



Country Report and Guidelines on social dialogue

Germany

COUNTRY REPORT - GERMANY

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Foreword

Environmentalism has a long history in Germany. As early as the late nineteenth century Germany was home to a growing nature movement that sought to limit the attending ills of industrialisation for humans and the environment. In the wake of the 1973 oil crisis, wide awareness for the limited natural resources and the need to conserve energy developed in West Germany. For example, this increased environmental awareness was manifested in the political success of the Green Party in 1980, which from 1983 was represented in the German Bundestag. A few years later, the nuclear disaster at Chernobyl led to the German Federal Government's establishment of the Ministry of Environment, Nature Conservation, and Nuclear Safety (BMU).

The trade union **IG Bauen Agrar Umwelt** (IG BAU) early began to take an interest in the environmental aspects relevant to its fields of activity, including ecological and sustainable building. When Germany's then-ruling red/green coalition initiated the Bündnis für Arbeit (Alliance for Jobs) in 1998, the trade unions and BMU joined forces to establish the **Bündnis für Arbeit und Umwelt** (Alliance for Jobs and Environment), the first organisation ever to bring together employers, unions, and environmental NGOs at the same table. The key actors had realised that the combination of work and environment represented a win-win situation. The social dialogue, which until then had been conducted between employers and unions in a classical fashion, was now bolstered by the integration of actors from civil society (environmental NGOs) that brought with it a new component that ever since is a central part of the political decision-making process. The unions, most importantly the IG BAU, the only German trade union to enter into dialogue with environmental associations, play a significant role in the process.

To date, one of the trade union IG BAU's primary concerns is the strengthening of green building, thus combining labour, health, and environmental protection issues. Together with the German Federal Environmental Foundation (DMU) and the German Confederation of Skilled Crafts (ZDH), IG BAU initiated the project "Sanieren – Profitieren" (Renovate and Profit), which creates a network for craftspeople and offers free energy checks for the owners of one- and two-family houses aimed at providing homeowners with good advice and professional workmanship for refurbishments. The trade union IG BAU is also dedicated to promoting sustainable education in the building trades. Knowledge of alternative building materials and a resource-friendly recycling economy

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needs to be reinforced. For this reason, IG BAU and the PECO Institute for Sustainable Regional Development have for years conducted seminars focusing on ecological construction in vocational schools supported by the Foundation of the Bavarian Building Trades (Stiftung Bayerisches Baugewerbe).

Holger Bartels

Head of Department for Environmental and Agricultural Policy
Parliamentary liaison office to the German Bundestag and European Parliament,
Gewerkschaft Bauen Agrar Umwelt (IG BAU)

Picture 1 - Training on Green Building, Vocational School Munich 2015



(photo credit: PECO)

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1. THE GREEN BUILDING SECTOR: MAIN CHARACTERISATION

Given the sector's extraordinary high demand for energy and resources, the knowledge of the finite nature of the world's resources means that the building sector must play a leading role in ensuring natural resources are available to future generations. The energy-efficient construction and refurbishment of buildings is of key importance. Heating, hot water usage, and lighting in public buildings are the source of nearly a third of all CO₂ emissions in Germany.

The German Building Sector

In terms of economics, the German building sector has a key role to play. When it comes to production and employment, it is ahead of important industrial sectors such as the automotive industry, machine construction, or the chemical industry. In 2015, the building sector contributed 4.7% to the nation's gross value added. Its share of the gross domestic product was double as high with 9.8%. The building sector's share of German employment lay at 5.6%.¹

Compared to other European countries, the German building sector has proven itself stable. Whereas its dynamism decreased after the boom of 2010 and 2011, when compared with 2007 there has been an increase in building investments of €11 billion, almost all of which stems from housing construction.² As opposed to other large European countries of Spain, France, Italy, Poland, and Great Britain, **German housing construction** since 2007 represents **an exception**. German residential investments have even increased 1.4%, even though construction intensity (2.5 newly constructed residences per 1,000 inhabitants) remains under the European average.³ By means of the investment in **existing residential buildings** in particular, at 58.7% Germany has the highest share of residential building in Europe. In Germany, residential real estate remains a secure investment, and existing low interest rates encourage investment in the sector.

¹ www.bauindustrie.de/zahlen-fakten/bauwirtschaft-im-zahlenbild/bedeutung-der-bauwirtschaft, accessed on 9 June, 2016.

² Rein, Stefan und Christian Schmidt, "Europäische Bauwirtschaft im Vergleich - Ausnahmeposition des dt. Bausektors in Europa". BBSR-Analysen KOMPAKT 12/2014 (Bundesinstitut für Bau-, Stadt- und Raumforschung), p.3.

³ Ibid., p.8.

