Supporting Study for Fitness Check on the Construction Sector – The Second Phase on EU Environment, Health and Safety Legislation

Main Report

Written by David Fleet (Project Manager), Sophie Upson
Rocio Salado, Michele Palladino, Anna Heinevetter,
Yvette Le Crom, Hannah Collins, Henk Vermande
October 2016

EUROPEAN COMMISSION

Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs
Directorate C - Industrial Transformation and Advanced Value Chains
Unit C1 – Clean technologies and products

E-mail:GROW-C1@ec.europa.eu

European Commission
B-1049 Brussels

EUROPEAN COMMISSION

Supporting Study for Fitness Check on the Construction Sector – The Second Phase on EU Environment, Health and Safety Legislation

Main Report

Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs

2016

Europe Direct is a service to help you find answers to your questions about the European Union.

Freephone number (*)**:**

00 800 6 7 8 9 10 11

(*) The information given is free, as are most calls (though some operators, phone boxes or hotels may charge you).

Luxembourg: Publications Office of the European Union, 2015

ISBN 978-92-79-52362-5
doi:10.2873/421771

Table of contents

Annexes (see separate volume):

Abbreviations & Acronyms

Legislation

Asbestos Directive	**Directive 2009/148/EC** of the European Parliament and of the Council of 30 November 2009 on the protection of workers from the risks related to exposure to asbestos at work: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0148
Directive on temporary or mobile construction sites	**Council Directive 92/57/EEC** of 24 June 1992 on the implementation of minimum safety and health requirements at temporary or mobile constructions sites (eighth individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC): http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31992L0057
Directive on the manual handling of loads	**Council Directive 90/269/EEC** of 29 May 1990 on the minimum health and safety requirements for the manual handling of loads where there is a risk particularly of back injury to workers (fourth individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC): http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31990L0269
EIA Directive	**Directive 2011/92/EU** of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32011L0092
OSH Framework Directive	**Council Directive 89/391/EEC** of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31989L0391
WFD	**Directive 2008/98/EC** of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain directives: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0098

Regions and countries

BE	Belgium
DK	Denmark
DE	Germany
ES	Spain
FR	France
IE	Ireland
IT	Italy
PL	Poland
RO	Romania
UK	United Kingdom
EU-27	Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden and the United Kingdom
EU-28	EU-27 + Croatia

Organisations

AMAT	Associación de Mutuas de Accidentes de Trabajo (Spain) [Mutual Insurance Society for Accidents at Work]
EEC	European Economic Community
EU	European Union
FIEC	European Construction Industry Federation
HSE NI	Health and Safety Executive of Northern Ireland
ILO	International Labour Organization
INSS	National Institute of Social Security (Spain)
ISPRA	Institute for Environmental Protection and Research (Italy)
OECD	Organisation for Economic Co-operation and Development
UK HSE	Health and Safety Authority of the United Kingdom
UN	United Nations
WHO	World Health Organization

Other acronyms

CDW	Construction and demolition waste
CHAS	Contractors health and safety scheme
CSCS	Construction skills certification scheme
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
ESENER	European Survey of Enterprises on New and Emerging Risks
GDP	Gross Domestic Product
GWP	Global warming potential
OSH	Occupational safety and health
PPE	Personal protective equipment
PIVISTEA	Programa de Vigilancia de la Salud de los Trabajadores Expuestos al Amianto (Spain) [Health Surveillance Programme for Workers Exposed to Asbestos]
MS	Member State(s)
RA	Risk assessment
SCM	Standard Cost Model
SMEs	Small and medium sized enterprises
SSWP	Safe system work plan

1 Introduction

1.1 Background

The construction sector provides 18 million direct jobs and contributes about 9% of the EU's GDP[1]. In 2014, the EU had the largest construction sector globally, with total construction output for the EU-28 being €1,211 billion. Despite the 2008 economic crisis, the prospects for the sector are now more positive and an expected growth of around 2% to 3% per annum has been forecast for the coming years[2].

The construction and use of buildings accounts for about half of the extracted materials and energy consumption and about a third of water consumption in the EU[3]. The sector also accounts for about 25% to 30% of all waste generated in the EU[4]. Environmental pressures arise at all stages of the construction life cycle, including the manufacturing of construction products, physical construction, use of buildings, renovation and the management of waste. Thus, the construction sector has the potential to make a major contribution in terms of environmental sustainability.

Although there have been big improvements over recent years in reducing the number and rate of injuries to construction workers, construction remains a high-risk industry and accounts for a high percentage of fatal accidents and major injuries. In 2013 alone, there were 645 fatal accidents at work among construction contractors in the EU (defined as NACE Sections F41 and F43)[5]. These accidents undoubtedly have important cost implications for companies and put additional pressure on an already struggling industry that is yet to fully recover from the 2008 downturn.

The Commission's "*Strategy for the sustainable competitiveness of the construction sector and its enterprises*"[6] announced the Commission's intention to undertake a fitness check for the construction sector. A fitness check is a comprehensive evaluation of a policy area that usually addresses how several related legislative acts have contributed (or otherwise) to the attainment of policy objectives. The purpose is to identify excessive burdens, overlaps, gaps, inconsistencies

1 DG GROW (2016): Construction, available at: http://ec.europa.eu/growth/sectors/construction/index_en.htm

2 Euroconstruct (2016): Ongoing recovery in European construction, available at: http://www.euroconstruct.org/pressinfo/pressinfo.php

3 European Commission (2014): Communication from the European Commission to the European Parliament, the Council and the European Economic and Social Committee of the Regions on Resource Efficiency Opportunities in the Building Sector, COM(2014) 445 final, available at: http://ec.europa.eu/transparency/regdoc/rep/1/2014/EN/1-2014-445-EN-F1-1.Pdf

4 DG Environment (2016): Waste, Construction and demolition waste, available at: http://ec.europa.eu/environment/waste/construction_demolition.htm

5 Eurostat (2013): Fatal Accidents at work by economic activity (hsw_n2_02), available at: http://ec.europa.eu/eurostat

6 European Commission (2012): Communication from the Commission to the European parliament and the Council, Strategy for the sustainable competitiveness of the construction sector and its enterprises, COM(2012) 433, available at: https://ec.europa.eu/transparency/regdoc/rep/1/2012/EN/1-2012-433-EN-F1-1.Pdf.

and/or obsolete measures that may have appeared over time, and to assess the synergies between, and the cumulative impacts of, regulation. As stated in the Commission's Roadmap[7]:

> *"The purpose of this Sectoral Fitness Check is to evaluate the efficiency, the coherence, the effectiveness, the relevance and EU added value of the selected EU legislative texts with respect to the achievement of the objectives for a more competitive and sustainable construction sector, in particular for SMEs. Results from the work on the Sectoral Fitness Check will also feed into preparations for Commission action to address regulatory barriers in key business services and construction as announced in the Single Market Strategy.*
>
> *The Sectoral Fitness Check will pay particular attention to identifying any synergies (e.g. improved performance, simplification, lower costs, reduced burdens) or inefficiencies (e.g. excessive burdens, overlaps, gaps, inconsistencies and/or obsolete measures) within the group of legislative texts assessed which may have appeared over time, and help to identify the cumulative impact of the interventions covered, covering both costs and benefits."*

To assist the Commission with this fitness check, two supporting studies have been commissioned – one focused on legislation relating to the Internal Market and Energy Efficiency and one focused on legislation relating to Health & Safety[8] and the Environment – the latter of which is the subject of this report.

1.2 Study objectives

The objectives of this study are to:

- Evaluate the cumulative impacts (both in terms of costs and benefits) that a number of pieces of EU legislation related to Environment and Health & Safety have on the construction sector, considering the challenges facing the sector in terms of competitiveness and sustainability; and

- Evaluate the efficiency, the coherence, the effectiveness, the relevance and the EU added value of the selected EU legislative texts and their implementation/national transposing measures with respect to the achievement of the objectives for a more competitive and sustainable construction sector, in particular for SMEs.

This Final Report presents the findings of the study.

---

[7] DG GROW (20016): REFIT Sectoral Fitness Check of the construction sector, Evaluation and fitness check (FC) roadmap, revised 25 April 2016.

[8] It is important to stress that all references to health & safety in this report relate to health and safety at work as opposed to other aspects of health & safety such as consumer safety, food safety, transport safety, etc. In this report, we follow the naming convention of OSH (occupational safety and health) as used in the overarching legislation (the OSH Framework Directive) and for the EU agency for occupational safety and health (EU-OSHA).

1.3 Structure of the Final Report

The Report has been organised as follows:

- **Section 2** provides a description of the approach to the study;
- **Section 3** sets out the intervention logic;
- **Section 4** provides the evaluation of the costs and benefits to the construction sector associated with the selected legislation. Particular attention is given to SMEs (small and medium size enterprises) which are vital to the continuing recovery of the construction sector;
- **Sections 5** presents the analysis of the evaluation questions with particular regard to the relevance, coherence, effectiveness and added value of the selected legislation; and
- **Section 6** presents the overall conclusions of the study.

2 Approach to the Study

2.1 Overview

This Section of the Report sets out our approach to the study, including the study scope (Section 2.2), the selection of the legislation (Section 2.3), our approach to data gathering and consultation (Section 2.4) and our methodology for the evaluation (Section 2.5).

2.2 Study scope

2.2.1 Geographic scope

The study focuses on ten EU MS (Belgium, Denmark, France, Germany, Italy, Ireland, Poland, Romania, Spain and the UK) which are considered to be representative of the various economic characteristics of the EU construction industry. Table 2-1 shows the share of total EU-28 turnover held by the ten countries covered by this study in each sub-sector in 2014, or where data is missing, the most recently available data (which for most cases is 2013). As would be expected, the larger countries (Germany, Italy, France, Spain and the UK) account for the majority of the turnover in each sub-sector. Together, the ten countries selected for this study account for about 80% of the EU-28 turnover in the various construction sectors.

Table 2-1: Turnover 2014 (or most recent data)- millions of €

Country	Construction contractors		Construction products	
	€	%	€	%
Belgium	52,719	4.1%	15,821	4.0%
Denmark	24,153	1.9%	5,655	1.4%
France	240,800	18.7%	45,052	11.5%
Germany	206,886	16.1%	87,953	22.4%
Ireland	6,183	0.5%	1,522	0.4%
Italy	140,985	11.0%	55,675	14.2%
Poland	43,391	3.4%	24,076	6.1%
Romania	11,069	0.9%	6,227	1.6%
Spain	84,125	6.5%	22,415	5.7%
United Kingdom	219,408	17.0%	39,884	10.1%
Rest of Europe	257,659	20.0%	88,954	22.6%
EU 28	**1,287,378**	**100.0%**	**393,234**	**100.0%**

Table 2-1: Turnover 2014 (or most recent data)- millions of €				
Country	Mining and quarrying		Professional services	
	€	%	€	%
Belgium	749	2.1%	8,457	2.6%
Denmark	380	1.1%	8,229	2.5%
France	5,758	16.4%	54,075	16.5%
Germany	6,320	18.0%	63,728	19.4%
Ireland	0	0.0%	2,598	0.8%
Italy	2,641	7.5%	21,389	6.5%
Poland	1,675	4.8%	5,272	1.6%
Romania	440	1.3%	2,389	0.7%
Spain	2,385	6.8%	20,819	6.3%
United Kingdom	7,436	21.1%	74,010	22.5%
Rest of Europe	7,415	21.1%	67,244	20.5%
EU 28	**35,198**	**100.0%**	**328,210**	**100.0%**

2.2.2 Sectoral scope

The focus of this study is on the construction sector and therefore costs and benefits to/for other stakeholders are not considered in detail here[9].

The following table sets out the sub-sectors under the scope of this study and their corresponding NACE statistical classification. In line with the terms of reference for the study, NACE Section F42, which covers infrastructure works, is not included within the study scope. The person, company, or organisation that buys the final construction products or services is not considered to be part of the construction sector and is also excluded from the study scope.

Table 2-2: Construction sector: statistical classification according to NACE Rev. 2		
Sub-Sector	**NACE Rev. 2 code**	**Official name**
Mining and quarrying (Section B)	8.1	Quarrying of stone, sand and clay
	8.9	Mining and quarrying not elsewhere classified
Manufacture of construction products and equipment (Section C)	16.2	Manufacture of products of wood, cork, straw and plaiting materials
	including, 16.23	*Manufacture of other builders' carpentry and joinery (such as doors and window frames)*
	22.23	Manufacture of builders' ware of plastic
	23.3	Manufacture of clay building materials
	23.5	Manufacture of cement, lime and plaster
	23.6	Manufacture of articles of concrete, cement and plaster
	23.7	Cutting, shaping and finishing of stone
	25.1	Manufacture of structural metal products
	28.92	Manufacture of machinery for mining, quarrying and construction

[9] For further information on the EIA Directive, including a link to the Commission's report of the application and effectiveness of the EIA Directive, please see http://ec.europa.eu/environment/eia/review.htm.

Additional information regarding the EU Waste legislation, including impact assessments and evaluation of certain waste stream Directives can be found at: http://ec.europa.eu/environment/waste/target_review.htm

Further information regarding EU OSH legislation can be found at http://ec.europa.eu/social/main.jsp?catId=151&langId=en

Table 2-2: Construction sector: statistical classification according to NACE Rev. 2		
Sub-Sector	**NACE Rev. 2 code**	**Official name**
Construction contractors (Section F)	41	Construction of buildings
	43	Specialised construction activities
Professional construction services (Section M)	71	Architectural and engineering activities; technical testing and analysis

2.2.3 Temporal scope

In line with the terms of reference for this study, the analysis in this report is retrospective and focuses on the impact of the relevant legislation on the construction sector over the period from 2004 to 2014. It is noteworthy that some of the legislation (e.g. the EIA Directive) has already been amended since 2014. Where it is clear that significant changes that have taken place in the legislation since 2014 have led to a need to reassess impacts on the construction sector, some relevant qualitative considerations have been presented.

2.3 Selection of legislation

2.3.1 Overview

As noted in the introduction, this study reviews EU legislation in the following two policy areas: (i) occupational safety and health; and (ii) the environment. It focuses on the most relevant texts which have a significant impact on the construction sector's competitiveness and sustainability.

The following six pieces of EU legislation form the focus of the study:

- Directive 89/391/EEC Occupational Safety and Health Framework
- Directive 90/269/EEC on Manual Handling of Loads
- Directive 92/57/EEC on Temporary or Mobile Construction Sites
- Directive 2009/148/EC on Exposure to Asbestos at Work
- Directive 2008/98/EC Waste Framework Directive
- Directive 2011/92/EU on Environmental Impact Assessment

Our approach to selecting these pieces of legislation is outlined in Section 2.3.2 and Annex 1 below.

It should be noted that some of the legislation that has been assessed in this study is not focused solely on the construction sector. The OSH Framework Directive, for example, applies to a wide variety of sectors. Nevertheless, the selected legislation does have a clear relevance to, and direct impact on, the construction sector. While the selected legislation may have wider environmental or social impacts beyond the construction sector these are not within the scope of the present study. Rather, the fitness check takes a sectoral perspective and focuses solely on the impact on EU construction firms.

2.3.2 Approach for the Selection of the legislation

Based on an initial long list of nearly 60 pieces of EU legislation, an 'intermediate' list of 48 pieces of the more relevant legislation was developed following meetings with the Commission's Steering Group and with the Mirror Group[10] (in December 2015).

A set of criteria was developed and agreed upon in order to select a manageable set of pieces of legislation in view of the resources available for the current study. These criteria are set out in the text box below[11].

[10] The Mirror Group for this study includes representatives from a number of EU trade associations as well as Member State(MS) representatives.

[11] These criteria are the same as those developed for the other study focusing on the internal market and energy in order to ensure consistency of approach between the two studies.

Eligibility criteria and substantive criteria used for selection of legislation

The criteria for selecting the directives include four 'eligibility criteria' (which refer to the nature of the EU legislation and its alignment with the scope and purpose of the Study) and three 'substantive criteria' (which refer to the nature of the effects (costs or benefits) generated by EU legislation) as listed below.

Eligibility criteria:

- The legal act should be **binding** in order to be able to establish a causal linkage between the EU legislation and the costs and benefits observed.
- The legal act should have been **in force between 2004 and 2014.** Where applicable and relevant, the legal texts which preceded or amended the selected legal act during this period also need to be included, so as to ensure coverage of the relevant period.
- The legal act should **not** have been **subject to major, recent modifications**, as this would negatively influence the ability to appropriately assess its effects.
- The **bulk of the impacts generated by the act should pertain to the policy areas covered** by the Study (i.e. Health & Safety or Environment) * and not areas covered by the parallel study (i.e. Internal Market and Energy).

Substantive criteria:

- The legal act should produce **direct effects** on the construction sector (i.e. mining and quarrying, construction contractors, construction products and/or professional services). In practice, this criterion refers to the length of the causal chain and involves the exclusion of legislation that is excessively distant from the focus of the analysis. This can be seen as an operationalisation of the 'proportionate analysis' principle commonly used by the Commission in evaluation and impact assessment work - ('proximity' criterion).
- The legal act should generate **specific effects** on the construction sector, in particular in relation to **competiveness or sustainability**. This criterion is obviously met by the legislation directly targeting the construction and related sectors but it may also be satisfied by horizontal legislation that addresses issues of particular relevance for the sectors concerned. In addition, this criterion takes into account the nature of the entities affected by legislation. Since the focus of the Study is on the cost and benefits for operators, acts impacting solely on other entities (e.g. public administrations) are not retained for further analysis.
- The expected likelihood of occurrence and magnitude of the effects generated by the act must be **significant** ('significance' criterion). This criterion results in the elimination of pieces of legislation exerting only a negligible influence on the construction sector. Obviously, the criterion requires an ex ante tentative assessment (as implied by the word 'expected'), as the precise scale of the effects will only be known at the end of the Study. Therefore, the emergence of new elements during implementation may lead to a revision of the classification of legal acts under this criterion.

Source: Adapted from Economisti Associati et al. (2015)[12]

Using the criteria presented above, a shortlist of 15 items of legislation was derived from the intermediate list of 48 pieces of legislation. The results are summarised in Figure 2-1 overleaf with a tabular summary setting out the extent to which the different pieces of legislation meet with the substantive criteria presented in Annex 1.

[12] Economisti Associati et al. (2015): Supporting study for the Fitness Check on the Construction Industry, Inception Report (Revised), Volume 1 – Main Text, 19th October 2015.

