But the government nevertheless decided to continue the investment-oriented approach practiced in the previous period. To meet wider regional problems, the Sachsen-Anhalt government pursued an implicit strategy by utilising the GRW scheme in as flexible a way as possible in order to meet needs in urban development or environmental protection, while also partly meeting the requests of other departments. The environmental problem was addressed in the strategy either indirectly, by installing environmentally-friendly technologies in enterprises (a side-effect of the modernisation of fixed assets), or directly, by modernising enterprise-related wastewater treatment.

- The programme for the 2000-2006 period was a strategic breakthrough, when the regulatory limitations of the GRW were overcome. The programme strategy responded to the existing wide variety of regional needs which had already been identified within the region by partners in the previous period. The programme addressed most of them. In this context, more attention was directed in the programme strategy to R&D and innovation, networking and advisory services for SMEs. Moreover, the programme understood infrastructure in a more comprehensive manner, and the allocation was changed in favour of infrastructure. At the same time, the programme continued to address needs with respect to modernising fixed assets in enterprises and enterprise-related infrastructure, because high unemployment persisted, and the challenge of enhancing export-oriented industries persisted. The need to strengthen the development of urban agglomerations in Sachsen-Anhalt did not become an explicit strategic priority, though their economic weakness was evident.

- In the 2007-2013 period, the programme continues to pursue the strategic approach introduced in the previous period, and it focuses on a wide range of regional problems. In contrast to the previous period, the set of measures aimed at addressing regional needs has expanded. The current programme addresses major weaknesses of cities in terms of growth, which are still very evident, despite the fact that these problems have existed since the 1990s. In summary, the 2007-2013 strategy appropriately identified the wide

[2] At the same time, other national and Laender programmes tried to tackle the shortages which were not addressed by the ERDF programme.

range of regional problems. Furthermore, the foci on R&D, innovation and human capital became stronger and thus address the continuing regional needs in these fields in an appropriate way. The proportion of innovation support in the total programme allocation was the largest in comparison with previous periods. Nevertheless, the translation into action needs to be improved, because shortages in private R&D have remained almost unchanged since 1991. With this in mind, regional stakeholders continue to emphasise the importance of on-going support for fixed-assets investment in enterprises to enable them to grow and thereby create more favorable conditions for R&D. However, the decrease of the overall allocation for the programme and its distribution across a very wide set of measures can be regarded as a flaw which undermines the relevance of the programme.

An emerging need, which up to now has not been addressed in an appropriate way, relates to demographic change. During the first programme periods, the programme strategies were mainly targeted at job creation to mitigate further out-migration. In the meantime, there has been a realisation that demographic change cannot be tackled by a single priority. Regional partners have noted that the decrease of population of working age requires better integration of school-leavers or persons without vocational education into the labour market.

Table 5: Needs and imputed objectives for eight thematic axes

Thematic axes	1991-1993		1994-1999		2000-2006		2007-2013	
	Needs	Imputed object-tives	Needs	Imputed object-tives	Needs	Imputed object-tives	Needs	Imputed object-tives
Enterprises	++	5	++	5	++	5	++	4
Structural adjustment	++	5	++	5	++	5	++	4
Innovation	+	2	+	2	++	4	++	4
Environmental sustainability	++	4	++	4	+	4	=	3
Labour market	++	5	++	5	++	5	++	4
Social cohesion/ community development	+	1	++	1	++	2	++	2
Spatial cohesion	-	1	-	2	-	2	-	4
Infrastructure	++	5	++	5	+	4	+	4

Needs Scale (evaluation of the region at the start of the period)
++ Very high need: the region is highly deprived on this axis
+ High need: the region is somewhat deprived on this axis
= Average need: the region is around the national mean on this axis
- Low need: the region is above the national mean on this axis
-- Very low need: the region is already a European frontrunner on this axis

Imputed Objectives
5 Very high effort, this axis is a central aspect of the regional development strategy
4 High effort, this axis is an important element in the regional development strategy
3 Average effort, this axis is included in the regional development strategy but not particularly important
2 Low effort: this axis is only marginally considered in the regional development strategy
1 No effort at all on this axis

4. EXPENDITURE ANALYSIS

4.1 Financial allocations

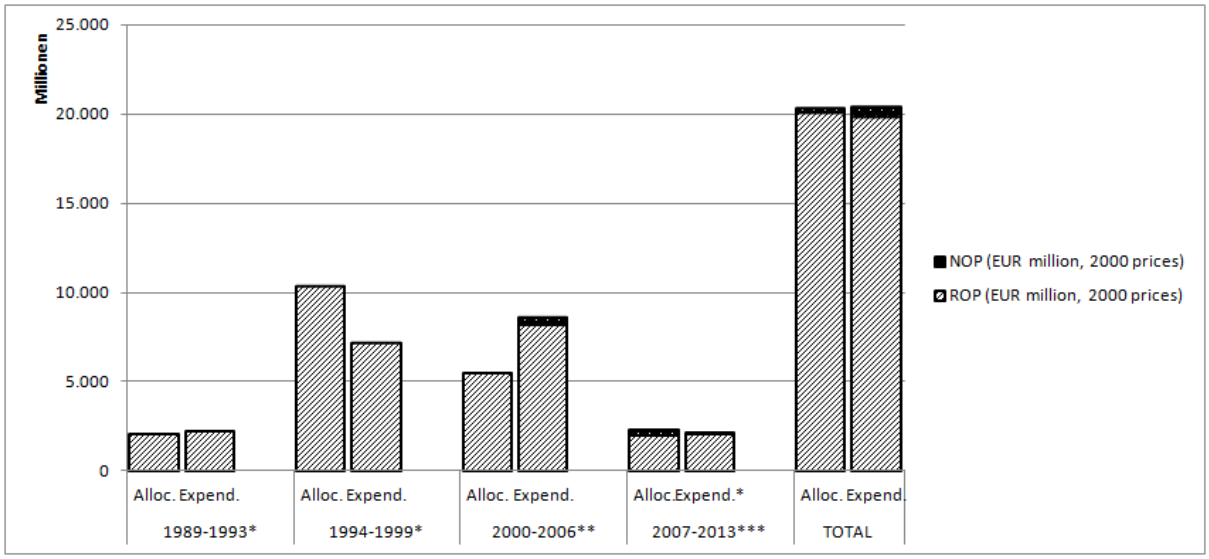
The total allocation of ERDF funds over the study period amounts to some €20,035 million (Table 6 and Figure 9). About half of that amount was allocated under the 1994-1999 programme, when the annual average amounted to €1,724 million. This is by far the highest amount of all periods.

Table 6: Allocation of ERDF funds

Period	ERDF – allocation (ROP) in € (2000 prices)
(1989)1991-1993	2,086,606,150
1994-1999	10,344,115,061
2000-2006	5,544,379,372
2007-2013	2,060,801,274
Total	20,035,901,858

Expenditure for 1991-1993 represents 'approved' expenditure, because actual expenditure figure for 1991-1993 is only available in the form of European and National expenditure data. Therefore, approved expenditure is closer to reality.
Sources: Own elaboration based on FIR 1991-1993, no data of publication, FIR 1994-1999, 2003, data compilation by Sachsen-Anhalt Investment Bank for the periods 2000-2006 and 2007-2013, data on NOP Transport by Federal Ministry of Transport, Building and Urban Development and Ministry of Spatial Planning and Transport of the Federal State of Sachsen-Anhalt.

Figure 9: Allocation and expenditure by periods and total (in million Euros, 2000 Prices)



* There are no NOPs for the 1989-1993 and 1994-1999 periods.
** Data on allocations of NOPs for the 2000-2006 period is missing.
***Data on allocations in 2007-2013 do not include private expenditure. Therefore, allocation for the 2007-13 period underestimates total expenditure, is not comparable to those of previous periods, and is not comparable to expenditure in 2007-2013. Expenditure data in the 2007-2013 period is available until 2011.
Expenditure for 1991-1993 represents 'approved' expenditure, because actual expenditure figures for 1991-1993 is only available in the form of European and National expenditure data. Therefore, approved expenditure is closer to reality.
Sources: Own elaboration based on FIR 1991-1993, no data of publication, FIR 1994-1999, 2003, data compilation by Sachsen-Anhalt Investment Bank for the periods 2000-2006 and 2007-2013, data on NOP Transport by Federal Ministry of Transport, Building and Urban Development and Ministry of Spatial Planning and Transport of the Federal State of Sachsen-Anhalt.

For the first three years from 1991 to 1993, a budget of €2,086 million was allocated, which is €695 million per year. In the 2000-2006 period, the average annual allocation was slightly higher (€792 million), so a total budget of €5,544 million was available. In the current period, the total budget is €2,060 million, which produces an annual average of €294 million.

A closer look at the figures of real expenditure across periods reveals that the most significant increase was recorded between the 1989-1993 and 1994-1999 periods. Expenditure was four times as high in the 1994-1999 period. However, it must be noted that the first period comprised three years, whereas the second was a six-year period. To a certain extent, the increase is explained by the fact that during the first period Sachsen-Anhalt and other East German *Länder* were not included in the regular EU Structural Funds procedure.

Moreover, the increase can be partly explained by the fact that the early years of ERDF support coincided with the challenge of building up a completely new Federal State administration in Sachsen-Anhalt, because under the centrally planned economy the State of Sachsen-Anhalt had been abolished. Consequently, the absorption capacity was limited at that time.

Moreover, in addition to ERDF, other funding facilities were of considerable importance for regional development in the early 1990s. In order to protect and support the enterprise sector in the face of sudden exposure to international competition, the *Treuhandanstalt* (the German privatisation agency) provided a considerable temporary injection of new liquidity. After successful privatisation, ERDF was used to enhance restructuring. For enterprise restructuring, the public banks of Kreditanstalt für Wiederaufbau and Deutsche Ausgleichsbank provided loans, partly with subsidised interest rates, to strengthen the SME sector. Moreover, the Federal Employment Administration provided funding for short-time work, job-creating schemes (*Arbeitsbeschaffungsmaßnahmen*), qualification and retraining measures, and early retirement to mitigate social tensions.

The following table gives an idea of the relevance of ERDF in relation to other public transfers to East Germany in the years immediately following unification. The figures refer to Eastern Germany, not only to Sachsen-Anhalt, but the relative weight is the same.

Table 7: Financial transfers to Eastern Germany 1991-1996 - in DM, unadjusted values

Source of the transfer	Amount (total from 1991-1996*)	Share (in %)
Federal budget, gross transfers	635	
Federal budget, net transfers	388	42.3
West German *Länder*/local authorities	128	14.0
Funds 'German unification'	75	8.2
Federal Employment Agency/Pension insurance	169	18.4
European Union	34	3.7
Treuhandanstalt	123	13.4
Total, net transfers	917	100.0

* 2006: preliminary data.

Source: Ragnitz, 1996: 4, own calculations.-

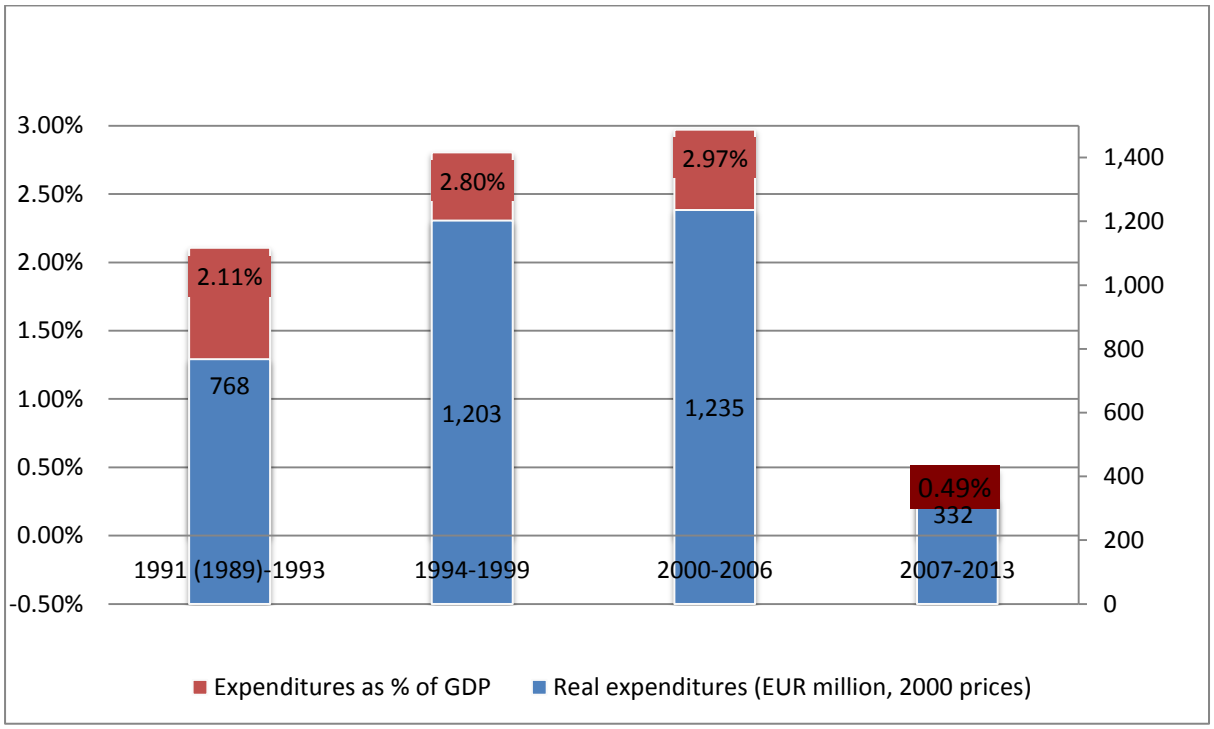
For the years immediately after unification (1991-1996), EU funds (including ESF, ERDF and EAGGF) amounted to only 3.7 percent of all public transfers to East Germany. The gross transfer from the federal budget alone is some twenty times higher than the EU contribution. Other sources, mainly specific funding instruments created to cope with unification, or transfers via labour market policy and pension systems, far exceeded the EU contribution.

Thus, an isolated focus on the ERDF-cofinanced programmes would underestimate the extent of support to Sachsen-Anhalt and the other East German federal States. From the 1994-1999 period to the 2000-2006 period, the allocation decreased by 46 percent, followed by a further decrease of 68 percent in the allocation in the current period (2007-2013) This last decrease can be explained in part by the shift in allocations following the 2004/07 enlargement, but it is also partly due to the significant progress registered in the region in terms of catch-up growth over the last two decades.

4.2 Expenditure compared with allocations

Figure 10 shows annualised expenditure, which ranges from €768 million in 1991-1993 to €1,235 million in 2000-2006 and decreases to €332 million in 2007-2013. During the first two periods, ERDF was primarily used to co-finance a single regional policy support scheme (Joint Task 'Improvement of the Regional Economic Structure'). Later, in the 2000-2006 and 2007-2013 periods, ERDF contributed to an increasing number of support schemes at the Land level as well as to the National Operational Programmes to support transport infrastructure. Looking at annual expenditure (Figure 11) that are only available from 2000, the typical starting curve is visible, as is a continuous slowdown of expenditure.

Figure 10: Evolution of annualised expenditure across the four programme periods

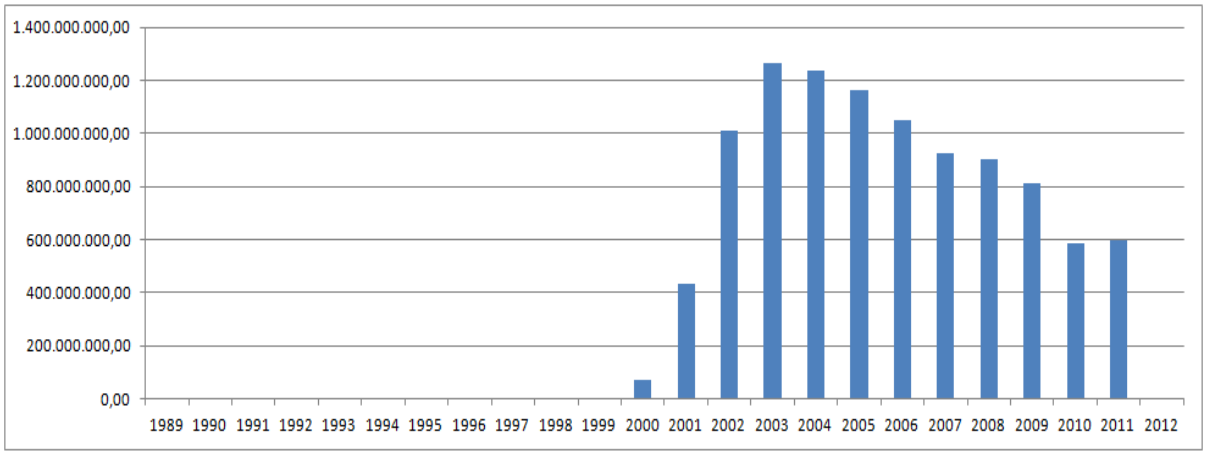


Expenditure 1991-1993 represent 'approved' expenditure, because actual expenditure figures for 1991-1993 are only available in the form of European and National expenditure data. Therefore, approved expenditure is closer to reality.

Source: Own elaboration based on FIR 1991-1993, no data of publication, FIR 1994-1999, 2003, data compilation by Sachsen-Anhalt Investment Bank for the periods 2000-2006, 2007-2013.

As a share of local GDP,[3] expenditure increased from approximately 2.1 percent (1989-1993) to 3 percent in 2000-2006, and it decreased to 0.5 percent in the current period (2007-2013),[4] following a similar trend to the evolution of real expenditure. There is variation within these figures as a result of the concentration of funding in particular years – so the peak could be 4 or 5 percent in individual years of the 2000-06 period.

Figure 11: Annual expenditure



*Data missing from 1989 to 1999 and for 2012.

Source: Own elaboration based on data compilation by Sachsen-Anhalt Investment Bank for the 2000-2006 and 2007-2013 periods.

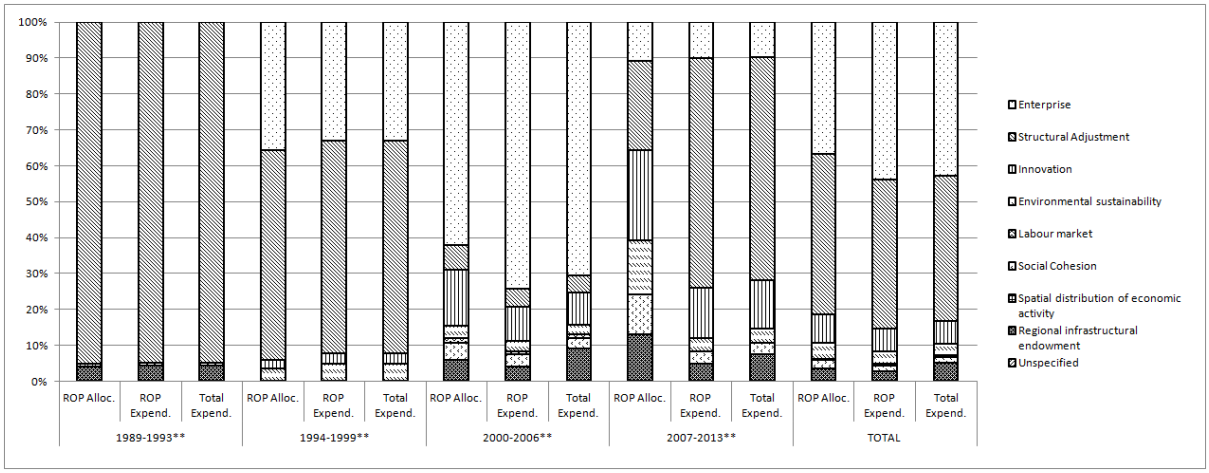
Expenditure can be analysed in terms of the main themes used in this study, as addressed by each measure. As can be observed in Figure 12, the heading 'Structural adjustment' is particularly important in the first period, accounting for approximately 90 percent of total expenditure. It should be noted that this includes enterprise-oriented measures in the form of subsidies for corporate investments. Moreover, investment in infrastructure was supported if the infrastructure was closely related to enterprise, e. g. industrial sites, roads that ensure accessibility of these sites, and others (Sub-section 3.1.1). This heading is also the most relevant in the second period, although with a lower percentage (59 percent), and remains an important element through the whole period. Only in the 2000-2006 period is the share comparatively small.

Since the second funding period, support under the heading of 'Enterprise' has been important, with around 30 percent of expenditure. This heading increases in importance in the third period (2000-2006), accounting for more than 70 percent of total expenditure. In the current period, the share of this thematic axis is more than 30 percent.

[3] Local GDP for the 2009-2013 periods is calculated using the percentage change in national GDP projections from Eurostat.

[4] With respect to Sachsen-Anhalt, data on the initial allocation in 2007-2013 do not include private expenditure. Therefore, data for the 2007-13 period underestimate total initial expenditure, and they are not comparable to those of previous periods.

Figure 12: Allocations and expenditure by thematic axis (expressed as percentages)



** Total expenditure includes the following programmes: 1989-1993 and 1994-1999: ROP. 2000-2006 and 2007-2013: ROP and NOP. Expenditure data in the 2007-2013 period is available until 2011. ROP expenditure data 1991-1993 represent 'approved' expenditure, because actual expenditure for 1991-1993 is only available in the form of European and National expenditure data. Therefore, approved expenditure is closer to reality.
Source: Own elaboration based on FIR 1991-1993, no data of publication, FIR 1994-1999, 2003, data compilation by Sachsen-Anhalt Investment Bank for the periods 2000-2006 and 2007-2013, data on NOP Transport by Federal Ministry of Transport, Building and Urban Development and Ministry of Spatial Planning and Transport of the Federal State of Sachsen-Anhalt.

However, in practice, it is difficult to separate the targets of 'Structural adjustment' and 'Enterprise' in Sachsen-Anhalt, because structural adjustment was mainly realised through support to enterprises, complemented by certain improvements in enterprise-related infrastructure. Taken together, the two thematic axes of enterprise and structural adjustment amount to more than 70 percent of the expenditure in each funding period.

In the current period, expenditure is more evenly distributed across headings, with spatial distribution of economic activity, innovation and structural adjustment targets each accounting for around 20 percent of total expenditure. The growing importance of the heading 'Spatial distribution of economic activity' can be partly explained by an emerging emphasis on urban development, which has found expression in its introduction as an explicit priority axis and as a horizontal objective (Chapter 3). Moreover, Figure 12 shows that, in line with the 'Lisbonisation' of ERDF funding (Sub-section 3.1.4), the proportion of innovation-oriented expenditure has increased in the 2007-2013 period.

The findings derived by the expenditure analysis reflect those gained from the programme analysis (Chapter 3). ERDF-cofinanced programmes were mainly targeted at enterprises and structural adjustment. Measures to enhance structural adjustment also benefitted enterprises. The particular importance of these two headings is valid for all periods under consideration. Nevertheless, the analysis reveals changes: innovation has grown in importance over time, and support has become more diversified in terms of targets and needs. At the same time, the total volume of expenditure has decreased. Shrinking funding must now be distributed across a growing number of support measures. The next two chapters will look at the achievements, effectiveness and utility of support.

5. ACHIEVEMENTS ANALYSIS

This chapter addresses the achievements of the ERDF programmes in Sachsen-Anhalt for the entire period from 1991 to the present. On the one hand, attention is given to the achievements reported in official documents such as annual, interim and final reports and ex-post evaluations. On the other hand, the reported achievements are placed in the context of evidence on actual achievements. Information concerning the latter is gained through expert interviews, ex-ante and ex-post evaluations, additional data sources and an online survey. This chapter also examines the complementarities and synergies with other EU-funded programmes and with domestic programmes. The following section presents achievements for each programme period and according to the eight thematic axes.

5.1 Reported & actual achievements

The development of the ERDF-related monitoring in Sachsen-Anhalt highlights specific issues. Roughly speaking, two phases can be distinguished. In the first phase, while ERDF was coupled to the domestic GRW (from 1991 to 1999), monitoring of ERDF was strongly determined by the GRW monitoring. It is worth noting that it was precisely during the 1990s that the monitoring and evaluation of the GRW developed significantly. Accordingly, certain limitations - mainly in the first years - reflect the situation of monitoring and evaluation in domestic regional policy. After the decoupling of ERDF and GRW, ERDF monitoring in Sachsen-Anhalt developed in an own and very specific style that differed from the previous GRW experience and established a unique approach compared to other German ERDF programmes. This Sachsen-Anhalt approach is based on a very differentiated and detailed system of indicators that, even after a significant reduction, amounts to several hundred indicators in the current period. This system can produce vast amounts of data, but this sometimes makes it difficult to filter out the most essential information. On the one hand, indicator definition and selection is biased towards financial and physical indicators on output levels. Most of the indicators correspond to this quality of information. On the other hand, meaningful indicators on a level above the single instruments and actions (e.g. priorities of the programmes) are scarce. Unfortunately, the culture that evolved for monitoring also partly affected the style in which evaluations have been carried out, so that in some cases information on a more aggregate level than can be found from these sources is also limited.

5.1.1 Programme-level achievements

As noted, in the **1991-1993 period** ERDF was used to co-finance the Joint Task of the federal and State governments for the improvement of the regional economic structure (GRW). This had a very narrow focus on financial support to overcome the structural disadvantages which remained as a legacy from the planned economy in GDR times. Efforts were concentrated on structural adjustments by modernising fixed assets and thereby creating and safeguarding jobs. Overall, the projects of the initial 1991-1993 programme invested predominantly in the modernisation of the capital stock and in infrastructure.

In the 1991-1993 programme, targets were set only for financial indicators and employment effects. The reporting of achievements focused on both (i) the support for fixed-asset investments in enterprises and (ii) the modernisation of infrastructure. The target of 9,000 to 11,000 jobs was significantly exceeded. A total of 36,321 (gross) jobs were created or safeguarded. This was regarded as an extremely positive result in the ex-post evaluation (ISW, 1994/1995: 62). The

achievement with respect to created or safeguarded jobs represents gross value and does not allow for an assessment of net job effects.

Monitoring and reporting in this period were made mainly on financial grounds. The indicators used to assess support for fixed-asset investments included the number of projects, the investment volume, and the number of supported jobs. Projects modernising infrastructure were monitored by the number of projects and the investment volume. In addition, for the creation of industrial sites, which represented the most important subject of infrastructural support in the 1991-1993 period, the number of sites, the area of land prepared/floorspace constructed and information on the occupancy of the sites were recorded. The achievements with respect to enterprise-related infrastructure can be regarded as reliable, because they display output indicators which were recorded in the course of preparing the project application. This rather simple indicator system closely followed the GRW support scheme practised in the 1970s and 1980s in West Germany. The reason for the absence of a more sophisticated indicator system for ERDF support is that this was the first time that German regions had been an Objective 1 subject (and had received this designation quite suddenly), and there was no time and no experience to define a more differentiated system of indicators and benchmarks to quantitatively assess the achievements of intervention.

In retrospect, the targets were rather unambitious and set with caution by the West German experts who helped to introduce the first programme. The transition from planned to market economy represented a particular situation characterised by far-reaching uncertainty on how Sachsen-Anhalt's economy would develop after German unification and how the GRW would work in this specific environment. It is assumed that the figures reported for jobs created do not include double counting, but this is still an indicator of gross job effects, without taking deadweight and substitution into account. There is no distinction between new and safeguarded jobs. Making this distinction would be an important factor in assessing achievements. The number of jobs created or safeguarded is recorded ex-ante when potential beneficiaries apply for grants. The applicants have to make a statement on the number of jobs existing prior to the investment and on the expected new and safeguarded jobs after realisation of the investment. Ex-post, the actual achievements in terms of employment targets must be met and checked. This approach of target verification was introduced in the mid-1990s, and in addition a minimum job increase of 15 percent compared to the baseline situation was set as a rule. The Federal Ministry of Economics has admitted in information addressed to a Member of the German Parliament that the separate attribution of funding to new jobs on one hand and to safeguarded jobs on the other hand is hardly possible (Deutscher Bundestag, 2007: 2). Nevertheless, this indicator has been widely used in the first and in all subsequent ERDF programme periods.

The **1994-1999 programme** still did not introduce standardised output indicators, benchmarks or quantified targets, except investment volume, the number of projects and number of jobs created and safeguarded. The major focus in this period was again placed on support for fixed-asset investment in enterprises to enhance structural adjustement and improve employment and on enterprise-related infrastructure that was strongly linked with the support for enterprises.

Reporting on the other outputs and results was focused mainly on financial progress and based on a few quantitative indicators. Hence, achievements can be assessed only in terms of programme targets that were appropriate in the context of regional needs and realised to a considerable

extent. This particularly concerns investments in complementary infrastructure, research, technology and innovation, as well as environmental and rural development.

Despite the strong emphasis, the targets in terms of job created and safeguaded were missed by far (see **Table 8**). Only around 30 percent of the targeted 120,000 jobs were created or safeguarded through investment funding. However, the short timespan from the start of de-industrialisation in 1991, as well as the on-going structural adjustments in all sectors, makes those targets appear rather ambitious. Apparently, the jobs shortfall resulted partly from the underestimated high capital intensity of investment projects.

Table 8: 1994-1999 programme jobs created and safeguarded

	Target	Achieved	Created	Safeguarded
Priority 1: Productive investments	120,000	40,929	14,617	26,312
Priority 2: Support to SMEs	60,000	35,420	11,495	23,925
Priority 3: Research, technological development and innovation	no data	1,701	487	1,214
Priority 5: Labour force (ESF-dominated OP)	no data	55	55	0
Priority 6:				
6.1 Agriculture, rural development and fisheries	no data	3,520	965	2,555
6.2 Rural development	no data	1,940	729	1,211

Source: FIR 1994-1999, 2003: 99-110, 292.

An additional issue concerns the durability over time of the jobs created/safeguarded. The purely job-related figure says nothing on this theme. The FIR for the 1994-1999 period reports cases of insolvency. Among the projects supported by ERDF in this period, altogether 211 cases of insolvencies were recorded in enterprises which received ERDF support for modernisation of fixed-asset investment. The ERDF volume spent on the enterprises that subsequently went bankrupt was DM90.1 million (€49.2 million, 2000 prices). This is 6.7 percent of total ERDF expenditure for fixed-asset investment. The number of jobs lost in the bankrupt enterprises was not displayed. Taking the average number of created and safeguarded jobs per project (36.4) as a crude measure, the proportion of created or safeguarded jobs in bankrupt enterprises among the total number of jobs created or safeguarded was 9 percent (FIR 1994-1999, 2003: 99, 100, 226, 244, 245, own calculations). Furthermore, from 1994 onward, the final reports specificially mentioned permanent jobs (distinguishing between created and safeguarded), e.g. jobs existing for at least one year. However, it is not clear what happens to those permanent jobs after the end of the funding period. The data on jobs created and safeguarded are recorded ex-ante in a statement by the enterprise when applying for grants, and it has to be verified after the completion of investment or within 5 years. Since the funding-period duration has increased, there is no monitoring of the sustainability of created or safeguarded jobs beyond the funding period.

The **2000-2006 programme** brought about a change in strategic approach. A very broad range of detailed and project-specific 'output' and 'results' indicators was introduced (776). The programme had the main strategic objective of enhancing the competitiveness of Sachsen-Anhalt through: (i) investments in enterprises, (ii) support of R&D, and (iii) co-financing innovative approaches in SME promotion. These measures were intended to boost the slowing growth in the

region and to create new and to safeguard existing jobs, as a high rate of unemployment remained a persistent problem. Thus, for purposes of business promotion, a large amount of overall ERDF resources was allocated to Priority 1 and also two-thirds of the ERDF-funded projects (FIR 2000-2006, 2010: 46). The implementation of investment projects advanced, and as a result 20,950 new jobs were created and 56,733 were safeguarded (see **Table 9**).

Table 9: Permanent jobs created/safeguarded through ERDF support for productive investments in 2000-2006

Indicator	Target	Achieved	Achievements as %
Jobs created	12,117	20,950	172.90
- of which women	-	7,307	-
Jobs safeguarded	24,236	56,733	234.09
- of which women	-	17,964	-

Source: efREporter per 28.02.2010.