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Figure 1

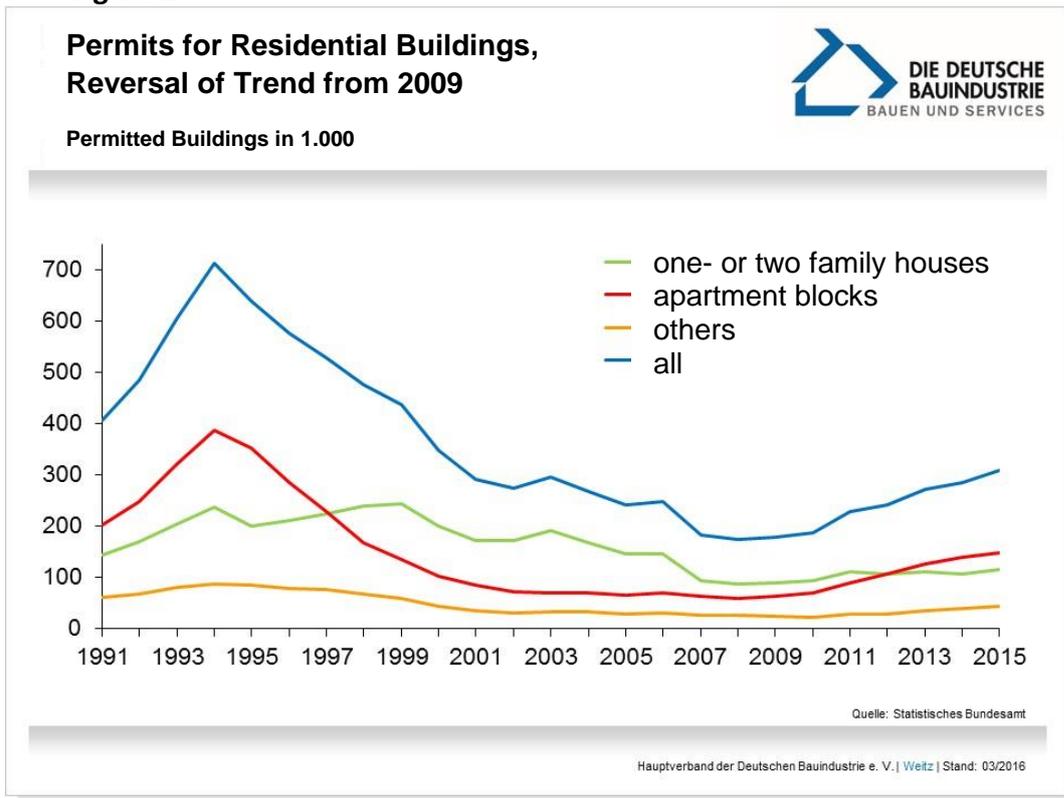
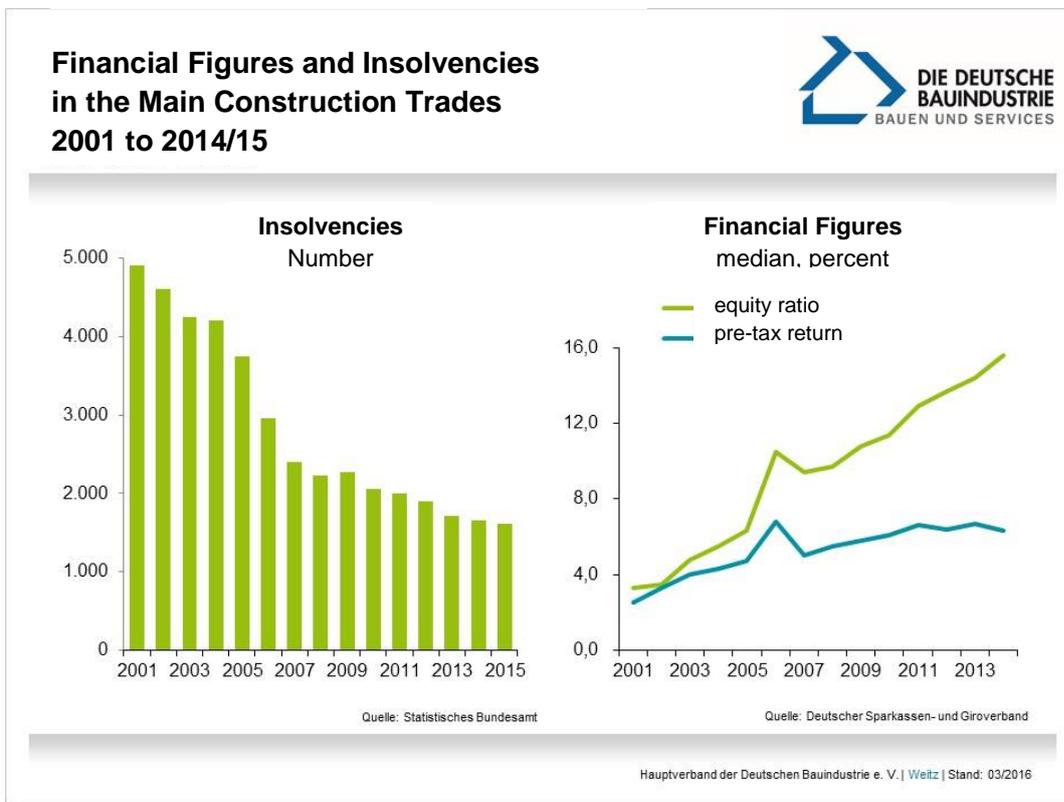


Figure 2



(diagrams modified by PECO for translation)

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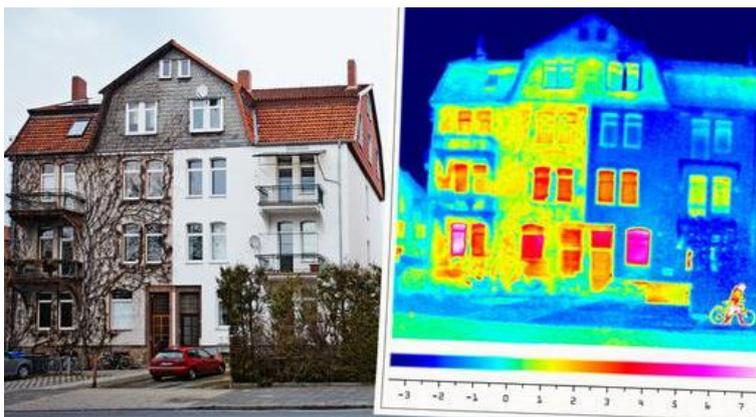
At mid-year 2016, the main building trades can draw a positive balance: compared to the same month in the previous year, in June the companies have shown a 21.6% increase in orders. At present, 90% of all companies expect a more favourable or at least an unchanged business situation.⁴ The basis for this outlook, in addition to low interest rates, is to be found in a continuing positive employment situation as well as immigration and migration within Germany (influx into cities and areas of high population density).

The Importance of Green Building in Germany

Thanks to modern building technology and professional refurbishments, up to 80% of Germany's energy consumption could be cut – a potential that must be tapped in the near future. Whereas specifications for new buildings will soon incorporate the lowest-possible energy standards, the existing building stock poses the main challenge. At present, only about 1% of old buildings in Germany is being refurbished to increase energy efficiency – and in many cases this is not even carried out under optimal standards. In order to achieve the climate goals, this renovation backlog must be removed.

Whoever plans, builds, or changes a building in Germany must adhere to the applicable version of the German Energy Saving Ordinance (EnEV). Ever since the first EnEV was enacted in 2002, the energy-efficiency demands on buildings have been raised step by step. Together with the increase in legal requirements, the certification of buildings has continued to gain in importance.

Picture 2



(photo credit: fotolia/Ingo Bartussek)

⁴ (28.08.2016) "Halbjahresbilanz im Bauhauptgewerbe: ausgesprochen positive", www.baulinks.de, accessed on 31 August, 2016.

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Certification of Sustainable Buildings by the German Sustainable Building Council (DGNB)

Since 2009, the German Sustainable Building Council has evaluated existing and new buildings based on up to forty criteria. These not only include ecological characteristics such as energy efficiency or sparing use of resources, but also social (such as accessibility) as well as economic aspects, including running costs over the building's entire lifecycle or its so-called marketability (for example, risk of vacancy).⁵ The four quality factors – ecological, economic, socio-cultural, and technical – are weighted equally in the evaluation. This makes the DGNB system the only one to assign the same value to a building's economic viability as it does to its environmental performance.⁶ Additionally, quality of process and location are integrated into the evaluation. As of March 2015, nearly 900 building projects have received a DGNB certificate or precertification.

In the German market for environmentally-friendly construction, the DGNB system shares in 69% of commercial buildings (BNP Paribas Real Estate, 2015). In the market for new buildings, the DGNB's share is 87%. In recent years, real estate funds have shown sharp rise in interest for certified buildings.

⁵ See "Grüne Bauwerke sind auch in Deutschland gefragt", *Die Welt*, 27 November, 2014, www.welt.de/134720590, accessed on 8 August, 2016.