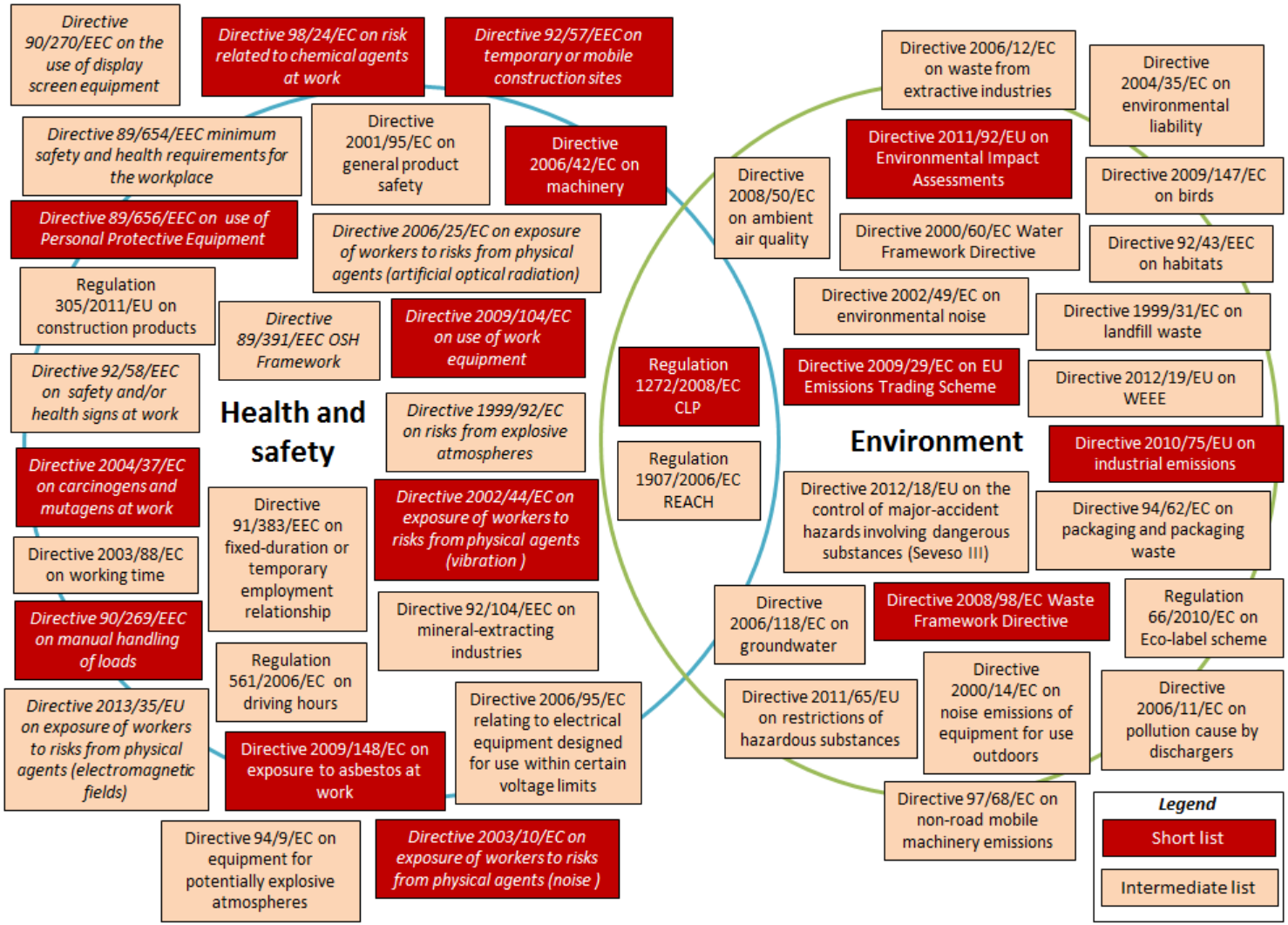


Figure 2-1: Intermediate and Short-listed Legislation

However, detailed analysis of these 15 pieces of legislation was not feasible and there was a need to reduce the number of pieces of legislation still further. Following inter-service discussions between the Commission DGs and between the Commission and the Consultants, six pieces of legislation were selected for this study to focus on:

- Directive 89/391/EEC Occupational Safety and Health Framework
- Directive 90/269/EEC on Manual Handling of Loads
- Directive 92/57/EEC on Temporary or Mobile Construction Sites
- Directive 2009/148/EC on Exposure to Asbestos at Work
- Directive 2008/98/EC Waste Framework Directive
- Directive 2011/92/EU on Environmental Impact Assessment

Reasons why individual directives were included or excluded from the scope of the study include their existing coverage under the OSH Framework Directive as well as legislative reviews or other evaluations on-going on specific directives (as summarised in Annex 1).

A description of each of the selected Directives is provided in Section 3.

2.4 Approach to data gathering and the consultation

2.4.1 Overview

Our approach to the study has combined literature review with consultation by means of an Open Public Consultation (OPC) and interviews with relevant stakeholders in the ten EU MS. The study was overseen by a Steering Group (comprising Directorate Generals of the Commission with an interest in the study, including DG for Internal Market, Industry, Entrepreneurship and SMEs, DG Environment, Secretariat-General, DG Employment, Social Affairs and Inclusion and Joint Research Centre) with support from a Mirror Group, which comprised representatives from the sector associations, national administrations and international organisations to accompany the study throughout its duration and facilitate the gathering of information and views from stakeholders on the research questions of the fitness check. These groups reviewed outputs from the study and attended meetings to discuss reports as it progressed and also participated in a validation workshop to review the results of this study as well as the other study commissioned to focus on the internal market and energy efficiency.

The first step in the analysis was to identify how each of the selected Directives had been transposed into national legislation in each of the ten countries. A summary of relevant national provisions is provided in Annex 2.

Following this, the information and data needed for the Fitness Check was gathered via the following approaches:

- **Literature review:** A comprehensive desk-based literature review, synthesis and analysis of available information was carried out to gather any relevant information. Data was gathered *inter alia* on the construction industry (e.g. levels of employment, number of firms, turnover by size of enterprise, etc.), trends in health and safety in the construction sector (e.g. statistics on the number of accidents and fatalities) and trends in the environmental impacts pertaining to the sector (e.g. data on Construction Demolition Waste (CDW) arising). Data was sought on the costs and benefits of implementing the various measures set out in the Directives and, where available, information was gathered relating to the synergies, overlaps, gaps, inconsistencies and obsolete measures in the Directives.

Key sources of secondary data for this study include E**urostat data on economic trends for the sector and accidents/fatalities**; **European Agency for Health and Safety at work** (EU-OSHA), in particular their **2014 Second European Survey of Enterprises on New and Emerging Risks** (ESENER-2[13]); and the **UK Health & Safety Executive (HSE[14])**, which has a long standing tradition of estimating the costs of occupational health and safety. Data from the UK HSE have been particularly useful for selecting values to use for estimating the financial costs and benefits to companies of applying OSH legislation (see Annex 4 for details on references).

- **Telephone interviews:** For this task, telephone interviews were carried out with over **60 organisations from the ten selected EU MS**. Initially, it was hoped that it would be possible to conduct at least eight interviews in each country, but it proved very difficult to engage stakeholders to the degree envisaged (as discussed further in Annex 5). A breakdown of the stakeholders consulted is provided in Section 2.4 below. To support this task, tailored interview guides were developed for each stakeholder group[15] and these were finalised at the beginning of March 2016 following discussions with the Commission. The interview guides were broad in scope (with a wide range of different questions) and sought to address the overarching evaluation questions.

- **Open Public Consultation (OPC):** In order to gather experiences, views and opinions of interested stakeholders and the public on the impact of the EU legislation for the construction sector, an OPC was launched (running from March to June 2016). The OPC was led by the Commission and was shared with the other parallel study carried out (by Economisti Associati et al.) for the Fitness Check for the construction sector and included questions addressed towards citizens, MS authorities, industry associations and companies. Details on the OPC are provided in Annex 5. In total, 54 responses were received regarding the questions relating to OSH and environmental legislation.

- **Validation Workshop:** In order to obtain feedback from stakeholders on some of the preliminary findings of the study, a validation workshop was held, in Brussels, on the 26 May 2016. In addition to representatives from the Commission, the Steering Group and the study teams, 20 representatives from industry associations, 8 MS authorities and 1 other stakeholder attended the workshop.

[13] Note that any reference to this source is in relation to the construction sector as defined in their report (i.e. NACE Rev. 2 Groups B, D, E, F and division 05-09; 35-43 and thus NOT including architectural or engineering services)

[14] http://www.hse.gov.uk

[15] In order to gather as much detailed information as possible from each stakeholder, it was important to tailor the interview guide according to the type of stakeholder being interviewed. It was decided that some questions would be more relevant to specific types of stakeholder, and so some questions were not asked of some stakeholder types. The interviewer was also briefed to tailor the questions to the specific person being interviewed and their specific knowledge/experience and perspective. This means that stakeholders were not all asked exactly the same questions in the telephone interviews.

2.4.2 Responses to the telephone interviews

Interviews (mainly by telephone[16]) were held with organisations from the ten countries selected for the study, as well as with a small number of organisations that operate at an EU level. The table below shows the location of interviewees. The following stakeholder groups were targeted for interviews:

- National/Regional Authorities in the MS;
- Companies (including SMEs);
- Industry associations (including business associations and workers unions/associations); and
- Other stakeholders, e.g. relevant NGOs.

Table 2-3: Summary of interviews held

	MS authorities	Industry associations	Companies	Other	Total
Belgium	2	5	1	1	9
Denmark	1	2	4	0	7
France	3	0	2	0	5
Germany	2	1	3	0	6
Ireland	4	0	0	0	4
Italy	0	3	2	0	5
Poland	3	1	5	0	9
Romania	2	2	2	0	6
Spain	1	0	3	0	5
UK	1	0	1	2	4
EU Associations	0	3	0	0	3
Total	**19**	**18**	**23***	**3**	**63**
**of which five were SMEs*					

2.4.3 Responses to the Open Public Consultation

In total, 54 stakeholders responded (at least in part) to questions in the OPC concerning health and safety and the environment. A breakdown of these responses by stakeholder group and location is provided in the tables overleaf.

[16] A few interviews were either face-to-face or via video-conference.

Table 2-4: Summary of responses to the Open Public Consultation – Stakeholder type	
Stakeholder type	**Number of responses**
Employee	3
Private company	4
International organisation	1
Workers organisation	8
NGO	3
Industry/business association	14
Other interest group	2
Consultancy	1
National authority	11
Regional authority	2
Citizen	5
Total	**54**

Table 2-4 indicates that the highest number of respondents were from industry associations. This may have been for a number of reasons, including some of their involvement in the Mirror Group for the study, the fact that a number of them have dedicated staff responsible for responding to policy issues as well as the fact that a number of EU-level associations are based in Brussels.

Table 2-5: Summary of responses to the Open Public Consultation – Stakeholder location	
Country	**Number of responses**
EU	1
Austria	1
Belgium*	12
Croatia	1
Czech Republic	1
Denmark	2
Estonia	1
Finland	4
France	3
Germany	8
Hungary	1
Ireland	1
Italy	2
Luxembourg	2
Malta	1
Netherlands	1
non-EU	2
Slovenia	1
Spain	4
Sweden	2
United Kingdom	3
Total	**54**
* A number of industry associations are headquartered in Brussels, which explains the relatively higher number of responses for Belgium	

2.5 Approach to the evaluation

2.5.1 Introduction

In line with the two main strands of analysis in this study, this section of the report has been broken down as follows:

- **Section 2.5.2 Economic evaluation:** This section summarises our methodology for the economic analysis. It outlines the types of costs and benefits identified as being relevant and our approach to their quantification. The results of the economic evaluation are presented in **Section 4.**
- **Section 2.5.3 Ex-post evaluation:** This section presents the evaluation matrix for the study and outlines our approach to the ex-post evaluation. The results of the ex-post evaluation are presented in **Section 5.**

2.5.2 Economic evaluation

When trying to assess the costs and benefits in a fitness check, it is important to consider both direct and indirect costs and benefits but also the cumulative impacts of the legislation. A list of impact categories relevant to this study has been developed (see text box below). For consistency and to aid the aggregation of data in the Commission's final fitness check, the list converges with that of the study by Economisti Associati et al. Because this study is focused on the **cumulative impacts of the legislation on the construction sector,** the main focus is on **direct costs and benefits to companies** from the legislation. Wider impacts (e.g. on MS authorities or citizens) are not within the study scope.

Impact categories for assessing costs and benefits

In order to assess the costs and benefits, and as required in the tender specifications, the study "Assessing the Costs and Benefits of Regulation"[17] was also reviewed (as this is expected to provide an input to the upcoming revision of the European Commission Impact Assessment Guidelines). This categorises the costs of regulation into the following broad categories[18]:

- ***Direct costs***, including direct compliance costs (regulatory charges, substantive compliance costs, administrative burden) and hassle costs (e.g. delays, etc.);
- ***Enforcement costs,*** including costs associated with monitoring, enforcement and adjudication; and
- ***Indirect costs***, which are defined as costs "incurred in related markets or experienced by consumers, government agencies or other stakeholders that are not under the direct scope of the relevant legal act".

The **categories of benefits** that can be considered consistent with both the scope of this study and the first phase study are defined as follows:

- ***Regulatory costs savings:*** costs savings are analogous to the regulatory costs but with an opposite sign;
- ***Improved wellbeing***: benefits deriving from increased social welfare or individual utility; and
- ***Wider macroeconomic benefits***: new business opportunities and improved competitiveness.

[17] CEPS & Economisti Associati (2014): Assessing the Costs and Benefits of Regulation, available at http://www.ceps.eu/book/assessing-costs-and-benefits-regulation

[18] And these reappear in Tool #51: Typology of Costs and Benefits in the Better Regulation "Toolbox"

Impact categories for assessing costs and benefits

As noted in the *Better regulation "Toolbox"*, there is no commonly agreed taxonomy of regulatory benefits, although the Commission recommends a classification based on the three categories already mentioned (i.e. direct and indirect benefits, and ultimate impacts). The study conducted by CEPS and Economisti Associati for the European Commission[19] pointed out that benefits of regulation are the least easy to classify and tend to be very specific to the regulation at hand.

The methodology to the estimation of the direct regulatory costs is based on the **Standard Costs Model** (SCM) where administrative burdens are calculated on the basis of the average cost of the required administrative activity (Price) multiplied by the total number of activities performed per year (Quantity).

The cost is generally estimated by multiplying a tariff (based on average labour cost per hour including overheads) and the time required per action. Other types of costs (outsourcing, equipment or supplies' costs, etc.) are taken into account as appropriate. It is recognised that the SCM approach normally makes use of data obtained for interviews in terms of how long tasks take and unit costs, but the interviews conducted for this study revealed very little useable data in this respect. As an alternative, the study team identified estimates for time taken and/or costs from reports, publications etc. where available and adopted the same approach as described in the following core equation:

The core equation of the SCM is $\sum P \times Q$, *where P (for Price) = Tariff x Time and Q (for Quantity) = Number of businesses x Frequency)*

The purpose of the SCM methodology is to produce estimates that allow an order of magnitude of the burdens in different regulatory areas to be identified.

Throughout our analysis, impacts have been quantified to the extent possible based on information gathered from the literature review and consultation. When trying to extrapolate costs, general statistics have been used but there was a need to match the sectoral scope of the study with Eurostat statistics and NACE codes. For instance, Section F (Construction) of the NACE classification includes Civil Engineering (F42) but this is not within the scope of the present study.

Availability of data for estimating costs and benefits played a key factor in determining the approach to their quantification across MS. However, despite extensive research through literature review and consultation (interviews and OPC), it has not been possible to identify base data on the costs and benefits from the different requirements under each of the Directives in all (and for some requirements, in any) MS. Engaging industry representatives and individuals in the collection of data to inform the scale and the value of costs and benefits has been extremely challenging. In addition, it is also the case that much of the data required in order to inform their measurement and value is not routinely collected at company level and is not, therefore, likely to be available in any event. Furthermore, whilst some industry representatives have commented on certain assumptions utilised in this report (which have been based on Eurostat, EU-OSHA and ESENER-2 data) and have suggested that they may be overestimated in terms of the levels of compliance with various measures introduced by the different pieces of legislation, very few alternative estimates have been provided for the study team to work with. Consequently, in most cases, the available figures have been utilised where these were considered sufficiently robust.

Where limited data from specific MS has been used to extrapolate costs and benefits to the other MS within the core group of 10 that the study is focusing on, GDP price deflators have been utilised

[19] CEPS & Economisti Associati (2014): Assessing the Costs and Benefits of Regulation, available at http://www.ceps.eu/book/assessing-costs-and-benefits-regulation

where reasonable to reflect variations in costs/values in the different MS prior to making overall calculations. For instance, a number of the calculations have been based on data for the UK (which has a long history of studying and monitoring health and safety and environmental data) due to data availability. Since the 10 focal countries together account for about 80% of the EU-28 turnover in the various construction sectors, extrapolations to EU-28 are made by uplifting overall cost and benefit figures for the 10 countries by 25%.

Price indices used for calculations of costs and benefits are presented in Table 2-6 below. However, whilst using price deflators does take account of overall price differences, it does not account for differences in a number of other factors (e.g. capacities in dealing with OSH and environmental issues, variations in national priorities, differing levels of compliance etc.) across MS. Nevertheless, the overall EU estimates are driven by those countries with the largest numbers of actors in the construction sector (France, Germany, Italy, Spain and UK) where costs are likely to be more similar to the UK (compared to some of the newer MS).

Table 2-6: GDP indices utilised for extrapolations

Location	2013
European Union (28)	100.0
Belgium	110.5
Bulgaria	47.2
Czech Republic	67.3
Denmark	134.8
Germany	105.3
Estonia	72.0
Ireland	111.1
Greece	83.3
Spain	91.3
France	110.9
Croatia	64.6
Italy	101.1
Cyprus	93.1
Latvia	68.1
Lithuania	60.4
Luxembourg	121.0
Hungary	57.7
Malta	78.7
Netherlands	109.4
Austria	108.8
Poland	57.4
Portugal	79.0
Romania	50.0
Slovenia	81.2
Slovakia	67.4
Finland	123.7
Sweden	136.5
United Kingdom	110.4
Source: Eurostat	

It is important to note at the outset that many of the figures provided in the following sub-sections are the result of various assumptions, taking averages, extrapolations from one MS to others etc. Consequently, the final estimates are likely to be subject to significant uncertainty. In order to reflect this uncertainty, ranges of costs and benefits are presented based on the data available where this is feasible. Where assumptions have been made in order to generate monetary figures, high and low scenarios have been introduced in order to demonstrate the extent to which higher/lower level assumptions influence the results of calculations.

Consequently, overall values for costs and benefits across the EU should be considered as being uncertain, although they do provide an indication of their likely order of magnitude.

2.5.3 Ex-post evaluation

A list of evaluation questions was developed for each of the five evaluation criteria (i.e. relevance, coherence, effectiveness, efficiency, and added value). These questions are presented in the Evaluation Matrix overleaf. The matrix also provides details on the data collected, key sources, and how that data was analysed to provide answers to the questions.