For all the thematic axes, data were reported on financial spending and the number of funded proejcts. Beside jobs created or safeguarded, very few additional outputs and results were used to assess achievements under the thematic axes of 'Enterprises', 'Structural adjustment', 'Environmental sustainability', 'Innovation', 'Labour Market' and 'Infrastructural Endowment' (for the details, see the next section of this chapter). Overall, the targets in financial terms were met quite precisely, while other reported achievements exceeded the targets in almost every area of intervention (see Table 10), for example:

- In terms of enterprise support, the number of start-ups and business formations overachieved the target of 142 by an impressive 1,652.11 percent.
- The number of inhabitants connected to public sanitation services and wastewater systems in the area of environmental sustainability exceeded the target by 163.67 percent.
- For area of structural adjustment – particularly the construction of new industrial sites - instead of 987,698 square metres of floorspace, 18,986,000 square metres have been built (target overachieved by 19,222.25 percent).
- The targets for jobs created and safeguarded were also impressively overachieved (jobs created by 172.90 percent and jobs safeguarded by 234.09 percent).

The extensive overachievement in some dimensions shown in **Table 10** raises the question of whether the figures – for targets, achievements or both - were realistic. The number of jobs was promised by the applicant enterprises. They might have had an incentive to set 'soft' targets, because after the realisation of the investment they had to verify their own targets to the *Länder* authorities. This might be a reason to set employment targets that are not too high. Indeed, in many cases a modest overachievement of the job indicators in GRW funding is evident.

Table 10: Aggregated achievements (outputs and results) of the 2000-2006 programme period

Thematic axis	Target	Achieved	%
Enterprise			
€m ERDF funding	862.84	860.77	99.76
Permanent jobs created	12,117	20,950	172.90
Permanent jobs safeguarded	24,236	56,733	234.09
No. person/business start-ups	142	2,346	1,652.11
No. SMEs participating in funded projects	5,400	4,850	89.81
No. funded projects (in total)	84	10,839	12,903.57
Environmental sustainability			
€m ERDF funding	131.11	130.68	99.67
No. SMEs participating in funded projects	15	24	160
No. inhabitants connected to public sanitation services	90,092	147,450	163.67
No. inhabitants connected to public water supply	-	5,059	-
No. funded projects (in total)	776	1,578	203.35
Innovation			
€m ERDF funding	378.79	364.11	96.12
No. SMEs participating in funded projects	1,105	472	42.71
Funding of free inventors	238	349	146.64
Funding of innovation assistants	127	155	122.05
Sq m land prepared	71,397	84,618.80	118.52
No. university study places	-	2 023	-
No. funded projects (in total)	4,874	4,064	83.39
Labour market			
€m ERDF funding	36.	36.	100.
No. created multimedia workplaces	-	6,596	-
No. funded projects (in total)	0	456	-
Regional infrastructural endowment			
€m ERDF funding	215.07	213.65	99.34
m length	373,150	416,269	111.56
Sq m floorspace	13771,044	5174,199.93	37.57
No. funded projects (in total)	725	873	120.41
Social cohesion			
€m ERDF funding	153.78	154.24	100.30
No. public projects in building repairs	-	13	-
Sq m floorspace	-	36,710	-
No. funded projects (in total)	174	953	547.70
Structural adjustment (sectoral development)			
€m ERDF funding	197.65	197.65	100.00
Sq m floorspace	987,698	18986,000	1,922.25
No. funded projects (in total)	-	445	-

Source: efREporter per 28.02.2010.

In other cases the differences can be explained by following reasons:

- The targets set were simply unrealistic from the outset. Due to a lack of experience in setting targets and managing programmes, the definition of quantitative targets was often

uncommon and could not rely on earlier experience. Consequently, the target definition can be seen as kind of a trial-and-error process.

- A gap between targets set and actual achivements can be interpreted as differences between supply and demand for certain measures. By way of illustration, the number of SMEs participating in funded projects under the thematic axis 'Innovation' remains clearly below the target. This is a sign of limited absorptive capacities for R&D in SMEs in Sachsen-Anhalt.

- Delays in planning procedures required prior to investment, or a change in needs in favour of small-scale projects. Apparently, this was the case with some infrastructural projects, where the achieved floorspace remained considerably below target. An overall critical point is that most of these target categories are very formal, and they are only loosely linked to the existing needs. Financial indicators and the number of projects reveal nothing about achievements.

In the **2007-2013** funding period, Sachsen-Anhalt developed and introduced a new indicator system, as the one used in the previous period had proven to be inappropriate. In addition to indicators that monitor the funding process (number of funded projects, etc.), the recently-implemented indicator system focuses more on the ex-post assessment of achievements linked to ERDF intervention by quantitative indicators. For this purpose (and in contrast to previous funding periods), the 2007-2013 programme set a target for every indicator. Given the fact that the monitoring system still consists of some 300 indicators, this is an exaggerated definition of objectives, as the sheer number of different values makes it difficult to establish a coherent picture of target achievement.

However, there are still too few reliable indicators that document for example the results of R&D, education and research promotion. Indicators such as the number of projects and funding allocated have limited informative value to assess actual achievements. Hence, indicators that measure the impact on employment (jobs) and the leverage effect (investment) of funding remain particularly important, meaningful and assessable.

The 2007-2013 programme is still in progress, and therefore an overall assessment of the achievements of this period is not possible. The mid-term evaluation on the basis of a Scoring Model in the strategy report (Rambøll, 2010) allows for a pre-assessment. It indicates particularly strong development in the traditionally GRW-supported areas such as raising competitiveness and the development of enterprise-related infrastructure. According to the mid-term evaluation, the target for jobs created and safeguarded will be met (Table 11; Rambøll, 2010: 47). However, the evaluator noted that difficulties are expected in meeting targets in the R&D area, regarding measures such as the promotion of cooperation between private business and scientific institutions, as well as measures to increase energy and resource efficiency. Furthermore, the area of environmental protection is underperforming at mid-term (ibid: 48f). This is attributed to delays in the specification of the regulation or imprecise definitions within the EU framework.

Table 11: Number of jobs created and safeguarded (so far) by 2007-2013 programme

	Initial value	Target	2007	2008	2009	2010	2011
INNOVATION, RESEARCH AND DEVELOPMENT							
Jobs created (in total):	0	870	0	950	0	0	212
… for women	0	276	0	75	0	0	58
Jobs safeguarded (in total)	0	870	0	130	0	0	308
… for women	0	226	0	50	0	0	163
Beneficiary of research workspace	0	600	0	0	0	0	0
Created jobs by direct investment grants for SMEs	0	800	0	950	0	0	212
Supported/created jobs by risk sharing	0	800	0	0	0	0	520
Supported/ created jobs for women by risk sharing (at least 30%)	0	240	0	0	0	0	221
IMPROVING COMPETITIVENESS OF THE ENTERPRISE SECTOR							
Jobs created (in total):	0	13,595	0	0	348	1,054	1,553
… for women	0	3,100	0	0	80	188	573
Jobs safeguarded (in total):	0	46,200	0	0	1,738	15,745	17,095
… for women	0	13,426	0	0	339	3,642	3,669
Supported projects for start-ups	0	100	0	0	0	0	0
Created jobs by direct investment grants for SMEs	0	44	0	0	0	0	0
Created trainee places	0	2,976	0	0	48	157	218
Supported jobs by investment grants and lending instruments	0	58,855	0	0	2,087	16,799	18,648
Supported jobs for women by investment grants and lending instruments (at least 38.3%)	0	16,526	0	0	419	3,830	4,242
Supported jobs in environmental technology by investment grants and lending instruments (at least	0	5,885	0	0	0	29	61
SUSTAINABLE URBAN DEVELOPMENT INCLUDING EDUCATIONAL INFRASTRUCTURE							
Created jobs	0	100	0	0	0	0	0
Safeguarded jobs	0	240	0	0	0	0	0

Source: Compilation by authors from data of AIR 2011, 2012.

Programme indicator systems

The quality of programme indicators and indicator systems for the collection of data and derivation of results is a crucial issue. Over time, increasing effort has been placed on developing the system of monitoring and data collection from the very limited output and result indicators in 1991-1993 through to the more elaborated data system of the current programme.

In the 1991-1993 programme period, no dedicated indicator system was in place specifically for the ERDF programme, and no targets or benchmarks were set. Thus, ex-post reports and evaluations mentioned results in financial terms, material scope (business, tourism, and infrastructure) and overall level of support and employment effects. This situation did not change significantly in the 1994-1999 period, although targets were set in respect of investment volumes and jobs created/safeguarded based on the experience of the 1991-1993 funding period. With the reform of the structural funding system (the Joint Task for the Improvement of Regional Economic Structures - GRW) in 1995, all estimations based on data from the previous funding period had become obsolete for regulatory and administrative reasons (ISW, 2001: 193-195).[5] However, the 1994-1999 programme was not adjusted to the new framework for structural funding, and thus it was no surprise that the targets were missed. Additionally, monitoring and evaluation of ERDF programmes were impeded by the lack of a centralised regional database that would also include data across EU Structural Funds.

For the 2000-2006 funding period, the objectives of the Operational Programmes were quantified for a broad range of indicators. This much-elaborated system of project-specific indicators was created on the basis of the methodological guidelines of the European Commission 'Indicators for monitoring and evaluation: a practical guide'. It took into account the strategic objectives of Lisbon and Gothenburg and was accepted by the European Commission. However, it was overdone and ultimately too complex for the monitoring and control of the programmes as a whole. The system contained a total of 776 different individual indicators that linked to the primary levels of the OP, producing a total of over 6,000 indicator values. For each separate measure or action of the OP, some 20-30 (and sometimes even more) indicators were listed for monitoring and evaluation. Although such a detailed system was able to concisely reproduce the results and outputs of the various programmes and sub-programmes co-financed by ERDF, it was too complicated to assess achievements and thus not very meaningful in this form.

In the current programme period, a streamlined system of indicators (300 instead of 776) has been introduced in Sachsen-Anhalt. The assessment of the reliability of these indicators varies depending on the indicator category, i.e. output or result.

Financial and output indicators are rather reliable, because they are based on information that does not require a subjective judgment, and thus they are uncritical. At the same time, they do not provide information on the programme quality. Output indicators display the number of beneficiaries or projects, physical dimensions of supported projects etc., but they are rather formally linked to the needs that exist in the region. As an illustration, the AIR 2011 (2012) reports on the length of streets newly built or reconstructed. This aggregation does not distinguish between efforts directed towards improvement of the quantity of road connections and the quality of roads. The quality of roads of local or regional importance is, as mentioned in Chapter 2, often insufficient in Sachsen-Anhalt, which cannot be easily reflected in an aggregation. A similar problem appears with respect to the output indicator on the length of new and reconstructed railway tracks. Also, outputs focused on advice or support to SMEs are considered reliable but still problematic, as they give no sense of the type of assistance provided, its quality, its fit with the

[5] This was due to an increase of the maximum proportion of subsidies compared with eligible investment, which was part of reform of the GRW scheme in 1995. Hence, a given ERDF volume led to a lower volume of investment and a lower number of jobs (ERDF Consulting im Hause Landesförderinstitut Sachsen-Anhalt, 2003: 98).

needs of the firm, or the likelihood that the firm will be able to make use of the assistance to achieve change. Overall, output indicators are often merely a number of projects (according to the AIR 2011 (2012), 38 indicators comprise project numbers), and they do not allow for an assessment of programme quality. A differenciated set of indicators - quantitative and qualitative - is still needed here to capture effects, or at least to check that projects are delivering what they have promised.

Results indicators represent a minority compared with the vast number of output indicators. Results are often measured by the number of jobs created or safeguarded by ERDF support for fixed-asset investment. Apparently, the number of jobs created is reliable in Sachsen-Anhalt, because beneficiaries regularly have to verify their targets with the Land authorities at the end of the supported period. The same is the case with the investment volume, supported by ERDF. Other result indicators included in the implementation reports in Sachsen-Anhalt are vague and hardly reliable. The number of safeguarded jobs can have some reliability problems, which are caused by the peculiarities of certain types of investment. In particular, if an enterprise gets support for an investment designated to extend production, it is difficult to separate newly created and safeguarded jobs. It is also not clear whether safeguarded jobs were at risk without subsidies. However, this problem is not limited to Sachsen-Anhalt (Deutscher Bundestag, 2007: 2). Furthermore, there is a specific result indicator for the 2007-2013 period on the number of 'supported/created workplaces' associated with venture capital funding (AIR 2011, 2012: 63). Putting supported and created workplaces together does not make clear the extent to which these workplaces were newly created and the extent to which they already existed. The aggregation undermines the value of this information. The same is the case with the number of 'supported workplaces' (AIR 2011, 2012) which allows no derivation of whether they represent newly created posts. Such an indicator does not allow aggregation.

Overall, there are other weak points in the indicator system in Sachsen-Anhalt. First, a small number of reliable and meaningful indicators exist to assess employment effects of ERDF funding. Second, there is a high probability of double counting, especially between measures. For instance, if a firm received business advice and created two new jobs, but was also housed in an ERDF-assisted incubator, it is not clear how the programme could ensure that the two additional jobs were only counted once. Third, in some fields of ERDF intervention in Sachsen-Anhalt, there are still unexploited opportunities to introduce result indicators, especially in the field of transport infrastructure, by displaying capacity effects. Hence, the consolidation of the indicator system as well as the development of results and outputs indicators is still taking place in Sachsen-Anhalt. The ultimate goal is to have an indicator set that contains only meaningful, manageable and reliable information, allowing the data not only to be collected but also to be used to assess and improve programme quality.

5.1.2 Analysis by theme

This section analyses the achievements of the programmes by the thematic axes. It examines both the aggregated reported achievements and information gained on actual achievements from the interviews and other sources, which also relate to the evolution of regional performance over the period.

(i) Enterprise development

The main focus of funding over the diferent programmes was on enterprise development, including support for start-ups, business assistance and finance. At the beginning, expenditure for enterprises was included in the overall spending on structural adjustment. This area of intervention in total accounted for around €2,188 million, corresponding to 95 percent of the ERDF expenditure. In 1994-1999, the share of expenditure for enterprises was reported separately as 33 percent, increasing to around 70 percent in the 2000s, and then dropping down to a level of 10 percent in the current period (see Chapter 4.2). Over all four periods, €8,700 million (43 percent) were spent on enterprises.

Over time, the programmes placed a specific focus on support for small and medium-sized enterprises. During the 1990s, the measures were concentrated on general subsidies for corporate investment and on providing appropriate infrastructure to retain and to attract investors to the region. This was subsequently complemented by measures focused on R&D and innovation activities and more significantly on the development of a system for consulting, finance and further business support (built-in training, general business advice etc.) for SMEs and start-ups, including innovative forms of financial instruments such as revolving funds.

Over the four programme periods, enterprise development and manufacturing have been permanent high priorities in Sachsen-Anhalt. The enterprise structure has undergone a highly intensive process of change due to the de-industrialisation of the region. Adjustments in enterprise development were vital after reunification. The shift to the market economy led to a change on the one hand in the size structures of firms – from large to predominantly small and very small - and on the other hand in industrial sectors.

In the 1991-1993 programme period, nine-tenths of ERDF supported projects were small and medium-sized in financial terms (ISW, 1994/95: 107). The start-up intensity was high, with 58 commercial applications per month according to the ex-post evaluation of ISW (ISW, 1994/95: 21). Contrary to ERDF, the investments supported only by national funds were mainly large-scale projects. In the 1994-1999 period, the number of companies in Sachsen-Anhalt, especially SMEs, continued to rise. More than two-thirds of granted project funding addressed SMEs (ISW, 2001: 47). There were also signs of stabilisation in the development of the manufacturing sector in the region. It was clear that the industry of Sachsen-Anhalt had embarked on a path of growth. Furthermore, the economic performance of supported enterprises has improved. According to survey conducted by the ISW, about 60 percent of responding enterprises were in profit in 2000 (ISW, 2001: 6). Despite a number of bankruptcies, the survivel rate of enterprises that received support in the 1994-1999 period was 90 percent (ISW, 2001: 5). Especially in the area of SMEs, on-going growth in the number of companies in Sachsen-Anhalt is evident. However, the start-up intensity is currently not as strong as in the previous periods. More recently, explicit measures have been set in the 2007-2013 programme to encourage entrepreneurs to take up as well as to continue business activity, providing them with consultations and with easier access to financial resources (Rambøll, 2010: 47-52).

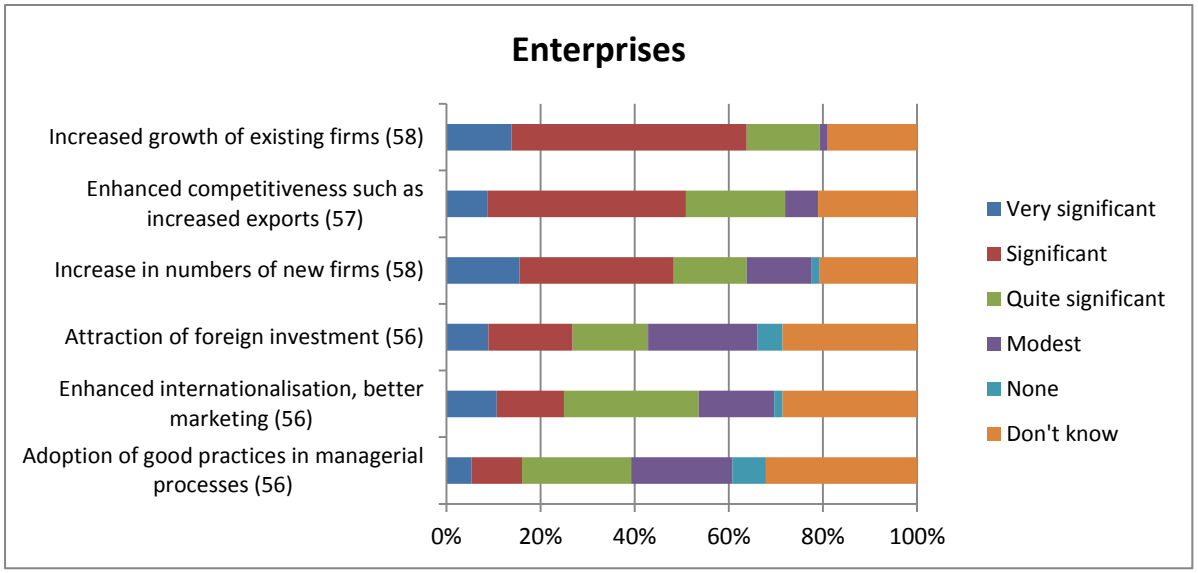
In order to expand specialist support for SMEs, a specific measure on business advice and consultation was introduced in the 2000-2006 programme to encourage the creation of a greater number of firms. Although no target was set for the measure 3,340 projects benefited from

consultation in 2000-2006 (FIR 2000-2006, 2010: 54). At the same time, a range of regional and national programmes addressed the same issue. In the 2007-2013 programme, 2,450 consultations have been made available for SMEs (ROP 2007-2013, 2012: 97), but the annual report 2011 revealed a rather low number of around 314 beneficiaries so far (AIR 2011, 2012: 74). This may also be the implicit consequence of the financial crisis, which, however, did not impact severely on the region. Or it is possible that SMEs are drawing upon other funds available for consulting and advice. Overall, it is difficult to assess the effectiveness of the measure and to attribute it to the ERDF programmes.

To support equity and liquidity support to SMEs, a loan programme was established in the 2000-2006 period aimed at SMEs in the field of trade and industry and professionals with predominantly business-related activity (FIR 2000-2006, 2010: 56-57). Examples of eligible measures include market-development activities, product and process innovations (including their deployment into production), improving management and organisation through consulting and training programmes, quality and environmental management systems, telematic applications, networks, or compensation for non-scheduled, high and temporary financial shortages. The loan programme, when it was introduced, was a novelty for Sachsen-Anhalt and accordingly difficult to handle in the beginning. However, after the introductory period, the increasing demand for this type of instrument was evident, so that by the end of the funding period 433 projects had been funded with total investment amounting to €130 million (€121.6 million, 2000 prices) and an ERDF share of €43.6 million (€40.8 million, 2000 prices). After its successful implementation, the loans programme is also available in the current funding period. Furthermore, in term of innovative forms of finance and business support, non-grant financial instruments such as revolving funds were introduced in the 2007-2013 programmes. Overall, some interviewees argued that non-grant financial instruments may have different negative effects. For instance, loans on favourable conditions are used by enterprises that would have been able to obtain the necessary funding through the private finance sector, but small enterprises are unable to obtain them. In addition, it was suggested that the shift from the use of grants to non-grant financial instruments needs a longer adjustment period, and it probably requires a transition time when both instruments would be used in a complementary fashion.

The assessments of the online survey on the extent to which the ERDF programmes delivered achievements in the field of enterprises revealed that enhanced competitiveness, the impact on growth in existing firms, and the increased number of new firms were regarded as the most crucial achievements (see Figure 13). The achievements were measured by the proportion of answers ‘Very significant’ or ‘Significant’.

Figure 13: Responses to the question 'Could you please assess the extent to which the ERDF programmes delivered achievements in the fields outlined below (across the entire period, i.e. 1991 to date)?' (in brackets: number of all responses)



Source: Online Survey, Sachsen-Anhalt.

By contrast, the achievements in attracting foreign investment and internationalisation were assessed as being relatively low. The latter corresponds to statistical data on export intensity, which lags considerably behind the average national value. Respondents regarded the effects on existing firms as more signicant than on attracting foreign investments; this indicates that the stronger orientation on endogenous potential in SMEs (which became part of the strategies from 1994 onwards) was appropriate. Nevertheless, a number of foreign investments were successfully attracted, especially in the early 1990s.

Strategically, three overlapping phases of enterprise development can be identified in the ERDF co-financed programmes:

1. In the first period, interventions were mainly dedicated to the creation of a sufficient basis for entrepreneurs in general and to the reduction of extremely high unemployment rates. The logic of intervention at this point was therefore on building premises, preparing land for industrial sites (see also sub-chapter 'Structural adjustment') and fixed-assets investments in enterprises. ERDF funding was used to co-finance the GRW programme.

2. This approach continued in 1994, but support to small and medium-sized enterprises gained higher importance and a separate priority axis. This approach aimed to create more favourable conditions for entrepreneurship, including the promotion of start-ups. GRW and ERDF investments in trade and industry targeted both the immediate goal of creating or keeping people in permanent jobs as well as the expansion of the enterpreunerial potential, including measures oriented towards the enhancement of productivity. On the basis of knowledge gained from ERDF interventions in the period up until 1993, it was deemed necessary to try to prevent unemployment to a far greater degree.

3. More recently, job creation and competitiveness of small and medium-sized enterprises remain important targets for ERDF intervention, although the 'Lisbonisation' of the programme has moved the focus of funding activities to the promotion of R&D activities in the public and private sectors and to the creation of an SME-friendly business environment supported by good access to finance. Recent measures to support business aim to help to exploit the entrepreneurial potential of the region, providing assistance and financial support for SMEs and start-ups and thereby creating conditions for sustainable smart growth.

This evolving strategy of regional development has not been without its difficulties. As noted at the beginning, there was a very limited availability of suitable industrial parks and the stock of business premises in the region was of poor quality. There were, however, other challenges to be addressed such as poor entrepreneurial skills and a shortage of finance and project support that emerged more slowly. From 1994, various European, national and regional support programmes made finance available for enterprise activities (ROP 1994-1999, 1994: 39-44). The small number of meaningful indicators does not allow a comparative assessment of actual achievements. Hence, it is not clear how funding from ERDF led to additional projects in the region, or the extent to which there was additional benefit to the region over what the programmes would have achieved anyway.

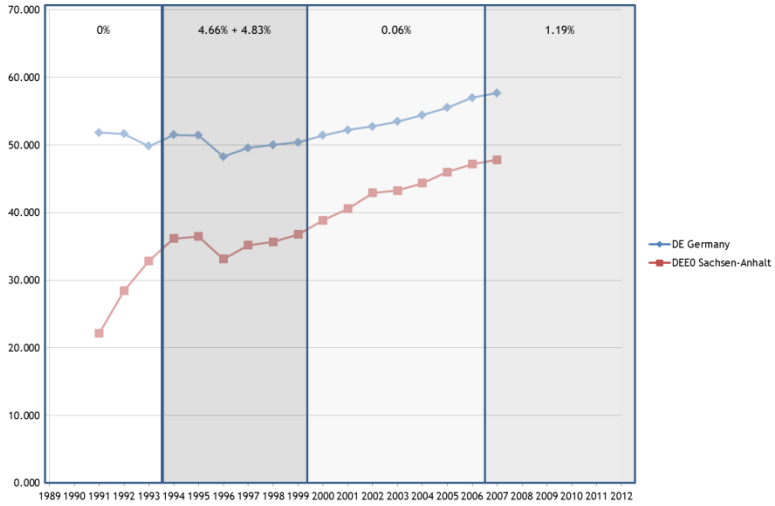
Overall, support for entrepreneurship is producing actual achievements in the form of real changes in the regional entrepreneurship structure and performance. There is no direct indicator of firm competitiveness, which can be based on many different assets, not only dependent on the firm itself, but often also dependent on the production system of the country. However, productivity should be a sufficiently good proxy to display results of changes in the enterprise sector, since it measures the capability of firms to produce GVA with an efficient use of its labour force. The total GVA per employee for Sachsen-Anhalt and for Germany is presented in Figure 14, where data are available for the 1991-2007 period. On the basis of the patterns identifiable in Figure 14, Sachsen-Anhalt has always been a laggard with respect to Germany in terms of productivity, but it has also been able to partially reduce the gap from the national average. Nonetheless, progress in productivity cannot be merely attributed to ERDF and even less so to general support for existing firms to enhance their competitiveness. This can be explained by two reasons:

i. Parallel to ERDF support, substantial national support was provided to SMEs in the form of automatic investment grants, special depreciations, loans and guarantee schemes provided by federal and *Länder* authorities. The specific effects of ERDF cannot be separated from the other transfers.

ii. ERDF expenditure for existing firms, for instance, provided support to enhance the internationalisation of firms as well as support for improving vocational training. Neither can be seen in an isolated manner. The proportion of expenditure on general support to existing firms to enhance their competitiveness is relatively small compared to the measures designated to enhance structural change, especially by subsidising fixed-asset investments in enterprises and by support for enterprise-related infrastructure. It was the combination of a number of various measures which made a contribution to the convergence in GVA per capita. During the first two periods, it was mainly support for corporate investment and enterprise-related infrastructure that enhanced productivity growth. In the 2000-2006 period, the strong focus on improving competitiveness was

continued, and in the 2007-2013 period the range of measures has become more diversified.

Figure 14: Real GVA per employee and Structural Funds expenditure on general support to existing firms for competitiveness (in Euros at 2000 prices, percentage on top)



Source: EUROSTAT.

Although a great number of start-ups have entered the market and the self-employment rate has increased considerably, start-up activities in the region have remained lower than in West German regions. In general, enterprise development in Sachsen-Anhalt is characterised by a permanent increase in the total number of SMEs, but not in large-scale enterprises that are capable of innovation. Over time, it has become clear that further progress in productivity growth depends not only on physical capital, but also on other factors such as R&D, clustering and networking. However, influencing the latter implies longer and less straightforward cause-and-effect chains, and hence the productivity curve slows down.

(ii) Structural adjustment

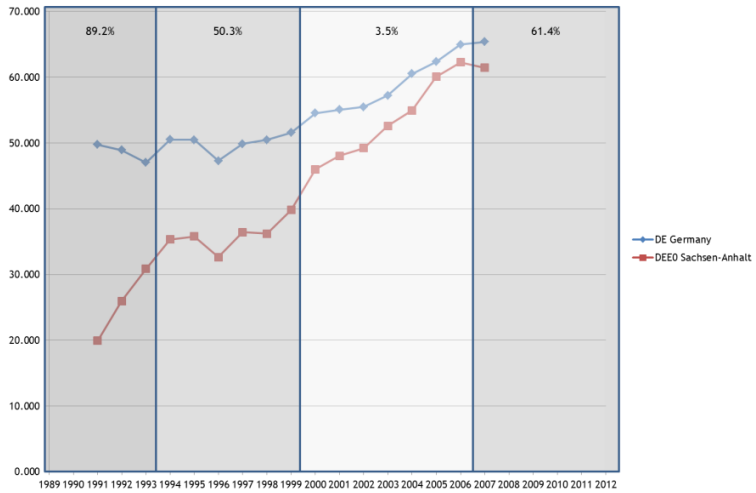
In the late 1980s, Sachsen-Anhalt emerged as one of the most specialised regions in Germany, and after the German reunification in 1991 structural adjustment became the most crucial task and the major theme in the region for decades. Consequently, a considerable amount of the programme funding has been spent on initiatives for restructuring and diversifying the regional economy, especially in the manufacturing and service sectors. This area predominated in the 1991-1993 period with about €2,188 million, comprising 95 percent of total expenditure (including enterprise-oriented measures). In the 1994-1999 and 2007-2013 periods, expenditure amounted €4,270 million and €1,367 million, representing a share of around 60 percent. Only in the 2000-2006 programme was a minor amount (5 percent) of ERDF expenditure allocated to this priority (see Section 4.2), whereby €6,102 million (70 percent) of the expenditure was enterprise-focused. In this context, it is worth mentioning that expenditure for enterprises and expenditure for structural adjustment are difficult to separate. Support for enterprises was mainly targeted at the enhancement of structural change, and measures to facilitate structural change were, to large extent, directed at enterprises, e.g. by subsidising fixed-asset investments. During the whole of the 1991-2011 period, €8,236 million were spent on structural adjustment. Consequently, a considerable proportion of programme funding has been devoted to restructuring, cluster development and diversification of the regional economy.

The first programme period, when the highest percentage of investments was devoted to the final objective of industrial restructuring, saw the fastest convergence of manufacturing productivity. This trend continued in the second programme period and also, though slower, in the third programme period, in which only a small percentage of funds were allocated to this target. However, the large proportion of funding in this period comprising general support to improve the competitiveness of existing firms operated in the same direction. Data for the current programme period, also heavily invested, are still unavailable.

If the industrial structure of ERDF support in the 1991-1993 period is taken into account, industries producing for consumers and construction-related industries prevailed, whereas industrial goods industries represented a minority. This is a sign that the ERDF strategy underestimated the difficulties and complexity of structural change in favour of export-oriented industries. In terms of size structure, more thn 50 percent of the enterprises newly established by ERDF support represent small firms with fewer than 20 employees. Hence, ERDF strengthened the SME sector: more than 95 percent of the newly-established enterprises were small and medium-sized. Industrial restructuring can take many different forms, and it may affect the sectoral composition or the functions performed in the economic sectors. Industrial restructuring may also comprise abandoning old industrial sectors or some production phases. For this reason, the impact of industrial restructuring on GVA or employment can be both positive and negative, but in all cases the productivity of manufacturing will go up, since restructuring allows concentration on production or production phases of higher value-added per employee. Industrial GVA per employee is therefore a good proxy of the quantity and success of industrial restructuring in a region.

Figure 15 presents the real GVA per employee in the manufacturing sector in Sachsen-Anhalt and, for comparison, in Germany. It is immediately evident that this region was significantly less productive than the rest of the country in 1991, after reunification. However, the industrial restructuring processes taking place allowed Sachsen-Anhalt to almost catch up with the rest of the country, and this occurred despite the fact that manufacturing productivity in Germany grew steadily, especially after 1996.

Figure 15: Real GVA per employee in the manufacturing sector and Structural Funds expenditure on industrial restructuring (in Euros at 2000 prices, percentage on top)



Source: EUROSTAT.

This pattern can be attributed only in part to ERDF interventions. In this context, it is worth mentioning again that structural adjustment was also supported by national and *Länder* programmes. As with ERDF, the majority of national programmes were focused on structural adjustment through the modernisation of fixed assets and facilitating the production of new products at competitive costs. Hence, these interventions enhanced productivity growth, especially in manufacturing. A survey conducted in the early 1990s by the Ifo Institute for Economic Research (Munich) and the Institute for Economic Research Halle (IWH) provides evidence that investment subsidies affected investments positively. The subsidies enabled enterprises (i) to invest, (ii) to invest more, or (iii) to invest earlier than would have been the case without support (Heimpold *et al.*, 1994: 118). Only 23 percent of enterprises in Sachsen-Anhalt admitted that subsidies had no effect, which might be regarded as an indication of windfall profits. Moreover, support for enterprise-related infrastructure created additional preconditions for productivity growth in enterprises, especially by well-equipped industrial sites, by establishing technology and incubator centres with the respective services for start-ups. Although the ERDF toolkit is well developed and considers a wide range of productivity-enhancing measures, closing the remaing productivity gap is becoming increasingly difficult. This is due to the small firm size, the lack of headquarters, and the low proportion of technology-intensive industries. Stronger growth of firms is required, but the shortcomings are unlikely to be abolished in the short term.