⁶ www.troldtekt.de/Wir-ueber-uns/News/Themen/Nachhaltiges-bauen/Ein-kurzer-Ueberblick, accessed on 8 August, 2016.

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2. DOMESTIC POLICY FRAMEWORK FOR GREEN BUILDING

2.1. Overview of Policy and Legal Frameworks

Green building must be understood as a subcategory of sustainable building. Sustainable building is defined as forms of construction that do not threaten the interests of future generations. In April 2002, the German Federal Government pledged to adhere to a sustainability strategy, which, in addition to social and economic goals, also included goals aimed at protecting humans' natural means of livelihood. With its draft from 30 May, 2016, the German Federal Government recently offered a new version⁷ of the sustainability strategy up for discussion.

The themes of energy consumption and heat production, resource efficiency, and the handling of hazardous substances are of great significance to the building sector. A number of laws, regulations, and initiatives of particular importance to the building sector that stem from this package of measures will be outlined below.

Energy Policy

An important component in the German sustainability strategy is what is commonly referred to as the “energy transformation”. The use of finite fossil fuels is to be shifted to renewable, sustainable sources of energy. At present, Germany now obtains nearly one third of its electricity from renewable sources, and the country has managed to decouple economic growth from energy consumption.

German energy policy is the purview of the Federal Ministry for Economic Affairs and Energy. Most of the principles it has created are now part of environmental law. According to EU Directive 2009/28/EG, member states must develop national action plans aimed at achieving certain national goals when regarding the use of renewable energy sources.

German Renewable Energy Sources Act (EEG)

The goal of the German Renewable Energy Sources Act (EEG) is to promote the production of electricity and heat using renewable sources of energy. The act regulates the preferential dispatching of electricity from renewable sources into the power supply system. The predecessor to the act was the Electricity Feed Law of 1991, the first law of its kind worldwide. To date, it has led to the installing of over 300,000 solar panel systems

⁷ www.bundesregierung.de/Content/DE/StatischeSeiten/Breg/Nachhaltigkeit/0-Buehne/2016-05-31-download-nachhaltigkeitsstrategie-entwurf.html?nn=437032, accessed on 4 July, 2016.

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on German roofs. The electricity buyback model has since been adopted by forty-seven countries.⁸

At the core of the Renewable Energy Source Act is a guaranteed buyback of energy produced as well as a corresponding obligation to pay remuneration to facility operators that is guaranteed for years. Renewable energy sources that according to law are eligible for subsidies are hydroelectric energy, biomass, geothermal energy, wind power, and solar energy.

German Renewable Energies Heat Act (EEWärmeG)

The Renewable Energies Heat Act has been in effect since 1 January, 2009, and is a supplement to the Renewable Energies Act aimed at promoting sustainable development in heating and cooling as well as the development of technologies for improving their usage.⁹

German Energy Conservation Act (EnEG)

The German Energy Conservation Act (EnEG) has its origins in 1976.¹⁰ The intent of the act was to ensure that buildings in terms of their energy demands are brought in line with the current state of technology in a timely fashion. As a result, the act has undergone a number of updates and adjustments. The fourth set of changes took effect on 13 July, 2013. The foundations for the current version of the act are the guidelines set forth by the European Parliament and the Council on the energy performance of buildings (2010/31/EU). Whoever constructs a heated or cooled building after 31 December, 2020 must erect a **climate-neutral building** (in line with “low energy building standards”). The long-term goal is the achievement of low energy building standards by 2019 or 2021 at the latest.

German Energy Saving Ordinance (EnEV)

The first version of the Energy Saving Ordinance dates back to 16 November 2001 and took effect on 1 February, 2002. The Energy Saving Ordinance replaced the Thermal Insulation Ordinance (WSchV) and the Heating Appliance Ordinance (HeizAnIV) and combined the two previous ordinances. It is a part of German commercial administration law and stipulates the structural standard regulations builders must follow for the energy efficient operation of their building or building project. The EnEV applies to residential,

⁸ See <http://www.energie-wissen.info/energiegesetze/erneuerbare-energien-gesetz.html>

⁹ http://www.erneuerbare-energien.de/EE/Navigation/DE/Recht-Politik/Das_EEWaermeG/das_eewaermeg.html

¹⁰ For the text of the law see www.Gesetze-im-Internet.de/bundesrecht/eneg/gesamt.pdf

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office, and – with limitations – factory buildings. Heritage-protected and other buildings such as air-inflated structures, greenhouses, or halls chiefly used for animal husbandry are exempt from the ordinance. The amendment of 2013 implements Directive 2010/31/EU¹¹ concerning the overall energy efficiency of buildings (revised version) and Directive 2012/27/EU concerning energy efficiency effective 1 May, 2014.

German Resource Efficiency Programme (ProgRess)

Already today, our use of natural resources significantly exceeds the earth's ability to regenerate. For this reason, a more sparing and at the same time more efficient use of natural resources will represent a key competency of future sustainable societies.

With the passage of the German Resource Efficiency Programme (ProgRess) in February 2012, Germany was one of the first countries to commit itself to the protection of natural resources based on central themes and action approaches. The Federal Government obligated itself to report every four years on the development of German resource efficiency, to evaluate the progress made, and to continue to develop the Resource Efficiency Programme. This update titled "German Resource Efficiency Programme II" was enacted by the federal cabinet.

Acting on the suggestion of Barbara Hendricks, Federal Minister for the Environment, Nature Conservation, Building and Nuclear Safety, the federal cabinet enacted the second German Resource Efficiency Programme (ProgRess II) in May 2016. It contains important measures aimed at making the production of raw materials and materials usage more efficient and more environmentally friendly. ProgRess II, too, focuses on market incentives and an increase in voluntary measures and initiatives in society as well as the economy. A fundamental enhancement vis-à-vis ProgRess I is that material and energy throughputs are to be considered much more in combination in order to take advantage of synergy effects and recognise and reduce target conflicts in a timely fashion.¹²

Handling of Hazardous Substances

Substances that are harmful to health, carcinogenic, teratogenic, or harmful to the environment are to be avoided in the building process and, if this is not entirely possible, used only together with the appropriate safeguards. The employer is obligated to carry out a risk assessment, to maintain safety limits, and to ensure that only trained personnel are allowed to handle the hazardous substance. Furthermore, the Ordinance on Hazardous Substances also dictates manufacturers' obligations regarding the packaging

¹¹ www.eur-lex.europa.eu

¹² <http://www.umweltbundesamt.de/themen/zweites-deutsches-ressourceneffizienzprogramm>

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and labelling of such materials. The Ordinance on Hazardous Substances dates from 23 December, 2004 and has received some adjustments in light of the European Directives 2002/44/EG and 2003/10/EG (for example, the ordinance on the protection of employees against noise and vibrations).¹³

2.2. Relevant institutional initiatives in support of green building

Only a small selection of the many different programmes and funding opportunities for green building can be presented here.

Funding for green building by the Reconstruction Loan Corporation (KfW)

The KfW's funding programmes rank among the most well-known and most important funding instruments in terms of range and scope – particularly in the private building sphere.