Table 2-7: Evaluation Matrix				
Evaluation Question	**Judgement Criteria**	**Indicators**	**Data Sources**	**Data collection/Analysis Methods**
Relevance				
To what extent are the different EU acts identified relevant to the needs and challenges identified for a competitive and sustainable construction sector?	Degree to which EU legislation meets the needs of industry in terms of remaining competitive whilst protecting workers and the environment	Qualitative assessment of extent to which EU legislation supports (or does not work against) EU industry needs in terms of competitiveness. Degree of concurrence from industry with premise that EU acts support industry	Companies MS Authorities Industry associations Directives identifying measures to be implemented Impact assessments/evaluations/other reports	Literature review Interviews with companies, MS authorities and Industry Associations Public consultation
Coherence				
To what extent do all the analysed pieces of EU legislation work together sufficiently well and provide the construction sector with a clear and predictable regulatory framework?	Clear and predictable framework – clarity and consistency in definitions and procedures, scope and treatment of exceptions	Qualitative assessment of legislation and whether or not there are contradictory elements or the different acts support each other. Qualitative assessment of degree to which legislation demonstrates inconsistencies, gaps etc. Extent of dissatisfaction expressed by stakeholders regarding coherence Number and nature of legal cases	Directives and any guidance documents Evaluations, impact assessments and other documentation identified at EU and national level Consultation with companies, authorities, associations EU infringement cases	Analysis of the Directives and corresponding legislation at national level and the measures included Review of queries and legal cases arising Interviews with companies, MS authorities and Industry Associations Public consultation
Are there any inconsistencies, overlaps (e.g. in terms of scope and definitions) or gaps that can be identified across the identified EU legal acts? if yes, which are the inconsistencies, overlaps or gaps?	Inconsistent definitions and/or scope Overlaps between Directives Major gaps in provisions/measures Obsolete provisions which are no longer relevant or	Nature and numbers of each category of issue	Directives and any guidance documents Evaluations, impact assessments and other documentation identified at EU and national level Consultation with companies,	Analysis of Directives Analysis of infringement cases Interviews with MS authorities, industry associations and companies Public consultation Literature review

Table 2-7: Evaluation Matrix				
Evaluation Question	**Judgement Criteria**	**Indicators**	**Data Sources**	**Data collection/Analysis Methods**
	superseded by other legislation		authorities, associations EU infringement cases	
To what extent can the inconsistencies and overlaps be attributed to provisions in the existing EU legislative framework or to implementation and/or transposition at national (including regional and local) level and/or to existing national legislative frameworks?	EU legislation or national transposition/legislation as source of inconsistencies or duplication	Numbers associated with each type of issue attributed to EU or national legislation/transposition	Directives and any guidance documents Evaluations, impact assessments and other documentation identified at EU and national level Consultation with companies, authorities, associations EU infringement cases	Analysis of Directives Analysis of infringement cases Interviews with MS authorities, industry associations and companies Public consultation Literature review
Effectiveness				
To what extent has the identified EU legislation contributed to achieving the objectives of a competitive and sustainable construction sector?	Extent to which EU construction industry has maintained competitive position whilst improving safety of workers and protecting the environment. Extent to which any shortcomings identified in the legislation impact competitiveness of the EU construction industry Extent to which obstacles to achieving a competitive EU construction industry are a result of improvements in protection of workers or the environment	Market data and trends in the construction sector relating to: - production volume - production value - number of firms - employment in the sector - profitability - number of building permits Trends in waste generation by construction sector. Trends in accidents/deaths in the workplace. Numbers of projects and % of those perceived to warrant it that undergo EIA. Substantive compliance costs and administrative costs borne	Eurostat/ILO/OECD and UN data Impact assessments and evaluations Industry and interest group publications Companies, MS authorities and industry associations Interest groups	Literature review Interviews with MS authorities, industry associations and companies Public consultation
To what extent do 'shortcomings' in EU legislation, or in its implementation/transposition at a national level, impact on the performance of the construction sector?				
What are the obstacles that still stand in the way of achieving the objectives of a competitive and sustainable construction sector?				

Table 2-7: Evaluation Matrix				
Evaluation Question	**Judgement Criteria**	**Indicators**	**Data Sources**	**Data collection/Analysis Methods**
		by the construction sector and impact on profitability. Numbers of jobs created in the environment sector related to construction		
What are the unintended positive or negative consequences and collateral effects of the EU legislation in question?	Identification of effects not anticipated from legislation (positive and negative) Identification of objectives not fulfilled	Costs incurred by the sector that were not foreseen Benefits anticipated but not achieved	Industry association position papers Interest group publications Companies, MS authorities and industry associations	Consultation with companies, industry associations and MS authorities Literature review
Efficiency				
What are the cumulative costs and benefits associated with the implementation and transposition of identified EU legislation for the construction sector, in particular for its SMEs?	Costs and benefits for construction companies arising from EU legislation and any differences due to transposition at National level Distributional impacts between small and large firms	Costs and benefits as a % of costs/turnover per firm (SME and large)	Companies, MS authorities and industry associations Impact assessments, evaluations Interest groups Eurostat/ILO/OECD/UN data Impact assessments	Literature review Interviews with companies, industry associations and MS authorities
Are the benefits achieved at costs that are affordable for the sector, or is there evidence that the legislative requirements have caused unnecessary regulatory burden for the construction sector?	Identification of alternative means of achieving legislative objectives	Costs and benefits as a % of costs/turnover per firm (SME and large) Comparison of costs/benefits with potential alternatives		Literature review Interviews with companies, industry associations and MS authorities
How do the cumulative costs and benefits differ across the EU?	Difference in costs and benefits for construction firms located in different MS	Costs and benefits as a % of costs/turnover per firm (SME and large) in different MS	Companies, industry associations and MS authorities Impact assessments National and Eurostat statistics	Literature review Interviews with companies, industry associations and MS authorities

Table 2-7: Evaluation Matrix				
Evaluation Question	**Judgement Criteria**	**Indicators**	**Data Sources**	**Data collection/Analysis Methods**
What factors influence the costs and benefits, in particular with regard to national transposition?	Identification of national provisions or transposition leading to higher/lower costs or benefits	Levels of costs/benefits in different member states attributable to differences in provisions or transposition	MS authorities, companies and industry associations National impact assessments	Literature review Interviews with companies, industry associations and MS authorities
How are the various aspects related to inefficiencies and unnecessary burden addressed by Member States and the affected industry sector in terms of cooperation and coordination?	Degree of co-operation between MS authorities and construction sector	Co-operation measures undertaken by industry and MS authorities and degree to which they successfully address issues and burden, reduce costs or increase benefits	MS authorities, companies and industry associations Industry papers	Literature review Interviews with MS authorities, companies and industry associations
EU Added Value				
What is the added value of the different acts identified for the construction sector, especially for SMEs?	Identification of benefits (or reduced costs) arising from action at EU level as opposed to action taken at individual MS level	Share of costs/benefits attributable to EU and national legislation	Companies, industry associations and MS authorities Literature review	Interviews with companies, MS authorities and industry associations
What would happen to the construction sector if that legislation or some of its specific provisions were to be removed?	Likely change in behaviour of companies regarding actions to protect workers or the environment	Expressed views of stakeholders	Industry associations, MS authorities and companies. Interest groups	Interviews with MS authorities, companies and industry associations Literature review
Do the needs and challenges addressed by the legislative acts continue to require action at EU level?	Degree to which MS legislation differs across countries and from EU minimum	Qualitative assessment of whether or not MS legislation alone would achieve same level of benefits at equal or lower cost	Companies, MS authorities, industry associations Interest groups	Interviews with MS authorities, companies and industry associations Literature review

3 Intervention Logic

3.1 Introduction

According to the European Commission's Better Regulation Guidelines, the first step in any evaluation is the development of an intervention logic. The intervention logic identifies the key issues that are to be addressed by the evaluation study and the context within which the intervention will take place. The key issues that are to be addressed can be summarized as follows:

- **Needs:** at the highest level, this could be viewed as the problems that led to the need for sectoral policy and the legislation. In this respect, there is the need to ensure the efficient functioning of the construction sector, focusing on its competitiveness and sustainability. There is also a need to provide legal clarity and a predictable legal framework.
- **Objectives:** this aspect considers how the European legislation in the Environment and Health & Safety areas can support the needs of the construction sector previously identified.
- **Inputs:** the inputs are the means by which the EU Environment and Health & Safety legislation sets out to fulfil its objectives, these being the technical requirements aimed at safeguarding the environment and the health and safety of workers, citizens and occupants.
- **Activities:** these are the actions that actors targeted by the intervention have to undertake in order to implement or comply with the EU legislation. Actions must be undertaken by construction contractors, professionals (e.g. architects and engineers) and manufacturers of construction products as well as European Agencies and National enforcements authorities.
- **Outputs:** these are the consequences or direct effects of the 'activities' required by the individual pieces of legislation. For example, the training of workers under the OSH Framework Directive or carrying out an EIA under the EIA Directive.
- **Results:** these are the short and medium term effects of the EU legislation in the Environment and Health & Safety area. For example, risks avoided and/or minimised for construction workers, reduced exposure to hazardous substances (such as asbestos) in the workplace, etc.
- **Impacts:** these are the impacts that arise from the results and which contribute to achieving a more competitive and sustainable construction sector. For example, reduced incidence of occupational accidents and illness, improved wellbeing of employees, increased resource efficiency and improved environmental performance of organisations.

When assessing results and impacts, it should be noted that some interventions may have unintended and unexpected consequences. These also need to be identified so that risks can be managed and corrective action can be taken. There may also be external constraints that affect the results and impacts of the legislation, such as the economic crisis, national transposition and levels of enforcement, business systems and competitive pressure, etc[20].

Figure 3-1 (overleaf) illustrates how different inputs/activities/outputs triggered by the EU intervention were expected to interact to deliver the promised changes over time and ultimately achieve the objectives. More explanation is provided below.

[20] European Commission (2016): Evaluation and Fitness Check Roadmap, available at: http://ec.europa.eu/smart-regulation/roadmaps/docs/2016_grow_001_fitness_check_construction_en.pdf

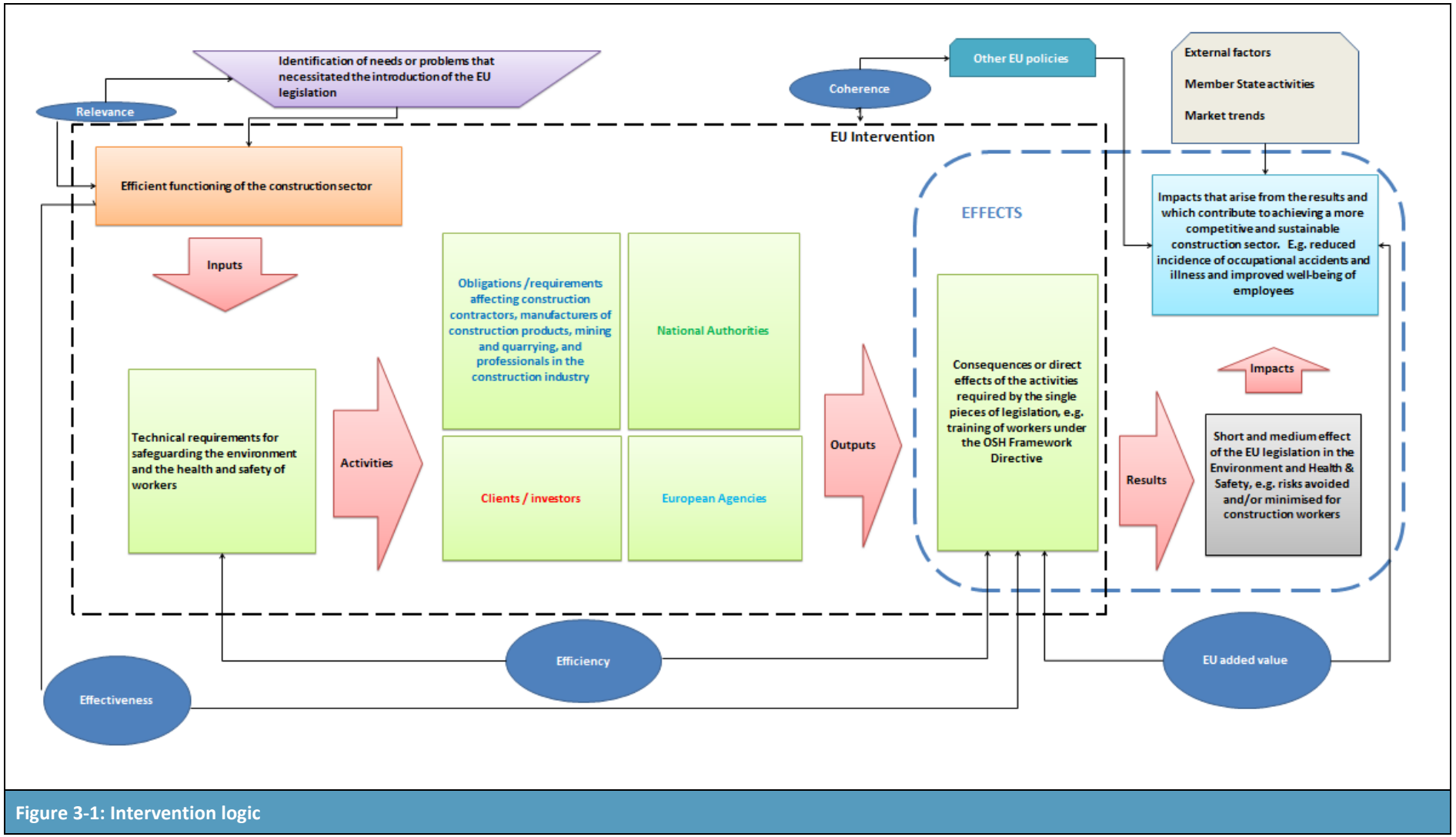


Figure 3-1: Intervention logic

3.2 The need for intervention in OSH

3.2.1 Overview

Since the start of the economic crisis in 2008, the construction sector has been severely affected and the volume of production of new buildings has experienced a marked decline (particularly in countries such as Spain and Ireland). This negative economic trend is reflected by a decrease in employment among construction contractors and a reduction in the number of enterprises operating in the sector (see Annex 3). Fortunately, the outlook for the construction sector has now improved and, since 2014, most EU economies have experienced economic growth. Research analysts predict that construction activity will increase again from 2015, with growth of up to 3% per annum[21]. Fatalities, accidents and ill-health that arise at (or as a result of) work have significant cost implications for industry. Thus, ensuring good occupational safety and health is important for maintaining the competitiveness of the sector and ensuring its economic and social sustainability.

The **Needs** and **Objectives** have effectively been defined by the Commission's "Strategy for the sustainable competitiveness of the construction sector and its enterprises", which states that:

> *"…in order to ensure a better functioning of the Internal Market for construction products and services, it is important that the legal framework is as clear and predictable as possible and that administrative costs are proportionate to the objectives pursued. This will require a more systematic analysis of the various regulatory approaches and administrative provisions that govern the implementation of EU legislation concerning the construction sector*."

3.2.2 OSH Framework Directive

Until the mid-1980s, there was no specific legal provision for health and safety legislation in the legal framework of the European Communities. In this regard, the 1987 Single European Act was a milestone, as it integrated occupational health and safety and labour protection into the Acquis Communautaire for the first time (see the text box below).

Article 21 of the Single European Act, amending article 118a of the Treaty of Rome

"Member States shall pay particular attention to encouraging improvements, especially in the working environment, as regards the health and safety of workers, and shall set as their objective the harmonisation of conditions in this area, while maintaining the improvements made.

In order to help achieve the objective laid down in the first paragraph, the Council, acting in accordance with the procedure referred to in Article 189c and after consulting the Economic and Social Committee, shall adopt, by means of directives, minimum requirements for gradual implementation, having regard to the conditions and technical rules obtaining in each of the Member States.

Such directives shall avoid imposing administrative, financial and legal constraints in a way which would hold back the creation and development of small and medium-sized undertakings.

The provisions adopted pursuant to this Article shall not prevent any Member State from maintaining or introducing more stringent measures for the protection of working conditions compatible with this Treaty."

[21] Hasan S (2015): European Construction Market Forecast from 2015-2020, available at: https://buildingradar.com/construction-blog/european-construction-market-forecast

One of the Directives adopted on the basis of article 118a of the EEC Treaty is the Council Directive of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work (Directive 89/391/EEC). This Directive was adopted as a Framework Directive setting a common standard of health and safety protection through providing for a minimum standard of safety and health.

One of the most important aspects of the OSH Framework Directive can be seen in its title 'on the introduction of measures' as it did not only provide for a general set of principles but also functions as the legal basis for more specific Directives adopted under it (article 16(1)).

Table A2-3 (in Annex 2) provides a summary of the transposition of the OSH Framework Directive in the ten MS covered by this study. It sets out some of the key measures put in place by the OSH Framework Directive and shows that these have all been transposed in the ten countries. It shows that in some instances, some countries appear to have implemented more detailed or stringent requirements than those specified in the provisions of the Framework Directive. The largest amount of implementing legislation can be found in the Czech Republic, which used 69 individual laws as the transposing vehicle, closely followed by Austria with 66 individual laws and Sweden with 34. This makes it difficult to assess the state of transposition with certainty.

3.2.3 Directive on the Manual Handling of Loads (90/269/EEC)

The Manual Handling of Loads Directive (90/269/EEC) was introduced in 1990 and lays down minimum health and safety requirements for the manual handling of loads where there is a risk particularly of back injury to workers. The Directive requires employers to avoid or reduce the risk to workers from manual handling of loads, through organisational measures (including workstations), as well as mechanical equipment. Where risks cannot be avoided, the employer shall assess the health and safety conditions of the type of work involved. Employers are also required to provide workers with information on the weight of loads, centres of gravity etc., as well as training on how to handle loads safely and on the risks associated with not following safe handling procedures. There is also the requirement to consult with workers on matters relating to the handling of heavy loads.

The Manual Handling Directive was amended by Directive 2007/30/EC, however there were no changes to the requirements for companies and, as such, the amendment is not considered here.

Table A2-4 (Annex 2) provides a summary of national transposition. It shows that the key requirements of the Directive have been transposed in all ten countries and that no significant differences are known.

3.2.4 Directive on Temporary or Mobile Construction Sites (92/57/EEC)

Directive 92/57/EEC on the implementation of minimum safety and health requirements at temporary or mobile construction sites is the eighth individual Directive within the meaning of Article 16(1) of the OSH Framework Directive. It lays down the minimum safety and health requirements for temporary or mobile construction sites, i.e. any construction site at which building or civil engineering works are carried out, and intends to prevent risks by establishing a chain of responsibility linking all the parties involved. It should be noted that the Directive does not apply to drilling and extraction in the extractive industries[22].