Increasing levels of export intensity and investment rates would reflect an appropriate structural adjustment of the region. However, the export rate in Sachsen-Anhalt is still low. Although it has been rising for several years, the exports level of West German enterprises has not been achieved. In addition, the steady decline in the investment rates (Rambøll, 2011a: 49) merits a critical assessment, as it continues despite the availability of different financial instruments and sources (also from ERDF) in the region. This trend might be attributed to the financial crisis and to growing uncertainty about future financial development Europe-wide. Another reason might lie in demographic changes. Additional factors such as the SME-dominated economic structure and the low export rate (both are interrelated to some extent) make the economy of the region particularly vulnerable to population development in the region and in Germany as whole.

In order to facilitate structural changes and to abolish the shortfalls, the region has been concentrating on the promotion of R&D activities by the establishment of high-tech clusters and incubators. There are a few positive examples where the support provided by ERDF in this area worked well. One of the successful examples is the Technology and Incubator Centre Halle at Weinberg campus, which started in the late 1990s as an incubator for new technology-oriented start-ups and grew into an industry-related network of companies, universities and other public R&D institutions beyond the centre boundaries. Another successful cluster is the chemical industry located around Merseburg, which attracted and continues to attract firms because of the available industry-related infrastructure. However, there are few connections to public or private R&D entities.

In the promotion of clusters, in addition to traditional industry branches such as chemicals and food, mechanical engineering and the automotive sector, Sachsen-Anhalt has recently concentrated on industries producing renewable energy and on recycling (Rambøll, 2011a: 54-55). This might be seen as an attempt to create new industrial clusters that could adopt a pioneering role and promote the region's growth and competitiveness in the future. With the support of ERDF, and in cooperation with Sachsen-Anhalt and Thuringia, a high-tech-cluster focused on photovoltaics – the

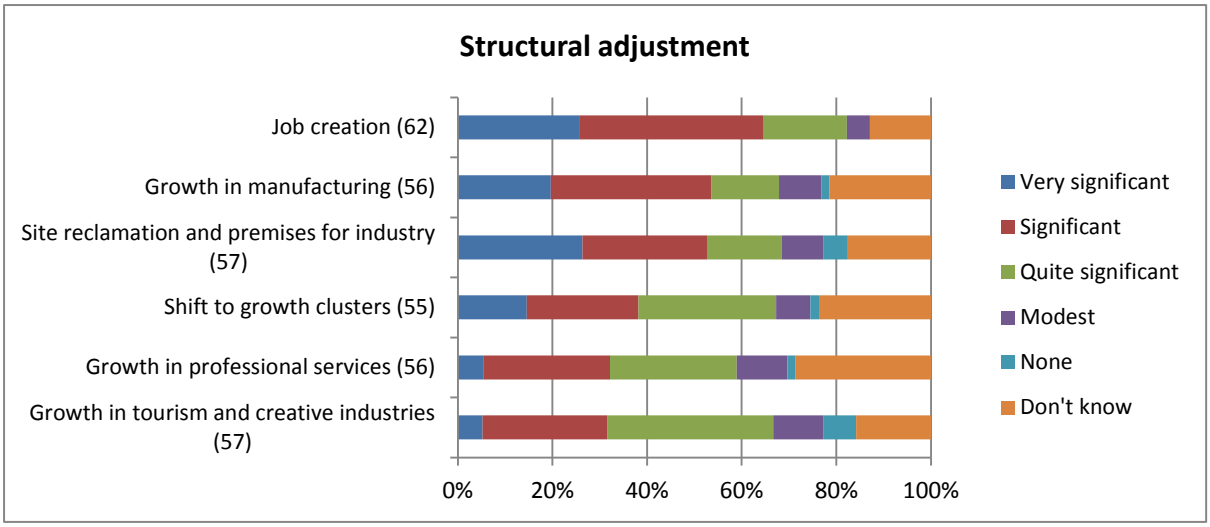
so-called Solar Valley – was created in the south of the region in 2005. The basic aim was to promote productivity, investment and collaboration in a cluster with growth potential. Up to 2012, this cluster has shown great development potential by attracting new innovative firms and by promoting cooperation between business (recently 35 firms) and research-oriented entities (19 university and non-university-based research organisations). Around 3,000 jobs have been created. Due to macroeconomic conditions in Europe and the current developments in the worldwide trade pattern for the photovoltaic industries, the Solar Valley has recently lost enterprises and employees. Hence, achievements in this area require careful assessment.

From the beginning, tourism (and subsequently, related cultural and creative industries) has represented a particular sectoral focus of structural adjustment that has run through the programmes. In the 1990s, the ERDF programme mainly concentrated on the restoration of the existing cultural heritage, to raise the attractiveness of the region, as well as on the creation of accommodation capacities in traditionally well-established tourism areas such as Harz. In the subsequent programmes, tourism was continuously supported by infrastructural measures (ERDF/GRW-funded), but it still did not realise its economic potential in terms of employment and growth effects. Whereas a high amount of smaller accommodation facilities were supported in traditional touristic regions, a rather small number of major projects were realised in the main cities and their surrounding areas. The projects focused overall on the promotion of traditional tourism areas such as the Harz mountain region, the Altmark, the Saale-Unstrut region and eastern Sachsen-Anhalt, but also Magdeburg and Halle. The spatial distribution has been broadly consistent with the country's development programme and targets. The achievements in the area of tourism infrastructure could be assessed from two perspectives: first, the region presents a favourable picture in terms of accommodation capacity created in the hotel industry, but it does not attract enough tourists to use the full capacity; second, throughout the whole period, decreasing emphasis was placed on recreating and modernising sites for cultural tourism, such as castles, places of cultural heritage etc. Over time, the number of visitors and overnight stays has continuously increased, and the share of tourism in GDP in 2010 reached about 2 percent. Thus, Saxony-Anhalt is still below the national average. In the 2007-2013 programme period, a specific measure is dedicated to exploiting the cultural tourism potential for economic and employment development in Sachsen-Anhalt. However, the opportunities to promote tourism are spread over different ministries, and too many small-scale initiatives are pursued. In this area, there is a need for a joint tourism strategy or 'Tourism Master Plan' supported by all departments of the State government.

The online survey shed light on how the stakeholders assess the achievements of structural adjustment. For the most part, the stakeholders of ERDF programmes rank job effects, growth in manufacturing and the creation of industrial sites highest (Figure 16), in terms of the proportion of responses indicating 'Very significant' or 'Significant'. Given the severe labour market problems, the subjective assessment of stakeholders seems plausible, though the hard facts and figures reveal continuing challenges in terms of unemployment. Growth in manufacturing is actually a result that is affirmed by statistical data on the proportion of manufacturing in total GVA, which has recently been close to the average value in Germany. Moreover, the relatively positive assessment regarding site reclamation and premises for industry coincides with statements by the Land authorities. The relatively moderate assessment in terms of professional services and tourism and creative industries are not really surprising, because their progress does not only depend on improvements

of fixed assets but is affected by various factors, for instance soft locational adventages and disadvantages.

Figure 16: Responses to the question 'Could you please assess the extent to which the ERDF programmes delivered achievements in the fields outlined below (across the entire period, i.e. 1991 to date)?' (in brackets: number of all responses)



Source: Online Survey, Sachsen-Anhalt.

(iii) Innovation

Support for innovation was launched in the early 1990s, and from 1994 it became a permanent explicit objective of ERDF interventions. In the 1994-1999 programme, it accounted for around €217 million, representing 3 percent of the programme, and in the subsequent programme it was increased to €782 million, which represented 9 percent of total expenditure in 2000-2006. In the 2007-2011 period, €298 million (14 percent) were spent on innovation (see Chapter 4.2). Thus, the relative importance of innovation in total expenditure has increased continuously, and across all periods €1,297 million were spent on this theme, representing on average 6 percent of total expenditure. Despite the strong focus on innovation policy in Sachsen-Anhalt, from recent perspectives there are significant differences between the public and enterprise sectors in terms of achievements in R&D activities.

Over the four programme periods, a wide range of innovation policy instruments as well as general and specific assistance services have been developed and implemented in Sachsen-Anhalt. Whereas the approach of infrastructural support particularly through investments in the establishment of technology, innovation and business centres and research laboratories within enterprises prevailed in the early 1990s, additional measures were applied in 1996 to provide venture capital for innovative companies. Some additional instruments were also introduced to provide advice and technical assistance to innovative enterprises, such as the Technology Management Programme (TEMPO) concentrating on assistance for the protection and realisation of inventions (TEMPO 3) or assistance for 'innovation assistants' in small and medium-sized enterprises (TEMPO 4) (FIR 1994-1999, 2003: 16). From the 2000-2006 programme period onwards, the emphasis has been placed on support to public R&D institutions as well as on the promotion of clusters and networks between the private and public sectors to enhance the intensity of research and innovation activities.

Technology and business incubation centres (TGZ) are innovation policy instruments, whose primary aims were to promote start-ups and young companies that develop and introduce new or significantly improved products, processes or research services to the market. The intervention focus was intended to provide a regionally relevant and spatially concentrated supply of cost-efficient land use and to provide services to technology-driven start-ups and small businesses. In addition to offices, warehouses and workshop areas, TGZ have provided laboratories in order to attract technological industries and to stimulate appropriate start-up dynamics. In the 1991-1993 period, five such incubators were installed in Sachsen-Anhalt (ISW, 1994/95: 3, 11-13). The number increased to 15 in the late 1990s and more recently to a total of 22 technology centres and incubators (ISW, 2001: 72; Rambøll, 2011a: 44). During the 1994-1999 programme period, the infrastructural focus was also directed towards improvement through expansion of the research and technology infrastructure in the region mainly in the form of technology and incubator centres (TGZ), but also by investments to enhance the R&D activities of private enterprises. For this area of ERDF support, no quantitative targets were set at the outset, and only data on created and expanded TGZ (13 TGZ) have been finally reported. In addition to the traditional research locations such as universities, research institutes and other science-related locations, TGZ were also promoted in industrialised and underdeveloped rural areas. The ex-post evaluation by ISW (2001: 123-146) explicitly noted that innovation and technology centres were important in terms of support to entrepreneurial activities in the region. The critical point was, however, that the hosted enterprises were mostly oriented not towards exports but to local (39 percent) or national markets (43 percent), and on average a single company created approximately 4.5 jobs and remained in the TGZ for two years only.

A more decisive element comprised the spatial concentration that results from bundling diverse facilities such as organisational and transport-related infrastructure. In short, the provision of technology and business centres was meant to induce the establishment of innovation-oriented business-business and business-science networks, which are still underrepresented in the region. In the 2000s, Sachsen-Anhalt is relatively active in following this path of regional economic development. With a total of 22 technology centres and incubators, the TGZ density in Sachsen-Anhalt – with 9.2 TGZs per one million of the population - is well above the national average. The TGZ density in the eastern part of Germany is 7.2 TGZ per one million inhabitants and hence already significantly above the level of the western part (4.3). Achievements are also reported in terms of the specification of the TGZ. One of the most successful TGZ examples is the Technology and Incubator Centre Halle (see detailed description in Annex I – Analysis of project samples), which was opened in the late 1990s with ERDF investment, and it has been very effective in providing industry-specific infrastructure for SMEs. Over an 18-year period, the Centre has acted as an incubator for 164 start-ups, mostly close to academic themes, it has had an average occupancy rate of 96-98 percent and - most importantly - it has acted as a node in Halle's network of science-industry relations, integrating other firms and actors from outside the campus. An important advantage is the proximity of companies and public research entities located at the Weinberg site.

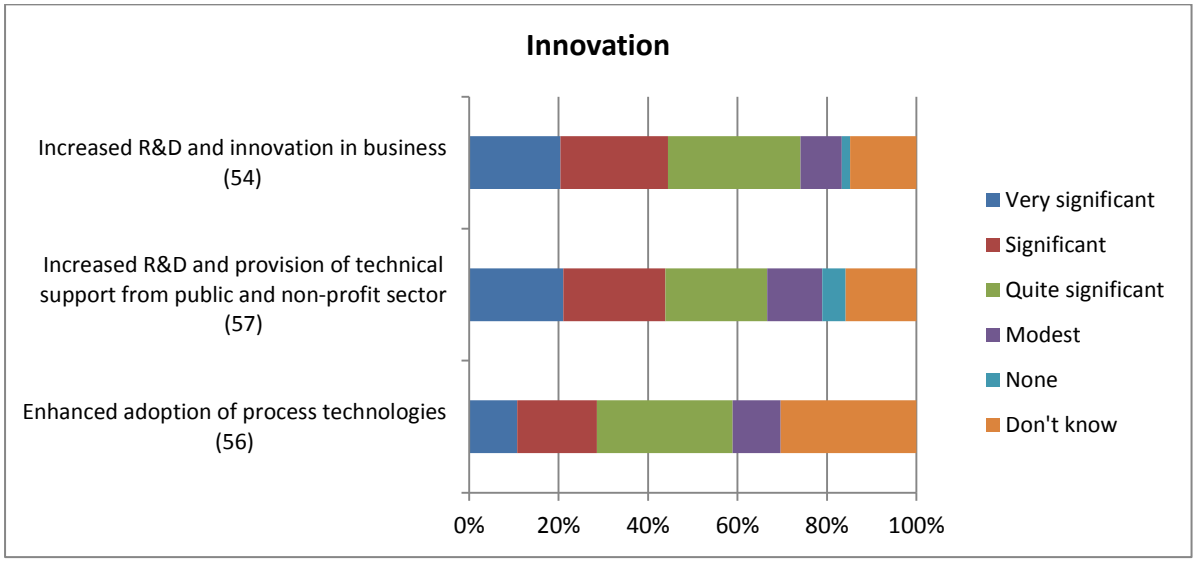
Whilst in the first years of ERDF interventions the focus was placed on general support for the TGZ - and thus the total of 15 TGZ established in Sachsen-Anhalt are highly diversified - more recently TGZ have been established in specific fields, for example in biotechnology (Rambøll, 2011a: 43-44). With regard to spatial distribution, a strong concentration is found in the phasing-out part of the region. Overall, the TGZ are regarded as one of the instruments that are meant to compensate for

weaknesses that result from the predominantly small-scale enterprise structure in the region (see Enterprise development).

To enhance the R&D capacities in the region, considerable emphasis has been placed on universities and non-university-based research infrastructure. The achievements in this intervention area are significant. A wide range of well-equipped and publicly-funded research institutions (universities in Halle and Magdeburg, polytechnics and government-sponsored research institutes such as Max-Planck-Institutes, Heimholtz Research Centres etc.) has been established in the region over the period. However, in terms of industry-relevant innovation, they are not strong enough to compensate for the shortcomings by means of R&D in the enterprise sector. The link between private businesses and public research entities is still weak. Hence, to cover the need for applicable product and process innovation, a specific objective was set in the 2007-2013 programme to promote cooperation and networking between science and business (Rambøll, 2011: 48-49). It is as yet too early to assess the achievements in this area, but its relevance for future regional development in Sachsen-Anhalt is recognised and accepted by politicians and businesses.

The online survey assessement reveals, however, that the stakeholders consider that there is almost no difference with respect to achievements in public R&D in comparison with private R&D (Figure 17). This assessment seems paradoxical, because statistical data show that only the public R&D sector advanced, whereas the relative gap in the enterprise sector increased. An explanation for this paradox might be that many respondents were only thinking of enterprises that pursue own R&D, and they did not consider the large number of small enterprises which, due to their small size, were not capable of using R&D support.

Figure 17: Responses to the question 'Could you please assess the extent to which the ERDF programmes delivered achievements in the fields outlined below (across the entire period, i.e. 1991 to date)?' (in brackets: number of all responses)



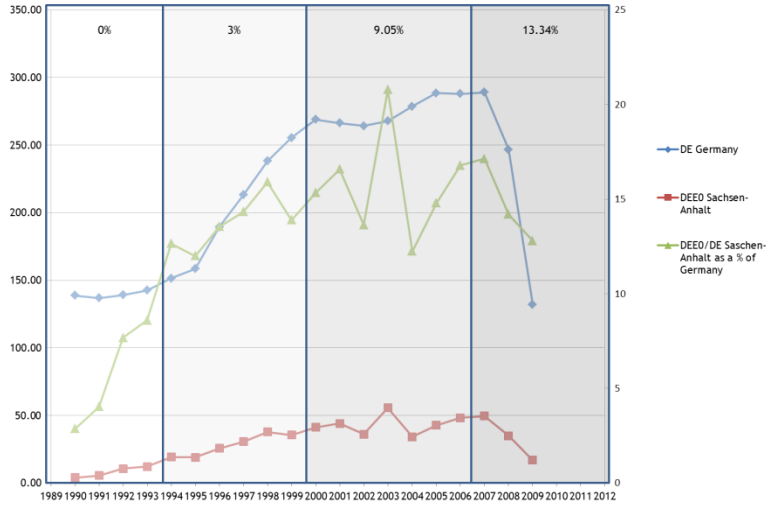
Source: Online Survey, Sachsen-Anhalt.

In the current 2007-2013 programme period, R&D and innovation was the main target objective of 24 measures. Although the R&D activities do not necessarily lead to patents, but they could lead to non-patented innovations, patents remain the most-used proxy for the effect of R&D, and they are available for long periods of time thanks to the patent offices. **Figure 18** plots the numbers of

patents per million inhabitants for Sachsen-Anhalt and Germany, but since the numbers are so different, the value of Sachsen-Anhalt as a percentage of the national one is also plotted, in order to better allow comparisons.

First of all, it is evident that Sachsen-Anhalt has been a laggard in R&D throughout the period, and that, apart from small oscillations, it tends to follow the general pattern of the country in terms of patents per inhabitant. Germany increased its number of patent applications in the 1990s and, to a lower extent, also in the 2000s, until the large drop due to the start of the economic crisis, and this is also reflected in Sachsen-Anhalt. From Figure 18, it is also evident that an incomplete process of convergence occurred in the 1990s, stronger in the first years after reunification, despite relatively low investment from Structural Funds. During the 2000s, there was an increased amount of investment from Cohesion policy, and the convergence process continued, though at a slower pace and with significant data oscillations. At the beginning of the crisis and the last programme period, Sachsen-Anhalt could not avoid being significantly affected by the national drop in patents per million inhabitants, despite the strong investment by Cohesion policy.

Figure 18: Patents application to the EPO per million inhabitants (Structural Funds expenditure on public and private R&D) (percentage on top)



Source: Own elaborations on EUROSTAT.

Taking into consideration that support to public and private R&D was provided not only by ERDF but also by national and *Länder* programmes, the effects on patent applications cannot be attributed to ERDF support alone. ERDF and national programmes enhanced both public and private R&D, whereby the former has admittedly advanced while the latter has remained behind across the entire period. Thus, looking in more detail at patent applications, the proportion of patent applicants which belong to the (public) science sector is three times higher in Sachsen-Anhalt compared with the national average value in the 2000-2005 period (own calculation based on data of Deutsches Patent und Markenamt, 2006). This is an indication of strengths in the public R&D sector, thanks to massive transfers, but they were not capable of fully compensating for the shortcomings in terms of private R&D, even though much was done to enhance science-industry relations. Private-sector R&D activities have remained weak. This is not an indication of low impact of EU intervention, but rather an indication that the dominance of small firms in Sachsen-Anhalt forms an important barrier for private R&D.

(iv) Environmental sustainability

Environmental issues were implicitly or explicitly a subject of ERDF funding from the beginning of the period under consideration and were targeted in all four programmes, explicitly representing one measure in 1994-1999 and 2000-2006, and 14 measures in 2007-2013. In terms of surveyed investment, environmental enhancement represented a significant percentage of the final allocations of expenditure, especially in 1994-1999, when it reached 4.83 percent of the total surveyed investment. Throughout the whole period under consideration, €664 million were spent for environmental purposes, representing 3 percent of total expenditure. Actually, the proportion of environment-related expenditure is much greater. The substantial spend on modernising fixed-asset investment in the corporate sector, subsumed under the thematic axes 'Enterprise' or 'Structural adjustment', was to a large extent associated with a positive impact on the environment, because these axes anticipated advanced standards in terms of environmental protection.

In the earlier 1990s, there were two predominant objectives in terms of environmental sustainability. First, it was necessary to eliminate ecological problems inherited from more than four decades of the communist system, which exploited natural and ecological resources. These problems hindered both the use of existing production facilities and the creation of new plants. The ERDF investments were used to reduce the negative environmental impact by replacing the outdated and more polluting technology with modern technology and thus contributed significantly to environmental changes in the region. Second, the interventions were meant to provide and to promote environmentally relevant infrastructure, for example rehabilitation of (brown) coal-mining areas, sewage water projects etc. In addition to the mainstream ERDF programme in the 1994-1999 period, there were also ERDF co-funded Community incentives such as RECHAR II, which addressed spatially concentrated needs beyond the general purpose of economic restructuring. The achievements of that period, such as the connection of 80 percent of households and enterprises to the sewerage system (only 62 percent in 1991) and the rehabilitation of (brown) coal-mining, for example in the Bitterfeld area, were delivered mostly on time and have been observable and significant.

Among the reported achievements in the 1994-1999 period on the priority 'Environment', the emphasis in Sachsen-Anhalt as in the other former East German States was put only on reducing the negative environmental effects in the sewage and wastewater sector. For instance, this concerned the share of households connected to public wastewater and sewerage systems that received ERDF support under the priority of environmental improvement. Wastewater facilities were eligible for funding through ERDF in cases when the share of commercial use was (i) at least 30 percent, or (ii) less than 30 percent, but the facilities were required for the establishment of commercial enterprises and thus for economic development. At the beginning of the funding period, only 62 percent of households were connected to public wastewater and sewerage systems. Here, the 67 percent target for the connection of households to sewerage systems was overachieved by the mid-term of the programme period. Apparently, the targets were rather less ambitious and set with caution. As a result, the programme was changed in May 1999 and additional quantitative targets were included at the measure level. For example, the building of approximately 170 km of sewers

and cleaning and treatment plant with capacity for about 18,000 population equivalents[6] were inserted. By the end of the 1994-1999 programme period, a share of 77.9 percent of households were connected to sewerage plants and 80 percent to the public sewerage system. Thus, the targets set at the outset were rather modest, but after the adaptation in 1999 they became realistic and appropriate. Nevertheless, there was still a need for high long-term investment in the field of municipal sanitation and sewerage systems (ISW, 2001: 30, 158).

The ERDF support, especially in the area of municipal sanitation, continued in the subsequent period. In the 2000s, the measures regarding connection of the population to public sewage treatment plants were still included in the ERDF co-funded programme. The investments facilitated an overall increase in the connection rate to reach 90.3 percent in 2007, although Sachsen-Anhalt was still below the national average of 97.5 percent in the same year. In the recent funding period, the ERDF co-funded programme still supported projects in the area of municipal sanitation, as the connection rate varies greatly, depending on the region and urban agglomeration. For instance, the cities of Magdeburg and Halle (Saale) indicate a connection rate of 99.2 percent and 99.5 percent respectively, whilst the district of Stendal, with a connection rate of 78.3 percent, is the most poorly connected to the sewerage system in Sachsen-Anhalt (Rambøll, 2011a: 24).

In the course of time, new instruments were introduced to promote environmental sustainability, such as a bonus for voluntary environmental measures by the corporate sector and support for the development and implementation of environmental technologies, products and processes.

Finding a perfect measure for achievements in a broad issue such as environmental conservation is not possible, but land-use data might be a proxy for the status of the environment in a region. Land-use data are available, though only for three points in time, from the Corine Land Cover in the ESPON database. Among the various aspects covered in the land-use patterns, the most relevant ones are presented in Table 12. The three available points in time comprise (i) 1990, broadly corresponding to the beginning of the interventions covered in this study, (ii) 2000, broadly corresponding to the end of the first two periods of intervention, and (iii) 2006, broadly corresponding to the end of the third period of intervention.

The achievements of Sachsen-Anhalt in terms of land-use in the first programme periods, i.e. of the 1990-2000 decade when significant Structural Funds investment had taken place in this sphere, are good in terms of consumption of soil. In particular, artificial surfaces, urban fabric and discontinuous urban fabric increased by around +2-3 percent, which was less than in Germany (+4-5 percent) in a period in which Germany was much more effective with regard to the EU in avoiding too much of its soil becoming artificial. Also, in terms of dumpsites, Germany was already good in EU terms, but the performance of Sachsen-Anhalt was weak, since its dumpsites only increased by 2.78 percent. In terms of forests, Germany was below the EU mean, leaving its surfaces almost unchanged, and Sachsen-Anhalt was generally following the national trend, only marginally better. In terms of artificial, non-agricultural vegetated areas and natural grasslands, the performance of Sachsen-Anhalt was significantly worse than the national mean and the EU.

[6] Population equivalent in treatment of wastewater is the number expressing the ratio of the sum of the pollution load produced during 24 hours by industrial facilities and services to the individual pollution load in household sewerage produced by one person in the same period of time.

Over 2000-2006, corresponding to the 2000-2006 programme period but perhaps also covering measures from the previous period that were not completed, Sachsen-Anhalt continued its trend of a very low increase in artificial surfaces and urban fabric, in a period in which they were increasing in Germany but decreasing in Europe. ERDF contributed to this moderate increase to a certain extent, because it supported the recultivation of industrial sites using previous brownfield areas. This was the case to a lesser extent in the first period, because initially unsolved property rights hampered land recycling. By contrast, the datum for dumpsites (increasing by 7.21 percent) was negative, especially if compared to the country figure or the European mean. Finally, Sachsen-Anhalt registered a substantial stability of the various types of forest areas in this period, a datum which is in line with Germany but better than the one of the European Union. The artificial, non-agricultural vegetated areas increased significantly in this period, and by more than the German average, while natural grasslands continued to decrease but less so than in Germany and significantly less than in the rest of Europe.

Table 12: Environmental achievements in terms of land use – change 1990-2000 and 2000-2006

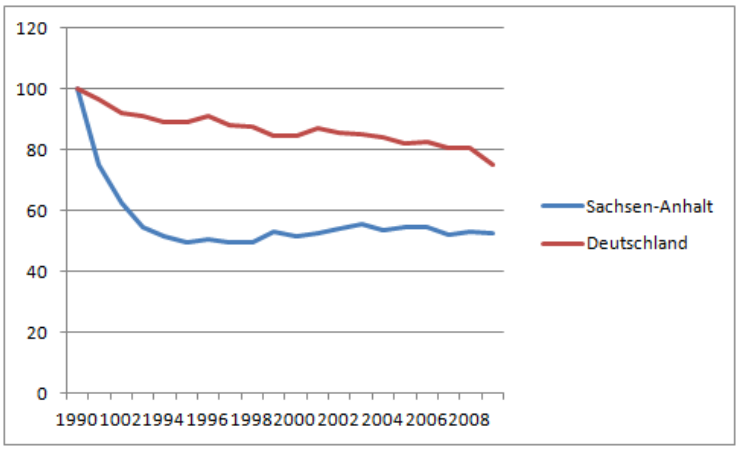
	% change 1990-2000			% change 2000-2006		
	EU27	**DE**	**DEE0**	**EU27**	**DE**	**DEE0**
	European Union (27 countries)	**Germany**	**Sachsen-Anhalt**	**European Union (27 countries)**	**Germany**	**Sachsen-Anhalt**
Artificial surfaces	26.69	5.65	2.31	-5.76	3.78	0.00
Urban fabric	22.32	4.23	3.79	-5.55	3.42	0.64
Discontinuous urban fabric	22.96	4.28	3.83	-5.46	3.46	0.65
Dumpsites	16.86	3.27	2.78	-9.84	1.42	7.21
Artificial, non-agricultural vegetated areas	77.33	12.31	-0.78	-18.81	7.26	8.10
Agro-forestry areas	1.38		n.r.	3.26	n.r.	n.r.
Forest and semi-natural areas	53.58	0.32	1.92	-7.77	0.11	-0.17
Forests	54.44	-0.39	1.19	-4.20	0.32	0.77
Broad-leaved forest	9.96	0.18	0.68	-5.33	0.51	1.29
Natural grasslands	22.61	-9.33	-45.87	-29.11	-4.57	-3.17
Open spaces with little or no vegetation	34.32	3.91	95.16	-14.15	-21.02	-86.68
Beaches, dunes, sands	8.43	-1.06	-100.00	-21.98	-11.22	n.r.
Burnt areas	-13.67	-100.00	-100.00	-25.61	n.r.	n.r.
Wetlands	181.90	-0.21	-9.35	-8.71	2.16	1.38

n.r. = not relevant.

Source: Own elaborations from ESPON database, Aggregation from Corine Land Cover. NUTS 0 and NUTS 2 data obtained by the authors as sum of relevant NUTS 3 data.

As an additional indicator for progress in terms of environmental sustainability, energy-induced CO_2 emissions might be of relevance. Although the evolution of CO_2 emissions also depends on cyclical development, it can be interpreted partly as an improvement of environmental conditions. The energy-related CO_2 emissions (see Figure 19) showed a sharp decrease in the first half of the 1990s. ERDF contributed to this decline, because the obsolete fixed assets previously producing large emissions were replaced by advanced equipment with low emissions. For the modernisation of equipment, ERDF provided investment subsidies. Hence, CO_2 reduction was a side-effect of ERDF interventions to modernise fixed assets in the enterprise sector, together with the closure of obsolete capacities. Thus, support from ERDF, which substantially contributed to structural change, contributed in parallel to the reduction of emissions. Later on, emissions slightly increased, which can be seen as a sign of economic recovery.

Figure 19: Energy-related CO_2 emissions based on consumption of primary energy

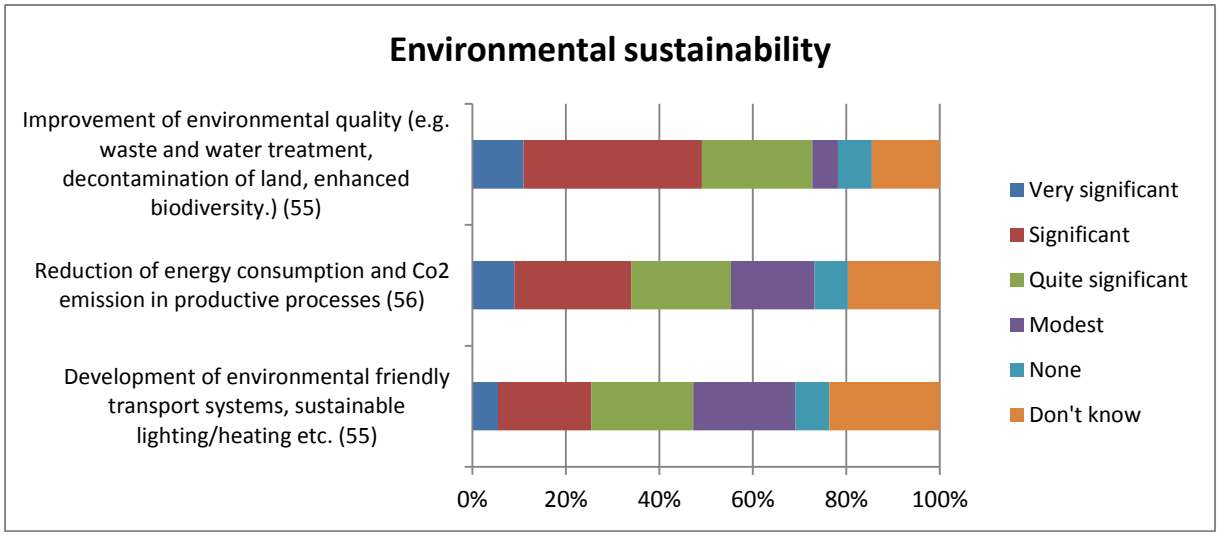


Source: Arbeitskreis Umweltökonomische Gesamtrechnungen der Länder im Auftrag der Statistischen Ämter der Länder (2012), diagram by IWH.

Moreover, ERDF-funded programmes over the whole period were focused on measures aimed at enhancing environmental sustainability, for example measures for flood protection or more recently the promotion of environmentally-friendly road infrastructure, whilst 'traditional' environmental measures were still of importance for the region, for example brown coal-mining rehabilitation, waste recycling and disposal, the reduction of air pollution, protection of endangered areas and the use of renewable energies.

Respondents to the online survey assessed the improvement of environmental quality highest (Figure 20), e. g. water treatment. This result corresponds with the data on the increasing proportion of the population with access to public wastewater treatment. The relatively low ranking of achievements in terms of reduction of energy consumption as well as in terms of developing environmentally-friendly transport systems shows continuing needs in these fields. From the stakeholders' perspective, this is particularly relevant in the transport sector.