The KfW was originally founded in order to help support reconstruction in Germany after the war. Today the national development bank offers a wide spectrum of programmes in the areas of building, living space, and energy saving that serve the financing of investments in residential properties. Their funding is used to create home ownership, refurbish residential properties, refurbish buildings for energy efficiency, construct new buildings according to the most up-to-date energy-saving technology, convert heating systems to renewable energies, and finance solar systems.

Some of the KfW's funding programmes include:

- *Energy-efficient construction*: the purchase of construction of a KfW energy-efficient building is financed by a loan with attractive interest rates and repayment bonuses.
- *Energy-efficient refurbishment*: improved insulation as well as the installation of solar systems for heating system support is subsidised. As of March 2013, the KfW also finances the installation and expansion of heating systems using renewable energy in residential buildings (for example, solar thermal systems, biomass systems, thermal heat pumps).

The lending criteria defined by the KfW and the German Energy Agency, the *KfW-Effizienzhaus* standards, represent recognised energy standards for buildings.

¹³ www.baua.de/nn_12292/de/Themen-von-A-Z/Gefahrstoffe/Rechtstexte/pdf/Gefahrstoffverordnung.pdf, accessed on 9 August, 2016.

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Buildings with lower energy consumption than approved by the German Energy Saving Ordinance (EnEV) are described as energy-efficient buildings. The state KfW Bank Group defines three standards for new buildings that are supported with low-interest loans or subsidies: “KfW-Effizienzhaus 55”, “KfW-Effizienzhaus 40” and “KfW-Effizienzhaus 40 Plus”. The “KfW-Effizienzhaus 70” standard is no longer supported. The numerical value indicates ratings for energy requirements of the relevant energy-efficient buildings when compared to the legally prescribed upper limit. Thus, a building with the “KfW-Effizienzhaus 70” standard has a yearly energy requirement that is seventy percent of a building with the minimal EnEV standard. In other words, it consumes thirty percent less energy. But this is something that many new buildings nowadays can achieve without additional effort, as for example, modern heating systems generally function much more efficiently than required by law.¹⁴

The energy-efficiency refurbishments and energy-efficient new buildings funded by the KfW have, according to the KfW’s own data from 2011, resulted in a ca. 540,000 ton reduction in greenhouse gas emissions. Furthermore, since 2002 the KfW has presented an annual KfW-Award “*Bauen und Wohnen*” (Building and Living), which includes a substantial cash award, for private individuals and architects who have realised exemplary new buildings, conversions, or modernisations.

Energy performance certificate

According to the EnEV (German Energy Saving Ordinance), an energy performance certificate is obligatory for public as well as private buildings. This obligation was tightened with amendments made to the 2014 EnEV. Owners face fines if they are unable to fulfil this requirement, and real estate advertisements must contain information to the building’s efficiency status. In addition to its practical relevance of evaluating the energy efficiency of existing buildings and identifying starting points for sensible refurbishments, the energy performance certificate also helps create a larger awareness for the need for energy-efficient building and refurbishment.

German Council for Sustainable Development

In April 2001, the Federal Government convened the **German Council for Sustainable Development**. The Council consists of fifteen individuals from the public sphere. It develops contributions aimed at implementing national sustainability strategies, designates fields of action, suggests projects, and makes sustainability an important public concern.¹⁵ The Council also supports research and development and plays an active

¹⁴ <http://www.bauen.de/a/kfw-effizienzhaus-70-besser-bauen-mit-foerderung.html>

¹⁵ See www.nachhaltigkeitsrat.de.

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role in bringing together aspects of sustainability at the European and international levels. A key focus of its 2014–16 work plan is the circular economy, an important lever in the development of green building.

3. MAJOR TRENDS IN THE GREEN BUILDING ECONOMY

3.1. Economic trends in the construction sector

The construction sector will remain on a path of growth and in doing so continue the positive trends of recent years. Even the years of crisis that followed in the wake of the American housing bubble of 2007/08 were overcome with only a few problems. Whereas it is true that the importance of the construction sector in the German gross value added has fallen since 1990, the massive crisis at the end of the previous century and beginning of this century appear to have been overcome. In the mean time the building sector presents itself as a motor for economic growth. All told, it is expected that turnover and employment figures will continue to rise.¹⁶

In the entire EU, more than 56% of fixed investment flows into the construction of residential and non-residential buildings. When it comes to this indicator, Germany is in line with the EU average and there are clear signs that the trend is rising. Currently 57.5% of all investment falls upon the construction sector. However, the rise in this percentage is only partially due to positive developments in building activity. First and foremost, it is cautious investments in long-lived investment and capital goods that has led to below average dynamic in the remaining fixed investments. Business uncertainty vis-à-vis future economic development is leading to significantly higher shares of building investment in fixed investments.

In the first quarter of 2016, business volume in the finishing trade was up 3.2% compared to the first quarter of 2015. Based on preliminary data, the Federal Statistical Office (Destatis) reports that 1.5% more workers were employed in the finishing trade in the first quarter of 2016 than in the same period of the previous year. Compared with the previous year, incoming orders in the main construction trades, per working day and adjusted for price, were 18.3% higher in June 2016. In the first six months of 2016, incoming orders were up by 16% compared to the same period in the previous year.

All of the branches of the finishing trade posted turnover gains. In the building installation sector, in the first quarter of 2016 turnovers were up by 2.5% compared to the same

¹⁶ See PECO-Institut e.V. (eds.): “Sozialer Dialog - Zum Ausgleich von Interessen”, Berlin 2014, pp. 7-8.

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period in the previous year. The greatest increase in turnover took place in other branches of the sector (for example, insulation against cold, heat, noise, and vibrations) at 4.1%.

In other finishing trades, turnovers in the first quarter of 2016 were up 4.1% compared to turnovers in the first quarter of 2015. Within this branch of the trade, turnovers in the areas of painting and glazing rose by 3.6%.¹⁷

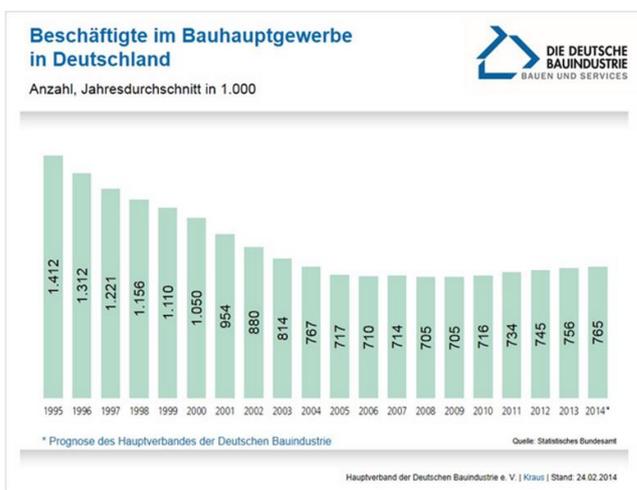
3.2. Employment trends in the construction sector

Labour reserves in the German building market are largely exhausted. In 2014 the number of unemployed skilled builders reached a historic low. Ever more companies appear to be filling the gap in skilled workers by recruiting skilled workers from abroad.¹⁸

The total number of employees subject to social insurance contributions in the building industry was approximately 1.7 million in 2012.¹⁹ Nearly 760,000 people were employed in the main construction trades.²⁰ The percentage share of the entire German labour force was 5.9%.²¹

The chart below illustrates two main points: the building boom in place before the turn of the millennium may be over, but things are once again moving upwards.