[22] Within the meaning of Article 1(2) of Council Decision 74/326/EEC of 27 June 1974 on the extension of the responsibilities of the Mines Safety and Health Commission to all mineral-extracting industries (Article 1(2))

The Directive on Temporary or Mobile Construction Sites was amended in 2007 with the aim of simplifying and rationalising the reports on practical implementation. Generally speaking, most MS have implemented the Directive without major differences, although a few countries (UK, Spain) have had special regard to aspects of sub-contracting and provided greater level of details as to the activities with special hazards on the basis of their national statistical data.

Table A2-5 (Annex 2) provides a summary of national transposition in the ten EU MS.

3.2.5 Asbestos Directive (2009/148/EC)

In acknowledgement of the risks posed by asbestos to workers' health, 'Council Resolution of 29 June 1978 on an action programme of the European Communities on safety and health at work'[23] provided for the establishment of specific harmonised procedures regarding the protection of workers with respect to asbestos. These procedures were initially encapsulated in Council Directive 80/1107/EEC[24] which included asbestos amongst a number of chemical, physical and biological agents for which specific requirements were considered necessary and Council Directive 83/477/EEC of 19 September 1983 on the protection of workers from the risks related to exposure to asbestos at work'[25], aimed to protect workers' health against risks posed by exposure to asbestos at work and laid down limit values for this exposure, protective measures and specific requirements.

The 1983 Directive was amended several times[26] and it was decided that, in the interest of clarity and rationality, the Directive and its amendments should be codified. The result was 'Directive 2009/148/EC of the European Parliament and of the Council of 30 November 2009 on the protection of workers from the risks related to exposure to asbestos at work'[27] (hereafter the 'Asbestos Directive"). Table A2-6 (Annex 2) shows the transposition of the main requirements in the ten countries covered by this study. It needs to be said that some of these have yet to implement the Directive fully. However, they have implemented earlier versions of the Directive (e.g. Portugal's legislation stems from the 2003 version of the Directive as opposed to the codified 2009 version, although this is not considered to be a material discrepancy).

[23] Council Resolution of 29 June 1978 on an action programme of the European Communities on safety and health at work, available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31978Y0711%2801%29

[24] Council Directive 80/1107/EEC of 27 November 1980 on the protection of workers from the risks related to exposure to chemical, physical and biological agents at work, available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A31980L1107

[25] Council Directive 83/477/EEC of 19 September 1983 on the protection of workers from the risks related to exposure to asbestos at work, available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A31983L0477

[26] Amendments are listed in Annex II Part A of the 2009 Asbestos Directive.

[27] Directive 2009/148/EC of the European Parliament and of the Council of 30 November 2009 on the protection of workers from the risks related to exposure to asbestos at work, available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0148

3.3 The need for environmental protection legislation

3.3.1 Overview

A large number of processes involved in the lifecycle of a single construction product have the potential to impact upon the environment. The types of construction products chosen for use in a building may have effects on water and soil quality; methods used to construct a building may have significant impacts on air and climatic factors; and the area in which a project is carried out may impact upon the human environment, local ecology, etc. The construction sector also produces one of the heaviest and most voluminous waste streams in the EU (see Annex 3). It accounts for more than a quarter of all waste generated in the EU and consists of numerous materials (e.g. concrete, bricks, gypsum, wood, glass, metals, plastic, solvents, asbestos and excavated soil), many of which can be recycled.[28]

3.3.2 Environmental Impact Assessment Directive (2011/92/EU)

Environmental impact assessment (EIA) is a means of methodically anticipating and assessing the potential effects of a given public or private project on the environment. The Environmental Impact Assessment Directive (2011/92/EU) states that consent for public and private projects which are likely to have "significant effects" on the environment should be granted only after an assessment of the likely significant environmental effects of those projects has been carried out. Public and private projects fall into two categories under the EIA Directive: those legally obligated to undergo EIA (listed in Annex I) and those that require screening to determine whether EIA is necessary (listed in Annex II).

The initial Directive (85/337/EEC) has been amended three times[29], in 1997, in 2003 and in 2009:

- Directive 97/11/EC brought the Directive in line with the UN ECE Espoo Convention on EIA in a Transboundary Context. The Directive of 1997 widened the scope of the EIA Directive by increasing the types of projects covered, and the number of projects requiring mandatory EIA (Annex I). It also provided for new screening arrangements, including new screening criteria (at Annex III) for Annex II projects, and established minimum information requirements.
- Directive 2003/35/EC was seeking to align the provisions on public participation with the Aarhus Convention on public participation in decision-making and access to justice in environmental matters.
- Directive 2009/31/EC amended Annexes I and II of the EIA Directive, by adding projects related to the transport, capture and storage of carbon dioxide (CO_2).

The initial Directive of 1985 and its three amendments have been codified by Directive 2011/92/EU of 13 December 2011. Directive 2011/92/EU has recently been amended by Directive 2014/52/EU which is intended to lighten and simplify the requirements. However, since the focus of this Fitness Check supporting study is on the time period 2004-2014, Directive 2014/52/EU falls outside the scope of this study.

[28] DG Environment (2016): Construction and demolition waste, available at: http://ec.europa.eu/environment/waste/construction_demolition.htm

[29] European Commission (2016): Environmental Impact Assessment – EIA, available at: http://ec.europa.eu/environment/eia/eia-legalcontext.htm

MS can decide whether to assess the Annex II projects on a case-by-case basis or set national thresholds/criteria, or combine these procedures. As indicated above, the EIA Directive also includes provisions on public consultation, which aim to ensure that members of the public are informed of any developments impacting upon them and to enable developments to be challenged, where necessary. The following figure provides an overview of the EIA procedure.

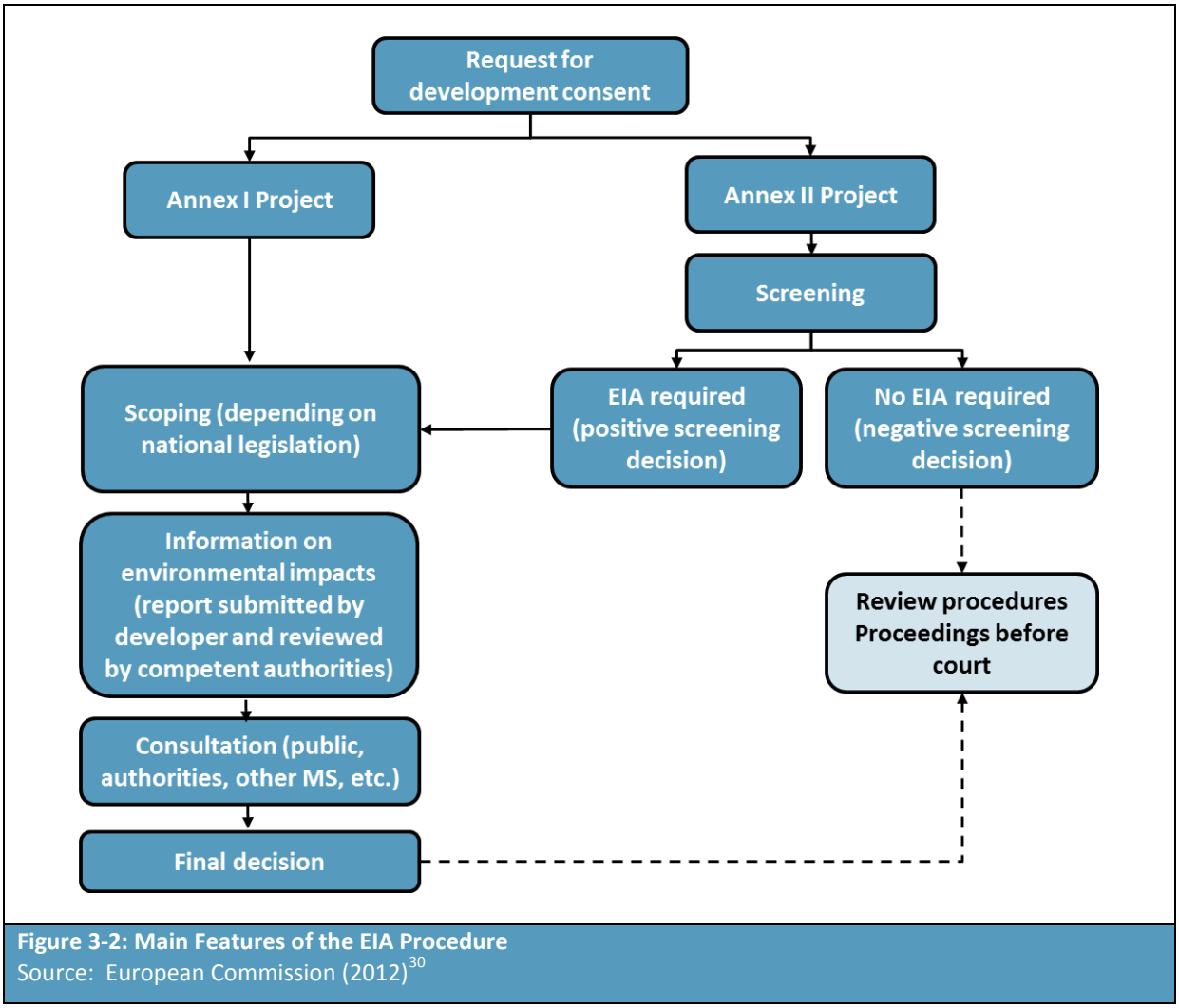


Figure 3-2: Main Features of the EIA Procedure
Source: European Commission (2012)[30]

Table A2-7 (Annex 2) sets out the main requirements of the EIA Directive and how these have been transposed in the ten MS. Although there are no significant variations with the Directive's main provisions, in terms of Annex I and II projects, approaches have varied to a degree. In Spain for instance, the transposing legislation has incorporated the principles of Strategic Environmental Assessment within the same piece. This makes an article by article comparison quite complicated.

[30] European Commission (2012): Impact assessment accompanying the document 'Proposal for a directive of the European Parliament and of the Council amending directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment', available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52012SC0355

3.3.3 Waste Framework Directive

One of the objectives of the Waste Framework Directive (2008/98/EC) is to provide a framework for moving towards a European recycling society with a high level of resource efficiency. In particular, Article 11.2 stipulates that "Member States shall take the necessary measures designed to achieve that by 2020 a minimum of 70% (by weight) of non-hazardous construction and demolition waste excluding naturally occurring material defined in category 17 05 04 in the List of Wastes shall be prepared for re-use, recycled or undergo other material recovery" (including backfilling operations using waste to substitute other materials)[31].

Table A2-8 (Annex 2) sets out the main requirements of the WFD. It shows that the key requirements have been transposed in all ten MS with no significant differences identified.

3.4 The need for Construction Sector Policy

The Commission indicates that the construction sector generates almost 9% of GDP[32], provides 18 million direct jobs in the EU and consumes approximately €800 billion of intermediate products from various industrial sectors and consequently, ensuring maximum performance of the sector is essential for the overall EU economy. The sector was impacted particularly negatively by the financial crisis in 2008 and whilst there has been some recovery since, the overall level of output remains well below that achieved at its highest point in 2007 and equivalent to the level achieved in early 2000.

It is also highlighted that the sector is highly regulated at many levels and that many aspects of regulation are MS competences. Much of the legislation to which the sector is subject has societal objectives (e.g. clean and healthy environment, quality of life) and there is a perception within part of the industry that the sector is excessively burdened by regulation. In order to maintain and improve the performance of the sector and to act as a driver for economic growth across the EU by increasing its competitiveness and sustainability, it is essential that the Internal Market for construction products and services functions effectively and efficiently, and the Commission Communication COM (2012) 433 final[33] sets out the Construction 2020 action plan to support the sector, focussing on 5 key objectives:

- stimulating favourable investment conditions;
- improving the human-capital basis of the construction sector;
- improving resource efficiency, environmental performance and business opportunities;
- strengthening the Internal Market for construction;
- fostering the global competitive position of EU construction enterprises.

[31] CEC (2016): Construction and demolition waste, available at: http://ec.europa.eu/environment/waste/construction_demolition.htm

[32] DG Internal Market, Industry, Entrepreneurship and SMEs: Construction, available at http://ec.europa.eu/growth/sectors/construction_en

[33] Annex 3 to COM(2014) 910, page 11.

3.5 Summary of intervention

The OSH Framework Directive has been described as a major step forward in that it introduced a new legal provision for improvements, especially in the working environment, as regards the health and safety of workers. Since then, a number of pieces of legislation have been adopted, including the directives that are the focus of this study.

Generally, there are a number of common measures across all directives to ensure health and safety (although with some slight variations across directives). These can be encapsulated as follows:

- Introduction of risk assessment methods, including drawing up plans for safety and health or plans of work;
- Taking internal and/or external preventative measures and protective services (including emergency measures);
- Provision of information and training for employees;
- Need to consult with workers; and
- Health monitoring and record keeping.

Most countries have implemented the measures accordingly, without significant discrepancies. Yet, it needs to be noted that some of the countries under the scope of this study have implemented more detailed or stringent requirements than those specified in the provisions of the OSH Directives, e.g. with regard to record keeping or with regard to aspects of sub-contracting that are of particular relevance to the construction sector in order to avoid accidents.

As for the environmental legislation, the examination of transposition in the ten selected MS seems to suggest similar results, with minor discrepancies in transposition.

The above would suggest that when asked about the different legislation, stakeholders may not be able to discern easily the impacts arising from national legislation from those of the directives, with some obvious exceptions (e.g. number of coordinators according to size for instance or when derogations apply). The outputs and outcomes expected from the different pieces of legislation are set out in the next table. This depicts the conceptual framework for the intervention logic for health and safety and environmental legislation covered by the Fitness Check.

Table 3-1: Intervention logic for the construction sector						
Area	**Acts**	**Process**	**Output**	**Outcome**	**Impacts on the construction sector**	
Health & Safety	OSH Framework Mobile & Temporary Construction Sites Directive Manual Handling of Loads Directive Asbestos Directive	National implementing measures, including: Consultation with workers, risk assessments, notification systems, allocation of H&S responsibilities, preparing work and safety plans, avoiding hazardous activity and stopping work, taking protective measures (including PPE, setting max. limits, restricting access), provision of information and training, health surveillance, emergency measures (first aid etc.), maintain registers and reporting of accidents	Better knowledge and understanding of risks by authorities, employers and workers alike Construction projects implemented in a safer manner Health issues identified at an early stage Risk areas controlled Workers protected	Risks avoided and/or minimised Reduced exposure Injured or exposed workers gain earlier treatment. Expansion of Health & Safety service providing sector	Reduced incidence of occupational accidents, work-related diseases and health problems Increased wellbeing of employees and building occupants. Saved health care costs	**Construction competitiveness and sustainability**
Environment Protection	Waste Framework Directive	Implementing waste hierarchy. Separation of waste for recovery, reuse and recycling. Setting of targets for diversion of CDW from landfill.	Increased recovery, recycling, reuse Reduction in use of raw materials	Reduced CDW entering landfill Expansion of the market involving recovery, recycling, reuse of CDW Reduction in numbers of projects causing environmental damage	Increased resource efficiency Improved environmental performance of organisations Reduced environmental impact of construction projects	
	Environmental Impact Assessment Directive	Ensuring Annex I projects undergo EIA Setting thresholds/criteria for Annex II projects to determine whether these should be subject to an assessment Ensuring access to information and consultations with the public and environmental authorities Provision for right to review procedures undertaken to grant permission to proceed	Mitigation measures to reduce negative environmental outcomes	Reduction in numbers of projects causing environmental damage Expansion of the EIA service providing sector Improved knowledge regarding environmental outcomes from construction activities and mitigating measures		

4 Economic Analysis: Costs and Benefits

4.1 Overview

This Section presents the identified analysis of the identified costs and benefits arising from the EU legislation being considered. As indicated in Section 2.5.2 above, the limited availability of data from consultation and literature review on the costs and benefits arising from the legislation has meant that the following estimates across MS have relied on limited data from individual MS, small samples of enterprises (which may be indicative as opposed to representative) and extrapolations in order to generate overall costs and benefits arising from the legislation across the EU over the period 2004-14. Consequently, the figures quoted are based mainly on the consultants calculations and assessments of the available data.

At the outset, it is important to note that not all costs arising from the implementation of the measures included in EU legislation will apply to all sub-sectors considered and this has been accounted for (to some extent) in the analysis which follows.

Table 4-1 (overleaf) summarises the measures included in the different Directives and identifies the actions that companies involved in the construction sector will need to carry out as a result, potentially leading to additional costs. However, a number of measures are common across the OSH Directives which will likely mean that full costs would not be incurred across each of the directives (e.g. one risk assessment would be completed which would satisfy the requirements of all the directives). It is also the case that not all sub-sectors will incur costs from the different measures in the same way and to the same degree, since companies' activities differ greatly across the sector. For example, companies involved in the provision of professional services generally do not engage in activities which require the use of PPE and consequently would not be expected to incur significant costs under measures requiring the adaptation and implementation of protective/preventive measures. Table 4-1 also sets out to identify the primary actors in the sector who would be expected to incur notable costs under each of the measures introduced by the various pieces of legislation and this information is then considered later in the section when it comes to estimating the overall costs by considering only those companies in the sub-sectors expected to be affected significantly.

Table 4-2 goes on to provide details on the key benefits that would likely accrue to the construction sector from implementing the different measures and how those benefits would be achieved. Certain measures are required under a number of different OSH Directives, and when viewing benefits in total those arising from these particular measures should not be considered multiple times under each Directive.

The subsequent sub-sections set out estimates for the costs of implementing the various measures required by the OSH and environmental legislation considered in this study, along with the benefits accruing to the construction sector. The reader is referred to Section 2.5.2 which sets out the study's approach to calculations and extrapolations to other EU MS and to the EU-28.