Figure 20: Responses to the question 'Could you please assess the extent to which the ERDF programmes delivered achievements in the fields outlined below (across the entire period, i.e. 1991 to date)?' (in brackets: number of all responses).



Source: Online Survey, Sachsen-Anhalt.

(v) Territorial issues

Territorial disparities have never been an issue of particular importance in Sachsen-Anhalt. Due to the collapse of the centrally planned economy that affected the entire region, the interventions of the ERDF and the GRW were needed in urban and rural areas. The modernisation of capital stocks, the preparation of new sites and premises, and the provision of suitable economic infrastructure required investment in the rural areas, while the service sectors were expanding in urban centres. In the 1991-1993 period, 80 percent of all expenditure eligible under GRW and ERDF criteria was spent on the development of urban regions and regionally important areas. A fifth of the subsidised investment was realised in other locations. Against the background of structural upheaval in Sachsen-Anhalt, not least because of the spatial reallocation of economic activity, this was a significant concentration effect. However, the interventions included approximately 95 cities and towns, i.e. a large share of the population (ISW, 1994/95: 70). Hence, the issue of intra-regional disparities did not emerge strongly in 1991, and it has not grown to any significant extent over time.

From the mid-1990s, the three major urban agglomerations of Magdeburg, Halle and Dessau received ERDF support through the Community Initiatives URBAN and URBAN II. The initiative URBAN Halle (Saale) can be regarded as an example of successful structural transformation from obsolete 'old industries' to a new set of manufacturing firms, service providers and State and judicial administrations complemented by an improvement of dwellings, creation of a better environment and new leisure facilities (see ANNEX I – ANALYSIS OF PROJECT SAMPLES, 8.1 for more detailed description). Before the collapse of the planned economy, the 'Riebeck-Quarter' hosted a number of manufacturing plants such as a sugar refinery, a plant producing a coffee substitute based on malt, and an engineering works that became uncompetitive after 1990. The OP CI URBAN included a total investment volume of DM10.2 million (€5.6 million, 2000 prices; including investment from the ERDF, the federal State budget and Halle city) and supported the establishment of a Youth and Leisure Workshop, recultivating a former railway station (*Thüringer bahnhof*) and the establishment of a park. Funding from other sources was also used to improve the

economic situation. Currently, the Riebeck-Quarter and its neighbourhood hosts small businesses as well as the manufacturing company SONOTEC, the Service Centre of The Dell Company, a logistic company for pharmaceutical products (Zur Rose), a producer of storage technologies (Gollmann Kommissionierungssysteme), and a car dealer company. In addition, a police headquarters and the 'Judical Centre Halle' have been established in the area. Similar to this example, a wider range of measures designed to pursue integrated urban development has been implemented in Dessau and Magdeburg. Since then, differences among these areas in terms of activity rates are virtually non-existent, although they are slightly higher in Halle and Magdeburg. In contrast to the mainstream ERDF programme, the less strict eligibility criteria of the Community Initiatives allowed ERDF funding to be used for economic and community development by restructuring former mining areas (CI RECHAR II), former iron and steel industry regions (CI RESIDER II) and former military areas (CI KONVER II).

The settlement structure of Sachsen-Anhalt was and is influenced significantly by small and micro-communities. Different evaluation studies have shown that in the 2000s the rural areas lost population to greater extent than did the urbanised areas. Within the rural areas, however, the larger towns experienced a greater degree of population decline than smaller settlements. A similar pattern has also been observed in the urbanised areas outside the core cities (FIR 2000-2006, 2010: 186). This development suggested that, in the longer term, a greater-than-previously-forecasted population decline must be expected in towns and urbanised areas. Hence, in terms of economic development, Sachsen-Anhalt is facing its greatest challenge: demographic change caused on one hand by the major trend of population ageing, and on the other hand by outmigration to more urbanised areas or outside the region (as recently observed in young people). In the ERDF 2007-2013 programme, the demographic challenge is only mentioned marginally, but the territorial dimension was concretised with the horizontal objective of the 'urban dimension' in the ERDF and ESF operational programmes. Also many interviewees underlined the increasing relevance of demographic change for future regional development in Sachsen-Anhalt. In this context, they drew attention to the need for a demography-sensitive alignment of all ERDF measures ('Demography Check' or in German, *Demography-TÜV*). This Demography Check has already been partly applied to ERDF measures during the current programme period, but it is too early to assess achievements, such as reducing the outmigration rate due to infrastructural improvements.

Overall, in the face of demographic challenges and on-going migration trends, the actions under the 'urban dimension' objective are of great relevance and are meant to create and maintain attractive living conditions as well as provide quality education for all generations. Currently, implementation is focused on actions to promote urban development, redevelopment and enhancement. ERDF, EAFRD and ESF have recently become involved in the integrated approach, as have different responsible government departments and ministries. This approach is meant to provide coordinated support that covers different aspects of urban life. There is, however, a strong need for better coordination. For example, the ERDF OP (urban development concepts) and the RDP (integrated rural development concepts, leader) follow different approaches that can also spatially overlap. According to the evaluator (Rambøll, 2011: 77, 90-93), no clearing house has been established to ensure a pragmatic and non-bureaucratic combination of various funding programmes.

(vi) Infrastructure

For the improvement of the regional infrastructural endowment, altogether €1,045 million have been spent, representing 5 percent of the total expenditure (including Transport NOP). In this context, it has to be mentioned that numerous support measures for infrastructure, especially for industrial sites and related transport and supply infrastructure, were discussed under the thematic axis 'Structural adjustment', since they were strongly related to restructuring the enterprise sector. Since the 1990s, the emphasis has been placed on infrastructure projects, regarding in particular:

- the creation and development of industrial and commercial sites;
- investment in training and retraining centres; and
- measures of transport development.

In the 1991-1993 period, preparation of industrial sites dominated in the field of infrastructure. Achievements were displayed, in addition to the number of sites and investment volume, in terms of hectares of land prepared. Supported by ERDF, 1,824 hectares of land were prepared and built upon and 69 industrial sites were created to attract and retain investors and start-ups (5,649 ha by GRW and ERDF overall). In the 1991-93 programme, with the exception of financial targets, no output or result targets were set for infrastructure projects. The rules of the GRW require that the firms which locate at the sites should be to a large extent export-oriented. Reports on occupation in various industry branches revealed the fact that consumer-goods production industries were underrepresented in Sachsen-Anhalt compared with food and other industries. Hence, attracting the target group of export industries to the sites was only partly successful. The reported achievements revealed a surplus of industrial sites, especially in certain rural territories which were not attractive enough for enterprises. The level of reported sites occupation (72 percent in 1993) presents another indication of this over-provision.In hindsight, the obvious lack of strategic coordination in terms of spatial planning, presumably because of the novelty of the transitional situation, was criticised by some interviewees. Apparently the number of industrial parks created exceeded the needs of the region, and sites were put in place without any strategic conception (e.g. industrial parks in rural municipalities which in retrospect were not attractive enough for investors). However, the reported achievements revealed demand exceeding supply, and the firms which located at the sites were not restricted to the target group of export-oriented enterprises.

In the 1994-1999 programme, the investments in complementary infrastructure continued to focus on the availability of industrial sites. The shift was made from 'greenfield' to the reconstruction of old industrial areas. During the programme period, 1,612 ha of land were prepared and made available for enterprises. The ex-post evaluation by the Institute for Structural Change and Economic Development (ISW) stated, however, that the occupation of prepared industrial land dropped from 72 to 65 percent compared to the previous funding period. Overall, by the end of the programme period, 58 new prepared industrial sites were occupied by 910 companies that created and safeguarded 22,235 jobs in the course of the projects (ISW, 2001: 9).

Rapid development and the deployment of industrial sites were considered to be among the most important factors for regional competitiveness. In general, there was a strong tendency to locate large infrastructure works primarily on 'greenfield' sites. This was associated with the changing

location requirements of businesses (such as good connections to motorways and the relocation of industrial production from the inner cities), but also with lower contamination risks, clear ownership and - compared to existing sites - lower development costs. However, as reported by one interviewee, there was no clear focus, and by the end there were too many industrial sites, and almost every village had its own commercial site. The reason for such an uncoordinated approach might lie in the fact that, after reunification, everything had to move fast and there was no time to pursue sophisticated spatial planning as a precondition for investment in infrastructure. By the end of April 1994, there were 362 new industrial sites in Sachsen-Anhalt (FIR 1991-1993, no date of publication: 10). Of these, about half (197) were funded by the resources of the GA and around a fifth (69) were supported by the ERDF. About 50 percent of the new settlements were attributed to the manufacturing sector (consumer goods industry, food industry and, to a lesser extent, investment goods industry). The trade, transport, communications and services sectors were also strongly represented in the newly created sites. However, the construction industry was absolutely dominant. Overall, about 12 percent of the newly established industrial and commercial sites were funded by the ERDF (FIR 1991-1993, no date of publication: 74). This intervention focus was maintained over the whole 1991-2011 period, but over time a shift was made from 'greenfield' infrastructure towards the revitalisation, renovation and modernisation of industrial sites (FIR 2000-2006, 2010: 70). In the current period, the topic remains particularly relevant for the convergence region of Sachsen-Anhalt, as there are still notable deficiencies in infrastructural conditions for new businesses. However, more recently the overall emphasis has shifted from the creation, revitalisation and modernisation of industrial and commercial sites to a broad range of infrastructural projects designed to help provide the necessary conditions for the settlement and growth of enterprises (Rambøll, 2011: 64).

Whereas physical infrastructure for businesses was the main intervention area in the early 1990s, the need for investments in vocational schools, training and retraining centres emerged strongly in the mid-1990s. In the framework of the 1994-1999 OP, ERDF resources were also used for the construction of vocational schools. In addition to the support of human capital development, the funded projects were ecologically very ambitious and pioneering (e.g. Dessau, Bitterfeld). In many cases, in the course of a project fallow land and conversion areas were revitalised, existing buildings were integrated into the project, and an important contribution was made to urban development. Instead of new construction, renovation or modernisation of existing vocational schools often took place (ISW, 2001: 14-15). From 2000 onwards, the ERDF interventions in terms of training infrastructure shifted from the support of vocational schools to support and creation of R&D and ICTC infrastructure in schools, universities and training and retraining centres. In the 2000-2006 programme period, a total of 1,437 R&D infrastructure projects and 33 ICTC infrastructure projects were funded (FIR 2000-2006, 2010: 73-77). According to one interviewee, there are now a sufficient number of vocational schools available in the region, and good progress has been made in the creation of training and retraining infrastructure. Hence, the achievements in terms of educational infrastructure are regarded as positive. However, more attention has to be given to the long-term effects and needs of the region. In particular, the observable demographic changes in Sachsen-Anhalt must be taken into account in decision-making and the implementation of projects. Increasing educational infrastructural capacities may now lead to their rededication for other purposes in the near future due to outmigration and population ageing. This must be taken into consideration in advance. Nevertheless, there is still a need for further investment. In the current period, investments in infrastructure that provides vocational education, training and

retraining (also by means of lifelong learning) are included in the measure that aims to provide the necessary infrastructural conditions for the settlement and growth of enterprises (Rambøll, 2011: 64).

The internal infrastructural gap/bottlenecks/congestion has attracted eight measures in total in Sachsen-Anhalt: one in 1991-1993, one in 2000-2006, and six in 2007-2013. In terms of the surveyed investment, this objective attracted 9.28 percent, 2.43 percent and 4.64 percent respectively in the three programme periods. In the early period, road improvements were focused on the enhancement of important routes within the region, especially linking industrial sites with major highways and urbanised areas. Some of these projects were quite small and specific, and the programme reports rarely included any evaluation of these projects. Morover, ERDF support was provided for improving infrastructure in rural areas in 1991-1993. In subsequent programmes, the provision of transport infrastructure became a part of the National Operational Programme Transport (NOP). The Transport NOP projects realised in the 2000-2006 period improved the supra-regional accessibility of regions in Sachsen-Anhalt. By way of illustration, a railway track was modernised south of Halle, improving the connectivity of the city with the southern part of Germany, especially with Frankfurt and Munich. The transport frequency was improved (from 239 to 312 crossings), and the speed increased from 120 km per hour to 160 km per hour (BMVBS, 2010: 67, 69). Another important infrastructural improvement with support from the Transport NOP was the modernisation of the railway connection between Halberstadt and Vienenburg, two towns located in the Harz region (a mountainous area). It is part of the railway track which connects Halle with Hildesheim and Hannover. Thus, the modernisation improved the connectivity of the northern part of the Harz region with TEN nodes in Braunschweig, Hannover, Magdeburg and Leipzig/Halle. As a result, the speed in passenger transport was increased from 100 km per hour to 120-160 km per hour depending on the technical standard of trains. Commuting became easier for the local population, and tourists from outside the region have easier access to the sights.

In order to measure the achievements of ERDF support related to the internal infrastructural gap/bottlenecks/congestion, one option is to measure the time spent on the journey from home to work, which would certainly benefit from a reduction of bottlenecks and congestion through the ERDF co-funded infrastructural measures. This datum is not available at regional level, but it is available at urban level through the Urban Audit database, where the two cities of Sachsen-Anhalt are included, namely Halle (Saale) and Magdeburg. A lengthy time-series is available for Germany, and five observations between 1991 and 2008 should reflect the interventions of all the programme periods, also taking into consideration the time needed to build infrastructure (Table 13). At the beginning of ERDF support to transport development in 1991, the average journey-to-work time was lower than the German mean in Magdeburg and slightly higher in Halle an der Saale. In 1996, despite the investment of Cohesion policy from 1991 to 1993, these times had increased more than in the rest of Germany and in both cities was above the mean. Despite low growth rates, the same situation of relatively long times to work prevailed in 2001. However, between 2001 and 2004 and between 2004 and 2008, years in which Structural Funds investment started again, both Halle (Saale) and Magdeburg recorded a greater decrease than the rest of the country, so that in 2008 Magdeburg was again below the national mean and Halle (Saale) was not much above it.

Table 13: Average time of journey to work

CITIES	1991	1996	2001	2004	2008
Halle an der Saale	23.9	28.4	28.0	27.4	26.4
Magdeburg	21.8	25.2	25.8	24.8	23.0
Non-weighted average of 30 German cities with data from 1991	23.7	23.6	24.6	24.4	24.2
% change		**1991-96**	**1996-01**	**2001-04**	**2004-08**
Halle an der Saale		18.8	-1.4	-2.1	-3.6
Magdeburg		15.6	2.4	-3.9	-7.3
Non-weighted mean of 30 German cities with data from 1991		-0.4	4.4	-0.8	-1.1

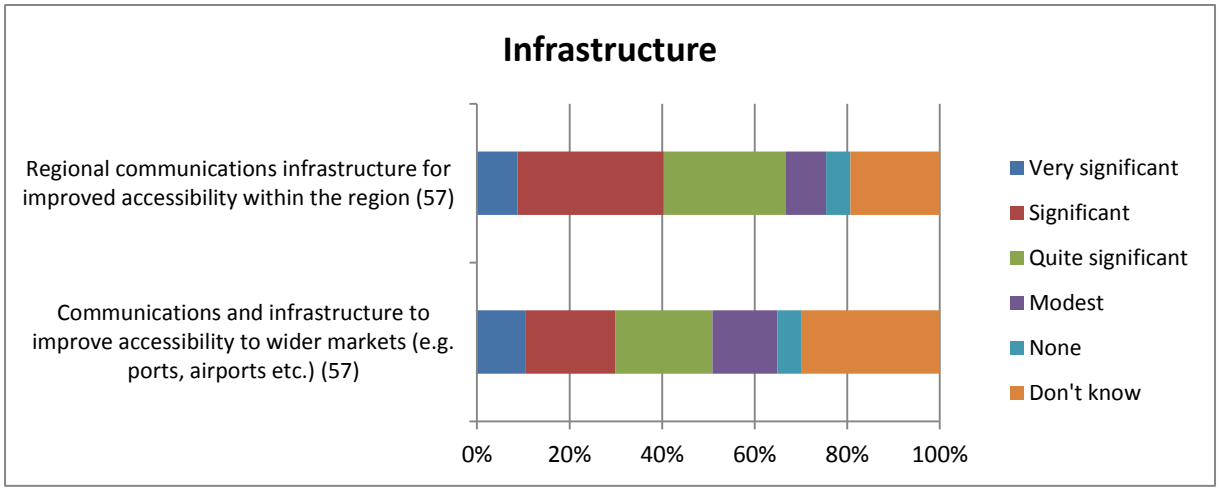
Source: Elaborations on Urban Audit data.

In the 2000-2006 and 2007-2013 Operational Programmes, specific measures were included for the promotion of investments for the conversion, extension and construction of federal, State and local roads and bridges. These interventions primarily aimed at improving the accessibility of business sites in rural areas, including small settlements. Particular emphasis has been put on roads and streets in municipal ownership. The need to reduce bottlenecks in the national and local transport infrastructure and to improve accessibility within the region remains high.

The transport project 'German Unity Number 8' (VDE 8) will further improve rail infrastructure in Sachsen-Anhalt. The new construction of the railway route Erfurt–Leipzig/Halle will be completed in 2015. The route runs through the southern part of Sachsen-Anhalt and will enable a better connection between Halle (Saale) and the link between Berlin and Munich (Rambøll, 2010: 46). In general, the region benefits from better accessibility to the transport routes of supra-regional importance: railways as well as highways. However, it is difficult to assess how much of these developments can be attributed to the ERDF. Most of the projects have been initiated in the past ten years, and they require a long period of realisation. This fact makes it difficult to analyse the achievements at this stage. However, with respect to accessibility, endowment and the quality of the general infrastructure, and transport infrastructure in particular, there is a need for further support.

According to the online survey, stakeholders of ERDF support in Sachsen-Anhalt regard improvements of accessibility within the region as better than the access to wider markets (Figure 21). This is surprising, because in terms of road infrastructure the main investment projects in motorways were realised. Roads of regional or local importance in many cases continue to suffer from qualitative shortcomings. Apparently, the subjective view on shortcomings in terms of accessibility to wider markets results rather from the train infrastructure, where some projects of the National Transport Infrastructure Plan are still under construction.

Figure 21: Responses to the question 'Could you please assess the extent to which the ERDF programmes delivered achievements in the fields outlined below (across the entire period, i.e. 1991 to date)?' (in brackets: number of all responses)



Source: Online Survey, Sachsen-Anhalt.

5.1.3 Institutional factors affecting achievements

The achievements of different programme periods in Sachsen-Anhalt were strongly affected by organisational and administrative factors.

Initially, there were great difficulties in managing ERDF funds effectively. The region had to tackle problems and challenges to shape the social, economic and socio-political restructuring process, but at that time it had no experience in how to handle it. There were clear initial procedural problems that rendered the Structural Funds interventions extremely difficult. In general, preliminary investigations and analysis of demand were only possible ex post, after the decisions had been made. The same applies to pilot projects and feasibility tests. The considerable lack of time raised the problems of setting up administrative bodies and a technical assistance structure. In the preparation phase of the Operational Programme as well as when the interventions began, there were still qualification deficits and a lack of experience amongst the fund administrators, which caused faults in the approval and payment procedures. In some cases, the regulation on public procurement was not followed (ZENITH, 1996: 58). The evaluator ZENITH further stated that: 'Evaluation of projects and control mechanisms to measure success in terms of continuous work tools for fund administrators and accompanying instruments to control the dynamism of structural developments were not systematically and comprehensively developed in most of the new German States in the programme phase from 1991 to 1993' (ZENITH, 1996: 58).

This situation improved slightly in the 1994-1999 programme period, as some experience had been gained from the previous period. However, the major administrative and organisational changes were developed and implemented from the 2000s.

Positive effects at the beginning of the 2000-2006 period derived, on one hand, from the establishment of a joint EU SF Management Authority (MA) for the ERDF and ESF and, on the other hand, from the joint steering and monitoring committees. Both allowed for the better participation of various stakeholders in the processes of strategy development, implementation and monitoring. The establishment of a strategic clearing house and the development of the efREporter database

further enabled centralised steering and reporting of the ERDF programmes. The efREporter database system allows an information flow of electronic data between the State of Sachsen-Anhalt and the European Commission, as well as the documentation and control of assistance instruments and projects throughout all management stages of the Operational Programmes. The system is fully applied in Sachsen-Anhalt, and other Objective 1 regions in Germany adopted it, revised parts of it, and adapted it to their own specific administrative procedures. However, there is still criticism that so far only financial data and indicators are collected and processed. Moreover, some interviewees suggested that there should be a focus on the maintenance and further development of the system. The EU requirements regarding e-cohesion systems are continuously increasing, and only up-to-date software can ensure that the system will be used in the next programme period.

The fact that the steering committee had the opportunity to contribute to the development of indicators is also seen as a positive factor. Additionally, the continuous flow of information regarding the state of the evaluations in the monitoring and steering group 'Monitoring und Evaluation' prevented the emergence of unwanted surprises at the end of the evaluation. The introduction of a strategic clearing house at State Secretary level has realised its full potential. However, according to experts, the (clearing house) members are too much in line with their ministers and ministries, and consequently new ideas on how to enhance the effectiveness of ERDF funding in the region are mostly developed by practitioners.

On the other hand, members of diverse committees criticise that they have too little influence on development and decision-making regarding large-scale projects. Thus, the steering committee, consisting of business and social partners, has one vote, the same as the Management Authority. If there is a stalemate in decision-making, the final decision is made by the EU Management Authority, which is a department in the Finance Ministry.

A further step in developing the implementation structure was made in the context of preparations for the 2007-2013 programme period by introducing a very detailed programming structure by actions and sub-actions. Experts' views on this implementation factor were ambivalent. Several interviewees expressed the opinion that this detailed programming structure by actions had resulted from the 'Lisbonisation' of ERDF support. From this perspective, the detailed programming structure was necessary to meet the requirements of Lisbon-earmarking. However, other interviewees pointed to considerable transaction costs associated with the detailed programming structure in conducting programme updating.

Introducing the detailed programming structure for the 2007-2013 period was associated with using the instrument of scoring for the elaboration of the ERDF OP. In this context, individual units that sought EU SF funding had to pass a scoring process to make the objective of the favoured measures transparent. According to one expert, scoring was valuable for setting priorities against the background of scarce public budgets, even though it was time consuming.

Finally, in the context of implementation structures, it is worth mentioning the establishment of a Competence Centre for the Economic and Social Partners. It operates as a form of service provider supplying upgraded information to the Economic and Social Partners. There is obviously a great need for such a service unit: numerous interviewees pointed out that there are considerable information asymmetries between highly specialised and qualified experts involved in the EU SF

administration - who are very familiar with the subject of the EU SF - and the Economic and Social Partners, for whom the EU SF are often one theme among a broad range of responsibilities.

By and large, a comprehensive, transparent and functioning management and monitoring system has been established. After a start-up phase, it delivers effective governance and control of programme implementation. In future, there should be closer interlocking between the financial budgeting of the OP and the State budget, which operates within a more restricted timeframe.

Given the rather complex rules and regulations on the implementation of the EU Structural Funds, considerable efforts had to be made from 2000 to introduce further adjustments to the management and control procedures in Sachsen-Anhalt. One interviewee argued that these efforts have been compensated by a number of benefits, such as an additional budget, new forms of integrated coordination of funding policies, and a substantially improved transparency in approval procedures and outputs. In the current programme period, connecting funding activities to quantified target indicators has initiated a learning process among all stakeholders in Sachsen-Anhalt and a more targeted-oriented governance of the programmes. Nevertheless, further quantification of targets is needed and should be undertaken for the second half of the 2007-13 programme, as it is conducive to the preparation of future programmes.

5.2 Complementarities and synergies

5.2.1 Complementarity between EU-funded programmes

Sachsen-Anhalt began to use sources from different EU funds to tackle urgent problems at a very early stage. The ex-post evaluation of the 1991-1993 programme noted that 44 projects integrating ERDF and ESF funding had been implemented. In these projects, enterprises (mainly SMEs) received ERDF support to improve their technical standards and enhance their competitiveness, while at the same time the ESF supported training activities to upgrade employees' qualifications (ISW, 1994/95: 134). Overall, these projects led to more than 4,000 jobs being created or safeguarded. Similarly, integrated ERDF/EAGF projects for the development of rural areas and infrastructure investments in 46 local communities created more than 2,400 jobs. Despite these numbers, synergies or complementarities were judged by interviewees to have been low or non-existent in the first programme period.

To improve the effectiveness of the EU funds in the 1994-1999 programme period, emphasis was placed on establishing effective linkages between the ERDF, ESF and the EAGGF and also to the operations of the EIB and other existing financial instruments (FIR 1994-1999, 2003: 71). Nevertheless, co-ordination between those three funds was limited. The attempt to integrate the funds led to the creation of an artificial overarching fund, but in reality there were no joint support measures from the three funds, and each fund still acted in isolation. Even if ERDF and ESF or EAGF programmes were started in the same location, synergy effects arising from this quasi-coordination occurred by accident rather than being the result of systematic coordination efforts (AIR 2006, 2007: 137). This lack of coordination between the funds was mainly due the lack of binding regulations in the planning process of the programme period.

In the 1994-1999 programme period, Structural Funds were also used in eight Community Initiatives (RECHAR II, RESIDER II, KONVER II, KMU, LEADER II, ADAPT and URBAN Magdeburg and Halle(Salle)) in Sachsen-Anhalt as specific structural policy instruments by the EU Commission. In this

framework, both EU funds and regional funds contributed to joint projects that either went beyond the scope of ERDF funding or were not allowed by ERDF regulations, but which contributed to solving specific and important problems of the region (FIR 1994-1999, 2003: 14). Projects were implemented in the areas of, *inter alia,* start-ups and SME support, sales promotion, environment, R&D support, infrastructure and labour markets.

Ex-post evaluations revealed practical problems in terms of coordination of institutional processes. This referred in particular to the timeframe for coordination within individual funding regulations. Nevertheless, it was feasible at least in part to integrate ERDF and ESF and thus to contribute to the overall insight that the modernisation of the capital stock is most efficient if it is accompanied by a corresponding increase in the employees' qualification levels. This was regarded as a highly positive aspect by the interviewees.

The 2000-2006 Operational Programme contained further approaches to integrating goals in the development strategy. This included multi-funds support schemes and the bundling of regional stakeholders' preferences into unified priorities. An important step in this respect was the regional government's decision on the realisation of regional initiatives (*Landesinitiativen*) (FIR 1994-1999, 2003: 75). However, it was also noted that only a few instruments and areas, such as R&D and SME support, are suited for funds-overlapping support (AIR 2001, 2002: 9).

The 2000-2006 programme period was the most successful in terms of synergies particularly because of the bundling initiatives, but also because the organisational procedures and the reporting system for different funds were harmonised. Amongst other things, these important steps made the programme evaluation much more simple and efficient. On the other hand, according to one interviewee's assessment, concerns were raised that it might be difficult for the EU Commission to implement such integrated funding approaches in a top-down process. From another interviewee's viewpoint, better results might be achieved through a bottom-up process that takes account of practical experience and the region's individual needs and problems as well as solutions to these problems. Despite the synergies achieved, a critical observation was that the funds acted too much in isolation, due to some egoism in the responsible ministries, thus precluding a better linkage between them.

For the current 2007-2013 programme period, three core areas were foreseen for an integrated strategy in the Sachsen-Anhalt OP (OP ERDF 2007-2013: 66). Firstly, in the area 'Research, Development and Innovation', the ERDF supported innovation measures in individual companies and also aimed at facilitating the financing of innovation for SMEs. The ESF contributed to this area by supporting technology transfer and human resources, while the EAFRD provided funds to strengthen cooperation and to introduce new technologies in the agrarian food-processing industry.

Second, for the 'Education' objective, ERDF, ESF and EAFRD, assisted by central and regional government funds, are used to improve human resources via supporting kindergartens and schools. The third objective based on an integrated strategy is 'Investment support, qualification and reduction of financing restrictions for companies, especially SMEs'. In this case, ERDF funding is still predominantly used to strengthen the investment support of the Joint Task 'Improvement of the Regional Economic Structure'. Beyond this, the ERDF and the EAFRD contribute to the ESF priority of 'Support for self-employment and business start-up'. In turn, ESF support to improve the employees' level of qualifications has positive spillovers on the ERDF-financed programmes, as it is

complementary to the ERDF-supported expansion and modernisation of fixed assets. Aiming to enhance the efficient and effective coordination of the three funds, the regional government implemented the intergovernmental working group 'EU Funds' (ROP 2007-2013, 2007: 156).

However, stakeholders repeatedly drew attention in interviews to the fact that the integration of the ERDF and ESF funds is impeded by the isolated ways of operating (due to egoism in the responsible ministries). This lack of integration of Structural Funds within a common approach often leads to the fragmentation of complex projects and the creation of a high number of stand-alone projects with few interconnections. Hence, the difficulty of managing complex projects potentially discourages potential applicants for funds.

In the face of demographic challenges and on-going migration trends, the actions under the horizontal objective 'Urban dimension' have become highly relevant. All three Structural Funds (ERDF, EAFRD and ESF) are involved in the integrated approach, as well as different responsible government departments and ministries. This approach is based on integrated urban development concepts and is meant to provide coordinated support that covers different aspects of urban life. There is, however, a strong need for better definition of criteria and better coordination. For example, this could allow for an adjusted use of European Structural Funds beyond the existing classification criteria for funding. Projects in areas with less than 5,000 population equivalents or 10,000 inhabitants are co-financed by the EAFRD and threreafter by the ERDF. Furthermore, the ERDF OP (urban development concepts) and the RDP (integrated rural development concepts, leader) recently follow different approaches that can also spatially overlap. As argued by the evaluator (Rambøll, 2011: 77, 90-93), a clearing house has to be established to ensure a pragmatic and non-bureaucratic bundling of various funding programmes, something that has not yet happened.

5.2.2 Complementarity with domestic regional policy

In the early 1990s, it was difficult to obtain differentiated complementarities between domestic funds and ERDF. The ERDF was seen as potentially being complementary to domestic regional policy, but the funding approaches of the European Commission and the Federal Ministry of Economics (BMWi) were too different. Hence, in the initial period, ERDF funding was used exclusively to co-finance the National Joint Task 'Improvement of the Regional Economic Structure'. From the 1994-1999 programme period, the regional stakeholders were allowed to develop their own priorities for regional development. At that time, different regional (domestic) programmes were used to support the targets set by the Operational Programme, for example the Kreditanstalt für Wiederaufbau (KfW) granted loans on particularly beneficial conditions to support SMEs. For almost every kind of intervention, there was a regional programme available: equity and guarantee programmes of the Deutsche Ausgleichbank, support for start-ups from the European Reconstruction Programme, etc. (ROP 1994-1999, 1994: 39-44). Although complementary to each other, the ERDF and these regional programmes were rarely well coordinated, and they co-existed almost independently of each other, providing competing funding sources for similar purposes.

For the 2000-2006 programme period, the regional government decided to run a number of region-specific Land initiatives in order to realise a number of integrated projects to support sustainable growth and employment, while taking into account sustainable development and equal opportunities: local and regional employment pacts (PAKTE), development of urban areas (URBAN

21), implementation of regional development concepts (REGIO), rural development (LOCALE) and innovation strategies (LIST). Each project had to target two funds as well as two different priorities of the OP. Regarding the coordination, regional funds supported by EU Structural Funds and domestic funds both had to be used (FIR 1994-1999, 2003: 75). Sachsen-Anhalt reserved 20 percent of the Structural Funds for such regional initiatives.

The aims of the integrated approach of the regional initiatives were: the delegation of responsibilities to sub-regions and project partners, the bringing together of villages and business and social partners, an increase in planning reliability at the regional level for beneficiaries and other regional stakeholders, and the avoidance of further regulations (FIR 2000-2006, 2010: 29).

According to the interviewees, these regional initiatives did not work well, and all of them (except PAKTE) caused a significant increase in the administrative burden, frustrated applicants, and led to the use of non-integrated approaches, especially mono-programmes. The regional initiatives were not continued in the subsequent programme period.

In 2000-2006, the ERDF began to contribute to the establishment and upgrading of relevant transport infrastructure of supra-regional importance. The National Operational Programme (NOP) 'Transport infrastructure' was managed by the federal government (BMVBS, 2001). The programme aimed to improve infrastructure as a development factor by the accelerated development of transport routes of national importance in German Objective 1 regions (BMVBS, 2004: 4). One of its specific objectives was to strengthen the links to the Trans-European Transportation Network.