Figure 3 – Employees in the main construction trades Number, average per year in 1000



(modified by PECO for translation)

¹⁷ Statistisches Bundesamt: press release from 14 June, 2016. Link: www.destatis.de/DE/PresseService/Presse/Pressemittelungen/2016/06/PD16_201_44131.html; accessed on 23 June, 2016.

¹⁸ Hauptverband der deutschen Bauindustrie e.V.: *Bauwirtschaft im Zahlenbild*, 2015, p.27

¹⁹ Institut für Arbeitsmarkt und Berufsforschung: *Der Arbeitsmarkt im Bausektor 2013*, p.11.

²⁰ The numbers are better documented for the main construction trades. A great number of self-employed individuals are employed in the finishing trades, and their numbers are very difficult to ascertain as it is a figure that constantly changes.

²¹ Hauptverband der deutschen Bauindustrie e.V.: *Bauwirtschaft im Zahlenbild*, 2013

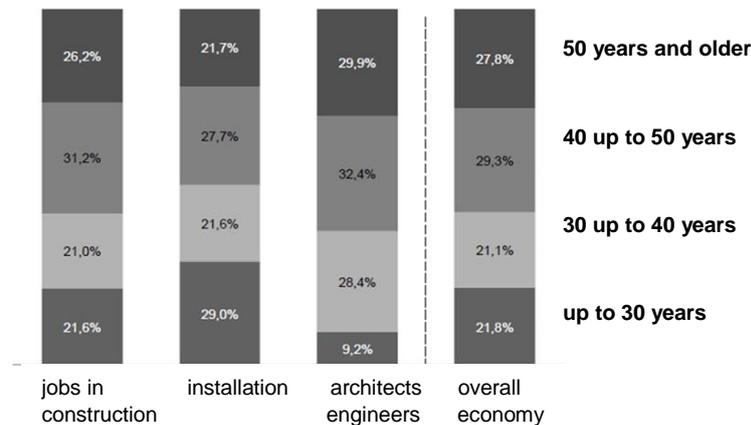
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Most workers in the building sector are employed in small and very small businesses. In 2012 more than 580,000 workers were employed in companies with less than ten employees, and more than 320,000 workers were employed in companies with ten to nineteen and twenty to forty-nine employees. All together they make up 75%.²² Every fifth worker in the building trades is self-employed, whereby the number of self-employed individuals has risen greatly since 2000. This development is primarily evident in the finishing trades (including plasterers, insulation workers, tilers, screed layers, carpenters, roofers, and painters).²³

Overall the number of employees subject to social insurance contributions in the building sector has stabilised, but it still remains under the 2002 level. By contrast, the number of employees subject to social insurance contributions in the overall economy has risen to a significantly higher level than that of 2002.

Unemployment in the building trades has fallen since 2005/06. The unemployment rate is well under the rate among the building trades ten years ago, but it is still higher than the average for all trades. The number of reported open positions has risen significantly since 2004 and again, after the crisis, since 2009.

Figure 4 – Age distribution of employees in the main building trades²⁴



Remarkable is the high average age of employees in the building trades, a phenomenon that can be observed in the overall economy as well. More than 40% of workers in the main building trades are forty and over. A retirement age of ca. 57.6 in building above and below ground is indicative of a serious problem for the future. In the finishing trades,

²² Institut für Arbeitsmarkt und Berufsforschung: *Der Arbeitsmarkt im Bausektor 2013*, p.19.

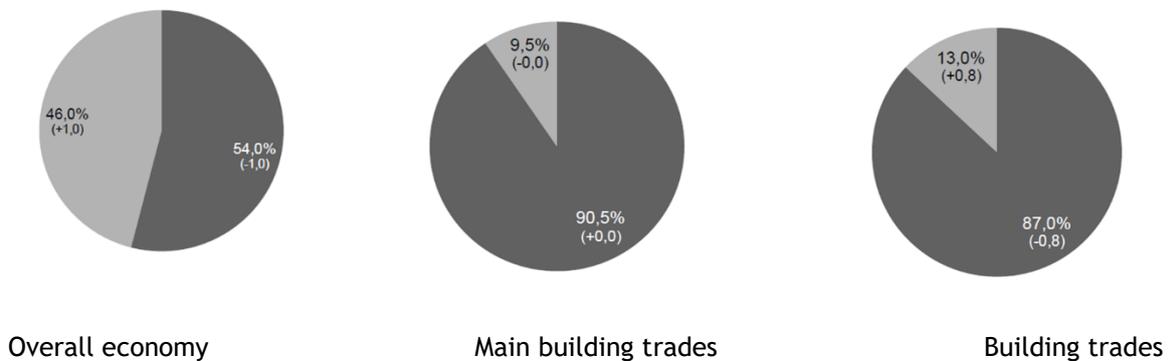
²³ Institut für Arbeitsmarkt und Berufsforschung: *Der Arbeitsmarkt im Bausektor 2013*, p. 6.

²⁴ Ibid., p. 29.

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where more than 35% of all employees are older than forty, the situation is somewhat better. The share of female employees subject to social insurance contributions in the building sector is extremely low. Whereas their share in the overall economy is 46%, in the building sector it is 13% and in the main building trades only 9.5%.

Figure 5 – Employees subject to social insurance contributions by gender with the change in percentage vis-à-vis 2002 in percentage points (in brackets), reference date 30 June, 2012²⁵



In larger companies the percentage of older employees is greater than in smaller businesses; the same is true of the building trades as a whole, but only in a very limited sense in the main building trades. Whereas in 2012 only 23% of workers in very small businesses (up to nine employees) were fifty and older, their share in companies with more than 500 employees was 31%. These numbers seem to support the line of IG BAU’s reasoning that the small-business oriented structure of the building sector is a problem for the shaping of transitions from working age to retirement.²⁶

This situation is particularly problematic as it describes a trend in recent years and also highlights the mid- to long-term necessity of finding new workers for the building trades, which, in light of demographic transformations, will not be easy. This is also reflected by the increase in open positions, which, in the fourth quarter of 2012, was 14.6% higher than the same quarter in the previous year.²⁷

²⁵ Institut für Arbeitsmarkt und Berufsforschung: *Der Arbeitsmarkt im Bausektor 2013*, p. 27

²⁶ IG BAU: *Rente muss zum Leben reichen! Entschließung des 7. Außerordentlichen Gewerkschaftstages der IG BAU* on 31 March, 2012.