Table 4-1: Costs associated with legislation			
Measure	**Requirement**	**Type of costs**	**Sub-section for further discussion**
Common measures across all OSH Directives			
Conducting a risk assessment	Employers are required to assess any risks in the workplace and document this assessment in order to take relevant actions. A safety and health plan should be drawn prior to the setting up of a construction site. The plans shall be taken into account each time this appears necessary and updated accordingly. This measure will likely affect companies in all 4 sub-sectors, leading to costs across the sector.	Substantive compliance cost	4.2.1
Ensuring internal and/or external preventative and protective services	Employers are required to assign responsibility for carrying out tasks required to protect employees and prevent accidents occurring or to bring in such services from qualified service providers. The measure will primarily impact the mining and quarrying, construction contractors and construction products sub-sectors. It is unlikely that companies providing professional services will need to carry out many measures under this requirement.	Substantive compliance cost	4.2.2
Information and training for employees	Employers must provide training in health and safety, in particular as it relates to individual jobs and work areas. Whilst all sub-sectors might be affected, professional services will be the least affected by this requirement as they employ limited numbers of people and most of the construction related risks arise in the other sub-sectors	Substantive compliance cost	4.2.3
Consultation of workers	Employers must consult with employees on all issues relating to safety and health, including the planning and introduction of new technology. Greater consultation will be required where there are higher levels of risk to workers so that they will be involved in developing plans and processes to deal with the risks. Costs are expected to fall mostly on the mining and quarrying, construction contractors and construction products sub-sectors.	Substantive compliance cost	4.2.4
Health monitoring and record keeping	Employers must keep a list of occupational accidents resulting in a worker being unfit for work for more than three working days and draw up, for the responsible authorities and in accordance with national laws and/or practices, reports on occupational accidents suffered by workers. The employer must keep a risk register of workers. It is expected that the costs from this measure would fall more on companies in the mining and quarrying, construction contractors and construction products sub-sectors, with professional service companies primarily using national health systems.	Administrative cost	4.2.5

Table 4-1: Costs associated with legislation			
Measure	**Requirement**	**Type of costs**	**Sub-section for further discussion**
Costs of familiarising with the legislation	Employers must be aware of their responsibilities. Companies in all sub-sectors would be required to engage in familiarisation activities.	Administrative costs	4.2.8
Other costs from specific measures of Directives			
Appointment of coordinators	***Directive on Temporary and Mobile Construction Sites*** The Directive requires the client or the project supervisor to appoint one or multiple coordinators for safety and health matters for any construction site on which more than one contractor is present. Whilst the functions of a co-ordinator will need to be carried out in all temporary or mobile construction sites, it is likely that only those companies with greater numbers of employees will need to dedicate significant specific staff/significant staff time to this function as an addition to the normal organisation of work. It is therefore assumed that only companies in the construction contractor sub-sector with more than 20 workers will incur such significant costs. Whilst contractors with less than 20 staff might subcontract the appointment of an external health and safety coordinator, this service is often charged on the contract with the client, so the costs are passed on the client.	Substantive compliance cost	4.2.6
Prior notification	***Directive on Temporary and Mobile Construction Sites and Asbestos Directive.*** The client or the project supervisor shall communicate a notice to competent authorities prior to the commencement of the work. Costs under this measure would likely only apply to companies operating in the construction contractors sub-sector.	Administrative cost	4.2.7
Disposing of construction and demolition waste	***Waste Framework Directive*** This measure is particularly relevant to those companies operating in the construction contractors and mining and quarrying sub-sectors.	Substantive compliance cost	4.4.1
Preparing an EIA	***Environmental Impact Assessment Directive*** Costs resulting from EIAs are generally borne directly by the developer and not the construction sector per se. However, it is likely that where these are significant, developers will attempt to negotiate cost reductions from construction companies in order to keep their own costs down.	Substantive compliance cost	4.4.2

Table 4-2: Benefits associated with legislation			
Key benefits	**Description**	**Type of benefit**	**Sub-section for further discussion**
OSH legislation			
Increased productivity from improved wellbeing and job satisfaction among workers, also increasing employee retention	Efforts to keep workers safe, as well as consultation and training will be beneficial for worker's moral and job satisfaction. This in turn is likely to improve the quality of their work. Reducing the accident rate could encourage people to stay within the sector, as well as opening the sector up to a wider range of workers. These benefits are likely to accrue across all sub-sectors of the construction sector. However, the highest level of benefits is likely to be in the construction contractors sub-sector where most accidents happen and where significant investment in equipment to improve safety has had knock on effects on productivity.	Direct	4.3.1/4.3.5
Fewer work days lost to work related injuries and ill-health	Prevention of work related injuries and ill-health will avoid the loss of work days. These benefits are likely to accrue across all sub-sectors of the construction sector. However, the highest level of benefits is likely to be in the construction contractors sub-sector where most accidents happen.	Direct	4.3.2
Reduced insurance premiums	Avoiding work related injuries and ill-health and improving the health and safety of companies and the sector as a whole may have a beneficial impact on insurance premiums. These benefits are likely to accrue across all sub-sectors of the construction sector. However, the highest level of benefits is likely to be in the construction contractors sub-sector where most accidents happen.	Direct	4.3.1
Reduced legal costs	Avoiding work related injuries and ill-health and improving health and safety of the companies and the sector as a whole may have a beneficial impact on legal costs. These benefits are likely to accrue across all sub-sectors of the construction sector. However, the highest level of benefits is likely to be in the construction contractors sub-sector where most accidents happen.	Direct	4.3.3
Improved competition (level playing field in all Member States)	Possible beneficial impacts from level playing field (in own MS and other MS). Common rules in all MS may have facilitated cross-border trade. Ultimately developers and consumers will benefit from improved competition and associated lower prices. Construction contractors and construction products manufacturers will benefit from being able to compete on a level playing field (in terms of health & safety and	Indirect	4.3.4

Table 4-2: Benefits associated with legislation			
Key benefits	**Description**	**Type of benefit**	**Sub-section for further discussion**
	environmental legislation) with other companies across the EU.		
Environmental protection			
Revenues from CDW resale	There is a high potential for recycling and re-use of CDW, since some of its components have a resource value. In particular, there is a re-use market for aggregates derived from CDW waste in roads, drainage and other construction projects. Construction contractors and mining and quarrying companies will benefit from resale of CDW.	Direct	4.5.1
Increased turnover for related industries	Technology for the separation and recovery of construction and demolition waste is well established, readily accessible and in general inexpensive. Companies involved in this sector will benefit from the additional sales of equipment	Indirect	4.5.2
Increased certainty for project delivery when impacts are assessed	Benefits for conducting an EIA related to reduced risk of legal challenges to project delivery. Primarily companies in the mining and quarrying and construction contractors sub-sectors will benefit from avoidance of legal challenges and subsequent delays (although as noted, it is the developer that is directly responsible for any costs associated with EIAs if required)	Direct	4.5.1

4.2 The direct costs to companies from OSH legislation

4.2.1 Costs of conducting risk assessment

Some of the main costs from the Directives relate to the cost of conducting risk assessments (RAs). According to the EU-OSHA, 83% of companies carry out workplace RAs regularly or on a project basis. It is noted by the Consultants and confirmed though consultation (in particular with industry associations) that the act of conducting a RA is, to a certain extent, a normal part of the organisation of the work and labour in a construction project. Specific provisions of the Directive on the Manual Handling of Loads are also strongly related to the efficient organisation of work and essential for any work design and planning, with or without OSH legislative provisions. Consequently, the costs set out below do not represent those that are fully attributable to the EU legislation in the area of health and safety since companies would incur some of these in the absence of the legislation. However, it has not been possible to identify the extent to which this would be the case and therefore the costs are presented in their entirety in the absence of any additional information. The study team notes that this will result in an overestimate of the costs attributable to EU OSH legislation.

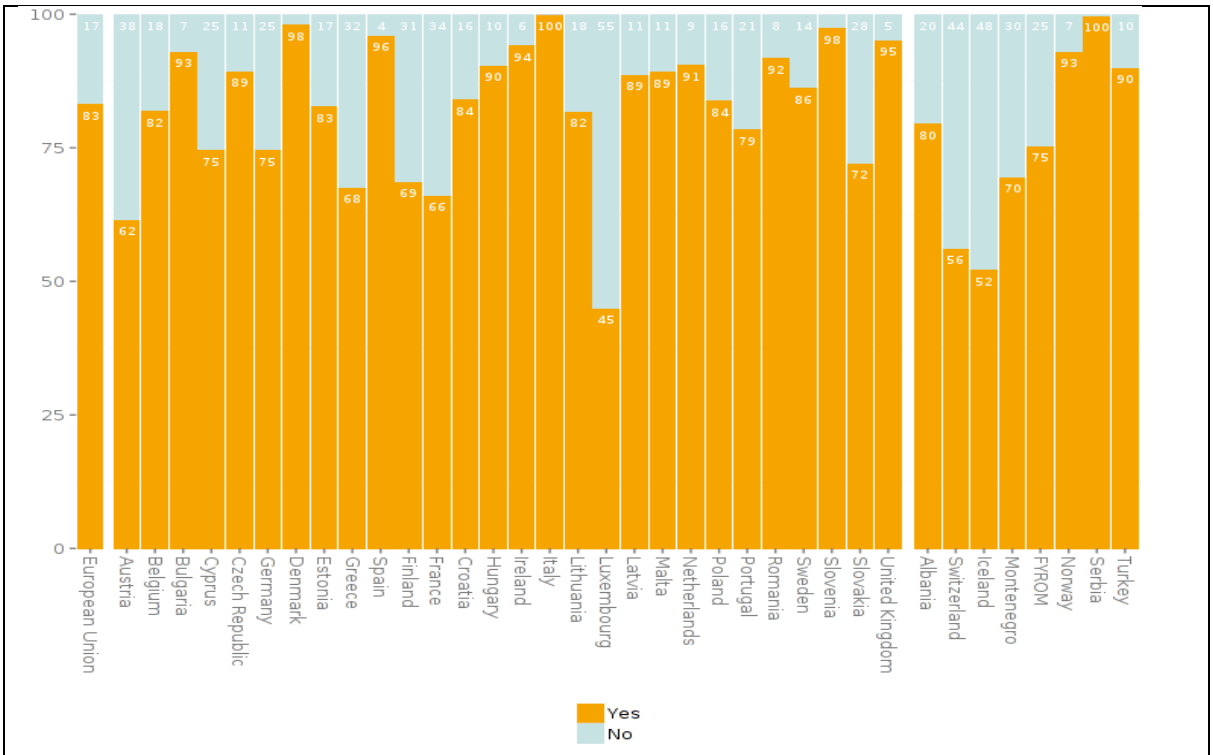


Figure 4-1: Does your establishment regularly carry out workplace risk assessments?
Source: EU-OSHA (2016): European Survey of Enterprises on New and Emerging Risks (ESENER-2), available at https://osha.europa.eu/en/surveys-and-statistics-osh/esener/2014

Data included in Figure 4-1 above, and throughout this section, from the ESENER-2 survey cover NACE codes B, D, E, F 05-09; 35-43 construction, waste management, water and electricity supply, and so cover a wider range of companies than is the focus for this study. Given that the construction sector is known to be a high-risk one in terms of accidents at work[34], it may be the case that a

[34] Eurostat (2015): Accidents at work statistics, available at: http://ec.europa.eu/eurostat/statistics-explained/index.php/Accidents_at_work_statistics

slightly higher percentage of companies do actually carry out RAs. However, an EU-wide industry association consulted during the study indicated that many micro-enterprises employing fewer than 5 people would not conduct such assessments. Additionally, many subcontractors may be covered by the main contractor's RA and consequently would not carry out one themselves. On balance, the consultants are of the view that it would seem to be the case that for the purpose of calculating costs later on, the figure of 83% would represent an overestimation.

The cost of a RA may vary according to whether it is carried out by internal staff or by external providers. Data from the EU-OSHA shows significant variation across different MS as to whether RAs are conducted internally or outsourced.

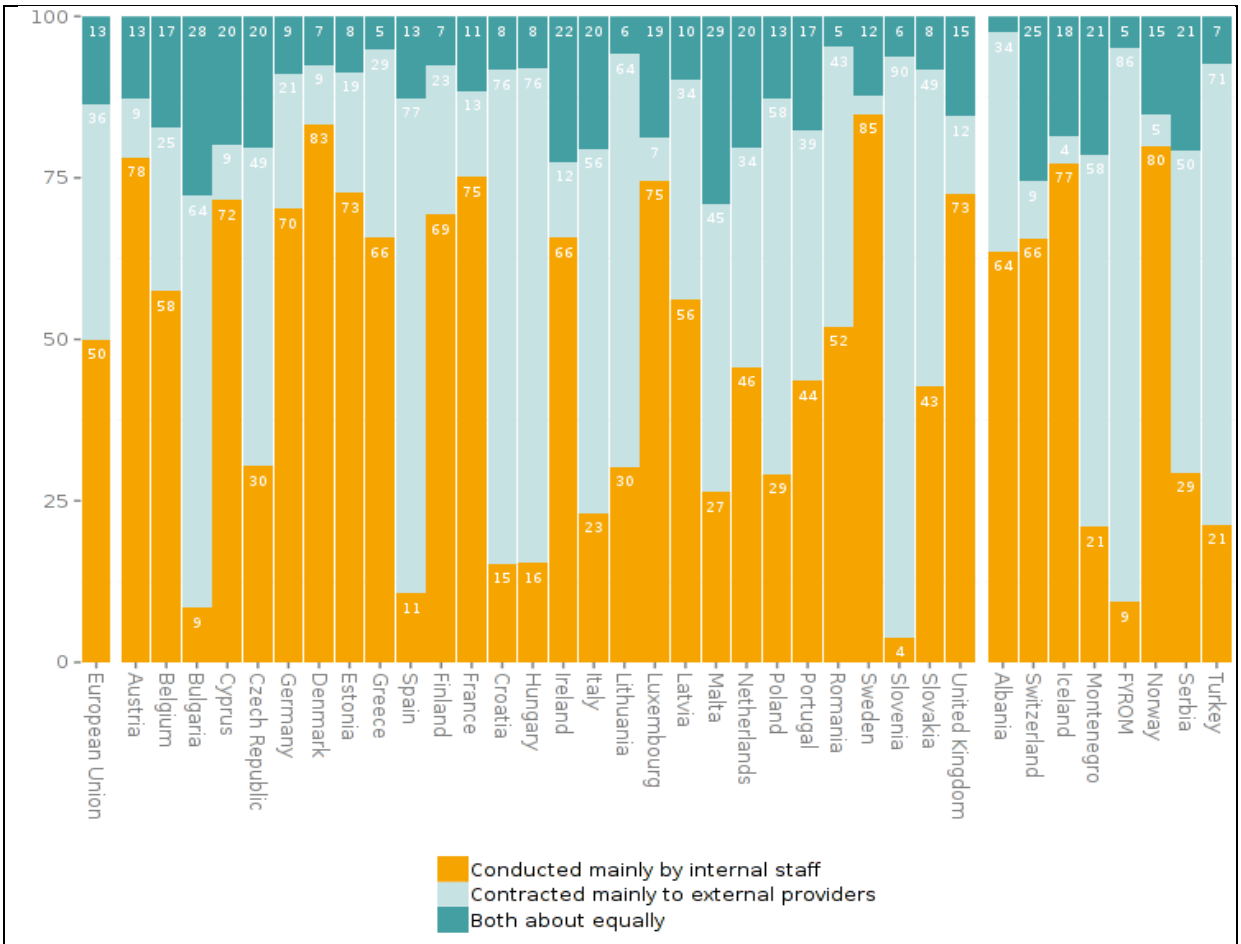


Figure 4-2: Are workplace risk assessments mainly conducted by internal staff or are they contracted to external service providers?
Source: EU-OSHA (2016): European Survey of Enterprises on New and Emerging Risks (ESENER-2), available at https://osha.europa.eu/en/surveys-and-statistics-osh/esener/2014

Various estimates of the cost for conducting a RA have been determined from both literature review and through stakeholder consultation. These have ranged from around €2,000 to €4,000 with some specific examples including information from consultation on the Directive on Temporary or Mobile Construction Sites which indicated that the cost of providing safety and health plans for a medium-

sized company would be around €4,000 per year. A study for the UK HSE[35] specific to the Manual Handling Regulation also estimated that the cost of conducting a RA for a SME was around €4,000.

While the cost of the initial RA may be assumed to be around €4,000, expert opinion from major contractors and the study team's own risk management specialist suggests that the RA is likely to be reviewed/adapted on a routine basis, rather than completely rewritten each time. Consequently, we have assumed that the initial assessment will be replaced every five years (at a cost of €4,000) with updates/revisions costing 10% of the full assessment each year. This equates to an annual spend of €1,120 per enterprise.

Table 4-3: Average expenditure per company on activities to meet Manual Handling Regulations (UK)[36]

Actions	Calculated mean (€)	Valid no. of responses (for calculated mean)	Mean, based on actual costs given (€)	Valid no. of responses (for actual costs mean)	Typical Range (€)
Employment/training a specialist	7,758	N=539	6,366	N=296	5,902-9,614
Risk assessments – manual handling	4,416	N=875	4,123	N=428	3,265-5,564
Reviewing assessments	4,657	N=475	3,959	N=212	3,466-5,847

The following table sets out the costs for conducting RA across the sector, based on 2013 figures on the number of companies in the ten MS. Based on the average annual cost of a RA in the UK of €1,120 (and making adjustments for the remaining 9 focal countries based on GDP price deflators, as well as uplifting the overall figure by 25% to account for RA in the remaining EU countries), **the total cost across the construction sector (EU-28) is of the order of €3.4bn** and the greatest costs are associated with the construction contractors – simply due to the number of enterprises in this sub-sector. The figures should be read with caution (refer to assumptions mentioned in the table below and detailed above) and are only provided as an order of magnitude[37].

Table 4-4: Summary of costs from provision of risk assessment - €2013 (10 countries)

Sub-sector	Total number of enterprises	Total costs (€2013m)
Construction contractors	2,295,444	1,925
Construction products	272,876	218
Mining and quarrying	10,860	8
Professional services	698,508	581
	TOTAL for sector (10 countries)	**2,732**
	uplifted by 25% for EU-28	**3,416**

Assumptions
83% companies undertake RA
Cost of RA: €4,000 every 5 years and updated at a cost of €400 (10% of the total) per annum. Average annual cost = €1,120

[35] HSE (2003): Costs of compliance with health and safety regulations in SMEs, available at http://www.hse.gov.uk/research/rrpdf/rr174.pdf

[36] HSE (2003): Costs of compliance with health and safety regulations in SMEs, available at http://www.hse.gov.uk/research/rrpdf/rr174.pdf

[37] It was also not possible to apply different costs of RA conducted internally or by external providers.

The costs indicated are significant across the EU but are likely to overestimate the number of RA being carried out. This is due to the fact that on many construction projects, a main contractor is employing a number of sub-contractors and the main contractor's RA would need to cover all activities. Where this is the case, many of the smaller sub-contractors will not need to complete their own RA, thereby reducing the number completed and the overall level of costs. Industry association stakeholders have also questioned the figure of 83% of companies conducting RAs, in particular whether or not very small companies (specifically construction contractors with less than 5 employees) will incur such levels of costs.

Given that there is a wide range of estimates on the cost of a RA, if a lower figure of €2,000 is used in the calculations instead of €4,000, the overall EU-28 estimate reduces significantly from €3.4bn to approximately €1.7bn per year.

4.2.2 Costs of provision of preventative and protective services and measures

All of the OSH Directives under this study are aimed at reducing the risk to workers by ensuring that employers identify measures or use services to protect their employees. The OSH Framework Directive itself requires that employers designate one or more workers to carry out activities related to the protection and prevention of occupational risks for the undertaking and/or establishment, or alternatively, to enlist competent external services or persons to fulfil this function[38]. This can include a range of services (e.g. using an occupational health doctor, or experts on accident prevention and ergonomics) and measures (e.g. use of personal protective equipment (PPE), introduction of workstations, changes to the working environment, etc.). The measures and services are likely to vary according to the sub-sector under consideration and also their risks. According to the EU-OSHA 2014 survey, among the factors of risk most frequently highlighted by the construction sector are:

- Risk of accidents with machines or handtools (82% of establishments), with this applying particularly to construction contractors and manufacturers of construction products; and
- Lifting or moving people or heavy loads (72% of establishments), with this risk more prevalent across all sub-sectors other than professional services.