In the current 2007-2013 programme period, a joint central and regional government working group is responsible for the coherence and complementarities of the national programmes for transport infrastructure and the ERDF OP. The national programme focuses on interregional transport and rail infrastructure (being the responsibility of the central state), while the ERDF OP focuses on selected intra-regional transport infrastructure (being the responsibility of Sachsen-Anhalt). The task of the working group is not only to prevent double-funding of projects, but also to explore potential synergies of the projects funded by the two programmes at the territorial and project levels.

In the area of transport infrastructure, a new obstacle for the effective use of ERDF funding has recently arisen. The mid-term evaluation by Rambøll revealed shortcomings in the ability of municipalities to raise enough funds to co-finance transport infrastructure projects related to local and regional roads owned by municipal authorities (see Chapter 5.1.2). The reason for the weak performance in realising this measure may also relate to the availability of other funding opportunities offered by the federal government as a particular stimulus. Hence, as agued by the evaluator, there may be a duplication of funding, which makes it necessary to define the funding criteria in a more transparent way (Rambøll, 2011: 15).

In general, there is a range of domestic and ERDF-funded measures in different areas of ERDF interventions (SMEs, transport infrastructure etc) which provide support simultaneously and may lead to duplication of funding. In many cases, according to interviewees, the beneficiaries prefer to use domestic funding, as the requirements to obtain it are more easily met. Hence, a better definition of funding criteria and elaborated coordination approaches to link domestic and European funds are needed to enhance the effectiveness of structural interventions.

6. ASSESSMENT OF ACHIEVEMENTS AGAINST OBJECTIVES AND NEEDS (EFFECTIVENESS AND UTILITY)

6.1 Overall achievements of ERDF programmes measured against programme objectives (effectiveness)

The effectiveness of the programme is the extent to which the objectives of the programme were achieved through the projects funded. Two levels of objectives can be distinguished: the overarching programme objectives, which are often stated in terms of overall regional development, and the specific objectives or targets related to the level of individual measures. The former have usually been set in the form of aggregate regional indicators such as GDP and employment or narrowing gaps with the rest of the Germany, whilst the latter have usually been set in terms of narrowly defined indicators relating to the outputs rather than the changes resulting from the intervention. In addition, an attempt can be made to assess the process effectiveness of the programme, which simply means analysing the far-reaching consequences of the objectives and targets set in the programmes, as well as looking at the decision-making process.

The objectives set for Sachsen-Anhalt as a whole were focused on the most urgent problems and bottlenecks that resulted from the legacy of the planned economy in the GDR period. The structural adjustments in manufacturing, agriculture and services, as well as in the exploration of human resources, were highly needed, given the uncompetitive economic structure in Sachsen-Anhalt at the beginning of the 1990s (see Chapter 2 for a detailed review of the region's initial situation and needs). As a consequence, the overarching objectives of all programmes concerned the creation of conditions to transform the economy of Sachsen-Anhalt and to enable the region to regain its interregional competitiveness. The main difficulties in meeting the overarching objective resulted from the fact that there was no ready solution or concepts on how to transform a planned economy into a market economy while avoiding large social and economic problems.

In the 1990s, the programmes were used to co-finance the GRW, and thus the objectives were derived from this scheme and so less specific, with the overall objectives set more in terms of contributing to the economic transformation by structural adjustment and avoiding the further rise of the unemployment rate. The 1991-93 and 1994-99 programmes were targeted at the modernisation of fixed assets and at investments in infrastructure, followed by the exploration of human capital and environmental aspects. Subsequently, the programmes moved away from the exclusive use of ERDF for co-financing a single regional policy scheme (GRW). The shift represented a move away from the narrow orientation on investment strategies to encompass non-investment strategies, and the programmes had a rather broad range of more specific objectives such as the promotion of application-oriented R&D or SME-related consulting and networking in 2000 (illustrated in detail in Section 3.1).. A certain underlying implicit rationale for the decision to broaden the scope of ERDF spending was the urgent need to make ERDF funding available not only to the Ministry of Economics but also to other State departments; a need emerged due to the considerable increase of pubic debt associated with a 'wave' of investment in the 1990s (Sub-section 3.1.3). The current programme still focuses on enhancement of regional competitiveness through investment and non-investment strategies by combining the three strategic priorities for (i) R&D and innovation, (ii) education, and (iii) support for fixed-assets investments, training and the reduction of barriers to corporate finance (with respect to SMEs).

The overarching objectives are hardly measureable by quantitative indicators. Moreover, it is difficult to assess whether the impact on the economy comes from the measures directed towards these objectives or from other not-explicitly-observable factors resulting from the change in overall macroeconomic conditions (as in the example of Solar Valley, discussed in Sub-section 5.1.2, heading 'Structural adjustment', p. 67).

The assessment of the effectiveness of more specific targets and programme measures is less affected by this issue. All four programmes set the target of creating a substantial volume of new jobs. Apart from the 1994-99 programme, which missed the targets by far because of administrative changes and an estimate based on experience from the 1991-93 programme, the reported achievements of programmes in terms of employment are rather positive (see Table 14).

Table 14: Programme objectives and targets for Sachsen-Anhalt ERDF programmes 1991-2011 and reported achievements

Programme	Aggregate objectives/ targets	Reported achievements
1991-1993	9,000-11,000 new job created/ safeguarded	36,421 jobs created and safeguarded
199419-99	120,000 jobs created/safeguarded with productive investments 60,000 jobs created /safeguarded by support to SMEs 62% to 77% connection rate to sewerage treatment plants	40,929 jobs created or safeguarded 35,420 jobs created and safeguarded by support to SMEs 77.9% connection rate to sewerage treatment plants
2000-2006	12,117 jobs created 24,236 jobs safeguarded	20,590 jobs created 56,733 jobs safeguarded
2007-2013	14,565 jobs created 47,310 jobs safeguarded	1,765 jobs created 17,403 jobs safeguarded

Source: Authors' compilation from OPs and FIR documents of four programme periods, and for 2007-13 programme from AIR 2011 (2012).

Other specific measure-level targets have been met reasonably well or were even overachieved. In these cases, targets were set with great caution and not ambitious. At the same time, some of the measures experienced difficulties in setting appropriate targets and measuring outputs. Particularly in the 2000-2006 period, an impressive overachievement of targets was reported for a broad range of measures. For example, the target for the number of start-ups and business formation was exceeded by 1,652 percent, and the target for floorspace prepared for industrial sites by almost 2,000 percent. In these cases, targets have obviously been set in an unrealistic manner. This situation resulted from the weaknesses of the indicator system in Sachsen-Anhalt. On the one hand, there was a vast number of output indicators, but on the other hand, these many indicators were hardly meaningful to gauge and improve programme quality (as discussed in Sub-section 5.1.1, heading 'Programme indicator systems').

Infrastructure has generally been delivered effectively in terms of adherence with measure-specific targets, but the overarching objectives were not always reasonably met. Reports admitted that attracting the targeted group of export industries at the industrial sites failed. Althought the export rate in Sachsen-Anhalt has been rising for several years, the export level of West German enterprises has not been achieved (Sub-section 5.1.2, heading 'Structural adjustment'). Overall, the quality of infrastructure (R&D, transport, business infrastructure) and the environmental conditions of the region have improved significantly over time, which could be attributed to a considerable extent to ERDF contributions. Circa €664 million were spent throughout the whole study period for environmental purposes. . This was particularly relevant in in the area of municipal sanitation, where the ERDF investments facilitated an overall increase in the connection rate to public sewage treatment plants from 62 percent in 1991 to 90.3 percent in 2007 (Sub-section 5.1.2, heading 'Environmental sustainability'). Nevertheless, the need for further support continues to exist particularly in terms of investment in export and technology-driven sectors, in infrastructure, and in R&D activities. Also modernisation of fixed assets and support for further growth and the development of SMEs are still on the agenda of structural adjustment in Sachsen-Anhalt. Bearing in mind that, for many projects, the real impact would have been over a longer period than that reported, the long-term investments - particularly in infrastructure and environment – will continue to pay out in future.

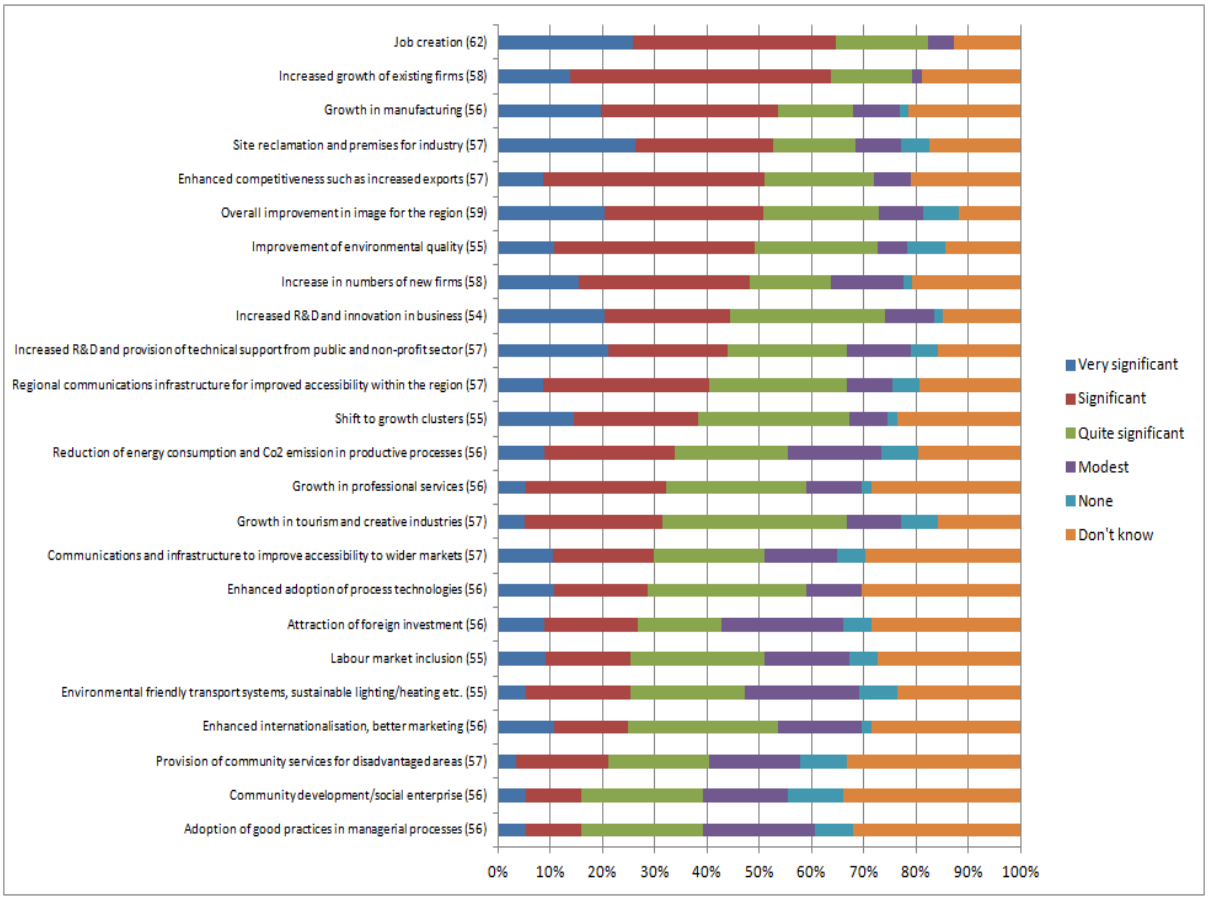
Beyond employment and infrastructural effects, **small and medium-sized enterprises** have been a key target group in the development strategy of Sachsen-Anhalt. In the first periods, they were assisted by support for fixed-asset investment, and from 2000 onwards more in terms of training and reduction of barriers to corporate finance. Because of the lack of large companies, the employment effect is attributed to the good entrepreneurial development of SMEs. So far, the ERDF interventions oriented towards the support of SMEs have produced very positive outcomes that have contributed to an overall positive macroeconomic development of the region (Subsection 5.1.2, 'heading 'Enterprise development'). However, other factors such as demographic changes and outmigration are important obstacles in the development of SMEs in Sachsen-Anhalt. Moreover, in the current programme period two factors tend to impede entrepreneurial potential: first, the on-going difficult macroeconomic conditions following the financial crisis; and second, the shrinking financial resources to co-finance the ERDF loan programme effected by the recent cut in public spending (*Schuldenbremse*). All these factors create an increasingly insecure economic environment that might have a negative impact on further development of SMEs in Sachsen-Anhalt.

The support to **R&D and innovation** activities was included in the programme at an early stage, but it played a rather secondary role, as a part of the modernisation process of fixed assets. More recently, it has become one of the highest priorities of ERDF funding in Sachsen-Anhalt, and the effectiveness of intervention should be assessed from two perspectives. Whereas the measure-level targets directed towards support for research activities in the public sector – for example, to universities, research institutes etc. – were met reasonably well (measured as project number), the enterprise sector R&D and innovation activities remain at a low level. Looking in more detail at the number of patent applications, the proportion of patent applicants which belongs to the (public) science sector is three times higher in Sachsen-Anhalt compared with the national average value in the 2000-2005 period (own calculation based on data of Deutsches Patent und Markenamt, 2006). This is an indication of the strength of the public R&D sector, which is linked to the support received by the R&D sector through the ERDF programmes. However, even though much was done

to enhance science-industry relations (Subsection 5.1.2, heading 'Innovation'), were not able to compensate for the shortcomings in the private R&D sector. Nevertheless, this cannot be attributed to ERDF funding alone. The SMEs located in Sachsen-Anhalt are too small to conduct R&D activities within the enterprises, and there are still very few networks and clusters between enterprises and public research organisations (Chapter 2, heading 'Enterprise'). In order to fulfill the need for applied research resulting in product and process innovation within firms, a specific objective was set in the 2007-2013 programme to promote cooperation and networking between science and business (Rambøll 2011: 48f.). Hence there is evidence that positive steps have been taken, but the overall assessment that can be made is not yet clear-cut.

According to the online survey, stakeholders of ERDF support in Sachsen-Anhalt rank effectiveness of ERDF programmes in the fields of structural adjustment, enterprises and environmental sustainability as particularly high. As an illustration, at least 50 percent of the responses assessed achievements in job creation, growth of existing firms, growth in manufacturing, site reclamation and premises for industry, and improvement of environmental quality as significant or very significant (Figure 22).

Figure 22: Responses to the question 'Could you please assess the extent to which the ERDF programmes delivered achievements in the fields outlined below (across the entire period, i.e. 1991 to date)?' (in brackets: number of all responses)



Source: Online Survey, Sachsen-Anhalt.

By contrast, the effectiveness of the ERDF programme in the fields of labour market and social cohesion - and in specific enterprise-related fields, such as internationalisation and management practices - was regarded as relatively weak. In this context, the international connectivity of industrial clusters in Sachsen-Anhalt is regarded as having remained rather poor (as was illustrated in more detail in Chapter 2). The lower-ranking results relate to challenges that are rather complex and difficult to tackle in a direct way. They can only be met in the medium-to-long term, associated with learning processes.

An overview of achievements of objectives is provided in **Table 15** below. This illustrates the extent to which achievements in particular thematic axes have been above or below what might be expected given the level of effort and investment. Overall, there are few instances across the programmes where achievements in thematic axes have exceeded expectations. In summary, the programmes have made some progress towards meeting their objectives and the region has been transformed. However, it still faces many problems that result partly from the changing macroeconomic conditions and partly from demographic developments, which represents a major challenge not only for the region but also for the EU.

Table 15: Achievements compared with imputed objectives for eight thematic axes

	1991-1993		1994-1999		2000-2006		2007-2013	
Thematic axis	**Imputed objecti-ves**	**Achieve-ments**	**Imputed objecti-ves**	**Achieve-ments**	**Imputed objecti-ves**	**Achieve-ments**	**Imputed objecti-ves**	**Achieve-ments**
Enterprise	++	5	++	5	++	5	+	4
Structural adjustment	++	5	++	5	++	5	+	4
Innovation	-	2	-	3	+	3	+	4
Environmental sustainability	+	5	+	5	+	4	=	3
Labour market	++	4	++	4	++	4	+	3
Social cohesion	--*	1	--*	1	--*	1	-*	2
Spatial cohesion	--	1	-	4	-	4	+	4
Infrastructure	++	5	++	5	+	4	+	3

Objectives scale, start of period

++ Very high effort, this axis is a central aspect of the regional development strategy
+ High effort, this axis is an important element in the regional development strategy
= Average effort, this axis is included in the regional development strategy but is not particularly important
- Low effort: this axis is only marginally considered in the regional development strategy
-- No effort at all on this axis

Achievements scale, end of period with respect to beginning of period

5 Very high achievement, the results for this axis are considerably above expectations given the effort put in it and ex-ante conditions
4 High achievement, the results for this axis are above expectations given the effort put in it and ex-ante conditions
3 Average achievement, the results for this axis are those which could be expected given the effort put in it and ex-ante conditions
2 Negative achievement, the results for this axis are below expectations given the effort put in it and ex-ante conditions
1 Very negative achievement, the results for this axis are considerably below expectations or even nil

6.2 Overall contribution of ERDF programmes to regional development (utility)

Sachsen-Anhalt faced a difficult situation after the collapse of the GDR planned economy due to the severe lack of competitiveness in the manufacturing sector, an underdeveloped service sector, and other legacies of the past that have generated a wide range of needs, including the necessity to modernise fixed assets, reduce the high level of unemployment, develop human capital, enhance productivity etc. The scale of the problems was greater than the resources available to deal with them, and many of them could not be addressed by ERDF programmes. Hence, prioritisation was needed. In hindsight, some strategic choices affected the degree to which particular needs were addressed, and the choices were not always the best possible, e.g. unilateral focus on fixed assets in the first two funding periods (Subsection 3.1.1, 3.1.2). Overall, however, the ERDF programmes have made a contribution to regional development even if the impact has been variable across fields of intervention.

The utility of ERDF spending was particularly significant and pivotal for structural adjustment and enterprise development. The ERDF contributed significantly to the economic restructuring of the region that was urgently needed after 1991, as the capital stock turned out to be obsolete and the large industrial trusts had become uncompetitive. The effective combination of ERDF with one single regional policy scheme (GRW) helped to tackle some of the most urgent problems that resulted from the sudden economic transition and de-industrialisation. Whereas the region was previously dominated by large-scale chemical, mining and mechanical engineering industries, ERDF enhanced re-industrialisation and diversification of the economic structure. However, the intra-industrial structures still contain deficiencies that strongly impact on the regional economic performance. There is still an insufficient number of enterprises in export and technology-driven sectors, while the proportion of labour-intensive economic activities is above the West German average (Chapter 2). Simultaneously, in terms of productivity, the gap between Sachsen-Anhalt and Germany is still significant, which points to the fact that the initial exclusive focus of ERDF on fixed assets was necessary but not sufficient for productivity convergence. ERDF subsidies contributed significantly to the change in the enterprise structure in favour of SMEs over the entire period. ERDF helped to establish an SME sector with a remarkable productivity and competitiveness which had been maginalised in the communist past (Subsection 5.1.2, heading 'Enterprise development'). However, there is a continuing need for large-scale enterprises capable of internal R&D and innovation.

Tourism was another sector where relevant changes can be imputed to ERDF, but the achievements in this area are not impressive, even though the cultural heritage is rich. ERDF funding was continuously available for tourism projects. Whereas a high amount of accommodation facilities were supported by ERDF, only a small number of major projects were realised, particularly regarding cultural tourism. On one hand, the region presents a favourable picture in terms of accommodation capacity created in the hotel industry, but on other hand this does not result in the region attracting more tourists. In all four programmes, tourism featured among the infrastructural measures, but it could not realise its potential as an economic growth factor despite ERDF investment. Although, the number of visitors and overnight stays has continuously increased, the share of tourism in GDP in 2010 reached only about 2 percent. Thus, Saxony-Anhalt is still below the national average.

The focus of ERDF support on structural adjustment and enterprise development helped to ease problems in terms of unemployment. Nevertheless, the unemployment increased in the 1990s, before the situation started to improve slowly from 2005, as shown in Chapter 2, under the heading 'Labour market'. The recent positive developments in employment in Sachsen-Anhalt are the result of labour market reform rather than the ERDF contribution.

The ERDF co-funding was a very important factor in the promotion of enterprise-related infrastructure, although the needs were not always met appropriately. The creation and equipment of industrial sites dominated in the 1990s. This led to an excessive provision of industrial sites: as the degree of utilisation capacity decreased during the 1990s, the occupation of equipped industrial areas dropped from 72 percent in 1993 to 65 percent in 1999 (Subsection 5.1.2, heading 'Infrastructure'). In retrospect, some interviewees criticised the obvious lack of strategic coordination in terms of spatial planning. This was presumably a consequence of the novelty of the transitional situation and the fact that not all planning and administrative capacities had been established. Apparently, the number of industrial parks created exceeded the needs of the region, and sites were partly put in place without any strategic conception (e.g. industrial parks in rural municipalities, which in retrospect were not attractive enough for investors). Overall, the needs with respect to enterprise-related infrastructure in Sachsen-Anhalt were met in the 1990s.

One of the important issues was and still is the development of transport infrastructure. In addition to the ROP ERDF, the region participated in the NOP Transport in the third and fourth funding periods. The level of accessibility was partly improved. The internal roads and railway connectivity have been enhanced, allowing faster journey times, though there is still a disadvantage in terms of accessibility compared with the national average. Improvements to the road and railway networks have also helped the region's connections to routes with supranational importance and ensured good access to industrial sites. Despite ERDF-enhanced improvements, further needs exist with respect to improvements in the quality of roads and road bridges. Such investments were typically necessary but insufficient, and it would be difficult to attribute any major impacts on the region in wider economic terms.

Over time, it has become clear that further progress in terms of productivity depends on more than physical capital. ERDF strategies recognised especially in the 2000s that the drivers of productivity growth are innovation and R&D activities. ERDF supported both public and private R&D activities in Sachsen-Anhalt and herewith contributed to the creation of preconditions for innovation. The most significant improvements in terms of R&D capacity are in the public sector, but it is not capable of fully compensating for the shortcomings of private R&D activities which have persisted across the entire period since 1991. SMEs prevail in Sachsen-Anhalt, and they often do not have capacities for internal R&D and innovation. Recently, the ERDF interventions have focused more on the enhancement of science-industry relations (a positive example is the project relating to Halle's Technology and Incubator Centre, illustrated in ANNEX I). However, the gap in terms of patent applications remains extremely high.

Another significant achievement has been the improvement of environmental sustainability in the region. Environmental issues were implicitly or explicitly a subject of ERDF funding from the beginning of the ERDF programmes. First, the substantial spending on the modernisation of fixed assets in the enterprise sector, subsumed under the thematic axes 'Enterprise' or 'Structural adjustment', was to a large extent associated with positive impacts on the environment as a side

effect, because this modernisation met environmental protection standards. CO_2 reduction in the first half of the 1990s in Sachsen-Anhalt illustrates this side-effect (Sub-section 5.1.2, heading 'Environmental sustainability'). In this context, the ERDF investment was used to reduce negative environmental impact by replacing the outdated and more-polluting technology with modern technology, and this contributed significantly to environmental changes in the region. Second, ERDF contributed substantially to the improvement of environmentally relevant infrastructure such as the rehabilitation of (brown) coal-mining areas, sewage and wastewater systems (Sub-section 5.1.2, heading 'Environmental sustainability'), and in the area of municipal sanitation.

Issues concerning the spatial distribution of economic activity have not been prominent in ERDF programmes in Sachsen-Anhalt, as ERDF interventions were needed in urban as well as in rural areas after the collapse of planned economy. Over the whole period, however, the contribution of large cities to overall GVA in Sachsen-Anhalt decreased, as shown in Chapter 2, Table 3. Thus, the urban areas show persistent weaknesses in terms of economic growth. This issue was implicitly addressed by the Community Initiatives URBAN and URBAN II, which supported integrated urban development in Halle (Saale), Magdeburg and Dessau. The initiatives are an example of successful structural transformation from obsolete 'old industry' to a new set of manufacturing firms, service providers and State judicial administrations complemented by an improvement of dwellings, creation of a better environment, and new leisure facilities, e.g. the 'Riebeck-Quarter' in Halle (Annex I). The territorial dimension was concretised with the horizontal objective of the 'urban dimension' in the ERDF and ESF Operational Programmes.

In summary, the programmes have undoubtedly made a contribution to the process of regional development and to meeting many of the region's developmental needs (Table 16). Taking a long-term perspective, the greatest positive impact of ERDF is to be found in its contribution to facilitating structural change through investments in fixed assets, development of enterprises and in infrastructure. The physical environment was one area where the programme's interventions led to a significant improvement, as the impact in Sachsen-Anhalt was substantial. Public R&D activities were also enhanced by ERDF funding. And to some extent, the Structural Funds contributed to the reduction of the very high level of unemployment faced by the region after the collapse of the centrally planned economy, although in this intervention area there are still substantial needs for improvements. Over the 20-year period of Cohesion policy, Sachsen-Anhalt has changed significantly in several important ways, greatly improving its difficult initial conditions. Nevertheless, numerous shortages continue to exist, and new challenges must be tackled in future programmes.

Table 16: Need compared with achievements for eight thematic axes

	1991-1993		1994-1999		2000-2006		2007-2013	
Thematic axis	**Need**	**Achieve-ments**	**Need**	**Achieve-ments**	**Need**	**Achieve-ments**	**Need**	**Achieve-ments**
Enterprise	++	5	++	5	++	5	++	4
Structural adjustment	++	5	++	5	++	5	++	4
Innovation	+	2	+	2	++	3	++	4
Environmental sustainability	++	5	++	5	+	4	-	3
Labour market	++	4	++	4	++	4	+	3
Social cohesion	+	1	++	1	++	2	++	2
Spatial cohesion	-	1	-	4	-	4	-	4
Infrastructure	++	5	++	5	+	4	+	3

Needs Scale, evaluation of the region at the start of the period

++ Very high need: the region is highly deprived on this axis
+ High need: the region is somewhat deprived on this axis
= Average need: the region is around the national mean on this axis
- Low need: the region is above the national mean on this axis
-- Very low need: the region is already a European front-runner on this axis

Achievements scale, end of period with respect to beginning of period

5 Very high achievement, the results for this axis are considerably above expectations given the effort put in it and ex-ante conditions
4 High achievement, the results for this axis are above expectations given the effort put in it and ex-ante conditions
3 Average achievement, the results for this axis are those which could be expected given the effort put in it and ex-ante conditions
2 Negative achievement, the results for this axis are below expectations given the effort put in it and ex-ante conditions
1 Very negative achievement, the results for this axis are considerably below expectations or even nil

6.3 Key elements of success and failure

6.3.1 Good practices and successes

Sachsen-Anhalt has gained considerable learning and experience from its engagement with the ERDF and with the development of regional strategies. It has been able to build processes to develop and embed the learning into programmes, which is visible in the evolution of the ERDF programmes over time. Throughout the different periods, major improvements were made in the implementation, monitoring and evaluation of the ERDF programmes.

A number of factors contributed positively to the effective use of ERDF funds in Sachsen-Anhalt.

- In general, there was to some degree a willingness to invest in strategy-building, as well as to develop effective instruments for the implementation and monitoring of the ERDF programmes (Sub-section 5.1.1, heading 'Programme indicator systems', Subsection 5.1.3).

- To obtain a more result-oriented approach regarding growth and employment, the highly detailed 'Scoring-Model' developed by the Institute for Financial and Regional Analyses (GEFRA 2006) was implemented in the planning of the priorities in Sachsen-Anhalt. In this model, the interventions and/or actions were rated by specific welfare-economic criteria. The resulting project score builds the basis for a formalised assessment facilitating decision-support and thereby allowing for a process-oriented fine-tuning of Structural Funds programmes. However, the high level of detail and fragmentation of actions has also been criticised by some evaluators, who considered that a more focused approach and the concentration of funds on a small number of actions would have been more useful. In their view, this would have provided a critical mass of funds, allowing the effects of the EU funding to become significant and measurable. The establishment of a joint management authority for the ERDF and ESF, as well as joint steering and monitoring committees, allowed for better participation by various stakeholders, while the establishment of a strategic clearing house and the development of the efREporter database enabled centralised steering and reporting of the ERDF programmes (Sub-section 5.1.3).

- The efREporter database system allows an information flow of electronic data between the State of Sachsen-Anhalt and the European Commission, as well as the documentation and control of support instruments and projects throughout all stages of the management of the Operational Programmes. The system is fully applied in Sachsen-Anhalt, and some other Objective 1 regions in Germany have adopted it, revised parts of it, and adapted it to their own specific administrative procedures. Positive features include the involvement of the ERDF in an integrated domestic regional development strategy as well as the integrated approaches covering several EU Structural Funds (ERDF, ESF, and EAFRD), which allowed the exploitation of synergies between different programmes. This led to better coordination of organisational processes and reporting mechanisms, as well as to the opportunity to use integrated approaches to fund a complex and interrelated set of projects through one single measure, without splitting them up into a high number of small measure-related actions (Section 5.2).

- The region also gained experience in developing interregional projects. Regarding the effects of integrated approaches or programmes such as Community Initiatives, the interviewees differed in their judgements. Some of them pointed to positive aspects that comprised the opening-up towards other policy areas, the coordination of organisational processes and reporting mechanisms, and the scope to use integrated approaches to fund a complex and interrelated set of projects through one single measure. On the other hand, the interviewees doubted whether integrated approaches could be implemented via a top-down approach (i.e. by the Commission), as this may lead to solutions that do not work because of egoistic behaviour by government departments. A positive example of an effective combination of several support schemes is represented by the CI URBAN Halle (discussed in detail in Annex I).

6.3.2 Bad practices and failings

Despite overall significant progress in economic development, Sachsen-Anhalt also experienced a number of problems and encountered examples of poor practice.

The changing EU regulatory framework led to difficulties. Negative effects arose on one hand from delays in the specification of regulations or imprecise definitions, and on the other hand due to the audit burden increasing over time. The latter led to increasing inflexibility and made it difficult for projects to modify their approach in the face of regional changes without risking missing their targets. Some experts also argued that due to delays in the specification of regulation, the funds cannot be spent and the EU regulatory framework makes it difficult to shift the funding to other priorities. Shifts in spending within the same priority were not a subject of complaint. A further emerging issue concerns the application process. A number of interviewees highlighted the problems that enterprises faced (and continue to face) in completing the application and fulfilling the full range of requirements necessary to obtain ERDF funding. The administrative burden is much higher for the EU Structural Funds than for domestic development programmes. Hence, there was a general concern that the project application process is becoming more and more complicated, which would lead to deterioration in the projects funded by the ERDF. As a consequence, this would have a negative impact on the overall effectiveness of the programmes. Furthermore, in certain cases it was difficult to find a sufficient number of recipients (e.g. in the case of business start-ups and R&D), and there were also problems in the coordination of a number of competing funds (regional, national, EU Structural Funds). An emerging negative issue is a mismatch between EU regulations and procedures on the one hand and German budgetary rules on the other. As an illustration, the national and regional budgets are set up long before the Regional OP is ready to work, hence the co-financing cannot be delivered for a certain period of time. Additional problems arose recently from the budget freeze and from the fact that regional budgets are decided on an annual basis. Planning for the 2-year budget for 2014/2015 starts in the near future, but as yet no reasonable estimates can be made regarding the size of the co-financing requirements for the next programme period. This may generate uncertainty regarding the effective use of available Structural Funds.

7. CONCLUSIONS

This section draws conclusions from the whole case study, and it is structured in accordance with the questions set in the call for tender.

7.1 EQ1: To what extent did the programmes address regional needs and problems over time?

EQ1a: What were the initial regional needs and problems and what has been their evolution?

Sachsen-Anhalt's regional development context has been shaped by the transition from a centrally planned economy to a market economy. Formally, this transition process was completed quickly by assuming the rules of a market economy. However, a number of structural and institutional issues rooted in the legacy of the planned economy still impact on regional development today. This is not a specific feature of Sachsen-Anhalt. It concerns all East German regions.

When the centrally planned economy collapsed, Sachsen-Anhalt's enterprise sector consisted of large industrial trusts. The SME sector had been marginalised, and the communist past had weakened the entrepreneurial spirit. The large units were exclusively oriented to the COMECON market, and they were unproductive due to obsolete fixed assets. Low competitiveness and the loss of export markets led to extensive de-industrialisation in the first years after unification. At the same time, the service sector was underdeveloped. R&D units in the enterprise sector, which were strongly oriented towards imitation during the GDR period, were in many cases shut down in the course of privatisation. The new private owners were often predominantly interested in taking over only the production units. The labour market situation worsened as a result of de-industrialisation. Employment decreased considerably as a result of company closures and the massive rationalisation of production. At the same time, unemployment increased steeply. Intra-regional disparities were relatively low. The shortcomings mentioned concerned the whole territory of Sachsen-Anhalt. Similar to the situation in the enterprise sector, fixed-asset investment in infrastructure had been neglected in the period of the centrally planned economy. Thus, the infrastructure was obsolete in the early 1990s. Furthermore, Sachsen-Anhalt was heavily specialised in the chemical industry and brown-coal mining, which had caused considerable environmental damage due to obsolete equipment.