²⁷ Institut für Arbeitsmarkt und Berufsforschung: *Der Arbeitsmarkt im Bausektor 2013*, p. 29.

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The trend in training figures throughout Germany shows a light decrease and/or stagnation in new articles of apprenticeship in construction above and below ground and a significant decrease in the finishing trades. In Bavaria, however, a slight increase has been noted.

When it comes to realising workers' interests, the low number of companies with workers' councils represents a serious drawback, for it not only means a fundamental corrective for undesirable developments is lacking when it comes to, for example, questions of labour and health protection, but it also means there is a lack of support for the development of strategies that could make the workplace more attractive.

3.3. Needed skills and training

Significance of education in the field of green building

A German Environment Agency study from 2011²⁸ asserted that the shortage of skilled workers is hindering energy-efficiency refurbishments and urged that energy efficiency must play a greater role in vocational training and further education.

Construction defects that may circumvent the actual goal are not uncommon in climate-friendly buildings.²⁹ Improper building construction and refurbishment can lead to a number of complications. In order to achieve Germany's climate protection targets, the high potential for energy savings offered by the refurbishment of old buildings must be better exploited. New demands are not only being placed on construction techniques, but also on the necessary professional credentials of employees.³⁰

One important approach to reinforcing green building is the reorientation of education in the building trades. In Germany, vocational education takes place within the framework of a dual system: trainees receive the practical part of their education in the companies, whereas the theoretical part is the responsibility of the vocational schools. At least 50% of the training period is spent in the companies. This dual educational system plays a major role in providing professional training to large portions of the working population and in doing so offers a boost to Germany's innovation potential.³¹

²⁸ See www.uba.de/uba-info-medien/3970.html.

²⁹ See for example "Dekra Schadensbericht 2008".

³⁰ On the challenges faced by the construction sector and the role of educational activity in the process, PECO presented the 2014 study "Bildungsarbeit in der bayerischen Bauwirtschaft".

³¹ Deutscher EQR-Referenzierungsbericht, May 2013, www.dqr.de/media/content/Deutscher_EQR_Referenzierungsbericht.pdf, accessed on 23 August, 2016.

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While German educational policy is the purview of the German federal states and the school systems can differ from one another rather significantly, training regulations are determined at the federal level.

European and German Qualifications Frameworks

The European Qualification Framework (EQF) is an instrument aimed at making national qualifications comprehensible throughout Europe and thus encouraging mobility among workers and trainees as well as lifelong learning. It is the reference framework for comparing the different national qualification systems. The core of the EQF consists of eight levels of reference. These describe learning results – in other words, what the trainees know, understand, and are capable of implementing. Accordingly, the learning outcomes for the individual levels are described in terms of three pillars: “knowledge”, “skills”, and “competences”, whereby “competences” describes the adoption of responsibilities and self-reliance.

Like the EQF, the German Qualifications Framework (DQR) also defines eight levels. These however are structured differently from the EQF levels. The DQR describes four pillars (knowledge, skills, social competences, self-reliance) to better represent the learning outcomes sought by the German educational system. The DQR thus seeks to reinforce the fact that a **comprehensive understanding of competences** is of central importance to the German educational system.³²

A similar approach is used by educational concepts that seek to teach trainees in the building trades a comprehensive understanding of green and sustainable building. The main focus is on themes such as resource efficiency, recycling economy, and ecological insulation materials.

The example of KOMZET

The competency centres for vocational education in the network of building and energy seek to cooperate closely in order to improve their educational and advisory work. This is manifested in the exchange of experts, course concepts and materials, the development of standards, the shared development and testing of training courses, materials, and media. This is intended not only to optimise quality and work outcomes, but also to make competences and educational offerings available to a wide and supra-regional professional public.

³² <http://www.dqr.de>

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In addition to expanding their professional expertise, the network partners promote their development in cross-sectional fields of activity and to this end exchange experience, outcomes, and instruments. These fields of activity include monitoring, knowledge management, marketing, use of information technologies, quality development, organisational and personnel development, knowledge sharing, and sustainability.³³

3.4 Changes and innovations in the green building economy

Technological development is moving rapidly ahead, and this offers a wide range of innovations that are of use in green building. These include innovations in the areas of facade insulation (for example, wood-plastic composite cladding or recyclable sheets of rock wool), heating technology, or the use of recycled building materials.³⁴ For example, straw bales are now approved for regular use as a building material in Germany, but there are also other innovative materials, such as panels and assembly kits for entire houses or prefabricated wall elements.³⁵ Over the last ten years, the number of patents in the field of green building has tripled in Europe. The most activity was seen in the following areas:

- Heating, ventilation, and climate-control technology
- Energy-efficient insulation
- “Green” lighting
- The use of renewable energy³⁶

Research institutes such as the Fraunhofer Institute are exploring innovative technological solutions in the field of sustainable building. As early as ten years ago, the architect Werner Sobek³⁷ designed the House R128 in Stuttgart based on the “triple-zero principle”, according to which a structure may not use more energy than it produces, may not produce carbon dioxide, and must be simple to dismantle and sort for recycling. The Effizienzhaus Plus, an energy-plus-house in Berlin commissioned in 2011 by the Federal Ministry for Transport, Building, and Urban Development, produces twice as much energy as its occupants’ consume. Furthermore, the home’s and automobile’s energy streams are connected; the parking space in front of the house is surfaced with induction mats,

³³ <http://www.komzet-netzwerk-bau.de>

³⁴ See <http://www.oekologisch-bauen.info/baustoffe/dach/fassaden/fassadenplatten.html>.

³⁵ Additional information concerning straw-bale construction at www.fasba.de or www.oeko-bauen-bilden.de

³⁶ See European Patent Office: www.epo.org/news-issues/technology/sustainable-technologies/green-construction_de.html.

³⁷ See also the Institute for Lightweight Structures and Conceptual Design (ILEK) at the University of Stuttgart: <http://www.uni-stuttgart.de/ilek/>

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meaning that an electric car can charge its batteries on renewable energy from the house's own batteries.³⁸

In 2007 and 2009 students at the Technische Universität Darmstadt won first prize at the Solar Decathlon in Washington in 2007 and 2009 with their energy-plus houses.

BAU trade fair in Munich

BAU, the World's Leading Trade Fair for Architecture, Materials, and Systems, takes place every two years. In 2015 it attracted 2,000 exhibitors and 250,000 visitors. It offers a communication platform for anyone active in the area of green building.³⁹ For example, under the motto “plan for sustainability – develop innovation”, the German Sustainability Council together with partners from the building industry and planning offered 100 m² of materials illustrating the potential for innovation in the growing market of sustainable building. Topics included the correct construction of façade elements, which are supposed to serve as a bioreactor, or insulating concrete as a structural element.