Across Europe, around 72% of companies identify lifting or moving heavy loads as a risk factor in their establishment.

[38] A large Belgian contractor interviewed for the study estimated that the contribution per employee for the external prevention service amounts to €112 per employee depending on the risk category of the company (this is mandatory in Belgium).

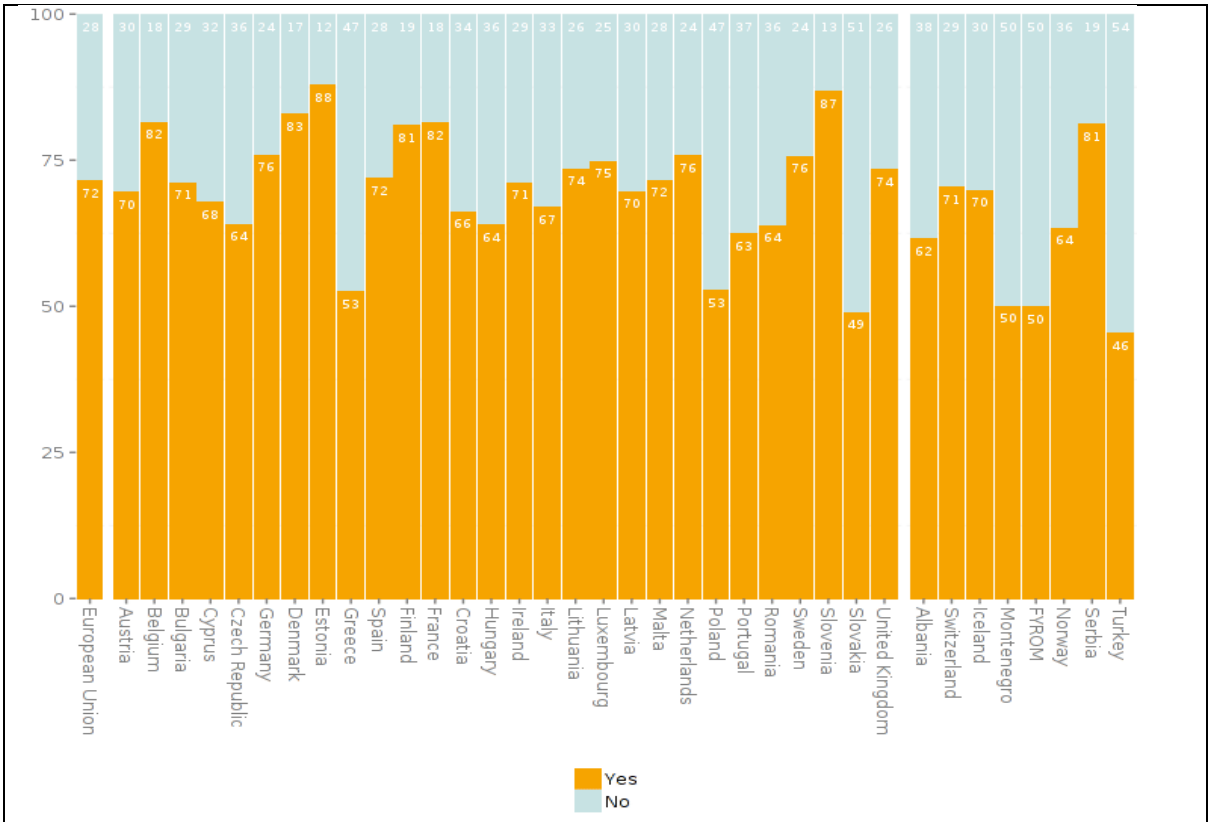


Figure 4-3: Factors present in the establishment: Lifting or moving people or heavy loads
Source: EU-OSHA (2016): European Survey of Enterprises on New and Emerging Risks (ESENER-2), available at https://osha.europa.eu/en/surveys-and-statistics-osh/esener/2014

According to responses to ESENER, 92% of companies across Europe apply preventive measures to avoid injuries with loads.

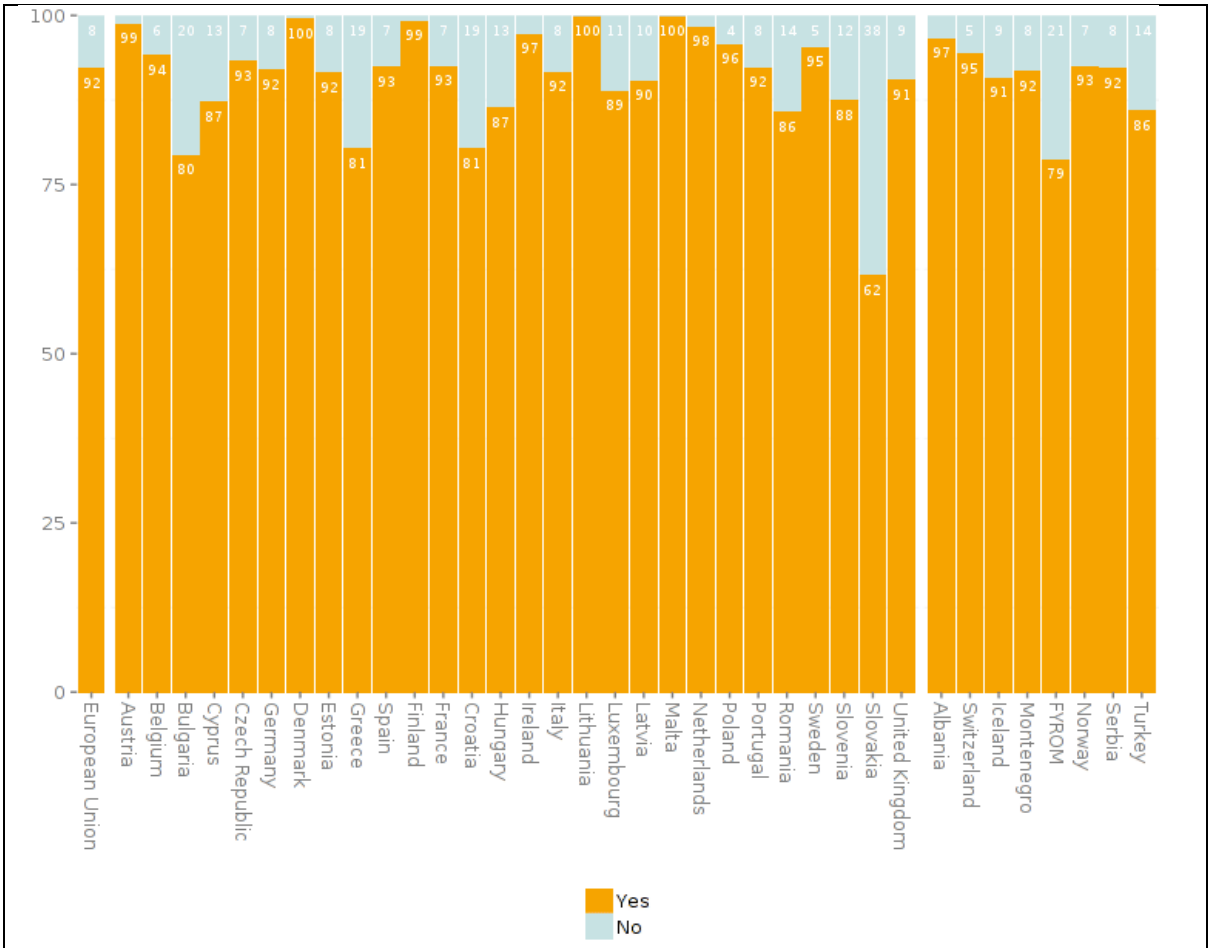


Figure 4-4: Preventive measures regarding musculoskeletal problems: Equipment to help with the lifting or moving of loads

Source: EU-OSHA (2016): European Survey of Enterprises on New and Emerging Risks (ESENER-2), available at https://osha.europa.eu/en/surveys-and-statistics-osh/esener/2014

A large Belgian contractor, interviewed for this study, estimated that 2% - 3% of the hourly wages of a labourer are spent on dealing with protective equipment.

The choice of measures to avoid manual handling by workers is dependent on the activity; however common methods are the delivery of material to the point of use and redesigning a process so that manual handling is not necessary. Organisational measures can be used to reduce risks and can include:

- Breaking loads into smaller units (e.g. boxes or bags);
- Using smaller materials (e.g. plasterboard, wood-based panels);
- Using lighter materials (e.g. blocks, bricks, lintels);
- Ensuring proper rest periods for workers;
- Rotating workers where possible to allow resting of certain muscle groups; and/or
- Using teams of people to complete a task (e.g. lifting).

Mechanical equipment to avoid or reduce the risks of manual handling can range from simple, manually-operated tools to power-assisted trucks and lifting devices, an overview of some of the types of aids that may be used in the construction sector is provided in the table below.

Table 4-5: Types of equipment that may be used in the construction sector to avoid or reduce the risk of manual handling[39][40]	
Mechanical aid	**Description**
Simple tools	Help grip the load and provide leverage to reduce the actual weight to lift. These aids can avoid lifting the load entirely although some manual handling is still needed Can include lifting hooks for sheets of steel or glass, drum upenders and paving slab and general purpose handlers
Trucks and trolleys	These come in a variety of shapes and sizes and allow one person to transport loads between different locations more efficiently Sack trucks – conventional, with star wheels for ascending stairs and with a hydraulically-powered lifting mechanism General trucks – platform trucks, platform truck with detachable tug unit, platform truck with raising and lowering platform, hand truck and balance truck Trolleys – container trolley, shelf trolley and, drum trolley
Roller tracks and chutes	Allow heavy and bulky loads to be moved manually or by gravity under their own weight
Lifting devices or lifting machines	These come in a wide range of forms for example chain or rope blocks can be suspended from fixed points or beams (manually operated lever hoist). These devices are for general use in workshops and on building sites. Using an electric hoist to raise the load will further reduce the amount of effort you need
Pallet trucks	Moved by pedestrians and manual effort is required to transfer the load but hydraulic power is normally used to raise and lower the load
Portable conveyors	Used to transport loads between places at the same level or different heights
Cranes	Cranes are generally equipped with a hoist, wire ropes or chains, and sheaves that can be used to lift and lower heavy materials and to move them horizontally
Power shovel	Power shovel is a bucket-equipped machine, usually electrically powered, used for digging and loading earth or fragmented rock and for mineral extraction conveyor systems
Fork lift truck	A fork lift truck is a powered industrial truck with hydraulic lift system and forks to pick up and transport materials
Specific tools	There are also a number of tools for specific jobs within the construction sector, for example window installation devices that involve a mobile hoist and suction frame lifting accessory

The cost to companies of measures to avoid or reduce the risk of manual handling will be dependent on the company and the type of activity that they are involved in; as such it is difficult to generalise. In some instances, measures to avoid or reduce manual handling will involve one-off costs, for example, redesigning a work process or purchasing mechanical aids. Information on the cost of the measures discussed above is presented in the table below, and followed by a case study for the fixing of plasterboard (an activity that is common in the construction sector and known to result in manual handling injuries).

[39] HSE (nd): Manual handling – Solutions you can handle, available at http://www.preston.gov.uk/GetAsset.aspx?id=fAAxADQAMAA2ADcAfAB8AFQAcgB1AGUAfAB8ADAAfAA1.

[40] OSH Wiki website (nd): Lifting operations and lifting equipment, available at https://oshwiki.eu/wiki/Lifting_operations_and_lifting_equipment

Table 4-6: Average expenditure per company on activities to meet Manual Handling Regulations (UK)[41]					
Actions[42]	Calculated mean (€)	Valid no. of responses (for calculated mean)	Mean, based on actual costs given (€)	Valid no. of responses (for actual costs mean)	Typical range (€)
Work practice changes	54,727	N=552	111,579	N=241	52,409-57,044
Work environment changes	16,825	N=291	21,521	N=126	14,368-19,280
Load changes	6,541	N=251	5,994	N=96	4,921-8,159
New equipment	38,457	N=566	56,824	N=280	35,243-41,671
PPE	7,778	N=556	7,394	N=276	6,230-9,323

Case study 1: Fixing of plasterboard

Plasterboard is widely used in construction to line internal walls and ceilings; this is commonly referred to as dry-lining in the UK. Sheets of plasterboard can be up to 8' by 4' (2.4m x 1.2m) and weigh 32.5kg; as such handling and installing boards represents a moderate to high level of musculoskeletal disorder (MSD) risk[43]. Often, more than one board will be lifted and carried at a time and it is particularly risky to handle plasterboard in small spaces and windy conditions. Handling and installation tasks are highly repetitive and awkward postures (e.g. bent forward, trunk twisting and reaching with the hands above shoulder height) can be adopted[44].

The HSE has completed a study into the use of plasterboard manual handling aids in the UK, and the factors helping and hindering their application, a series of recommendations were made to avoid and reduce the risks of manual handling during this activity, see table below.

[41] HSE (2003): Costs of compliance with health and safety regulations in SME's, available at http://www.hse.gov.uk/research/rrpdf/rr174.pdf

[42] The HSE report referenced above which provides the source for the costs makes note that "The work environment, work processes and new equipment categories should be treated with caution as respondents have reported provision of new equipment under each of these headings". This may mean that there is some-double counting of the costs incurred and as such, the overall estimates may be inflated as a result.

[43] HSE (nd): Reducing plasterboard manual handling, available at http://www.healthandsafetyworksni.gov.uk/reducing_plasterboard_manual_handling.pdf

[44] HSE (2010): An investigation into the use of plasterboard manual handling aid in the GB construction industry and factors helping and hindering the practicability of the application, available at www.hse.gov.uk/research/rrpdf/rr812.pdf

Case study 1: Fixing of plasterboard

Recommendations to avoid or reduce manual handling in dry-lining[45]		
Recommendation	**Considerations**	**Associated cost**
Provide mechanical assistance, including getting materials to point of use[46] For example: using a crane to lift packs into the building site, panel trolley used to move to point of use, provision of trestle tables for cutting plasterboard, and foot board lifters, panel lifters or adjustable props to raise the plasterboard ready for fixing. Methods to avoid carrying plasterboard up stairs should be employed; cutting slots in floorboards and using a ladder fitted with a bracket, or alternatively, through openings in the brickwork (must be planned at the design stage).	Use of manual handling aids is dependent on the space, benefits of scale, etc., afforded in larger building projects such as office buildings or other commercial type buildings, while those working within the constraints of new build housing will find the use of manual handling aids more problematic.	Variable however some commonly used items are: Panel trolley - €258-517 Trestle tables - €26 (2 x work stands)[47] - €129 (2 x work stands)[48] Foot board lifter - €13[49] Panel lifter - €232[50] - €1,293[51] Adjustable props - €18[52]

[45] HSE (2010): An investigation into the use of plasterboard manual handling aid in the GB construction industry and factors helping and hindering the practicability of the application, available at www.hse.gov.uk/research/rrpdf/rr812.pdf

[46] The HSE report that the majority of construction sites used trolleys to transport plasterboard around site and placed boards as close to where they were needed as possible.

[47] Machine Mart website (nd): Brennenstuhl MB110 Steel Work Stand, available at https://www.machinemart.co.uk/p/mb110-steel-work-stand/

[48] Machine Mart website (nd): Brennenstuhl Aluminium Trestle AMB 200, available at https://www.machinemart.co.uk/p/brennenstuhl-aluminium-trestle-table-amb-200/

[49] Screwfix website (nd): Board & Door Lifter, available at http://www.screwfix.com/p/board-door-lifter/20360?kpid=20360&cm_mmc=Google-_-Product%20Listing%20Ads-_-Sales%20Tracking-_-sales%20tracking%20url&cm_mmc=Google-_-Shopping%20-%20Tools-_-Shopping%20-%20Tools&gclid=CKC-4dmkhswCFdW4GwodJPINNg

[50] Industrial Supplies website (nd): Heavy Duty 11 Ft Drywall Hoist Plaster Board Panel Sheet Lift Lifter Tool, available at http://www.industrialsuppliesco.co.uk/size/Heavy-Duty-11-Ft-Drywall-Hoist-Plaster-Board-Panel-Sheet-Lift-Lifter-Tool/4552#fo_c=1218&fo_k=839ceb32d28b649a3d2ae2958521dbe5&fo_s=gplauk

[51] Mad4Tools.com website (nd): Levpano COMBI Pro Plasterboard Lifter – Horizontal, Vertical & Angle Panels, available at http://www.mad4tools.com/levpano-combi-pro-plasterboard-lifter---horizontal-vertical--angle-panels-35196-p.asp

[52] Tooled up.com website (nd): Tyzack Dry Lining Support Prop, available at http://www.tooled-up.com/product/tyzack-dry-lining-support-prop/106259/?Referrer=googleproductlisting&gclid=COeyosnJhswCFQ0SGwodvf8L3w

Case study 1: Fixing of plasterboard		
Provide **safe systems of work** (Construction Skills Certification Scheme (CSCS) or the Contractors Health and Safety Scheme (CHAS))	Also requirement under OSH Framework and Construction Directives	CSCS card (UK) - €39 Health, Safety and Environment Test (UK) - €25 Renewable cards are valid for 5 years[53]
Reduce dimensions of board	There is the tendency to carry more boards when they are smaller and lighter. Smaller boards also increases the time and cost associated with taping and jointing.	Reducing the size of plasterboard could increase material costs by a factor of up to 1.3. Increased time required to finish plasterboard (taping and jointing)
Reduce weight of loads	As above	As above
Team handling of plasterboard	Team handling is an effective way of reducing the physical burden of manual handling	Increased time required to move sheets
Provide **training** in manual handling for all workers	The training should be tailored to the needs of the worker, covering the specific manual handling tasks they will encounter, the planning of lifts and the use of handing aids appropriate to their environment.	Considered separately
Increase task variety, including breaks		Non-working time is increased

The cost of actions contributing to the avoidance or reduction of risks of manual handling presented in the table above can be extrapolated across Europe, see Table 4-7. Assuming that 66% of companies apply these measures (combining those companies where risk is identified with those applying preventive measures[54] from Figures 4-3 and 4-4 above), **the (one-off) cost associated with applying preventive measures[55] is estimated to be around €47 billion**. Again, this is likely to be an overestimate of the costs accruing across the EU since the estimate is based on measures taken in the UK, which has a strong tradition of implementing health and safety measures at work. The overall calculation assumes that 66% of companies take measures to the equivalent value of those taken in the UK, but whilst a high percentage of companies may take measures across the EU (as indicated in Figure 4-4), they might not implement all the measures taken by companies in the UK. In the event that 50% of the measures were implemented at 50% of the cost of those reported for the UK, the overall cost from applying preventive measures to reduce risks of manual handling would be approximately €23.7 billion across the EU-28.