In the course of the past 20 years, Sachsen-Anhalt experienced progress in numerous fields of economic development. At the same time, considerable shortcomings continue to exist and new problems have emerged. The enterprise sector has shifted from large units to a small-scale enterprise landscape. Start-up activities are lower in interregional comparison. Structural adjustment has occurred. After a phase of extensive de-industrialisation, some recovery of the manufacturing sector occurred, but the intra-industrial structure suffers from a lack of technology-intensive industries. The gap in export intensity has become even greater across the entire period. The recovery of manufacturing was mainly achieved by the modernisation of fixed assets in the enterprise sector in combination with the improvement of enterprise-related infrastructure. The service sector gained in importance. Productivity increased considerably, at the expense of employment. However, it is still below the German average. Lower productivity is – at least partly – a consequence of small firm size and weak R&D activities in the enterprise sector. The latter has remained weak across the entire period. Large firms that conduct their own R&D have remained rare. By contrast, the public R&D sector shows strengths which, nevertheless, cannot fully

compensate for the shortcomings in private R&D. The environment has improved considerably and no longer constitutes a disadvantage. The labour market situation remains unfavourable in comparison with the German averages, but from 2005 the unemployment rate has decreased. However, the rate of long-term unemployment is the highest among the German States, and as a consequence the risk of poverty exceeds the national average. Furthermore, Sachsen-Anhalt experienced outmigration of young people, and hence skill shortages are expected to increase in future. Spatial inequalities within Sachsen-Anhalt are rather low. But this is because Sachsen-Anhalt's large cities contribute less to Gross Value-added in comparison with the average contribution of German cities. Infrastructural endowment has considerably improved in terms of enterprise-related infrastructure, supply and disposal infrastructure and intra- and interregional transport infrastructure. Despite building and modernising roads and railway tracks, accessibility has remained lower than the national average.

EQ1b: What was the strategy of ERDF programmes of each programme period? What has been their evolution?

At the beginning of the 1990s, the programme presented an accurate analysis of the regional problems: uncompetitive industrial structures, lack of a strong SME sector, and losses of traditional domestic and COMECON sales markets were identified as the main shortages. The region responded to these problems by focusing the programme strategy on support for fixed-asset investment in enterprises and enterprise-related infrastructure. This was regarded as a promising way to pursue the structural changes required for economic recovery. In view of the rapid de-industrialisation and massive job losses, a broad consensus existed among the regional partners to pursue this investment-oriented strategy aimed at creating new jobs. However, in retrospect, the programme was one-dimensional. It did not address other regional problems, especially weak R&D activities in the enterprise sector, partly due to restrictions set by GRW rules.[7] Moreover, the ERDF strategy clearly underestimated the complexity of the challenges of achieving structural change in favour of export-oriented industries. The growth achieved in the early 1990s mainly resulted from the construction sector and from consumer-related industries.

Although the strategy in the first years after unification looks a bit incomplete compared to the problems and needs, it should be borne in mind that, in the early 1990s, not only economic, but also political, institutional and societal transformation was on-going. In this context, the choice to use GRW structures to implement ERDF was not so much a real strategic decision, but rather a pragmatic choice of what was feasible.

A second aspect is important when assessing the ERDF strategy: ERDF/GRW was only a small part of public support and transfers after unification. Vast amounts of money from other public sources have been spent on, amongst other themes, infrastructure and economic development. Thus, the resulting socio-economic development is not only shaped by ERDF, but also by other financial resources being spent simultaneously. Other choices also impacted heavily on the overall economic performance in later years, e.g. the strategy to organise the process of privatisation under the regime of the so-called 'Treuhandanstalt'.

[7] At the same time, other national and Laender programmes tried to tackle the shortages that were not addressed by ERDF programme.

At the outset of the 1994-1999 period, when the labour market situation continued to worsen, and catching up in terms of productivity slowed down, the programme continued to address the regional needs by interpreting them exclusively as further evidence of the need to modernise fixed assets in the enterprise sector and in enterprise-related infrastructure. At the same time, awareness arose in the region that further economic progress depended on more than fixed-asset investments. Regional partners understood that the ERDF had the capability to support a wider range of themes, especially in R&D and environmental protection. The examples of Brandenburg and Sachsen, which had begun to use ERDF beyond GRW, stimulated debate in Sachsen-Anhalt. Moreover, the growing scarcity of public budgets at the *Länder* level mobilised all departments to claim for ERDF monies. However, the government decided to continue the investment-oriented approach practised in the previous period. To meet wider regional problems, the Sachsen-Anhalt government pursued an implicit strategy by utilising the GRW scheme in as flexible a way as possible in order to meet needs in urban development or environmental protection, which also allowed the requests of other departments to be partly met. The environmental problem was addressed in the strategy either indirectly, by installing environmentally friendly technologies in enterprises (a side-effect of modernisation of fixed assets), or directly, by modernising enterprise-related wastewater treatment.

The programme for the 2000-2006 period was a strategic breakthrough, when the regulatory limitations of the GRW were overcome. The programme strategy responded to the existing variety of regional needs which had already been identified within the region by partners in the previous period. The programme addressed most of them. In this context, more attention was directed in the programme strategy to R&D and innovation, networking and advisory services for SMEs. Moreover, the programme understood infrastructure in a more comprehensive manner and considered, for instance, public R&D infrastructure and supra-regional transport infrastructure, and the allocation was changed in favour of infrastructure. At the same time, the programme continued to address needs with respect to modernising fixed assets in enterprises and enterprise-related infrastructure, because high unemployment persisted, as did the challenge of enhancing export-oriented industries. The need to strengthen the development of urban agglomerations in Sachsen-Anhalt did not become an explicit strategic priority, even though their economic weakness was evident.

In the 2007-2013 period, the programme continues to pursue the strategic approach introduced in the previous period, and it addresses a wide range of regional problems. Compared to the previous period, the set of measures has been further extended. In particular, the current programme puts more emphasis on addressing weaknesses of cities in terms of growth, which are still very evident despite the fact that these problems have existed since the 1990s. In summary, the wide range of regional problems is appropriately identified in the 2007-2013 strategy. Furthermore, the focus on R&D, innovation and human capital has become stronger and thus addresses the continuing regional needs in these fields in a suitable manner. The proportion of innovation support in the total programme allocation is the largest in comparison with previous periods. Nevertheless, there are doubts concerning the adequacy of the concrete instruments chosen, because shortages in private R&D have remained almost unchanged since 1991. But it might well be that the economic structure sets limits to potential development. With this in mind, regional stakeholders continue to emphasise the importance of on-going support for fixed-assets investment in enterprises to enable them to grow and thereby create more favorable conditions for R&D.

However, in the current period, there has been a decrease in the overall financial allocation to the programme, and simultaneously the trend to distribute funds to an ever-wider set of measures continues. The broadening of the narrow strategic focus in the first years was well justified and necessary, and the better coverage of measures supporting R&D was essential. But at the same time the distribution of funds over an ever-larger number of instruments raises doubts about the potential of the single instruments to influence relevant factors significantly. The relevance of the programme as a whole could be affected.

EQ1c: What were the priorities and objectives of ERDF programmes of each programming period? What has been their evolution? Were the objectives SMART?

The priorities and objectives of ERDF programmes over the whole 1991-2013 period in Sachsen-Anhalt reveal elements of continuity and change. Against the background of massive job losses, structural adjustment in the sense of strengthening the manufacturing sector and the service industries formed important objectives, together with establishing a balanced structure of firm size, which meant strengthening the SME sector. With the slowdown in catching up with the western part of Germany, the programmes for the third and fourth periods put explicit emphasis on accelerating growth, catching up and improving the situation in employment. Objectives to spur growth and employment were combined with objectives to improve womens' labour market position as well as the integration of disadvantaged persons into the labour market. While intra-regional disparities did not represent a central theme during the first two periods, they became an objective during the third period and the fourth period, ultimately introduced as an objective for sustainable urban development in the ERDF-financed OP.

The structure of the regional programme was relatively straightforward in 1991-93 – only four priorities: infrastructure; business investment; human resources; improvement of rural regions, agriculture and the environment. The number of priorities increased to six in the subsequent period (1994-99) with one priority dedicated exclusively to the environment and one targeting SMEs. In 2000-06, the regional programme was rationalised into only three priorities (firms' competitiveness, infrastructure and the environment). Presently, there are five priorities: innovation and R&D; competitiveness of the enterprise sector; business related infrastructure; sustainable urban development; and environmental protection and risk prevention.

Regarding the question of whether the objectives in the programmes can be characterised as **SMART,** an ambivalent picture can be drawn. On the one hand, the objectives of the ERDF programme are not very **specific**. They are rather general, emphasising the need for modernising manufacturing and services, creating a more balanced size-structure, producing competitive products and services. This can be explained by the complexity and intensity of the development problems of an economy that underwent the transition process from a centrally planned economy to a market economy. However, over time the objectives were concretised and broken down by measures and actions which show increasing diversification.

The attempt to **measure** whether objectives were met has led to the introduction of a very broad and complex set of indicators. In the 2000-2006 period, a peak with more than 700 indicators was reached. However, such a complex indicator system has its limits. Output indicators prevail and are often very formal and lack linkage to the specific needs existing in the region. The number of created and safeguarded jobs, which is one of the most important and most often-used result

indicators, is of low informational value if it does not distinguish properly between newly created and safeguarded jobs. Moreover, the indicator system introduces, in the worst case, wrong incentives to set 'soft' quantitative objectives in order to ensure that they can be fulfilled.

Regarding the question of whether the objectives set in the programmes are **attainable**, it can be assessed that the era of simple and fast problem-solving, as was the case in the early years with modernising the capital stock, has more or less come to an end. Short and immediate cause-and-effect chains were replaced by more complex ones, which generally take a longer time to induce effects. Moreover, the considerable decrease in funding which occurred especially in the 2007-2013 period coincides with a growing variety of actions designated for support, which may be of importance when it comes to the question of whether objectives are attainable.

The **relevance** of programme objectives extended over the study period, because they focused especially from 2000 onwards on a wider set of regional problems and went beyond the initially dominating focus on fixed assets. However, stakeholders of ERDF support criticise a growing overburdening of support measures by too many objectives which might be, from their point of view, counterproductive when it comes to reaching potential beneficiaries. The fieldwork sometimes revealed a certain desire for the simple programme structures and rules of the earlier years of support.

For the most part, the support was **timely** in the sense that it corresponded to the existing regional needs. However, certain needs, especially in the field of R&D, which existed as latent problems, were taken up comprehensively (in the sense of being regarded not only as a problem of physical investment) at a relatively late point, i.e. from 2000 onwards.

EQ1d: What has ERDF support been spent on in each programme period? Have there been significant transfers from initial allocations of ERDF resources to other priorities in any period?

The allocation of total expenditure in Regional Operational Programmes in Sachsen-Anhalt increased from €2.087 million in the **1991-1993 period** to €10.344 million in the **1994-1999 period**. The allocation in the subsequent **2000-2006 period** amounted to €5.540 million, and the total initial allocation for **2007-2013** is €2.061 million (figures in 2000 prices). ERDF-co-financed programmes were mainly targeted at enterprises and structural adjustment, whereby measures to enhance structural adjustment also benefitted enterprises. The particular importance of these two targets/needs applies to all the periods under consideration. This said, innovation has increased in relative importance over time. Support has also become increasingly diversified, whilst at the same time, the total volume of expenditure has decreased. Thus, shrinking financial resources are being distributed across a higher number of support measures.

Within the individual programmes, shifts from initially set allocations can be observed in the 1991-93 and 2000-06 periods, in both cases in favour of interventions to favour structural adjustment: in 1991-1993, resources initially allocated to human capital were transferred to structural adjustment. In the 2000-2006 period, a transfer in favour of structural adjustment took place, particularly at the expense of infrastructure and innovation.

7.2 EQ2: To what extent do ERDF achievements meet regional objectives and needs in each programming period and across all periods?

The programmes experienced mixed results in term of their effectiveness in achieving their objectives. At a programme level, objectives were set in terms of significant structural changes (in firm size and sectoral structure), changes in GVA and employment, which were unlikely to be achieved by the programmes, given the legacies of the past, the weaknesses of the region in the 1990s, and the large amounts of money spent simultaneously from other sources. However, the programmes have undoubtedly made a certain contribution to the process of regional development and to meeting many of the region's developmental objectives and needs.

The **1991-1993** and **1994-1999** programmes were targeted at the modernisation of fixed assets and at investments in infrastructure, followed by the development of human capital and environmental aspects. The combination of ERDF with a single regional policy scheme (GRW) does seem to have helped tackle at least some of the most urgent problems that resulted from the sudden economic transition and de-industrialisation. Whereas the region was previously dominated by large-scale chemical, mining and mechanical engineering industries, ERDF enhanced re-industrialisation and diversification of the economic structure. However, the intra-industrial structures still contain deficiencies that strongly affect the regional economic performance. There is an enduring lack of enterprises in export-oriented and technology-driven sectors.

In the **2000-2006** and **2007-2013** periods, the programmes moved away from the exclusive use of ERDF for co-financing a single regional policy scheme (GRW). This was a shift from the narrow orientation on investment strategies to encompass non-investment strategies, and the programmes had a rather broad range of more specific objectives such as the promotion of application-oriented R&D or SME-related consulting and networking from 2000 onwards. The current programme still focuses on the enhancement of regional competitiveness through investment and non-investment strategies by combining efforts in R&D and innovation, education, and support for fixed-assets investments, training and the reduction of barriers to corporate finance (with respect to SMEs). On one hand, the relative position of R&D has been strengthened; on the other hand, the enterprise sector shows persistent weak points due to the prevalence of small firms and the lack of technology-driven industries.

Small and medium-sized enterprises have been a key target group in the development strategy of Sachsen-Anhalt. In the first periods, they were assisted by support for fixed-asset investment and from 2000 onwards more in terms of consultancy services, clustering and networking, R&D and reduction of barriers to corporate finance. So far, the ERDF interventions supporting SMEs have shown very positive results that contributed to the overall positive macroeconomic development of the region. An SME sector has evolved, which did not exist when the planned economy collapsed. SMEs now provide the majority of workplaces in Sachsen-Anhalt. The dominance of small firms, which have shortcomings in terms of export intensity and R&D, is associated with a continuing need for growth in SMEs, especially through support for fixed-asset investments and transfers of knowledge from the public R&D sector. The overall rate of start-ups has increased over time but is still below the share of the western part of Germany.

Infrastructure has generally been delivered effectively, but the overarching objectives were not always reasonably met. Reports admitted failure to attract the targeted group of export industries

to the industrial sites. Overall, the quality of infrastructure (R&D, transport, business) and the environmental conditions have improved significantly over time, which could be attributed to a considerable extent to ERDF contributions. Nevertheless, there is a need for further support particularly in terms of investment in export and technology-driven sectors, infrastructure and R&D activities.

All four programmes set the target of creating a substantial volume of new jobs. With the exception of the 1994-1999 programme, which widely missed the targets because of administrative changes and an estimate based on experience from the 1991-1993 programme, the reported achievements of programmes in terms of employment are rather positive. Nevertheless, the rate of unemployment in Sachsen-Anhalt increased during the 1990s, but has been declining from 2000, impacted not only by ERDF but also by the labour market reforms in Germany. However, the regional need to reduce unemployment is still high.

Taking a long-term perspective, the greatest positive impact of ERDF is to be found in its contribution to facilitating structural change through investments in fixed assets, development of enterprises and in infrastructure. The physical environment was one area where the programme's interventions led to a significant improvement, as the impact in Sachsen-Anhalt was substantial. Public R&D activities were also enhanced by ERDF funding. And to some extent, the Structural Funds contributed to the reduction of the very high level of unemployment faced by the region after the collapse of the centrally planned economy, although in this intervention area there is still a substantial need for improvements. Over the 20-year period of Cohesion policy, Sachsen-Anhalt has changed significantly in several important ways, greatly improving its difficult initial conditions.

EQ2a: What are the reported achievements of each programming period?

The preceding report has examined the reported achievements in detail. The reporting of achievements in the **1991-1993** period focused on both (i) the support for fixed-asset investments in enterprises and (ii) the modernisation of infrastructure. The indicators used to assess support for fixed-asset investments in enterprises included the number of projects, the investment volume, and the number of supported jobs. In the 1991-1993 period, a total of 36,321 (gross) jobs were created or safeguarded. Projects modernising infrastructure were monitored by the number of projects and the investment volume and, if applicable, physical indicators such as surface prepared. With respect to industrial sites, which represented the most important subject of ERDF infrastructural support, 1,824 hectares of land were prepared and built upon and 69 industrial sites were created to attract and retain investors and start-ups.

In the **1994-1999** period, the major focus was again placed on support for fixed-asset investment in enterprises to enhance structural adjustment and improve employment, and on enterprise-related infrastructure that was strongly linked with the support for enterprises. As a result, 40,929 created and safeguarded jobs were reported in the context of support for productive investments. The investments in complementary infrastructure in the 1994-1999 programme continued to focus on the availability of industrial sites. The shift was made from 'greenfield' land to the reconstruction of old industrial areas. During the programme period, 1,612 hectares of land were prepared and made available for enterprises. During the 1994-1999 programme period, the infrastructural focus was also directed towards improvement through expansion of the research and technology infrastructure in the region, mainly in form of research, innovation and technology

centres (TGZ), but also by investments in R&D equipment for private enterprises. Altogether, 13 TGZ were created and expanded. In the area of environmental enhancement, 77.9 percent of households were connected to sewage treatment plants and 80 percent to the public sewerage system by the end of 1994-1999.

In the **2000-2006** period, the major strategic objective of enhancing competitiveness was underpinned through investments in enterprises, support of R&D and cofinancing innovative approaches in SME promotion. Thus, reporting on investment in enterprises indicated 20,950 created and 56,733 safeguarded jobs. Measures in favour of R&D&I supported, for instance, 472 SMEs involved in funded projects, 349 independent inventors, and 155 innovation assistants. To strengthen the SME sector, for instance, 2,346 persons/start-ups received support.

The **2007-2013** programme is still in progress, and therefore its achievements cannot be reported comprehensively. To improve competitiveness in the enterprise sector, which represents one of the most important challenges, for instance, 37,534 jobs were supported by investment grants and lending instruments.

EQ2b: To what extent were objectives achieved in each programming period?

In the **1991-1993** programme, targets in modernising fixed assets in enterprises were set only for financial indicators and employment effects. The 36,321 jobs created or safeguarded significantly exceeded the target of 9,000 to 11,000 jobs. The level of reported sites occupation (72 percent in 1993) presents an indication of over-provision in modernising infrastructure.

The **1994-1999 programme** still did not introduce standardised output indicators, benchmarks or quantified targets, except investment volume, the number of projects and number of jobs created and safeguarded. Despite the strong emphasis, the targets in terms of job created and safeguarded were widely missed. Only around one third of the targeted 120,000 jobs were created or safeguarded through investment funding. Moreover, the occupation of prepared industrial land dropped from 72 to 65 percent compared to the previous funding period revealing a growing underachievement in terms of occuppation. With respect to assistance for research, innovation and technology centres (TGZ) and investments in R&D equipment for private enterprises, no quantitative targets were set for this area of ERDF support at the outset The proportion of 77.9 percent of households connected to sewage systems represents an overachievement of the 67 percent target.

The **2000-2006** programme finally introduced a broad range of detailed 'output' and 'results' indicators to assess targets. While the targets in financial terms were met quite precisely, other reported targets were exceeded in almost every area of intervention. An impressive overachievement of targets was reported for a broad range of measures, e.g. with regard to the 20,590 jobs created and 56,733 jobs safeguarded, the targets were also overachieved by around two thirds respectively 134 percent. Contrarily, the number of SMEs involved in funded R&D projects (472) was considerably below the targeted 1,105 enterprises, which points to limited absorptive capacities in small firms for R&D. The targeted number of start-ups and business formation was overachieved by 1,652 percent and floorspace prepared for industrial sites by 1,922 percent. However, most of these target categories are very formal and they are only loosely linked

to the existing needs. Overachievement reported in terms of financial indicators and numbers of project reveals little about the actual achievements.

The current **2007-2013** programme period seems to have been meeting its objectives in terms of supported jobs by investment grants and lending instruments, but it faces obvious problems in reaching the targets set in the areas of 'Innovation, research and development' and 'Environmental protection and improvement'.

EQ2c: To what extent were needs met in each programming period? To what extent can observed changes in regional needs and problems be imputed to ERDF programmes over time?

Sachsen-Anhalt faced a difficult situation after the collapse of the planned economy, with a lack of competitiveness in the manufacturing sector, an underdeveloped service sector, and other legacies of the past that have generated a wide range of needs, including the necessity to modernise fixed assets, reduce the high level of unemployment, develop human capital, enhance productivity etc. The scale of the problems has been greater than the resources available to deal with them, and not all of them could be responded to immediately through the ERDF programmes. Hence, prioritisation has been needed. In hindsight, some strategic choices have affected the degree to which particular needs were addressed, and the choices were probably not always the best possible (e.g. a one-dimensional focus on fixed assets in the first two funding periods). Arguably, the region's real needs are still best summarised as a shortage of jobs, lack of enterprises capable of internal R&D activities, and overall insufficient high value-added economic activity. Whilst ERDF programmes have made a contribution towards these needs, it can be argued that the results are less impressive than the region would have wanted.

In the 1991-1993 period, the programme particularly addressed needs focused on structural adjustment and enterprise development and made a good contribution to those problems. While ERDF funding had a positive influence on productivity, it had limited effects on employment. The subsequent 1994-1999 programmes continued with these activities and still tried to influence regional performance in job creation and in productivity, but with limited effects in the short term. Only productivity in manufacturing increased further. Although, at first glance, manufacturing experienced a recovery, its intra-industry structures were weak in terms of export-oriented and technology-driven industries. It may be argued that the effects of these programmes were really only experienced in the 2000s. In the area of environmental enhancement, the regional needs were met by ERDF support to a large extent.

At the end of the 2000-2006 period, the unemployment gap had begun to grow smaller. The performance of the region in terms of GVA, employment, innovation (in terms of patents) and enterprise all improved in the 2000s, probably as a result of investment in fixed assets, enterprises and infrastructure from the 1990s programmes, as well as new business support measures and promotion of public R&D activities in the 2000-2006 programme. In the current period, in terms of overall productivity, the gap between Sachsen-Anhalt and Germany is still significant, which points to the fact that the initial exclusive focus of ERDF on fixed assets was necessary but not sufficient for productivity convergence. ERDF subsidies contributed significantly to the change of the enterprise structure in favour of SMEs over the entire period. However, there is a continuing need for large-scale enterprises capable of internal R&D and innovation. Moreover, the number of enterprises in export and technology-driven sectors is still insufficient.

EQ2d: What have been the complementarities and synergies of ERDF interventions with ESF, EAGGF/EAFRD, and with domestic regional policy interventions?

During the 1990s, Sachsen-Anhalt used sources from different EU funds to tackle urgent problems. In the **1991-1993** and **1994-1999** programme, enterprises (mainly SMEs) received ERDF support to improve their technical standards and enhance their competitiveness, while at same time the ESF supported training activities to upgrade employees' qualifications. Similarly, integrated ERDF/EAFRD projects for the development of rural areas and infrastructure investments took place. However, the co-ordination between those three funds was limited. Even if ERDF and ESF or EAFRD programmes were started in the same location, synergy effects arising from this quasi-coordination occurred by accident rather than being the result of systematic coordination efforts. One particular area of synergy was the development of packages of projects targeting Community Initiatives (CI) such as SME, RECHAR, KONVER, URBAN, and INTERREG, and integrating ERDF and ESF measures. Accordingly, whilst the ERDF funded infrastructure developments and business support, the ESF funded related employment and training activities.

The **2000-2006** and **2007-2013** programmes contained further approaches to include integrated goals in the development strategy. This included multi-funds support schemes and the bundling of the regional stakeholders' preferences for unified priorities. However, it was also noted that only a few instruments and areas, such as R&D and SME support, were suited for synergies of ERDF and ESF. Because of these bundling efforts, the 2000-06 programme period was the most successful in terms of synergies until recently; the harmonisation of organisational procedures and the reporting system for different funds was also a important factor.

Complementarities with domestic regional policy have varied over time. In the early 1990s, complementarities between domestic funds and the ERDF were created by the exclusive use of ERDF to co-finance the National Joint Task 'Improvement of the Regional Economic Structure' (GRW). However, this meant that the many of subjects that ERDF could support were not taken up due to the regulatory restrictions of the GRW. The latter was restricted to support for fixed assets in enterprises and enterprise-related infrastructure. Direct support for R&D and a broader range of non-enterprise-related infrastructure could not be supported under the GRW scheme. Apart from coupling ERDF and GRW, different regional (domestic) programmes were used to support the targets set by the Operational Programme. For example, this included the Kreditanstalt für Wiederaufbau (KfW) and the Deutsche Ausgleichbank (DtA), which granted loans on particularly beneficial conditions to support SMEs and start-ups. For almost every kind of intervention, a regional programme was available. The 'Riebeckviertel' in Halle (Annex I), which received support from CI URBAN in 1994-1999, is an example of how different support schemes were well combined, positively stimulating enterprise development and the employment situation. Nonetheless, although complementary to each other, coordination between the ERDF and these regional programmes showed weaknesses, and they co-existed almost independently of each other, providing competing funding sources for similar purposes.

In the 2000s, stronger synergies slowly emerged. The regional government decided to run a number of region-specific Land initiatives in order to realise a number of integrated projects to support sustainable growth and employment, while taking into account sustainable development and equal opportunities: local and regional employment pacts (PAKTE), development of urban areas (URBAN 21), implementation of regional development concepts (REGIO), rural development (LOCALE) and

innovation strategies (LIST). Thereby, each of the projects had to target two funds as well as two different priorities of the OP. Regarding the coordination, regional funds supported by the EU Structural Funds and domestic funds had both to be used. Sachsen-Anhalt reserved 20 percent of the Structural Funds for such regional initiatives. In the same programme period, the ERDF also began to contribute to the establishment and upgrading of relevant transport infrastructure of supra-regional importance on behalf of the National Operational Programme (NOP) 'Transport infrastructure', which was managed by the federal government. To better exploit synergies, a joint central and regional government working group is currently responsible for the coherence and complementarities of the national programmes for transport infrastructure and the ERDF OP. The national programme focuses on interregional transport and rail infrastructure (being the responsibility of the central state), while the ERDF OP focuses on selected intra-regional transport infrastructure (being the responsibility of Sachsen-Anhalt).

In general, there is a range of domestic and ERDF-funded measures in different areas of ERDF interventions (SMEs, R&D etc.) which provide support simultaneously and may lead to a programme diversity which undermines transparency from the viewpoint of beneficiaries. In many cases, the beneficiaries prefer the use of domestic funding, as the requirements to obtain it are easier to meet. Hence, a better definition of funding criteria and elaborated coordination approaches to link domestic and European funds are needed.

EQ2E: What has been the overall contribution of ERDF programmes to regional development?

The scale of the problems faced by the region was always greater than the resources available. However, the region has recorded impressive progress in numerous areas of intervention, and today it is a better place in which to live.

Most of the problems were well addressed over the whole period by ERDF funding. In retrospect, some strategic choices have affected the degree to which particular issues were addressed, and the choices were probably not always the best possible. There are still considerable problems to be addressed, such as the low overall level of productivity, the high level of unemployment, a private-sector shortage of large enterprises and, thus, a poor level of R&D and innovation, a lack of a well-developed technology-driven and export-oriented sector, and weaknesses of cities in terms of growth. Some of these challenges are exacerbated by the demographic developments in Sachsen-Anhalt, showing the on-going vulnerability of the region's economic development in terms of growth.

Despite current difficulties, the region was particularly successful in the development of the SME sector, in modernising the manufacturing sector, in creating and safeguarding associated jobs, in infrastructural endowment, in building and modernising roads and railway tracks, and in developing strong public-sector R&D. The latter has particularly advanced. Looking in more detail at patent applications, the proportion of patent applicants which belong to the (public) science sector is three times higher in Sachsen-Anhalt compared with the national average value in the 2000-2005 period (own calculation based on data of Deutsches Patent und Markenamt, 2006). This is an indicator of strength in the public R&D sector on account of the substantial transfers, but they are still not capable of compensating for the shortcomings in private R&D, even though so much was done to enhance science-industry relations. In this regard, regional stakeholders continue to

emphasise the importance of on-going support for fixed-assets investment in enterprises to enable them to grow and thereby create more favorable conditions for R&D.

The success in structural adjustment and enterprise development coincide with the results of the online survey. The respondents rank achievements in job creation, growth of existing firms and growth especially in manufacturing, site reclamation and premises for industry as particularly significant.

7.3 EQ3: *What are the main lessons learnt on the effectiveness and utility of ERDF interventions?*

In assessing targets and achievements within the region, there has been a degree of learning regarding appropriate indicators and measurements and what might be expected from ERDF-supported projects. The assessment of feasibility of projects and the identification of appropriate indicators for the respective measures is developing well. There is also more sensibility with regard to the qualitative aspects of measures that influence the degree to which the overarching programme objectives are met. For example, in the areas of urban development or infrastructure, the importance of developing a form of 'soft' indicator that assesses the sustainability of achieved results has been recognised. Another important issue that has been raised is the shift from the current thinking of measuring the 'end results' of interventions towards a more process-oriented appraisal of the effectiveness of the ERDF funding. The mere numbers of schools, jobs created or business start-ups do not provide a full picture of real achievements. Behind the measureable outputs and results, the full logic of a long-term intervention should be identifiable, taking into account not just single projects but also the long-term impacts on the desired changes.

In terms of project effectiveness, experience has shown that on one hand complex projects supported by different EU-funded programmes need better funds, overarching integration and coordination. The fragmentation of complex projects into a high number of individual projects is associated with two major problems. First, the missing link in terms of programming and coordination between different funds makes such projects difficult to manage, as it increases the administrative burden in terms of application when the complex project is carried out by a single or a few applicants. The weight of the application process discourages potential applicants for funds. Second, an integrated approach without efficient and effective local and regional coordination might lead to spatial overlap and to overall inefficient implementation in the sense of possible synergies. In the face of demographic challenges and on-going migration trends, the actions under the 'urban dimension' horizontal objective have recently become highly relevant in Sachsen-Anhalt. An integrated approach is required to cover the different aspects of urban life. All three Structural Funds (ERDF, EAFRD and ESF) are currently involved in an integrated approach, as are different governmental departments and ministries. The practice shows, however, that beyond formal coordination there is a strong need to establish a clearing house that ensures a pragmatic and non-bureaucratic bundling of various funding programmes, something that has not yet happened. On the other hand, project effectiveness is also determined by human factors. The success of a project is not guaranteed by the project size, the resources spend, coordination issues etc; the commitment and expertise of individuals involved in the project also matter. Some of the successful projects in Sachsen-Anhalt – such as the Technology and Incubator Centre Halle and the development of the 'Riebeck-Quarter' (see Annex I – Analysis of project samples, 8.1) – primarily worked because of personal and managerial qualities. In the interviews, experts and stakeholders also highlighted the

importance of human 'drivers' in challenging processes of regional development. Finally, the region faces great challenges in the completion of the current programme and the development of the new programme. One aspect is linked to the fact that the southern part has become a phasing-out region, even though many of the region's problems are still not resolved. An additional challenge will come from the restricted regional budget in the next programme period. Many lessons learnt from the past programmes will be useful in tackling current and future problems. Whereas past programmes were tied to employment and direct business support issues, in future more attention will be paid to targets that indirectly influence performance such as demographic development or a sustainable environment.

EQ3a: What are the main good/bad practices?

Sachsen-Anhalt has gained considerable learning and experience from its engagement with the ERDF and the development of regional strategies. Throughout the period, major improvements were made in the implementation, monitoring and evaluation of the ERDF programmes. A number of factors have contributed positively to the effective use of ERDF funds in Sachsen-Anhalt.