3.5 Drivers and barriers for the development of the green building

National and regional levels: Tax incentives are off-track

Economic instruments direct the behaviour of consumers and producers by means of financial incentives. It is important to ascertain whether these instruments – such as taxes or subsidies – set false signals for a development in the areas of green building and sustainable living. The abolishment of the grant scheme for first-home buyers and the reduction of the commuting allowance are both positive examples, as their absence helps to counter processes of urban sprawl. In order to consistently promote existing measures, the German Environment Agency (UBA) suggests repealing the housing construction subsidy, which in 2006 amounted to ca. €500 million, or to no longer support building savings when it comes to employee savings supplements. Public funds should no longer support regionally undifferentiated incentives promoting residential construction.⁴⁰

Obstacles to green building in the companies: a lack of know-how

Although a large share of craftsman's firms expect a rise in commissions in the area of sustainable building, workers have yet to develop sufficient know-how in the field. Here we see necessity of systematic further education. Clients expect comprehensive consultation, which is something individual craftspeople often cannot provide.

³⁸ www.land-der-ideen.de/sites/default/files/210x297_BMV_LDI_InnoDtBroschur.pdf

³⁹ See www.bau-muenchen.com.

⁴⁰ See Umweltbundesamt (eds.): Nachhaltiges Bauen und Wohnen 2010, p. 30.

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Energy counselling

When it comes to homeowners who wish to refurbish, in most cases the house is only partially refurbished. This represents a problem, for energy-efficiency refurbishment makes more sense when refurbishment takes into account the entire structure. However, private persons are usually overwhelmed by the complexity of the issue, and the firm hired to carry out the job might not always bring with it the necessary professional expertise. It is for this reason that so many energy consultants are available, but it must be said that the range of consultants is large and qualifications are not transparent. The energy consultancy market in Germany is subject to inconsistent quality standards and uncertified job titles (“energy consultant”, for example). On the other hand, clients’ willingness to pay for counselling is also quite low. At present, energy consultancy remains a “low-interest product”, meaning the demand must first be created.⁴¹ Consumers can apply to the KfW for grants when it comes to professional energy-efficiency planning and supervision by an independent specialist as well as for the preparation of certificates.

⁴¹ See www.bfee-online.de/bfee/informationsangebote/publikationen/studien/marktanalyse_edl_energieberatung.pdf.

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4. SOCIAL DIALOGUE AND GREEN BUILDING

4.1. Industrial relations systems at country level

In Germany, the trade unions, on the one hand, and the employers' associations, on the other, are viewed as "social partners". As an instrument aimed at overcoming the old, class-based ways of thinking, the two sides, as parties to collective agreements, are obligated by German law "to protect and promote the working and economic conditions" within the framework of the freedom of association and autonomy in collective bargaining.⁴² The social partners thus fulfil an important role in maintaining a functioning social market economy.

The trade union Bauen Agrar Umwelt (IG BAU)

The trade union IG BAU has existed in its current form since 1 January, 1996. It was created by the fusion of IG Bau-Stein-Erde (IG BSE) and the Gewerkschaft Gartenbau, Land- und Forstwirtschaft (GGLF) – two trade unions with a long history reaching back into the nineteenth century. The fundamental idea behind this new trade union is the "alliance of labour and the environment".

According to the organisation's statutes,⁴³ IG BAU is responsible for the following economic and administrative sectors: building trades, building material industry, waste disposal and recycling, agriculture and forestry, building cleaning and management, as well as environmental and nature protection. It thus represents workers such as construction workers, painters and varnishers, glaziers, roofers, scaffolders, cleaners, gardeners, horticulturalists and landscapers, florists, forestry workers, and employees in cement factories and landscape preservation associations. IG BAU is a grassroots organisation with numerous chapters at the city and district levels as well as professional groups and trade union memberships in a number of firms.

Hauptverband der deutschen Bauindustrie (The Association of the German Construction Industry) (HDB)

Together with its eighteen ordinary and extraordinary member associations, the Hauptverband der Deutschen Bauindustrie represents the interests of 2,000 large and medium-sized construction firms.⁴⁴ As a trade association, it represents the interests of the German construction industry vis-à-vis lawmakers, governments, and administrations at the national and European levels. Its goals are the need-based investment policy on

⁴² See German Basic Law: article 9, paragraph 3 GG.

⁴³ IG BAU statutes, see www.igbau.de/Die_Satzung.html, November 2013.

⁴⁴ www.bauindustrie.de

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behalf of the federal government, the states, and communities, an appropriate awarding of public construction contracts, and investment-friendly basic frameworks in the awarding of construction contracts and construction contract law as well as in tax, competition, and business law.

As an employers' association, the HDB represents one of the partners in collective bargaining agreements, is active in the areas of company and industry-wide training, and campaigns against illegal practices.

The Zentralverband Deutsches Baugewerbe (Central Association of the German Building Industry, ZDB)

The Zentralverband Deutsches Baugewerbe is the largest and oldest builders' confederation in German. It represents the interests of 35,000 mid-sized, owner-operated construction companies⁴⁵ from diverse branches of the industry ranging from classical building, road, and underground construction to demolition. Companies represented include those working in the areas of tiling, classical carpentry, timber construction, well construction, special underground engineering, screed floor layers, turnkey builders, as well as firms offering services ranging from project handling to facility management. The ZDB's members include smaller owner-operated craft firms as well as larger mid-sized companies.

Der Bundesverband der deutschen Zementindustrie (Federal Association of the German Cement Industry, BDZ)

The Bundesverband der Deutschen Zementindustrie is an economic association which represents the interests of its members in their interactions with the political, business, and public spheres. Its main focuses include challenges arising from the areas of industrial and construction policy as they relate to issues concerning raw materials, energy and the environment, residential building, infrastructure, and architecture. The BDZ represents fifteen cement producers with a total of forty-five cement factories. The BDZ supports sustainable production and the use of cement-bound building materials. It cooperates closely with the Verein Deutscher Zementwerke (Association of German Cement Works, VDZ), the branch's technical and scientific association.

4.2. Role of the social dialogue in support of the green economy and green building

From the union's point of view, economic growth has to be reconciled with environmental protection. As early as 1996, the manifesto of the DGB (Deutscher Gewerkschaftsbund) of 1996 calls for an equal treatment of Ecology, Economy and Social Affairs in

⁴⁵ www.zdb.de

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sustainability. Its aim is to overcome unemployment and to reconcile economic prosperity and environmental protection. From a union's perspective, the social aspects of sustainability have clearly to be strengthened.

Thus, in accordance with their relevant political remits, the social partners have approached the topic of green building from different starting positions, but it now appears as if they have achieved a shared understanding of a number of issues. Key words in this regard are health protection and workplace security as well as resource efficiency aimed at lowering costs and shoring up innovations connected with competitive advantages and job security.