It is noted that the figures only include the cost of measures taken to reduce risks from manual handling of loads and do not cover the cost of other preventative and protective services and

[53] Other cards that are valid for less than 5 years and are non-renewable are available

[54] It has been assumed that the same % of companies that purchase equipment to deal with musculoskeletal risks also carry out other measures to the same degree

[55] These costs do not apply however to professional services and will not occur every year.

measures that companies may take to reduce other risks present during construction activities (e.g. risk of falling, accidents etc.).

Table 4-7: Total costs of actions associated with actions to avoid or reduce risks of manual handling under the Manual Handling of Loads Directive (10 countries)				
Requirement	**Actions included**	**Number of enterprises***	**Implementation rate**	**Total cost of implementation (€m)**
Avoid or reduce risks of manual handling (Art 3)	• Work practice changes • Work environment changes • Load changes • New equipment • PPE	2,579,180	66%	37.966
	uplifted by 25% for EU-28			**47,458**
*Construction contractors, construction products and mining and quarrying but excluding prof. services. Mean improvement costs per enterprise = €24.9k (calculated as the average of the calculated mean amounts in column 1 in Table 4-6). This figure, based on costs in the UK for 2003, has been adjusted to 2013 prices and GDP price deflators used to estimate costs for the other 9 focal MS. So in Poland and Romania, for example, the average costs are estimated at €12.9k and €11.3k respectively.				

4.2.3 Costs of providing information and training

The cost of providing information may depend on the type of information being provided, whether this is in a special media and/or specific format or whether this consists of just sharing available information, such as the findings of the available RA. According to ESENER-2, 79% of companies in the construction sector provide their employees with the findings of the workplace RAs and 94% provide this information to the health and safety representatives. Sharing the findings of a RA with employees or health and safety representatives is not expected to constitute a significant cost to a company. The provision of specific information by other media, say warning signs, may, however, result in a larger cost for companies. An illustration of a simple way of communicating such information to workers is the Safe System of Work Plan (SSWP) described in the box below.

Provision of information - safe system of work plan (SSWP)

. A SSWP provides a set of instructions for a particular task which takes account of the foreseeable manual handling risk factors. Ideally safe system of work plans should be incorporated into a manual handling training programme. The content of a SSWP should include:

- Title
- Scope – brief overview of the task
- Key requirements – e.g. appropriate trolley with staff being instructed in safe use, staff receiving appropriate training and instruction and items are stored at the appropriate height
- Instructions – specifics about how to complete the task safely

No specific information on the time required to complete a SSWP has been identified, however it is expected that this would be dependent on the activity. It would be expected that such information would be updated in line with the frequency that risk assessments themselves are updated.

The cost of training, however, can be expected to be much larger. For a single employee, the provision of training can comprise multiple cost elements, including the following (although it is worth noting that not all of these cost elements will be applicable in every circumstance):

- The price of the training course;
- The value of time lost by the employer while the worker is away from work (e.g. salary plus overheads);
- Travel and subsistence costs;
- Administration cost (e.g. time spent booking a place on the training course, organising travel documents, etc.); and
- Cost of training materials, facilities, equipment, etc.

As shown in Table 4-8, information from literature review indicates that a typical asbestos training course lasts between one and five days and costs between €150 and €1,000.

Table 4-8: Cost and duration of some asbestos training courses (UK, Italy and Spain)				
Course run by	**Country**	**Course Name**	**Length**	**Cost**
Asbestos Removal Contractors Association (ARCA)	UK	New Operative Course	3 days	£425 - £475 (€549 – €614)
		Industry Based Operative Refresher	1 days	£155 - £175 (€200 – €226)
		New Supervisor	3 days	£425 - £475 (€549 – €614)
		Industry Based Supervisor Refresher	1 day	£195 - £230 (€252 – €297)
		Asbestos Awareness Course	1 day	Not indicated
		Health & Safety Management for Senior Managers & Directors	1 day	£195 - £230 (€252 – €297)
		Risk Assessment & Plans of Work	1 day	£155 - £175 (€200 – €226)
		IOSH Managing Safely in Construction	4 days	£685 (€885)
		RSPH Certificate in Asbestos Project Management	2 days	£355 - £405 (€459 – €524)
		RSPH Certificate in Asbestos Surveying	3 days	£520 - £570 (€672 – €737)
		RSPH Level 3 Certificate for Asbestos Duty Holder	4 days	£720 - £770 (€931 – €995)
Ente di formazione – Centro di addestramento	IT	Corso Generale Amianto	32 hours (4 days)	Not indicated
		Corso Aggiornamento Amianto	8 hours (1 day)	Not indicated
		Corso Preposti per l'amianto	16 hours (2 days)	Not indicated
		Corso aggiornamento preposti lavorazioni amianto	8 hours (1 day)	Not indicated
Time Vision - Agenzia Formativa e di Intermediazione Lavoro		Dirigente Amianto – Addetto alla Gestione delle Attività di Rimozione, Smaltimento e Bonifica dei Materiali Contenenti Amianto (Dirigente/Coordinatore Amianto)	50 hours (~6 days)	€301-€500
ISEA		Bonifica Amianto – Operatori	30 hours (~4 days)	€301-€500
ECOL STUDIO		Dirigente per le Operazioni di Rimozione, Smaltimento e Bonifica Amianto	50 hours (~6 days)	€990
		Addetto Alle Operazioni di Rimozione, Smaltimento e Bonifica Amianto	30 hours (~4 days)	€500
INESEM -Formación bonificada para empresas	ES	Técnico en Prevención de Riesgos Laborales en Gestión y Retirada de Amianto (Online)	Not indicated	€300
PREVENFORMAT		Prevención Riesgos Laborales especialidad trabajos de amianto	6 hours (~1 day)	€150
Icam - Ingeniería y control ambiental		Supervisor Técnico en Proyectos de Gestión y Retirada de Amianto - PRESENCIAL CANTABRIA	40 hours (5 days)	€180

Sources:
ARCA (2016): Asbestos removal, supervision, surveying & management training, available at: http://www.arca.org.uk/asbestos-removal-contractors-association/asbestos-training-courses.asp
Ente di formazione – Centro di addestramento (2016): Corso di formazione per addetti alla bonifica amianto, available at: http://www.enteformazione.it/bonifica-amianto/
Emagister (2016a): Corsi bonifica amianto, available at: http://www.emagister.it/bonifica_amianto-eh.htm
Emagister (2016b): Cursos amianto, available at: http://www.emagister.com/amianto-tps-4895.htm

Estimates of the annual cost of training for a single employee are provided in Table 4-9 below. Assuming that a worker participates in one training course per year, that the training course lasts between one and five days, and that the cost of the training course ranges from €150 to €1,000, the cost of training for a single worker would be between €259 to €1,547 per annum, where this accounts for the cost to the business of the worker's time spent participating in training and the price of the training course. Costs are estimated to be highest in Denmark (€379 to €2,144 per worker per year) and lowest in Romania (€162 to €1,058 per worker per year).

Table 4-9: Annual cost of training for a single employee

Country	Value of time spent (€)[1]		Total cost (value of time lost + cost of training course)	
	Assuming training lasts 1 day per year	Assuming training last 5 days per year	Assuming training lasts 1 day per year, and training course costs €150	Assuming training last 5 days per year, and training course costs €1,000
BE	177	886	327	1886
BG	12	58	162	1058
CZ	40	199	190	1199
DK	229	1144	379	2144
DE	145	723	295	1723
ET	28	138	178	1138
EI	153	766	303	1766
EL	90	449	240	1449
ES	96	478	246	1478
FR	144	718	294	1718
IT	134	668	284	1668
CY	96	481	246	1481
LV	20	101	170	1101
LT	22	110	172	1110
LU	185	925	335	1925
HU	27	133	177	1133
MT	68	339	218	1339
NE	135	677	285	1677
AT	131	657	281	1657
PL	37	185	187	1185
PO	51	257	201	1257
RO	16	82	166	1082
SL	53	263	203	1263
SK	35	173	185	1173
FI	158	789	308	1789
SE	178	888	328	1888
UK	113	564	263	1564
Average (EU27)	**109**	**547**	**259**	**1547**

[1] Based on hourly earnings for ISCO 9 'Elementary Occupations', adjusted to 2010 and including non-wage labour costs and 25% overhead; in line with the Commission's Standard Cost Model.

Over three-quarters (82%) of EU establishments surveyed by the EU-OSHA provide their team leaders and line managers with training on how to manage OSH in their teams. Whilst asbestos training is likely to be specialised (potentially longer and potentially more expensive) it is assumed that similar time and cost figures apply to other health and safety training due to the lack of data but wide range of training on offer. Assuming the average of the above costs apply to all training related to health and safety necessitated by the legislation being considered, and that each company trains one person per year, **the total cost for training across the EU can be estimated at €2.4bn per year** (based on a range of €685m to €4bn)**.** However, these figures need to be read with caution and although these may be on the low side (since it has been assumed that only one employee is trained per organisation), these costs are likely to occur often. This is because some training associations will only validate a certificate for one year and it is possible that refresher training might be undertaken more often. Training (particularly refresher training) might also be undertaken on an informal basis within an organisation, rather than formally via an external training course, but would still be likely to increase the overall cost.

Table 4-10: Total costs of actions associated with providing training

Requirement	Assumptions	Number of enterprises*	Compliance rate	Total cost of compliance (€m)
Provision of training	• 1 employee per company trained • 82% provide training • Average cost per training (value of time lost + cost of training course) €906	2,579,180	82%	1,910
	uplifted by 25% for EU-28			**2,388**
*Construction contractors, construction products and mining and quarrying but excluding prof. services.				

4.2.4 Costs of consultation with workers

In the construction sector, consultation with stakeholders can take multiple forms, including:

- A joint consultative committee, employee forum or equivalent body. Only 21% of companies across Europe and in the construction sector have a joint consultative committee according to the latest 2014 ESENER survey;
- A recognised trade union representation, the percentage here is 16%;
- A health and safety representative or representative of employee safety - 57% of companies interviewed by ESENER reportedly use this method for consultation; and
- A health and safety committee, with 18% of the companies reporting to use this as a means to engage with their employees.

Although the figures above appear to be on the low side, ESENER-2 also shows that:

- 80% of establishments in the construction sector report involving employees in the design of measures following a RA; and
- health and safety issues are discussed 'regularly' between employee representatives and the management in 65% of establishments.

There is limited information about the costs of consulting with workers from the implementation of the different Directives or the time spent on consulting workers, although there is some information as to when workers are consulted.

Assuming an average time spent consulting workers[56] per company and the number of times this is likely to occur each year, the cost for consulting with workers in the construction sector can be estimated using the SCM approach (time spent x no. times consulted x fee rate x no. companies that consult) . The cost of consulting with workers in the construction sector is expected to amount to around €700 million per year.

Table 4-11: Estimated cost of consulting with workers (10 countries)		
Element	**Value**	**Unit**
Time spent consulting workers	4	Hours of senior staff and managers. (@€41.50 according to the SCM)
How often are workers consulted per year	2	Frequency per year
Costs of consulting with workers per year	332	€ per year per company
No. of companies*	2,579,180	
% companies consulting	65%	Companies consulting regularly based on ESENER-2
No. of companies consulting with employees	1,676,467	
Total cost of compliance (Euros) per year	**€ 557m**	**€m per year**
uplifted by 25% for EU-28	**€ 696m**	**€m per year**
*Construction contractors, Construction products and Mining and quarrying, but excluding prof. services		

However, generally, the cost of consultation related to OSH is not expected to be as high as indicated in the previous table, particularly given that companies will consult with their workers on many issues anyway and additional time required specifically for health and safety consultations would not require major adjustments to consultation processes. Consequently, the estimated cost is likely to be an overestimate in this regard.

The following tables show how industry association[57] stakeholders responded when asked about the extent of costs that have arisen as a result of the requirement to consult with workers. While some stakeholders have identified moderate costs, others do not believe there have been any cost at all. No stakeholders have identified significant costs arising as a result of this requirement. It is noted that the limited responses to a number of the questions asked during interviews may mean that the responses may not be representative. However, it is clear that none of the respondents who replied to each of the three questions on costs arising from consulting on the issues described indicated that costs were significant.

[56] Assumptions relating to the amount of time spent on consultation included in the following table have been introduced by the consultants. In the absence of alternatives provided by industry stakeholders, the figures generated on costs are therefore very uncertain.

[57] The questions were focused on associations and companies only. Insufficient responses were received from companies to be able to present results here.

Table 4-12: Question to industry associations on the OSH Framework Directive – "To what extent have the companies your organisation represents incurred costs as a result of the following health and safety measures?" (answers provided during the telephone interviews)			
	Significant costs	**Moderate costs**	**No costs**
Consulting with workers about issues relating to safety and health at work	0	5	3
Total responses to this question: n = 7			

Table 4-13: Question to industry associations on the Directive on the Manual Handling of Loads – "To what extent have the companies your organisation represents incurred costs as a result of the following measures designed to reduce the risks associated with the manual handling of loads by workers?" (answers provided during the telephone interviews)			
	Significant costs	**Moderate costs**	**No costs**
Consulting with workers (or their representatives) on matters related to the manual handling of loads and worker health and safety	0	2	2
Total responses to this question: n = 4			

Table 4-14: Question to industry associations on the Asbestos Directive – "To what extent have the companies your organisation represents incurred costs as a result of the following measures designed to reduce the risks to workers associated with asbestos?" (answers provided during the telephone interviews)			
	Significant costs	**Moderate costs**	**No costs**
Consulting with workers (or their representatives) about the risks arising from exposure to asbestos	0	2	2
Total responses to this question: n = 4			

4.2.5 Costs of health surveillance and monitoring

Being subject to European and national laws, health surveillance of workers varies substantially between EU MS. This is also because the OSH Framework Directive allows health surveillance to be provided as part of a national health system. For the construction industry, in several MS (notably the Netherlands) a health examination is periodically offered to all construction workers (EU-OSHA, 2014[58]) .

ESENER-2 reports that 73% of companies employ an occupational health doctor either in-house or outsourced. The proportion of companies with an occupational health doctor varies significantly across countries. The findings by country reveal a very high use of occupational health doctors in several countries: Finland, France, Hungary, Portugal, Slovenia, Poland and Romania reporting proportions above 90%. The costs of an occupational health doctor are however unknown.

[58] Health in the Construction Industry, https://oshwiki.eu/wiki/Health_in_the_Construction_Industry#Technical_measures

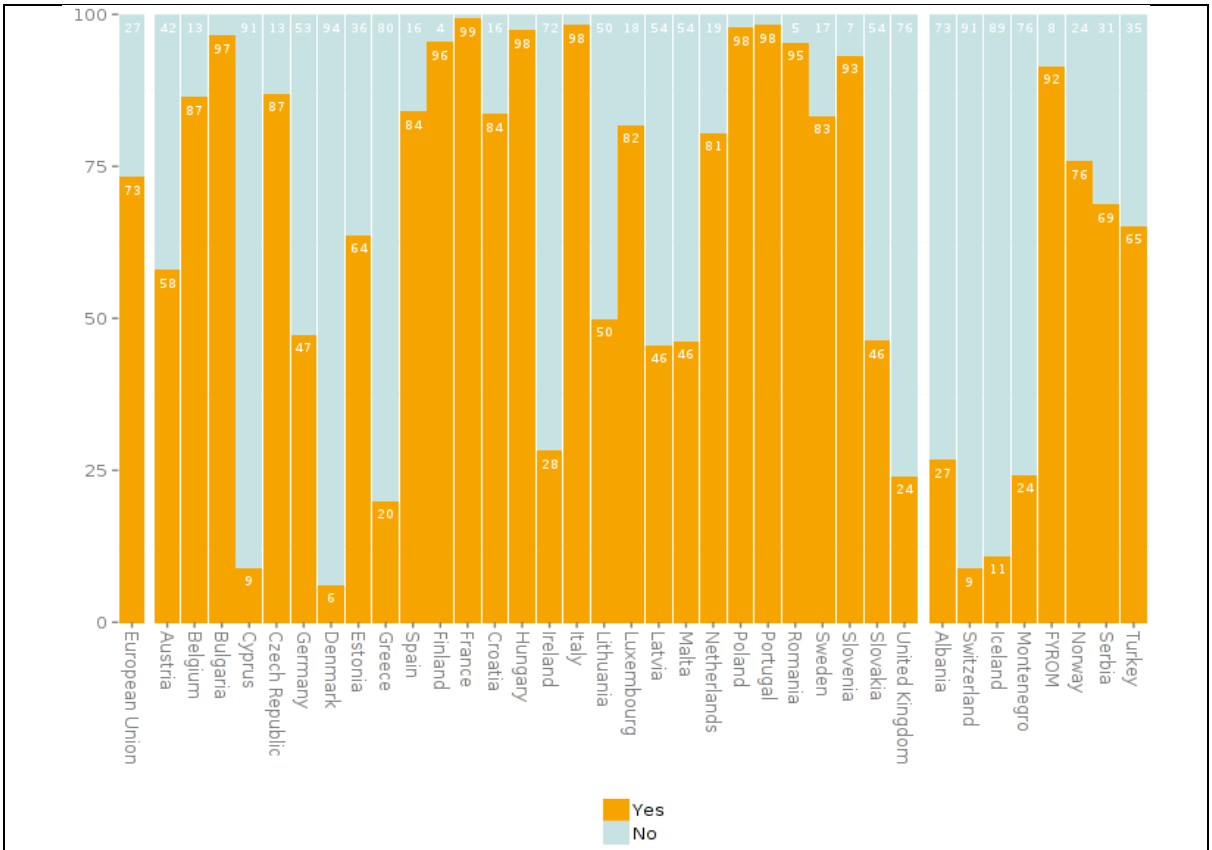


Figure 4-5: OSH Management / Use of health and safety services: An occupational health doctor
Source: EU-OSHA (2016): European Survey of Enterprises on New and Emerging Risks (ESENER-2), available at https://osha.europa.eu/en/surveys-and-statistics-osh/esener/2014

There are, however, specific requirements for health surveillance in the Asbestos Directive, which sets very detailed and comprehensive requirements with regard to the health surveillance of workers, including examination of the chest (see box below).

*Article 18(2) of the Asbestos Directive states that an assessment of each worker's state of health must be undertaken at least **once every three years** for as long as exposure continues. An assessment of each worker's state of health must also be available prior to the beginning of exposure to dust arising from asbestos or materials containing asbestos at the place of work. Nevertheless, some countries have gone beyond this minimum requirement, for example:*

- *In Belgium, a medical examination must be undertaken once per year;*
- *In France, a medical examination must be undertaken every 24 months;*
- *In the UK, a medical examination must be undertaken every two years for licensable work and every three years for non-licensable work;*

In Ireland and Poland, the examination must be undertaken every three years (in line with the Directive).