The main positive features include the involvement of the ERDF in an integrated domestic regional development strategy, as well as integrated approaches covering several EU Structural Funds (ERDF, ESF, EAFRD) that allowed the exploitation of synergies between different programmes, e.g. action in areas of intervention such as 'R&D and innovation', 'Territorial issues', 'Environmental sustainability' etc. (described in detail in Chapter 5). Over time, these features have led to a better coordination of organisational processes and reporting mechanisms, as well as to the opportunity to use integrated approaches to fund an interrelated set of projects through a single measure, without splitting them up in a high number of small measure-related actions. The region also gained experience in developing interregional projects.

Negative effects have arisen from a range of different factors, such as delays in the specification of regulations or imprecise definitions at the European level, with consequences such as delays in the implementation of projects, an increased level of bureaucracy caused by detailed planning and monitoring processes (partly a 'self-made' problem through the elaboration and implementation of a very complex monitoring indicator system), or narrow decision criteria and low flexibility, e.g. in the selection of investment projects. An emerging negative issue is the mismatch between EU regulations and procedures on the one hand and German budgetary rules on the other hand. As an illustration, the national and regional budgets are established long before the Regional OP is prepared, and hence the co-financing cannot be delivered until a certain period of time has elapsed. Additional problems have arisen from the budget freeze and the fact that regional budgets are decided on an annual basis. In the near future, planning will commence on the two-year budget for 2014/2015, but as yet no reasonable estimates can be made regarding the size of the co-financing requirements for the next programme period. This factor may generate uncertainty regarding the effective use of the available Structural Funds.

EQ3b: What conclusions can be drawn for improving ERDF programme design, implementation, results-based management, achievements?

To ensure that regional strategies for programmes reflect the needs of the region, a clear position must be taken on those needs. Recent programmes and discussions with interviewees made it clear that needs may vary within the region and between areas of support, and also that they can change

during the programme implementation. Thus, it is clear that programmes must be flexible to meet different needs and to be able to adjust to macroeconomic changes. But there is also a need for a consensus between EU, federal and regional bodies on regional priorities. Experience has shown that, in order to address the most important challenges, a bottom-up approach to programming, which involves municipal and local stakeholders, is regarded as appropriate. Since the ERDF resources available to Sachsen-Anhalt have been reducing, decisions on regional priorities made from a top-down perspective might become politically difficult to justify and need to be handled transparently.

Another important issue is the flexibility to adjust programmes to changing macroeconomic conditions to increase their overall effectiveness. In this light, the role of ex-ante, ex-post and mid-term evaluations has gained importance. In the context of evaluation, it was remarked that, in order to evaluate measures, it is necessary to analyse the processes and the logic of the processes, rather than limiting the analysis to the question of whether the targets have been met. Sometimes, these targets are set too low in order to ensure that they will be met under any circumstances. Moreover, the target achievement depends on a multitude of external factors, and many of them cannot be predicted in the planning phase of the programme, and thus they are not considered in the setting of targets. With respect to targets and indicators used to assess the effects of individual measures, some issues emerged in the area of infrastructure. For some measures, it was extremely difficult to provide any evidence of value-added from EU funding and at the same time to show that the regional needs were satisfied. The main reasons for this are the lack of output indicators, as well as the lack of a counterfactual analysis, so that the effects of support for transport infrastructure and urban development are hardly measurable, especially where 'soft' factors are concerned.

Additionally, one of the main targets of the future European and regional development strategies will be smart growth facilitated by innovation activity in the regions. ERDF and national programmes have enhanced both public and private R&D in Sachsen-Anhalt; the former has admittedly advanced while the latter has remained behind across the entire period. The weaknesses of private-sector R&D activities result from the predominantly small-scale enterprise structure in the region. SME innovation activities are strongly dependent on the availability of financial funds. To achieve the target of smart growth it will be necessary to provide a simplification of application procedures for small and medium sized enterprises. Recently, it has taken applicants up to one year to progress from applying for ERDF funds to receiving financial transfers. For dynamic processes such as innovation, this time span is too long.

8. Annex I – Analysis of project samples

8.1 Project: Community Initiative URBAN Halle (Saale)[8]

Summary description

The Community Initiative URBAN provided support for the integrated urban development of the 'Riebeck-Quarter', an area in Halle which has its origins in the second half of the 19th century. At that time, a sugar refinery, a plant producing coffee substitute made from malt, and residential buildings for workers were established there. The Riebeck-Quarter and the two plants mentioned faced the challenge of de-industrialisation when the centrally planned economy collapsed. Support was provided for a number of projects designed to improve the economic and social situation and the image of the district. CI URBAN provided support for a Youth and Leisure Workshop and for land recultivation (Ministerium für Wirtschaft und Technologie des Landes Sachsen-Anhalt,1996: 24-29). The latter initiative resulted in the creation of a park. CI URBAN was successful because it was part of a wider approach that comprised brownfield recultivation, provision of infrastructure for SMEs (community craft centre), and social infrastructure.

Underlying problem and context

The collapse of the centrally planned economy brought numerous development problems for Halle and many other cities in East Germany. The Riebeck-Quarter, which is located in the neighbourhood of the Halle Main Station, experienced its booming phase in the second half of the 19th century. At that time, a number of manufacturing plants were established, such as a sugar refinery, a plant producing coffee substitute based on malt, and an engineering works, and residential houses were built close to the company sites. However, investment for modernising machinery and industrial buildings had been widely neglected during the period of the centrally planned economy. Moreover, the renovation of old dwellings did not occur. Instead, new satellite cities were built, such as in Halle Neustadt. When East Germany was transformed into a market economy, the companies mentioned above were not competitive, and they were closed down. The Riebeck-Quarter looked desolate, and it had a poor image at the beginning of the 1990s.

Detailed description[9]

OP CI Urban included a total investment volume of DM10.2 million (€5.6 million, 2000 prices), of which DM8.6 million (€4.7 million, 2000 prices) stemmed from ERDF and the federal state budget (Halle Die Stadt, 2000: 38). Halle city contributed DM1.6 million (€0.9 million, 2000 prices). URBAN support was provided for the establishment of a Youth and Leisure Workshop (investment: DM4.8 million - €2.6 million, 2000 prices), which was designed both to improve employment opportunities for young people and to offer facilities for leisure activities. Moreover, CI URBAN provided funding for recultivating a former railway station (*Thüringer Bahnhof*) and the establishment of a park on this site (investment: DM4.6 million - €2.5 million, 2000 prices). CI URBAN was complemented by

[8] The description of CI Urban Halle OP and the associated measures is based on the documents cited and on an expert interview with a representative of the Halle city administration. The authors express their thanks to the Economic Support Unit of the Halle city administration for providing the respective documents and information on support measures for the 'Riebeck-Quarter' and its effects.

[9] The expenditure data displayed in this paragraph for CI URBAN Halle and for the funding by the Joint Task 'Improvement of the Regional Economic Structure' represents an update as of January 2000.

funding from other sources in order to improve the economic situation. For example, Halle city bought the industrial sites of the previous sugar refinery ('Venag Ostzucker') and of the plant producing coffee substitute based on malt ('Venag Kaffeerösterei') in September 1996. The purchase of these sites had the objective of creating preconditions for the revitalisation of the whole Riebeck-Quarter. The demolition of the remains of the previous sugar and coffee-producing plants was pursued using job-creation schemes ('*ABM*') funded by the labour administration. The land purchase was followed by building a community craft centre. Its target was to maintain the inner city as a place where business activities are possible, and to avoid further displacement and suburbanisation of small business activities. The investment costs for building the community craft centre amounted to about DM13 million (€7.1 million, 2000 prices). The main source of funding for the craft centre was the Joint Task 'Improvement of the Regional Economic Structure' (GRW), which represents a common federal-federal State regional policy support scheme. Moreover, the GRW provided support for the building of roads for transport purposes inside the sites and for connecting the recultivated industrial sites with roads of inter-regional importance. Altogether DM24.6 million (€13.4 million, 2000 prices) were spent on opening up the sites. The Halle city administration subsequently successfully pursued an active strategy to attract investors in favour of the Riebeck-Quarter, which was complemented by decisions to locate units of the State administration and the judicial system there.

Outputs and achievements

The community craft centre which was established at the former coffee company site hosts small businesses employing ca. 230 persons. Another manufacturing company, SONOTEC, a producer of ultrasonic measuring (90 employees), is located in the Riebeck-Quarter (SONOTEC, no date of publication: no pagination). Additional service companies also located in the neighbourhood, partly as a result of investors' international location decisions: DELL established a service centre at the former sugar refinery site, where about 760 persons are employed (as of September 2010) (Dell Deutschland, 2010: no pagination). Moreover, the Zur Rose company (82 employees, as of spring 2011), a logistic company for pharmaceutical products has located there (Zur Rose Pharma GmbH, no date of publication: no pagination, Auszug aus Wochenspiegel Halle Saale, 8. März 2012). Gollmann Kommissionierungssysteme, a producer of storing technologies, also located at the Riebeck-Quarter on the redeveloped sites (Gollmann Kommissioniersysteme, no date of publication: no pagination). The location of a car dealership is another example, which used renovated factory workfloors. In addition, the Riebeck-Quarter benefited from the location of the 'Judical Centre Halle', which comprises several courts and the body of public prosecutors (800 employees) (Das Justizzentrum Halle, no date of publication: no pagination). Furthermore, a police headquarters was established in the Riebeck-Quarter.

Value-added

CI URBAN was part of a wider range of measures designed to pursue integrated urban development. Nowadays, the district is regarded as an example of successful structural transformation from obsolete 'old industries' to a new set of manufacturing firms, service providers and State and judicial administrations, complemented by the improvement of dwellings and the creation of a better environment and leisure facilities.

Conclusions

The value-added described above stems from an appropriate combination of enterprise-related infrastructural support with environmental improvement, the modernisation of dwellings, and support for social inclusion by establishing a Youth and Leisure Workshop. This is confirmed by the FIR, which highlights the effective combination of several support schemes (Sachsen-Anhalt; Halle Die Stadt; TROJE, 2003: 28). According to expert assessment, CI URBAN could only develop its effects in strong combination with other support measures, especially with enterprise-related infrastructural measures. CI URBAN alone would not have had these effects.

8.2 Project: Technology and Incubator Centre Halle[10]

Summary description

ERDF supported the establishment of three core units of Halle's Technology and Incubator Centre: a Bio Centre, a Medical Centre, and a Bio-Nano Centre. They are located at the so-called Weinberg campus, a science park located in Halle (Saale), in the southern part of Sachsen-Anhalt. In its immediate neighbourhood, there are numerous university and non-university research institutes from which the three centres benefit.

Underlying problem and context

The background to establishing the three entities belonging to the Halle Technology and Incubator Centre is the challenge of stimulating structural change in Halle's economy toward a more science-based economic structure. Its necessity, on the one hand, arose with the sharp de-industrialisation after German unification in the course of which Halle lost its large manufacturing enterprises. On the other hand, the presence of the Marin Luther University, which specialises in natural and medical sciences, and the establishment of a number of new non-university research institutes after 1990 belonging to Fraunhofer, Leibniz and the Max-Planck Association, have created favourable pre-conditions for establishing new technology-oriented firms. According to an expert's retrospective view, the initial idea in the mid-1990s was to enhance development in biotechnogy, medical technology and materials research. The vision drawn in the starting phase of the Technology and Incubator Centre/Biocentre was to create synergies between the existing research compentences of public research entities and technology-oriented start-ups and young firms. In practice, this vision has become reality (see below).

Detailed description

The Bio Centre and the Medical Centre represent investment volumes of €25 million (€26.4 million, 2000 prices) and €27 million (€25.3 million, 2000 prices) respectively (Weinberg campus, no date of publication: no pagination). The first was opened in 1998, the latter in 2000. €32 million (€29.9 million, 2000 prices) were spent on the Bio-Nano Centre, which was opened in 2006. ERDF contributed to the establishment of all three centres. The contribution to the Bio-Nano Centre amounted to about €17 million (€15.9 million, 2000 prices) (Sachsen-Anhalt, no date of publication,

[10] The description of this project is based on information and documents provided by the management of the Technology and Incubator Centre / Biocentre Halle. The authors express their thanks for the valuable support given.

no pagination). The Centre provides industry-specific infrastructure. The Technology and Incubator Centre altogether hosts five clean rooms of which two are used for materials sciences, two for pharmaceutical purposes, and one is a clean greenhouse. At the Weinberg campus, where the Technology and Incubator Centre is located, public research facilities and firms have located especially from the following fields:

Environmental and energy technology

Biotechnology

Biomedicine

Bioinformatics

Bioanalytics

Materials sciences and nanotechnology

Industrial and processing technology (Weinberg campus Germany Halle (Saale) no date of publication: 8).

According to expert assessment, the investment would not have been possible without support from the ERDF. Funding for the Centre was provided, beyond ERDF, from the federal and the federal State budget and from own resources, especially from shareholder loans. The ERDF supported not only the three units at the Technology and Incubator Centre / Biocentre, but also public research facilities (university, non-university) located in the neighbourhood. The investment at Weinberg campus altogether amounts to about €1 billion over a period of 22 years (including expenditure for the Technology and Incubator Centre / Biocentre (see Weinberg campus, no date of publication, no pagination). The operating costs of the Technology and Founders' Centre have been covered by rent revenues and by service fees, i.e. the revenues cover the operational costs. Because the Centre has an incubator function, firms also move on. When a firm leaves the incubator, it takes approximately three months to attract a successor firm. During this period, the rooms undergo renovation and modernisation.

Outputs and achievements[11]

The nature of the Technology and Incubator Centre / Biocentre means that it is targeted at SMEs. Currently, the Centre hosts 53 firms, of which 28 stem from regions outside Halle, for instance from Finland (1), Belgium (1), the United States (1) and the Netherlands (1) and from the western part of Germany (16). The firms at the Centre have 520 employees on the payrolls. The average rate of occupancy is 96-98 percent per year. In a long-term perspective over 18 years, the Centre acted as an incubator for 164 start-ups, of which 85.4 percent had their origins in academia. The majority of the start-ups (67.7 percent) had their roots at the Martin Luther University Halle-Wittenberg. A proportion of 17.9 percent of the start-ups originate from other Federal States in Germany and from abroad. The industry structure of the firms located at the centre shows a strong complementarity to the fields of academic research available at the Weinberg campus. Hence, biotech firms represent the largest proportion, followed by nano-technologies, bio-medicine, and process technology. The university and non-university research units located in the neighbourhood altogether employ 4,919 persons.

[11] The information in this paragraph mainly stems from the Weinberg campus, no date of publication.

Value-added

Beyond supporting start-ups, the value-added of the Technology and Incubator Centre / Biocentre can be seen in its role as a node in Halle's network of science-industry relations. The centre is not only a business incubator, but it also works as the coordination unit of the Weinberg campus e.V., a network using the legal form of a registered association. It was founded to facilitate science-industry cooperation at the Weinberg campus site (see above) and beyond. It also integrates other firms and actors from outside the campus.

The proximity of companies and public research entities obviously forms an important advantage. For instance, a representative of a bio-pharmaceutical company emphasised the advantages of spatial proximity to potential partners for cooperation in the company or university sector (see Ministerium der Finanzen des Landes Sachsen-Anhalt, EU-Verwaltungsbehörde, eds., no date of publication). All in all, the Centre's success is closely connected with the resources and competences of the public research entities located at the Weinberg site.

Conclusions

The fieldwork identified a number of success factors. First, strictly following the idea to establish the Centre in the immediate neighbourhood of university faculties and non-university research institutes created favourable conditions for enhancing start-ups with their origins in the science sector. Second, the management of the Centre avoided pursuing a dominant sectoral or technological specialisation, even though external advisers had recommended a specialisation. Instead, the management and the owners preferred a degree of openness in terms of technologies. Third, the Centre's management perceives itself as a service provider for the firms, which means that there are close contacts and it provides support to the firms located there with regard to activities abroad. Fourth, maintaining the Centre's success requires continuous conceptual work, and therefore an expert group has been established. It develops technology concepts with a perspective of 10-15 years.

8.3 Project Zellstoff Stendal GmbH[12]

Summary description

ERDF provided support for the establishment of Zellstoff Stendal GmbH, a plant producing Northern Bleached Softwood Kraft (NBSK) market pulp, in Arneburg, in the Altmarkkreis Stendal district, which is an economically weak, sparsely populated rural region in the north of Sachsen-Anhalt. Zellstoff Stendal GmbH belongs to the US-Canadian Mercer International Group. The plant was built on a site which was previously designated to host a nuclear power station. Several reactor buildings, factory workshops and cooling towers had already been built. The nuclear power station project was cancelled after German unification because the Soviet nuclear reactors were not regarded as safe enough. Beyond the immediate creation of new jobs in the pulp plant, new employment opportunities arose in upstream and downstream firms. The wood and the chipped wood used for pulp production stem from producers covering a radius of 250 km around the plant location (see Stendal – Europas modernste Zellstofffabrik Teil II 2006/2010).

[12] The description of the Zellstoff Stendal case is based on the examination of documents gathered from Internet sources.

Underlying problem and context[13]

The central planning authorities of the former GDR had decided to establish a nuclear power station in Arneburg, close to the town of Stendal. Several reactor buildings, factory workshops and cooling towers had been built in the 1980s. Nuclear reactors produced in the Soviet Union were designated for utilsation. However, after German unification the project of establishing a nuclear power station in Arneburg/Stendal was cancelled, as the Soviet nuclear reactors were not regarded as safe enough. The location of Arneburg/Stendal belongs to the Altmarkkreis Stendal district. This district is densely populated, experienced major depopulation after 1990, and suffers from structural weaknesses. The US-Canadian company Mercers International expressed interest with respect to the industrial site in Stendal in 1998. The building of the pulp-producing plant began in 2002. In July 2004, the pulp production started.

Detailed description

The European Commission decided in favour of subsidies designated to establish a pulp-producing plant in Arneburg near to Stendal in June 2002 (Europäische Kommission, 2002). State authorities regarded the establishment of this plant as a driver for economic development in the Altmark region (Ministerium für Wirtschaft und Arbeit, 2002a: no pagination). The investment plan envisaged 580 employees directly in the plant and more than 1,000 in supplier, customer and service firms. Locational advantages which had an impact on the investment decision in favour of Arneburg included a fully prepared industrial site and a sufficient supply of wood on favourable conditions (Agrarsoziale Gesellschaft e. V., no date of publication: 29). The planned total investment amounted to €840 million (€785.8 million, 2000 prices) of which about €275 million (€257.2 million, 2000 prices) stemmed from European, federal and federal State budgets (Ministerium für Wirtschaft und Arbeit, 2002a: no pagination). During the building phase, a maximum of 2,500 persons were employed on the construction site (AIR 2006, 2007: 148). Companies, for instance craft businesses, benefitted from the investment-related contracts. Firms located in the region received a proportion of 70 percent of the total volume of the construction expenditure (information as of 28. August 2003, Ministerium für Wirtschaft und Arbeit, 2002b: no pagination). In addition, the central German region was of importance with respect to orders for equipment, for instance building cranes, electric motors, and equipment for water preparation and wastewater treatment.

Outputs and achievements

Six years after starting production, Zellstoff Stendal GmbH employed 601 persons in 2010, which is above the expected number of 580 (Sachsen Bank, 2011: 5, in comparison to Ministerium für Wirtschaft und Arbeit, 2002b: no pagination). The turnover was €390 million (as of 2010) (Sachsen Bank, 2011: 5).

Value-added

The existence of Zellstoff Stendal GmbH was one reason that the Italian paper-producing company, SOFIDEL, established a branch, 'Delipapier', producing tissue papers in Arneburg (Ministerium für

[13] The information displayed in this paragraph mainly stems from: Agrarsoziale Gesellschaft e. V., no date of publication: 29; Sachsen-Anhalt, 2007a: 148.

Wirtschaft und Arbeit, 2005: no pagination). Delipaper was established in the immediate neighbourhood of the pulp-producing plant. The planned investment amounted to €114.4 million (€107.0 million, 2000 prices), of which €13.5 million (€12.6 million, 2000 prices) were funded by the GRW. Half of the GRW contribution stemmed from the ERDF (AIR 2007, 2008: 139). The planned number of jobs after beginning operations (end of 2006) amounted to 220. According to a statement by Horst Rehberger, Minister of Economics in Sachsen-Anhalt at that time, the investment-related incentives provided by the GRW/ERDF were an important reason for locating in Arneburg/Stendal. Furthermore, the advantages in terms of logistics were of even greater importance: proximity to the pulp mill, a well-developed industrial site, accessibility by rail, road and waterway, and non-bureaucratic handling of the investment project by the State, district and local authorities (Ministerium für Wirtschaft und Arbeit, 2005: no pagination).

Moreover, the pulp plant is at the forefront in terms of environmental sustainability, and it operates Germany's largest power station based on biomass. According to the plant's information, the Zellstoff Stendal project is innovative because it defines new environmental standards in numerous fields (ZS Zellstoff Stendal ein Unternehmen der Mercer International Group, no date of publication: no pagination, b). Transport is to a large extent based on environment-friendly methods: 50 percent of pulp production is shipped by rail and waterway (Stendal – Europas modernste Zellstofffabrik Teil II 2006/2010). The power station uses tree bark and other production-related waste to produce electrical power (Agrarsoziale Gesellschaft e. V., no date of publication: 29) which is sufficient to meet the plant's own demand for electrical energy (ZS Zellstoff Stendal ein Unternehmen der MERCER International Group, no date of publication: no pagination, a). In addition, it provides electrical energy to the public electricity network.

Conclusions

The location of the pulp-producing plant in a peripheral rural space can be regarded not only as a result of the 31.34 percent subsidy (Europäische Kommission, 2002: 13), but also of other factors, namely that the Arneburg/Stendal location offered a prepared industrial site and accessibility by waterway, road and rail transport. Furthermore, wood resources in the surrounding territory are strong enough to provide the resource base for pulp production. The short period of time taken to build the plant, and the anticipation of requirements for environmental protection, can be interpreted as a result of strong and successful cooperation between the investor and the public administration involved.

9. Annex II – Structure of programmes 1991-2013 in Sachsen-Anhalt

All funding in millions of Euros (2000 prices)

Programme	EU Funding source	ERDF allocation	ESF allocation	National funds (inc private)	Total funds
ROP 1991-93					
Focal point 1: Infrastructure (m DM)	ERDF	131.4		244	375.4
Focal point 2: Business investment (m DM)	ERDF	160.9		1,448.1	1,609.1
Focal point 3: Development of human resources (m DM)	ERDF	5.7		10.7	16.4
Focal point 7/8 Improvement of rural regions/Agriculture and environment (m DM)	ERDF	30		55.7	85.7
ROP 1994-99					
Development focal point 1.1 Productive investment	ERDF	503.3		5,045.5	5,548.8
Development focal point 1.2 Complementary infrastructure	ERDF	226.2		272.8	499
Development focal point 2.1 SME/Productive investment	ERDF	272.1		2,448.6	2,720.7
Development focal point 3.1 Research, technology, innovation	ERDF	66.8		155.8	222.6
Development focal point 4.1 Measures to improve environment	ERDF	94.3		281.2	375.5
Development focal point 6.2 Agriculture, rural development, fishery/rural development	ERDF	35.1		190	225.1
Development focal point 5.1 Labour force potential ERDF (ESF-dominated OP)	ERDF	189.5		189.6	379.1
Development focal point **6.1.1** Agriculture, rural development, fishery/ ERDF (EAGGF-dominated OP)	ERDF	31.7		341.5	373.2
ROP 2000-2006					
Focal point 1: Enhancing competitiveness of the enterprise sector, especially SME	ERDF	918.9		2,915.4	3,834.2
Focal point 2: Infrastructural measures	ERDF	740		655.6	1,395.6
Focal point 3: Environmental protection and improvement	ERDF	187.2		127.4	314.5
Operational Programme 'Transport infrastructure'					
1 Federal railway	ERDF				
2 Federal roads	ERDF				
3 Federal water ways	ERDF				

ROP 2007-2013					
Convergence Region					
Priority axis 1: Innovation, research and development	ERDF	222.3	0.0	78.1	300.4
Priority axis 2: Improving competitiveness of the enterprise sector	ERDF	421.9	0.0	145.0	566.8
Priority axis 3: Enterprise-related infrastructure	ERDF	152.0	0.0	52.5	204.5
Priority axis 4: Sustainable urban development including educational infrastructure	ERDF	157.8	0.0	55.5	213.3
Priority axis 5: Environmental protection and risk prevention	ERDF	118.1	0.0	39.8	157.9
Phasing-Out Region					
Priority axis 1: Innovation, research and development	ERDF	183.4	0.0	61.6	245.1
Priority axis 2: Improving competitiveness of the enterprise sector	ERDF	108.7	0.0	36.1	144.8
Priority axis 3: Enterprise-related infrastructure	ERDF	61.3	0.0	20.6	81.9
Priority axis 4: Sustainable urban development including educational infrastructure	ERDF	59.2	0.0	19.8	79.0
Priority axis 5: Environmental protection and risk prevention	ERDF	47.1	0.0	19.9	67.1
Federal Operational Programme Transport ERDF 2007-2013					
1 Federal railway	ERDF	41.1	0.0	46.7	87.9[b]
2 Federal main roads	ERDF	86.3	0.0	53.1	139.4
3 Federal waterways	ERDF	22.5	0.0	12.1	34.7[c]

[a] No data available. [b] Including national public and private funding beyond NOP. [c] Excluding national public and private funding beyond NOP.

Sources: FIR 1991-1993, no date of publication; FIR 1994-1999, 2003, data compilation by Sachsen-Anhalt Investment Bank for the period 2000-2006, 2007-2013, data on NOP Transport by Federal Ministry of Transport, Building and Urban Development and Ministry of Spatial Planning and Transport of the Federal State of Sachsen-Anhalt, calculation by IWH.

10. Annex III: Reported achievements

10.1 1994-99 Regional Operational Programme

	Indicator	Target	Reported
Priority1. Productive investment and complementary infrastructure			
1. 1. Productive investment	ERDF funding (in million €)	926.354	841.381
	Created/ safeguarded permanent jobs or training places	120,000	40,929
1. 2. Complementary infrastructure	ERDF funding (in million €)	416.419	500.098
	Supply of areas to improve the business sites	no data	realised
2. Small and medium-sized enterprises			
2.1 Productive investments	ERDF funding (in million €)	500.801	492.064
	Creation/ securing of permanent jobs or training places	60,000	35,420
3. Research, technological development and innovation - industrial economy			
3.1 Industrial economy	ERDF funding (in million €)	no data	14.820
	Created/ safeguarded permanent jobs or training places:	no data	1,701
	- thereof high-quality jobs	no data	44
3.2 Infrastructure operations	ERDF funding (in million €)	no data	108.221
	Significant improvement in research and technology infrastructure	no data	realised
4. Measures to improve environment			
	ERDF funding (in million €)	173.661	156.788
	Number of construction of sewage treatment plants:	no data	no data
	- thereof with cleaning and sewage treatment plant capacity	approx. 18,000	no data
	- thereof increase in population equivalent	no data	no data
	- thereof connection rate to sewage treatment plants in national average	of 62% to 77%	approx. 77.9%
	- thereof sewage pipes	approx. 170 km	no data
❑ Priority 5:Training and retraining measures (ESF-dominated)			
	ERDF funding (in million €)	350.586	340.252
	Created/ safeguarded permanent jobs or training places in total	no data	55
	Development and expansion of inter-company training, continuing education and training sites	no data	achieved
Priority 6: Agriculture, rural development, fishery (EAGFL-dominated)			
6.1. Integrative development	ERDF funding (in million €)	58.580	53.606
	Created/ safeguarded permanent jobs or training places in total:	no data	3,520
	- thereof created jobs or training places	no data	965 (incl. 182 training places)
	- thereof safeguarded jobs	no data	2,555
	Supported accommodation capacities in hotel industry in total:	no data	2,115
	- thereof created accommodation capacities in hotel industry	no data	1,619
	- thereof secured accommodation capacities in hotel industry	no data	496

	ERDF funding (in million €)	64.675	63.017
6.2. Rural	Created/ safeguarded permanent jobs or training places in total:	no data	1,940
	- thereof created jobs or training places	no data	729 jobs (incl. 89 training
	- thereof safeguarded jobs	no data	1,211
	Supported accommodation capacities in hotel industry in total:	no data	1,956
	- thereof created accommodation capacities in hotel industry	no data	1,325
	- thereof secured accommodation capacities in hotel industry	no data	631

Source: FIR 1994-1999, 2003: 99-110.