Sustainability and the cement industry

An example for social partnership on the issue of green building

In 2002 the Socio-Political Working Group of the German Cement Industry (SPADZ) together with the Federal Association of the German Cement Industry (BDZ) and the Association of German Cement Works (VDZ), the IG BAU, and the Industriegewerkschaft Bergbau, Chemie, Energie (Trade Union for Mining, Chemistry, and Energy, IG BCE) produced materials documenting the relationship between sustainable development and the cement industry in order to create a foundation for better dialogue concerning sustainable development. In it the social partners explicitly stress that sustainable development/green building is to be viewed as a process that must encompass the entire value chain of cement-bound building materials.⁴⁶

4.3 Drivers and barriers for the social dialogue on green building

In conclusion, a number of drivers and barriers for the social dialogue on green building were identified by German social partners and experts in the course of the project. As favourable conditions, **the national legislation** on environmental issues and energy saving regulations present good framework conditions for green building. As well, the **economic situation** in Germany, with rising numbers in building and a further growing demand for residential buildings in urban areas, generally supports developments in green building. As a third driver, the **technological research** and development was identified to foster new materials, better planning in the building sector (as BIM – Building Information Modelling) and innovations in green building.

⁴⁶ See Nachhaltigkeit und Zementindustrie – Dokumentation von Beiträgen und Handlungsoptionen. Published by the Sozialpolitischen Arbeitsgemeinschaft der Deutschen Zementindustrie et al., edited by Ralf Löckener and Birgit Timmer, Düsseldorf: Verlag Bau + Technik, 2002

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The **complexity of green building**, the need for a comprehensive approach for building projects and the lack of expert knowledge is a barrier that needs to be overcome by further efforts in learning and vocational training. In Germany, the **prevalence of small enterprises** in the building sector hinders a swift adaptation to new forms of sustainable building and energy-saving buildings. But perhaps the most important and difficult to overcome barrier in green building is the **lack of a common understanding**. Although sustainability is a catch word present in every concept and official brochure on building for more than a decade, there is often too little knowledge about green building measures and how the various trades on a building site should work hand in hand to ensure quality and effectiveness of sustainable building.

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5. GUIDELINES FOR SOCIAL DIALOGUE IN GREEN BUILDING

5.1 Tools to strengthen the social dialogue

For the social partners in Germany, the national committees on education and vocational training represent the most important arenas to discuss and to promote Green Building and thus to also further strengthen the social dialogue. By fostering holistic thinking rather than expert knowledge and by strengthening the notion of the circular economy, the social partners should take their chance to support the development of Green Building and employment opportunities in the building sector in general.

Better cooperation between social dialogue partners, science and industry is necessary to improve quality of work and working conditions in a changing environment. A special focus should be put on the digitalisation of the building sector and BIM (Building Information Modelling) as the major tool in big building companies and projects of the public sector to make building more sustainable.

Exchange on the European level, as this project shows, is vital, to achieve a common understanding about the challenges and demands in adapting the building sector to the requirements of a sustainable economy, also with view to labour migration within the European Union.

5.2 Areas of Action

Policies and legal framework

Policies on Green Building need to be revisited. In Germany, the great numbers of regulations on energy-saving and Green Building often hinders innovation and technological development. It is much more effective to make performance standards binding than to regulate the material to be used. A well-known example is the size of insulation used in cladding design. The regulations on insulation for facades with polystyrene require an increased size with every new regulation - due to lobbying of producers of polystyrene, the windows of renovated buildings look almost like embrasures of a medieval castle. The additional effect of such an extra-thick insulation for a 19th century building with solid brick walls may be little if at all. For efficiency it makes no sense to generally regulate sizes of insulation as buildings have very different structures and measures for energy-saving have to be adapted appropriately.

Public projects are a major tool to invent new standards and materials in the building sector. Social Partners should use their impact to support the promotion of alternative

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materials and building procedures – especially to set standards with the notion of the circular economy and to promote recycled or recyclable materials and take the consumption of grey energy into account.

Working Conditions and New Skills

The prevalence of irregular or illegal employment and sub-contractor chains in the building sector is a heavy burden in regard to quality of work and working conditions in general but even more so when it comes to innovations, new techniques and materials in building as in green building. It is strongly supported by all social partners to fight irregular employment.

From the perspective of the social dialogue, the policies on education and qualification are the most relevant ones to foster green building. Improvements in vocational training and the integration of new skills into job profiles and training curricula are necessary. As discussed in the second national workshop in Berlin, e.g. the German Chamber of Crafts promotes development in new job profiles with the set-up of a new curriculum for a building energy craftsman (*Gebäudeenergiehandwerker*) to better meet the requirements of modern building.

Another challenge is the German Crafts Code that bases on decades-old regulations and needs to be adapted to modern technology and work.

Technology, Innovation of the productive process

As shown in the earlier parts of the report, there is a lot of technology development and research going on in Germany, supported by funding programs and fostered by a long history of environmental policies. There is, however, always the challenge to integrate the various activities, to connect universities, producers and consumers, to make technological innovation productive and to make new technologies and materials part of the mainstream.

In the course of the second national workshop it was part of the discussion that the usage of un-proven technology is a most frequent problem in building. As well, the application of new technology or new materials often creates dependence upon specific producers. A true competition is not existent as long as there are only a very few producers offering new materials or technology.

Cultural Dimension

With regard to the cultural dimension the social-cultural change must be reinforced: Sustainability has to be established as leading notion in society (*Leitgedanke*).

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Sustainability in the building sector means also to observe the notion of the circular economy and to be aware of the ecological footprint of the building process and of buildings. To better promote this understanding in all parts of society is a challenge that the social partners have to meet. The demographical structure of workers in the building sector as well as the prevalence of small enterprises in Germany makes it more difficult to disseminate technological innovations and to adapt to the digital change.

5.3 Directions for the Social Dialogue at European Level

Following the two national workshops as well as several interviews with German experts, representatives of workers, employers and research, these are recommendations for a Social Dialogue on Green Building and problems to solve:

- Tax incentives and legal regulations must be designed to bolster green building.
- Educational policy must reinforce sustainability themes in curricula, particularly in the case of dual education. To date, vocational training has not been integrated into national sustainability strategies and programmes; vocational training policy and environmental policy are often not or insufficiently attuned to one another.
- There is no coherent understanding of environmentally-friendly workplaces or environmental occupations.
- The notion of green building as a cross-sectional task must be reinforced. In addition to developing green occupations and ecological vocational training, it is also important that existing occupational competences are expanded with regard to the demands of green building.
- The lack of skilled labour as well as the prevalence of illegal employment poses a serious obstacle in the field of green building.
- It is often the case that a conflict exists – also within trade unions – between the interests of quick construction (for example, to overcome a housing shortage) and green building. The regulations governing green building are viewed as burden within the planning process making it more complicated and costly or as factors leading to higher rents. Social and ecological aspects of residential construction are in danger of being pitted against one another.

A general problem faced by the areas of environmentalism and sustainability is the fact that the costs of non-sustainable behaviour, such as health and environmental problems, do not necessarily manifest themselves in the places they are created. The building sector is therefore called upon to take into account their own responsibilities vis-à-vis these issues.

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