10.2 2000-2006 Regional Operational Programme

	Indicator	Unit	Target	Reported	Achievement in %
Priority 1: Enhancing competitiveness of the enterprise sector, especially SMEs					
1.11 Support for productive investment	ERDF funding	million €	700.46	696.93	99.50
	Job created (in total)	permanent jobs	12,117	20,950.60	172.90
	- thereof women	permanent jobs	-	7,307.90	-
	Jobs safeguarded (in total)	permanent jobs	24,236	56,733.10	234.09
	- thereof women	permanent jobs	-	17,964	-
	SMEs participating in funded projects	number	-	1,515	-
	Start-ups	projects	-	447	-
	Firm expansion	projects	-	1,088	-
	Firm acquisition	projects	-	5	-
	Rationalisation/modernisation of business facilities	projects	-	249	-
	Firm relocation	projects	-	24	-
1.21 Support for innovation, product and process development	ERDF funding	million €	105.46	100.59	95.38
	SMEs participating in funded projects	number	1,105	472	42.71
	Supported free inventors (in total)	persons	238	349	146.64
	Innovation assistants	persons	127	155	122.05
	Projects in the field of R&D, innovation, technology transfer	projects	2,119	1,584	74.75
1.22 Information and communication technologies	ERDF funding	million €	11.56	11.49	99.34
	Projects in the field of R&D, innovation, technology transfer	projects	88	98	111.36
1.23 Environmental technologies	ERDF funding	million €	2.39	1.84	76.85
	SMEs participating in aided projects	number	15	24	160.00
	Projects in the field of R&D, innovation, technology transfer	projects	30	31	103.33
1.31 Initiative for the SME sector	ERDF funding	million €	14.20	12.91	90.94
	SMEs participating in funded projects	number	5,400	3,335	61.76
	Consulting/ certification of companies, information and awareness-raising measures	projects	-	3,340	-

	Start-ups	persons	-	1,700	-
	Projects in market development	projects	-	3,583	-
	Projects in the field of R&D, innovation, technology transfer	projects	-	1,242	-
1.32 New financial instruments to support SMEs	ERDF funding	million €	148.18	150.93	101.86
	Start-ups	persons	142	646	454.93
	Projects in the field of R&D, innovation, technology transfer	projects	84	227	270.24
	Compensation of temporary financial requirements	projects	-	230	-
	Market launch and financing growth	projects	-	164	-
	Venture capital	projects	-	240	-
Priority 2: Infrastructural measures					
2.11 Business-related infrastructure	ERDF funding	million €	146.03	146.03	100
	Extent of the supported projects: floorspace	m^2	987,698	18953,000	1,918.91
	Extension of existing facilities	projects	-	9	-
	Sites development for tourism	projects	-	2	-
	Logistical infrastructure	projects	-	38	-
	New construction/ new acquisition	projects	-	84	-
	Development of floorspace	projects	-	25	-
	Local transport connection to trade sites	projects	-	31	-
	Regional development concepts, planning and consultancy services, regional management	projects	-	25	-
	Revitalisation of floorspace	projects	-	29	-
	Reconstruction/ modernisation	projects	-	17	-
2.12 Tourism-related infrastructure	ERDF funding	million €	51.62	51.62	100
	Site development for tourism	projects	-	169	-
	Regional development concepts, planning and consultancy services, regional	projects	-	16	-
	Extent of the supported projects: floorspace	m^2	-	33,000	-
2.21 R&D infrastructure	ERDF funding	million €	261.77	252.03	96.28
	New construction/ new acquisition	projects	1,209	683	56.49
	Reconstruction/ modernisation	projects	152	199	130.92

	Extent of the supported projects: floorspace	m^2	71,397	84,618.80	118.52
	Projects in the field of R&D, product and process innovation, technology transfer	projects	1,305.75	733	56.14
	Extension of existing facilities	projects	-	427	-
	Capacity of the supported projects in infrastructure: university places	number	-	2,023	-
	Infrastructure of technology transfer TGZ	projects	-	53	-
	Communication centres, information and communications technologies, multimedia infrastructure, ICT equipment	projects	-	287	-
2.22 ICT infrastructure	ERDF funding	million €	5	5.01	100.15
	New construction/ new acquisition	projects	33	10	30.30
	Projects in the field of R&D, product and process innovation, technology transfer	projects	33	13	39.39
	Cooperation and joint projects	projects	-	8	-
2.31 infrastructure in the field of professional training; ICT equipment in schools	ERDF funding	million €	36	36	100
	Extension of existing facilities	projects	-	2	-
	New construction/ new acquisition	projects	-	3	-
	Reconstruction/ modernisation	projects	-	6	-
	Communication centres, information and communications technologies, multimedia infrastructure, ICT equipment	projects	-	445	-
	Created multimedia workstations	number	-	6 596	-
2.41 Urban and local infrastructure	ERDF funding	million €	153.78	154.24	100.30
	New construction/ new acquisition	projects	7	49	700
	Reconstruction/ modernisation	projects	156	226	144.87
	Revitalisation of floorspace	projects	11	63	572.73
	Number of public projects in building repairs	number	-	13	-
	Equality of opportunities, social integration	projects	-	58	-
	Extension of existing facilities	projects	-	30	-
	Rehabilitation for subsequent commercial use (commercial area/ industrial area/ mixed area)	projects	-	2	-
	Cooperation and joint projects	projects	-	1	-
	Investment in enhancement of economic infrastructure in the cultural sector, culture tourism, development of the cultural heritage, conversion of cultural bodies	projects	-	20	-
	Enhancement in built environment	projects	-	234	-

	Town centre management	projects	-	38	-
	Strengthening economic prosperity and employment	projects	-	143	-
	Design of residential areas	projects	-	89	-
	Extent of the supported projects: floorspace	m²	-	36,710	-
2.51 Transport infrastructure	ERDF funding	million €	138.69	138.46	99.84
	Length	m	356,000	401,453	112.77
	New construction/ new acquisition	projects	53	79	149.06
	Reconstruction/ modernisation	projects	171	189	110.53
	Streets/ ways beyond districts	projects	110	146	132.73
	Streets/ ways in districts	projects	107	131	122.43
	Extent of the supported projects: floorspace	m²	62,700	31,670.19	50.51
Priority 3: Environmental protection and improvement					
3.11 Water supply/wastewater disposal	ERDF funding	million €	123.64	123.65	100.01
	Number of inhabitants connected to public sanitation services	persons	90,092	147,450	163.67
	Number of inhabitants connected to public water supply	persons	-	5,059	-
3.21 Air monitoring/ emission reduction	ERDF funding	million €	4.97	5.08	102.33
	New construction/ new acquisition	projects	52	101	194.23
	Reconstruction/ modernisation	projects	693	613	88.46
	Demonstration and pilot schemes	projects	-	18	-
	Low-emission drive systems - vehicles and petrol stations	projects	-	814	-
3.31 Waste disposal/ recycling	ERDF funding	million €	0.11	0.11	100
	New construction/ new acquisition	projects	1	1	100
3.41 Regeneration of abandoned areas and conversion areas, equalisation measure for ecological purposes	ERDF funding	million €	71.38	70.18	98.33
	Length	m	17,150	14,816	86.39
	Revitalisation of areas	projects	218	156	71.56
	Extent of the supported projects: floorspace	m²	13708,344	5142,529.74	37.51
	Rehabilitation for subsequent commercial use (commercial area/ industrial area/ mixed area)	projects	-	21	-
	Conversion areas	projects	-	30	-

	Recultivation/ development of the landscape/ local recreation	projects	-	17	-
	Ecological compensation measures	projects	-	60	-
	Averting of danger	projects	-	13	-

Source: Authors compilation from FIR 2000-2006, 2010: 47-74

10.3 2007-2013 Regional Operational Programme (thus far)

Priority	Indicator	Unit	Initial value	Target	2007 granted	2008 granted	2009 payment	2010 payment	2011 payment
1. Innovation, research and development	Jobs created (in total)	persons	0	870	0	950	0	0	212
	Jobs created: women	persons	0	276	0	75	0	0	58
	RTD projects	number	0	848	0	0	347	468	541
	Companies/ research institutions in cooperation projects	number	0	10	0	0	16	15	19
	Beneficiary research workspace	persons	0	600	0	0	0	0	0
	Projects of direct investment grants for SME	number	0	90	0	100	0	0	74
	Created jobs by direct investment grants for SME	persons	0	800	0	950	0	0	212
	Transport projects	number	0	66	0	0	0	0	0
	Projects in connection with renewable energy	number	0	204	0	0	0	0	0
	Additional capacity for production of renewable energy	MW	0	250	0	0	0	0	0
	Jobs safeguarded (in total)	persons	0	870	0	130	0	0	308
	Jobs safeguarded: women	persons	0	226	0	50	0	0	163
	Total eligible expenditure	€	0	660412,349	0	97811,899.75	253452,114.63	311799,130.89	425400,275.47
	Supported projects	number	0	1,218	0	100	363	483	634
	Renewed and new effective floorspace in buildings	m^2	0	39,000	0	0	0	0	0
	Supported projects of individual operational innovative	number	0	681	0	0	259	346	390
	Supported shareholdings by venture capital funds	number	0	90	0	100	0	0	74
	Supported innovative projects in public financed R&D at and out of universities	number	0	44	0	0	0	0	0
	R&D joint projects for formation of cooperation and networks in economy and science	number	0	133	0	0	104	137	170
	Projects in the field of climate protection and renewable energy	number	0	270	0	0	0	0	0
	Supported investment and project volume under R&D and innovative projects	€	0	816100,000	0	97811,899.75	132167,975.33	208155,909.85	425400,275.47
	Supported project volume of individual operational innovative projects	€	0	241800,000	0	0	40045,348.54	69938,187.95	170276,982.02
	Supported investment volume under venture capital participation	€	0	86300,000	0	85011,899.75	85011,849.11	85011,849.11	85011,849.11

	R&D projects at and out of universities	€	0	379400,000	0	12800,000	12988,067.13	26997,373.05	128204,679.62
	Supported project volume of R&D joint projects, cooperation and network projects	€	0	37800,000	0	0	5158,124.72	8565,133.35	11122,945.19
	Investment volume in the field of climate protection and renewable energy	€	0	70800,000	0	0	0	0	0
	Supported/ created jobs by risk-sharing	persons	0	800	0	0	0	0	520
	Supported/ created jobs for women by risk-sharing (at least 30%)	persons	0	240	0	0	0	0	221
2. Improving competitiveness of the enterprise sector	Jobs created (in total)	persons	0	13,595	0	0	348	1,054	1,553
	Jobs created: women	persons	0	3,100	0	0	80	188	573
	RTD projects	number	0	2,651	0	0	434	703	1,029
	Projects of direct investment grants for SME	number	0	2,986	0	6	371	773	1,107
	Supported projects of business foundation	number	0	100	0	0	0	0	0
	Created jobs by direct investment grants for SME	persons	0	44	0	0	0	0	0
	Information Society projects	number	0	15	0	0	0	0	0
	Created training places (in total)	persons	0	2,976	0	0	48	157	218
	Jobs safeguarded (in total)	persons	0	46,200	0	0	1,738	15,745	17,095
	Jobs safeguarded: women	persons	0	13,426	0	0	339	3,642	3,669
	Participants (in total)	persons	0	1,100	0	0	4	35	312
	Total eligible expenditure	€	0	861311,345	0	247872,096	1722363,200.33	1488430,564.02	2370175,433.68
	Supported projects	number	0	5,662	0	6	831	1,476	2,134
	Supported companies	number	0	375	0	0	0	279	329
	Supported projects of individual operational innovative projects	number	0	166	0	0	425	668	717
	Supported projects to reduce financial barriers for SMEs	number	0	784	0	4	0	655	778
	Initiatives in the field of business foundation offensive	number	0	110	0	2	0	0	0
	Supported consultations for SMEs	number	0	2,450	0	0	9	35	314
	Trade-fair participation of SMEs	number	0	2,100	0	0	369	116	310
	Supported individual operational investment volume	€	0	2649200,000.00	0	247872,096.00	917472,963.60	1399325,407.94	2115963,807.97
	Supported jobs by investment grants and lending instruments	persons	0	58,855	0	0	2,087	16,799	18,648

	Supported jobs for women by investment grants and lending instruments (at least 28.2%)	persons	0	16,526	0	0	419	3,830	4,242
	Supported jobs in environmental technology by investment grants and lending instruments (at least 10%)	persons	0	5,85	0	0	0	29	61
3. Enterprise-related infrastructure	Transport projects	number	0	76	0	36	8	25	38
	Restored or new streets	km	0	50	0	58.98	0.25	7.85	39.47
	Restored or new railwas lines	km	0	23	0	0	0	0	0
	Restored sites	km^2	0	0.02	0	0	0	0	0
	Tourism projects	number	0	105	0	0	47	68	85
	Total eligible expenditure	€	0	346818,159	0	52625,738.98	110982,882.55	99029,314.66	221080,662.18
	Supported projects	number	0	275	0	36	73	122	152
	New created area for business, industry, tourism, redevelopment	ha	0	1.85	0	0	0	0	0
	Renewed and new bridges	km	0	24.00	0	1.43	0	0.04	0.10
	Supported projects in the field of GRW-eligible enterprise-related infrastructure	number	0	135	0	0	43	70	67
	Supported projects in the field of tourism marketing and cultural tourism	number	0	84	0	0	29	41	59
	Supported projects in the field of municipal road construction and road construction of the country	number	0	41	0	36	1	11	26
	Supported investment volume in enterprise-related infrastructure	€	0	275600,000.00	0	52625,738.98	9606,291.47	38052,836.98	159991,110.66
4. Sustainable urban development including educational infrastructure	Created jobs	persons	0	100	0	0	0	0	0
	Information Society projects	number	0	2	0	0	0	0	0
	Restored sites	km^2	0	0.001	0	0	0	0	0
	Educational projects	number	0	604	0	0	77	126	185
	Beneficiary students (pupils)	persons	0	17,399	0	0	0	0	0
	Projects in the field of sustainability to raise attractiveness of towns and municipalties	number	0	232	0	0	20	49	74
	Jobs safeguarded (in total)	persons	0	240	0	0	0	0	0
	Beneficiary citizens by urban development measures	persons	0	550,000	0	0	730,960	841,080	807,277
	Total eligible expenditure	€	0	353887,350	0	0	7153,980.73	28129,643.60	105474,172.61

	Supported projects	number	0	881	0	0	99	204	312
	New created area business, industry, tourism, redevelopment	ha	0	0.13	0	0	0	0	0
	Supported integrated projects of urban redevelopment and urban development	number	0	212	0	0	22	78	127
	Supported projects to enhance educational infrastructure in the field of school and pre-school of the towns for	number	0	95	0	0	0	0	7
	Pilot schemes in the field of social infrastructure	number	0	60	0	0	0	0	0
	Supported investment volume in urban infrastructure (incl. urban educational infrastructure)	€	0	560200,000	0	0	36420,396.52	73771,275.11	105474,172.61
5. Environmental protection and risk prevention	Transport projects	number	0	101	0	1	1	10	14
	Additional population provided be water projects	inhabitants	0	0	0	0	0	0	1,358
	Additional population provided be sewage water projects	inhabitants	0	20,000	0	0	0	5,065	9,195
	Waste projects	number	0	250	0	0	0	0	0
	Restored sites	km^2	0	3.76	0	0	0.02	0.11	0.16
	Risk prevention projects	number	0	142	0	0	0	0	0
	Total eligible expenditure	€	0	272321,311	0	712,678.10	7470,300.14	20888,545.10	66 90,615.71
	Supported projects	number	0	972	0	1	21	60	132
	New created area business, industry, tourism, redevelopment	ha	0	326	0	0	0	0	0
	Renewed and new flooding areas	ha	0	445	0	0	0	0	0
	Renewed and new cycle paths	km	0	70	0	0	0	9.84	14.18
	Renewed and new dikes	km	0	12	0	0	0	0	0
	Renewed and new track system	km	0	8	0	0.33	0	0	0
	Backfilled shafts/ shifted routes, mining	m^2	0	824,000	0	0	0	0	0
	Supported investment volume in the field of environmental infrastructure and risk provisioning	€	0	439700,000	0	712,678.10	24883,581.56	55246,985.04	66090,615.71

Source: Authors compilation from AIR 2011, 2012: 60-111

11. Annex IV: List of interviewees and workshop participants

Name	Position (current and former roles where relevant)	Place	Date	Form
Bohn, Rudolf	Retired, former State Secretary at Ministry of Economics of the State of Sachsen-Anhalt	Magdeburg	14.06.2012	Face-to face
Bötel, Annegret	Head of evaluation team for period 2007-13, Rambøll Management Consulting (RMC)	Hamburg-Halle (Saale)	24.08.2012	Telephone
Bratzke, Petra, Dr	CEO of Halle Branch of Federal Employment Agency, previously responsible for EU SF at Sachsen-Anhalt Anhalt Trade Union Headquarter (DGB-Landesvorstand)	Halle (Saale)	26.06.2012	Face-to face
Costa-Zahn	Officer at EU SF unit at Federal Ministry of Economics and Technology	Berlin	04.06.2012	Face-to face
Diedrich, Stefanie	Officer at unit responsible for international cooperation at State Chancellery Sachsen-Anhalt	Magdeburg	26.07.2012	Face-to face
Franke, Heinz Friedrich, Dr	❑ Head of economic support unit at Halle (Saale) city administration	Halle (Saale)	24.09.2012	Face-to face
Geisthard, Ralf	Member of Parliament of Sachsen-Anhalt, Head of Committee of European, Federal and Media Affairs	Magdeburg	24.07.2012	Face-to face
Giza, Inken	Competence Centre for EU SF Economic and Social Partners	Magdeburg	07.06.2012	Face-to face
Gutowsky, Catrin	Head of unit responsible for interregional cooperation at Ministry of Science and Economics Sachsen-Anhalt	Magdeburg	10.07.2012	Face-to face
Heinke, Michael	Head of unit responsible for international cooperation at State Chancellery Sachsen-Anhalt	Magdeburg	16.08.2012	Face-to face
Heller, Norbert	Policy Officer - Seconded National Expert at Task Force for Greece, previously head of EU SF MA Sachsen-Anhalt	Telephone Brussels-Halle (Saale)	01.08.2012	Telephone
Hoffmeister, Carla	Officer at Ministry of Spatial Development and Transport of the State of Sachsen-Anhalt	Magdeburg	14.06.2012	Face-to face
Kakerbeck, Corinna	ERDF coordinator	Magdeburg	15.06.2012	Face-to face
Kelter, Thomas	Head of unit responsible for international cooperation at State Chancellery Sachsen-Anhalt	Magdeburg	26.07.2012	Face-to face

Name	Position (current and former roles where relevant)	Place	Date	Form
Köhler, Wilfried	Head of coordination unit 'Demographic change and forecast' at Ministry of Spatial Development and Transport Sachsen-Anhalt	Magdeburg	15.06.2012	Face-to face
Koll, Christian	Competence Centre for EU SF Economic and Social Partners	Magdeburg	07.06.2012	Face-to face
Lambert, Kurt Friedemann	Head of unit responsible for EU affairs at Ministry of Science and Economics of the State of Sachsen-Anhalt Anhalt at Ministry of Science and Economics of the State of Sachsen-Anhalt	Magdeburg	15.06.2012	Face-to face
Lukas, Wolfgang, Prof. Dr.	❑ CEO of the Technology and Founders' Centre/Biocentre Halle	Halle (Saale)	05.09.2012	Face-to face
Manthey, Manfred	Head of unit responsible for attracting investors at Ministry of Science and Economics of the State of Sachsen-Anhalt	Magdeburg	14.06.2012	Face-to face
Morgret, Sandra	Officer at unit responsible for international cooperation at State Chancellery Sachsen-Anhalt	Magdeburg	26.07.2012	Face-to face
Münch, Klaus	Head of unit responsible for transport infrastructure at Ministry of Spatial Development and Transport of the State of Sachsen-Anhalt	Magdeburg	14.06.2012	Face-to face
Nistripke, Udo	Craft Chamber Halle, member of group of Economic and Social partners	Halle (Saale)	06.06.2012	Face-to face
Oswald, Babette	Officer at Ministry of Spatial Development and Transport of the State of Sachsen-Anhalt	Magdeburg	14.06.2012	Face-to face
Scharr, Frank, Dr	Federal Chancellery, previously responsible for EU SF programme at State Chancellery Sachsen-Anhalt	Berlin	12.07.2012	Face-to face
Scheffel, Karin	Head of EU SF unit at Federal Ministry of Economics and Technology	Berlin	04.06.2012	Face-to face
Schreckenberger	Officer at EU SF unit at Federal Ministry of Economics and Technology	Berlin	04.06.2012	Face-to face
Senkbeil, Hendrik	Chamber of Industry and Commerce Halle/Dessau, member of group of Economic and Social partners	Halle (Saale)	18.06.2012	Face-to face
Stappenbeck, Joachim	Head of unit responsible for urban development at Ministry of Spatial Development and Transport of the State of Sachsen-Anhalt	Magdeburg	14.06.2012	Face-to face

Name	Position (current and former roles where relevant)	Place	Date	Form
Steinmetz, Thomas	Officer at unit responsible for interregional cooperation at Ministry of Science and Economics Sachsen-Anhalt	Magdeburg	10.07.2012	Face-to face
Töbermann, Stefan	Department director at Sachsen-Anhalt Investment Bank, previously officer at unit responsible for regional policy (GRW) at Ministry of Economics Sachsen-Anhalt-Anmhalt	Magdeburg	04.07.2012	Face-to face
Tögel, Tilman	Member of Parliament of Sachsen-Anhalt, Head of Committee of Economics, member of COR	Magdeburg	16.07.2012	Face-to face
Trognitz, Sigrun, Dr	Employers Association Sachsen-Anhalt Anhalt, member of the group of EU SF Economic and Social Partners	Magdeburg	03.07.2012	Face-to face
Wagner, Gerald	Officer at isw Institut für Strukturpolitik und Wirtschaftsförderung, involved in evaluation of EU SF in Sachsen-Anhalt in several periods	Halle (Saale)	29.08.2012	Face-to face
Wiedemeyer, Susanne	responsible for EU SF at Sachsen-Anhalt Anhalt Trade Union Headquarter (DGB-Landesvorstand), member of the group of EU SF Economic and Social Partners	Magdeburg	28.06.2012	Face-to face
Wilhelm, Ines	ERDF coordinator at Ministry of Spatial Development and Transport Sachsen-Anhalt	Magdeburg	14.06.2012	Face-to face
Wockenfuß, Christof, Dr	Head of department 'Locational policy', Chamber of Industry and Commerce Halle/Dessau	Halle (Saale)	18.06.2012	Face-to face
Zibolka, Olaf	Head of unit responsible for SME support at Ministry of Science and Economics Sachsen-Anhalt, previously head of unit responsible for regional policy (GRW)	Magdeburg	04.07.2012	Face-to face

Workshop participants (12th September 2012, Magdeburg, Roncalli House, 1 pm-5 pm)

Last name	First name	Affiliation
Jun.-Prof. Dr. Altemeyer-Bartscher	Martin	Halle Institute for Economic Research
Behrens	Dorit	Craft Chamber Magdeburg
Dr. Bratzke	Petra	CEO of Halle Branch of Federal Employment Agency, previously responsible for EU SF at Sachsen-Anhalt Anhalt Trade Union Headquarter (DGB-Landesvorstand)
Buczior	Jacqueline	Student apprentice, Halle Institute for Economic Research
Prof. Dr. Budzinski		Technical University Ilmenau
Dr. Esser	Clemens	State Chancellery Sachsen-Anhalt
Dr. Grusevaja	Marina	Halle Institute for Economic Research
Dr. Günther	Jutta	Halle Institute for Economic Research
Dr. Heimpold	Gerhard	Halle Institute for Economic Research
Kakerbeck	Corinna	Ministry of Science and Economics Sachsen-Anhalt
Koch	Anja	Ministry of Science and Economics Sachsen-Anhalt
Morgret	Sandra	State Chancellery Sachsen-Anhalt
Nistripke	Udo	Craft Chamber Magdeburg
Oswald	Babette	Ministry for Spatial Development and Transport
Schmidt	Lukas	Ministry for Spatial Development and Transport
Steinmetz	Thomas	Ministry of Science and Economics Sachsen-Anhalt
Theißen	Maria	Student apprentice, Halle Institute for Economic Research
Dr. Titze	Mirko	Halle Institute for Economic Research
Töbermann	Stefan	Sachsen-Anhalt investment Bank
Wilhelm	Ines	Ministry for Spatial Development and Transport
Willenbockel	Mathias	Ministry for Agriculture and Environment Sachsen-Anhalt
Wolf	Ulrich	Ministry for Labour and Social Affairs Sachsen-Anhalt
Zibolka	Olaf	Ministry of Science and Economics Sachsen-Anhalt

12. ANNEX V: Overview of sources used for the case study

Programme name	OP	AIR	FIR	Spend (by measure & year)	Evaluation reports	Strategic interviews	Operational interviews	External interviews	Stakeholder/ Beneficiary interviews	Workshop
ROP 1991-1993	no	no	yes	By measure: yes; by year: no	yes	yes	yes	no	no	[a]
ROP 1994-1999	yes	no	yes	By measures yes, by years no	yes	yes	yes	yes	no	[a]
OP CI URBAN Halle	yes	partly	yes	yes	yes	yes	no	no	yes	[a]
ROP 2000-2006	yes	yes	yes	yes	yes	yes	yes	yes	yes	[a]
NOP Transport Infrastructure 2000-2006	yes	yes	yes	no	yes	yes	no	no	no	[a]
ROP 2007-2013	yes	yes	no	yes	yes	yes	yes	yes	no	[a]
NOP Transport 2007-2013	yes	yes	no	no	yes[c]	yes	no	no	no	[a]

[a] The majority of workshop participants represent persons who are currently involved as strategic or operational experts in EU-SF support; however, some persons were also active in EU-SF support in earlier periods, partly in the first period. [b] Evaluation covering all OP CI URBAN in Germany. [c] Ex ante evaluation available.

13. ANNEX VI: REFERENCES

ADE (2009a): Ex post Evaluation of Cohesion Policy Programmes 2000-2006 co-Financed by the European Fund for Regional Development (Objectives 1 and 2) – Work Package 5b: Environment and Climate Change. Final Report – Volume 1, Louvain-la-Neuve: ADE s.a.

ADE (2009b): Ex post Evaluation of Cohesion Policy Programmes 2000-2006 co-Financed by the European Fund for Regional Development (Objectives 1 and 2) – Work Package 5b: Environment and Climate Change. Final Report – Volume 2, Louvain-la-Neuve: ADE s.a.

Agrarsoziale Gesellschaft e. V. (no date of publication) Frühjahrstagung in Stendal (Sachsen-Anhalt) vom 10. Bis 12. Juni 2009, Fachexkursion B Ländliche Wirtschaftsentwicklung, Revitalisierung von Industriebrachen, Gebäudeumnutzung, Tourismus, Kultur, Redaktion: Dagmar Babel, Michael Busch, Unter Mitarbeit von: Stefanie Schernikau, Koordinierungsstelle Elbetal bei der Landgesellschaft Sachsen-Anhalt, Gefördert von: Bundesministerium für Ernährung, Landwirtschaft und Verbraucherschutz, pp. 29f.

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14. ANNEX VII: Summary of survey results

A total of 314 contacts were invited to take part in the online survey for Sachsen-Anhalt. This included number includes 73 who were interviewed by the case study team, plus 241 additional invitees. The 241 additional invitees were broken down as follows: 14 percent were local authority contacts (selected senior administrators and political leaders in local authorities and bodies representing them); 52 percent were firms (whether beneficiaries or unsuccessful applicants); 13 percent were regional/local level political party representatives; 7 percent were regional/local social partners, third sector organisations and trade unions; 3 percent were from other local interest groups; and the remaining 11 percent were from other organisations not classified within these categories (or which were unspecified). Such organisations included, for example, the European Commission and Federal Ministries.

The overall response rate (i.e. those who started the survey and answered at least one question) was 28.3 percent, though the percentage of invitees who completed the entire survey (i.e. up to and including the final question) was - expectedly - lower at 15.9 percent. For the questions applicable to all, the response rates varied between 6.4 percent - 28.3 percent (there were also questions which related to each specific programme period only and these were accordingly filtered).

Within the above-mentioned categories, the breakdown of respondents was as follows (fully completed responses): 34 percent were local authority contacts; 32 percent were from the sample of firms; 12 percent were regional/local level political party representatives; 8 percent were from the category regional/local social partners, third sector organisations and trade unions; 6 percent were from 'other local interest groups' category; and 8 percent were from the other/unspecified group.

Proportionally speaking, firms were the least responsive group (of non-interviewees). Individuals from the category 'other local interest groups' had the highest completion rate, of 100 percent (i.e. progressing up to and including the final question). Individuals representing firms had the lowest completion rate, of 47 percent.

The following tables summarise the responses obtained on some of the most significant questions.

1. What type of organisation do you represent? Please tick all that apply, e.g. if you have changed status throughout the period or if more than one condition applies (e.g. beneficiary and unsuccessful applicant, beneficiary and representative of local interest group).

Answer	Response	%
Central Government Department/Agency	2	2%
Regional Government Department/Agency	22	25%
Local authority	17	19%
Political party or political constituency	6	7%
Firm	18	20%
Socio-economic organisation	8	9%
Interest group (e.g. environmental or social association/citizens' movement)	5	6%
None of the above (please describe)	16	18%

2. Please specify which type of political party or political constituency you represent:

Answer	Response	%
National	1	17%
Regional	4	67%
Local	1	17%
Total	6	100%

3. Was your involvement in the ERDF programmes direct or indirect?

Answer	Response	%
Direct	35	43%
Indirect	29	35%
Both direct and indirect	18	22%
Total	82	100%

4. Please indicate how you were directly involved:

Answer		Response	%
As a political decision maker		4	8%
As an administrator		24	47%
As a beneficiary		21	41%
Other (please specify)		2	4%
Total		51	100%

5. Please indicate in which of the following period/s your involvement in ERDF programmes took place (please tick all that apply):

Answer		Response	%
1991-93		14	19%
1994-99		25	33%
2000-06		42	56%
2007-13		68	91%

6. Could you please assess the extent to which the ERDF programmes delivered achievements in the fields outlined below (across the entire period, i.e. 1989 to date)?.

Question	Very significant	Significant	Quite significant	Modest	None	Don't know	Responses
Increase in numbers of new firms	9	19	9	8	1	12	58
Increased growth of existing firms	8	29	9	1	0	11	58
Enhanced competitiveness such as increased exports	5	24	12	4	0	12	57
Enhanced internationalisation, better marketing	6	8	16	9	1	16	56
Attraction of foreign investment	5	10	9	13	3	16	56
Site reclamation and premises for industry	15	15	9	5	3	10	57
Job creation	16	24	11	3	0	8	62
Shift to growth clusters	8	13	16	4	1	13	55
Growth in manufacturing	11	19	8	5	1	12	56
Growth in professional services	3	15	15	6	1	16	56
Growth in tourism and creative industries	3	15	20	6	4	9	57
Increased R&D and provision of technical support from public and non-profit sector	12	13	13	7	3	9	57
Increased R&D and innovation in business	11	13	16	5	1	8	54
Enhanced adoption of process technologies	6	10	17	6	0	17	56
Adoption of good practices in managerial	3	6	13	12	4	18	56

processes							
Improvement of environmental quality (e.g. waste and water treatment, decontamination of land, enhanced biodiversity.)	6	21	13	3	4	8	55
Reduction of energy consumption and Co2 emission in productive processes	5	14	12	10	4	11	56
Development of environmental friendly transport systems, sustainable lighting/heating etc.	3	11	12	12	4	13	55
Labour market inclusion (e.g. re-integration of long-term unemployed and marginalised groups etc.)	5	9	14	9	3	15	55
Provision of community services for disadvantaged areas	2	10	11	10	5	19	57
Community development/social enterprise	3	6	13	9	6	19	56
Communications and infrastructure to improve accessibility to wider markets (e.g. ports, airports etc.)	6	11	12	8	3	17	57
Regional communications infrastructure for improved accessibility within the region	5	18	15	5	3	11	57
Overall improvement in image for the region	12	18	13	5	4	7	59
Other (please specify)	1	1	0	1	0	1	4

7. In your view, did the objectives of the ERDF programmes address regional needs?

Question	Yes, very significantly	Yes, significantly	Yes, quite significantly	Yes, but to a limited degree	No, not at all	Don't know	Responses
1991-93	9	10	3	5	0	33	60
1994-99	9	12	5	5	1	28	60
2000-06	13	14	10	3	1	19	60
2007-13	14	23	11	4	1	7	60
Across the entire period	10	11	12	2	1	24	60

8. In your view, was there ever a mismatch between regional needs and the ERDF support provided?

Question	Yes, a considerable mismatch	Yes, but not too considerable	No, ERDF programmes met the needs	Don't know	Responses
1991-93	1	7	17	35	60
1995-99	2	10	18	30	60
2000-06	3	14	21	22	60
2007-13	2	17	26	15	60
Across the entire period	1	11	22	26	60

9.For the entire period (i.e. 1989 to date), please rate the following statements. When a statement does not apply, please choose 'N/A' (not applicable)

Question	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree	N/A	Responses
The programmes entailed appropriate strategies	4	25	4	4	1	0	0	9	47
The programmes targeted support appropriately (via the selection criteria adopted)	3	17	8	5	4	0	0	8	45
The allocation of funding was in line with needs	2	20	7	6	2	0	0	10	47
The concentration of funding on selected fields enhanced the programmes' effectiveness	2	14	5	11	2	0	1	11	46
The concentration of funding on few, large projects enhanced the programmes' effectiveness	1	8	5	9	5	2	1	14	45
The design of the	0	13	5	14	1	0	1	12	46

programmes was improved by the involvement of stakeholders									
The programmes' strategy was enhanced by the use of evaluation evidence	2	16	3	14	2	0	0	9	46
Implementation was effective	3	18	3	11	2	0	0	8	45
The performance of the programmes was enhanced by ongoing monitoring of its implementation	3	15	7	11	1	0	0	9	46
The implementation of the programmes was enhanced by the involvement of partners/stakeholders	2	11	8	13	2	0	1	9	46
The programmes achieved a fruitful integration with other EU policies	2	10	8	16	1	0	0	9	46
The programmes achieved a fruitful integration with domestic	3	15	10	7	1	0	0	9	45

policies									
The programmes were flexible enough to accommodate changing socio-economic needs	2	13	8	7	5	1	1	8	45
The programmes were flexible enough to accommodate changing recipients' needs	1	12	10	6	5	1	1	8	44
Other (please specify)	0	2	1	3	0	0	0	9	15
Other (please specify)	0	2	1	3	0	0	0	8	14

10. On the whole, could you assess the impact of ERDF programmes? For current programmes, please assess the level of impact which you anticipate they will have.

Question	Very positive	Positive	Quite positive	None/negligible	Quite negative	Negative	Very negative	Don't know	Responses
1991-93	10	7	4	1	0	0	0	28	50
1994-99	12	9	3	0	0	1	0	25	50
2000-06	14	18	2	2	0	1	0	13	50
2007-13	16	23	7	2	0	1	0	1	50
Across the entire period	11	19	3	2	0	1	0	14	50

11. Looking to the future, are there any aspects of ERDF design and implementation that would need to be improved to increase the extent to which support meets regional needs and enhance achievements?

Answer	Response	%
Programme design more responsive to regional needs via more use of evaluation evidence	17	34%
Programme design more respondent to regional needs via improved involvement of local authorities	18	36%
Programme design more respondent to regional needs via improved involvement of socio-economic partners and stakeholders	21	42%
Better targeting of interventions	14	28%
Increased funding concentration on key priorities	16	32%
Increased funding concentration on key target groups	20	40%
Increased funding concentration on fewer, bigger projects	1	2%
Increased funding of smaller projects	16	32%
Increased packaging of smaller projects	20	40%
Increased flexibility during the programme period to adapt programmes to changing needs	31	62%
Increased flexibility during the programme period to accommodate changing beneficiary needs	23	46%
Widening of eligible expenditure categories	21	42%
Better integration with other EU funding sources	16	32%
Better integration with domestic funding	18	36%

sources			
Simpler administration of the funds for programme authorities		33	66%
Simpler administration of the funds for programme beneficiaries		34	68%
Increased transparency in project selection		16	32%
Increased competitiveness in project selection		5	10%
Increased results-orientation in project selection		16	32%
Increased upfront funding for project beneficiaries (advances)		17	34%
Increased clarity on administrative requirements for project holders		5	10%
Other (please specify) …. _____		3	6%
Don't know		1	2%