The Asbestos Directive (Article 19(2)) also requires employers to keep a register of workers carrying out activities described in Article 3(1), detailing the nature and duration of activities and the exposure to which they are subjected. The doctor and/or the authority responsible for medical surveillance must be given access to this register.

These costs are described below but will not fall on companies that do not come into contact with asbestos. Based on low and high estimates of €110 and €194 per examination (see the Box below), the total cost of health surveillance and monitoring in the UK can be estimated at around €4.9m to €8.6m between 2004 and 2014, or €0.4m to €0.8m per year. Unfortunately, EU-wide data do not appear to be available on the number of Asbestos Directive related medical examinations pertaining to workers in the construction industry undertaken in the EU. The cost for a company of providing medical examinations for staff is likely to vary (perhaps significantly) between MS *inter alia* because in some countries there are national rules in place that go beyond the requirements of the Directive (e.g. by requiring more frequent medical examinations).

When asked about the costs associated with undertaking clinical surveillance of workers under the Asbestos Directive, stakeholders interviewed for the study responded as follows:

- One German industry association indicated that the cost to its members had been "moderate"
- One Romanian industry association indicated that the cost to its members had been "moderate"
- One Belgian industry association indicated that the cost to its members had been "significant"

A company from Romania (whose employees might come into contact with asbestos at their place of work) also noted that it costs them €100 per year for each working station and job type to implement the Directive's provisions on the clinical surveillance of employees. As would be expected, this is fractionally lower than the estimate provided above for the UK (i.e. €110 to €194 per worker per year).

Estimated costs of Medical examinations due to asbestos

A 2012 Impact Assessment undertaken by the Health and Safety Executive for Northern Ireland[59] of The Control of Asbestos Regulations (Northern Ireland) 2012 (S.R. 2012 No. 179) has identified that the bulk of the costs pertaining to the Regulations relate to medical examinations. It has been noted that a typical medical examination would be expected to take more than 2 hours of the worker's time on average, with a further 1.5 hours needed for travel (i.e. 3.5 hours in total). According to the Impact Assessment, a medical examination for notifiable non-licensed work (NNLW) can be expected to cost between £85 (€110) and £150 (€194) per worker (with a best estimate of £118 (€153)), per examination, where this excludes the cost of their own time.[60]

Data from the UK indicates that 4,731 medical examinations were undertaken in 2004 amongst all asbestos workers in the UK, of which 4,011 were medical examinations for workers involved in stripping asbestos (HSE, 2007)[61] and it this latter group which would be associated with the construction sector.

[59] HSENI (2012): The Control of Asbestos Regulations (Northern Ireland) 2012 (S.R. 2012 No. 179), Impact Assessment, available at: https://www.hseni.gov.uk/sites/hseni.gov.uk/files/publications/%5bcurrent-domain%3Amachine-name%5d/impact-assessment-sr2012-179.pdf

[60] Following standard HSE practice, the hourly wage for workers was up rated by 30% to account for non-wage costs.

[61] Of which 85% (4,011) were medical examinations for workers involved "stripping", 14% (662) were for "other" workers and 1% were for workers involved in "manufacturing" (HSE, 2007)

Estimated costs of Medical examinations due to asbestos

Assuming that 4,011 medical exams were conducted in the UK in 2004 at a cost of €153 per medical exam, the total cost of medical exams (for companies) in the UK would have been around €610k in 2004 (where this does not account for non-wage costs incurred by affected workers).

Estimated cost of medical examinations in the UK in 2004			
Information available	**Low estimate**	**Best estimate**	**High estimate**
Cost of a medical examination for a company[62]	£85 (€110)	£118 (€153)	£150 (€194)
Total number of medical examinations undertaken in 2004 amongst all workers involved in stripping asbestos in the UK[63]	4,011		
Total cost of medical examinations undertaken in 2004 amongst all workers involved in stripping asbestos in the UK	£340,935 (€441,210)	£473,298 (€613,683)	£601,650 (€778,134)

Assuming that the UK accounts for about 20% of the EU construction sector, then a first estimate for annual costs across the EU can be estimated to be of the order of 5 x €610k = €2.2m – €3.9m (2004 prices). This figure should be read with caution given that the cost of a medical examination for a company is unlikely to be the same for all MS (e.g. costs may vary according to both local wages and national healthcare provision). Nevertheless, information from consultation indicates that the cost of a medical examination in Romania may be broadly similar to the UK (at around €100 per worker per year), which supports the accuracy of our estimate.

In addition to the cost of the medical examination, there will be an administrative cost related to record keeping. Duty holders are required to keep a summary record of each worker's activity, its duration and an estimate of their exposure. These records are required to be retained by the employer for at least 40 years. Duty holders have flexibility in how they decide to keep records of health and work and, in many cases, workers do this for themselves. In their Impact Assessment, HSENI (2012) assumed there would be a low compliance rate among duty holders, on the basis that the perceived benefits of record-keeping are likely to be low. It was expected that medium-sized or larger firms would be more likely than small firms to comply because they may consider themselves more visible to the regulator and larger clients who expect compliance. Consultation undertaken for HSENI's Impact Assessment revealed that it would take around 10 to 15 minutes per job to complete the necessary record keeping, with a best estimate of 13 minutes.

Table 4-15 presents an estimate of the total cost per job in each of the EU-27 MS to complete the necessary record keeping, based on the amount of time taken to complete the record keeping and average hourly earnings in the MS[64]. As shown in the table, the total cost ranges from €0.24 to €0.37 per job in Bulgaria to €4.77 to €7.15 in Denmark, with an EU average of €1.98 to €2.97.

[62] HSENI (2012): The Control of Asbestos Regulations (Northern Ireland) 2012 (S.R. 2012 No. 179), Impact Assessment, available at: https://www.hseni.gov.uk/sites/hseni.gov.uk/files/publications/%5bcurrent-domain%3Amachine-name%5d/impact-assessment-sr2012-179.pdf

[63] HSE (2007): Asbestos Workers Database: Summary Statistics, available at: http://www.hse.gov.uk/research/hsl_pdf/2007/hsl0705.pdf

[64] Hourly earnings for ISCO 9 'Elementary Occupations', adjusted to 2010 and including non-wage labour costs and 25% overhead; in line with the Commission's Standard Cost Model.

Table 4-15: Record keeping - estimated cost per job (€)[1]			
Country	**Low estimate (Assuming 10 minutes per notification)**	**Best estimate (Assuming 13 minutes per notification)**	**High estimate (Assuming 15 minutes per notification)**
BE	3.69	4.80	5.53
BG	0.24	0.32	0.37
CZ	0.83	1.08	1.24
DK	4.77	6.20	7.15
DE	3.01	3.92	4.52
ET	0.58	0.75	0.86
EI	3.19	4.15	4.79
EL	1.87	2.43	2.81
ES	1.99	2.59	2.99
FR	2.99	3.89	4.49
IT	2.78	3.62	4.17
CY	2.00	2.61	3.01
LV	0.42	0.55	0.63
LT	0.46	0.59	0.69
LU	3.85	5.01	5.78
HU	0.55	0.72	0.83
MT	1.41	1.84	2.12
NE	2.82	3.66	4.23
AT	2.74	3.56	4.10
PL	0.77	1.00	1.16
PO	1.07	1.39	1.61
RO	0.34	0.44	0.51
SL	1.10	1.43	1.65
SK	0.72	0.94	1.08
FI	3.29	4.27	4.93
SE	3.70	4.81	5.55
UK	2.35	3.05	3.52
Average (EU27)	**1.98**	**2.58**	**2.97**

[1] Based on hourly earnings for ISCO 9 'Elementary Occupations', adjusted to 2010 and including non-wage labour costs and 25% overhead; in line with the Commission's Standard Cost Model.

In the Impact Assessment undertaken by HSENI (2012), one-off costs associated with the need to establish a record-keeping system were believed to be negligible, as it was considered that most businesses would already have the means for keeping records (e.g. a computer and a simple work processing document or notebook).

Although comprehensive EU data do not appear to be available on the extent of record keeping among construction firms in the EU, ESENER-2 reports that 52% of companies in the construction sector do undertake routine analysis of sickness absences with a view to improving working conditions. Presumably, this will involve record keeping. Applying the EU average low and high estimates (of €1.98 and €2.97 per job), the costs for the sector of health monitoring can be estimated to be in the range of €13m to €20m, with a best estimate of €17m (based on the best estimate cost of €2.58 per job) per year.

Table 4-16: Total costs of actions associated with health monitoring (10 countries)				
Requirement	**Assumptions**	**Number of employees***	**% of companies undertaking**	**Total cost (€m)**
Record keeping and health monitoring	Assumes 52% of total number of companies undertaking health monitoring and record keeping Costs per employee based on best estimate of €2.58 (based on SCM)	10.3m	52%	13.8
uplifted by 25% for EU-28				**17.2m**
*Construction contractors, Construction products and Mining and quarrying but excluding prof. services as these are assumed to use national health systems.				

When asked about the **cost of compiling and submitting information to a national register**, indicating the nature and duration of the activity and the exposure to which workers have been subjected, industry associations from Germany, the UK and Romania concurred that the cost for companies had been "moderate". A company from Romania noted that compiling and submitting information to a national register, indicating the nature and duration of the activity and the exposure to which workers have been subjected costs their company €200 per workstation and job type per year. The above costs may thus represent an underestimate. However, it is important to bear in mind the different national contexts as companies may rely on the national health systems for this. Moreover, there may be specific programmes for health surveillance where the costs of surveillance may be shared (see example below).

Companies may also turn to insurance providers or social partners such as MATEPSS (see box below) in order to fulfil their obligations.

Mutuas Aseguradoras in Spain

A Mutua of Accidents and Occupational Diseases (MATEPSS) is a collaborating entity with the Social Security Services which operates under the guidance and supervision of the Ministry of Labour and Social Affairs. They are non-profit organisations. Its main function is to manage professional contingencies: accidents and occupational diseases. Some entrepreneurs take this responsibility directly with the National Institute of Social Security (INSS), but most are associated with MATEPSS. Mutuas offer a number of services to its member companies. They are responsible for the management of health benefits, and can take over the management of subsidies for temporary disability due to common illnesses. They can also develop preventive activities for its member companies, both in terms of coverage of professional contingencies, as well as acting for them as external Prevention Services (such as "Prevention Societies").

There are around 20 MATEPSS. They are members of the Association of Work Accident Insurance Companies (Asociación de Mutuas de Accidentes de Trabajo, AMAT), which is a non-profit organisation, established in 1986. AMAT is the interest group for the insurance bodies. It represents common positions of the Mutuas and their member companies in negotiations within the social security system

Asbestos health surveillance programme

Although asbestos was banned in Spain in 2001, monitoring the health of previously-exposed workers is required. In 2002, the Ministry of Health and the autonomous regions of Spain planned a health surveillance program for workers exposed to asbestos (Programa de Vigilancia de la Salud de los Trabajadores Expuestos al Amianto [PIVISTEA]) with employers' organizations, trade unions and scientific societies. The aim of this study was to evaluate the PIVISTEA to improve its effectiveness.

A questionnaire with indicators for the year 2008 was sent to Spain's 17 autonomous regions, as well as to the autonomous cities of Ceuta and Melilla. The results were analysed by evaluating the compliance of each program with the activities established by the PIVISTEA.

In December 2008, a total of 22,158 workers from 14 autonomous regions and 306 companies were included in the program. The program had been started in 88% of the regions but surveillance activities remained scarce in 24%. Fifty-seven percent of the autonomous regions (69% of the total number of workers) provided the information requested. Seven autonomous regions provided data on the relationship between the diseases found and asbestos exposure. Only 5% of these diseases entitled affected individuals to receive compensation for occupational diseases.

The health surveillance of workers previously exposed to asbestos in Spain, as well as medical-legal recognition of diseases caused by exposure at work, remain inadequate. Although the trend is positive, the effectiveness of many regional programs is limited, and inter-regional inequalities among affected workers have been detected.

Source: Montserrat García Gómez, et al (2008): Evaluation of the national health surveillance program of workers previously exposed to asbestos in Spain, Gaceta Sanitaria, Volume 26, Issue 1, Pages 45-50

4.2.6 Appointment of coordinators

These costs stem from the provisions of the Directive on Temporary or Mobile Construction Sites that require the client or the project supervisor to appoint one or multiple coordinators for safety and health matters when more than one contractor is present[65]. Information from consultation indicates that the cost of implementing this measure for a medium-sized company would be around €2,000 per year[66]. However, it should be noted that, in some countries (e.g. Belgium), costs for the co-ordinator may be borne by the developer/client as they appoint the person to this position.

Unfortunately, information is not available on the total number of companies in the EU that appoint a health and safety coordinator (or coordinators), nor on the total number of health and safety coordinators employed. Nevertheless, in order to estimate the total cost to the European construction sector, it is possible to make some assumptions in this regard.

[65] The coordinator is vested with the tasks specified in Articles 5-6.

[66] Other figures, including 0.2% of the project cost and €50,000 per project were put forward during interviews. The figure of €2,000 is consistent with approximately 10% of ISCO3/ISCO4 annual salary at EU level from the Commission's Standard Cost Model. As such, the figure would account for the fact that, in many cases, this would not be a full-time position and might also include costs of training in the role. It must be noted however that, in some cases, companies will hire in consultants, whereas in other cases a full-time position is created and requirements vary from company–to-company and MS-to-MS. An interviewee pointed out that in Italy, for example, the position of Safety Coordinator is established in law (Law 626/1994) and the post holder is required to have relevant qualifications (e.g. in architecture, engineering), some years of work experience and must attend a course requiring certification and which must be updated regularly. A Belgian consultee stated that the cost of safety co-ordinators has gone down significantly since 2006 and that for small projects, the cost for the coordinator is relatively limited.

As shown in the table below, there are nearly 3 million construction firms in the EU, the vast majority of which are microenterprises (with <9 employees). For the purposes of our analysis, we have assumed that only medium and large companies would employ a health and safety coordinator involving significant costs because they are more likely to work on large construction sites with more than one contractor present. Assuming that all companies with more than 20 workers employ at least one construction coordinator, the total cost to the construction sector (EU-28) would have been **€112 million in 2013**. It should be noted that this is based on a cost of €2,000 per company, and does not take into account economies of scale (i.e. the same cost applies to all sizes of enterprise). It also does not take into account compliance rates with this provision (which are likely to be less than 100%).

Table 4-17: Costs relating to the appointment of health and safety co-ordinators						
	0 to 9 employees	10 to 19 employees	20 to 49 employees	50 to 249 employees	>250 employees	Total
No. of enterprises in 2013 (construction contractors in the 10 countries)	2,157,456	93,356	34,155	9,540	939	2,295,446
Cost per enterprise (assumed)	N/A	N/A	€ 2,000	€ 2,000	€ 2,000	N/A
Total cost in 2013 (€m) in the 10 countries	**€ 0**	**€ 0**	**€ 68m**	**€ 19m**	**€ 1.9m**	**€ 89m**
uplifted by 25% for EU-28						**€112m**

4.2.7 Prior notice/notification

The Directive on Temporary or Mobile Construction Sites requires that where the site is expected to remain open for longer than 30 working days, and employs more than 20 workers at the same time - or involves a volume of work in excess of 500 man-days - the client or project supervisor must give prior notice in accordance with Annex III to the competent authorities before work starts. There are also requirements from the Asbestos Directive to inform the responsible authority of any planned activities where employees are, or may be, exposed to dust from asbestos or materials containing asbestos. This notification must be made before the work starts.

Consultation undertaken by the Health and Safety Executive for Northern Ireland (HSENI) for their 2012 Impact Assessment[67] identified that compliance levels for requirements for notification and record keeping (both of work and health related records) are likely to be in the range of 5% to 30%, with a best estimate of 15%. HSENI assumed (based on the results of consultation) that **it would take a worker between 10 and 15 minutes to notify the regulatory authority per job by using an online method** (with a best estimate of 12.5 minutes), but also noted that the amount of time needed could shorten with practice.

When asked about the cost of submitting a notification to the responsible authority under the Asbestos Directive:

- One industry association from Germany and one industry association from Romania indicated that the cost had been "moderate" for their members;

[67] HSENI (2012): The Control of Asbestos Regulations (Northern Ireland) 2012 (S.R. 2012 No. 179), Impact Assessment, available at: https://www.hseni.gov.uk/sites/hseni.gov.uk/files/publications/%5bcurrent-domain%3Amachine-name%5d/impact-assessment-sr2012-179.pdf

- One industry association from Belgium and one industry association from the UK indicated that there had been "no costs".

Unfortunately, data do not appear to be available on the number of prior notices or notifications made to the applicable authorities throughout the EU. It is not, therefore, possible to provide an estimate of the total cost of notifications at an EU level. However it is expected that these costs are **negligible**.

It has been indicated that between April 2001 and October 2011, around 388,000 notifications were received by the HSE in Great Britain alone[68].

Table 4-18 presents an estimate of the total cost to companies of providing notifications to the authorities (HSE) in the UK over the period 2004 to 2014. It assumes that a similar number of notifications (i.e. 350,000 to 450,000) were received by the UK HSE between 2004 and 2014 (as were received between April 2001 and October 2011), and takes into account a range of estimated cost per notification based on hourly earnings for ISCO 9 'Elementary Occupations', adjusted to 2010 and including non-wage labour costs and 25% overhead, in line with the Commission's SCM.

Table 4-18: Estimated cost (€) of notifications in the UK between 2004 and 2014

	Low estimate (Assuming 10 minutes per notification)	Best estimate (Assuming 12.5 minutes per notification)	High estimate (Assuming 15 minutes per notification)
Estimated cost per notification in the UK (€)	€2.35	€2.94	€3.52
Total number of notifications in the UK between 2004 to 2014 (assumed)	350,000	400,000	450,000
Total cost (€) to UK enterprises of providing notifications between 2004 and 2014 (estimated)	€822,000	€1,174,000	€1,585,000

Article 13 of the Asbestos Directive requires that prior to commencing work, employers must prepare a plan of work.

When asked about the **cost of drawing up this plan of work** one industry association in Germany, one industry association in Romania and one industry association in Belgium indicated that the cost for its member companies had been "moderate".

4.2.8 Other direct (familiarisation) costs

Familiarisation costs may arise for businesses in the construction sector owing to the time taken to understand the changes in national legislation and its effects for their organisation.

However, the associated costs are, to a greater or lesser extent, already accounted for in the various activities considered above.

[68] European Data Portal (2016): Asbestos Notifications System, available at: http://www.europeandataportal.eu/data/en/dataset/asbestos-notifications-system-ans

4.3 Benefits to companies from application of OSH legislation

4.3.1 Overview

As shown below, work related diseases and injuries can lead to multiple costs for enterprises in the construction sector, including those related to loss of output, costs associated with hiring and training new staff, increased insurance premiums as well as, potentially, legal costs. Clearly, any cases that can be avoided will have an economic benefit for enterprises in the construction sector.

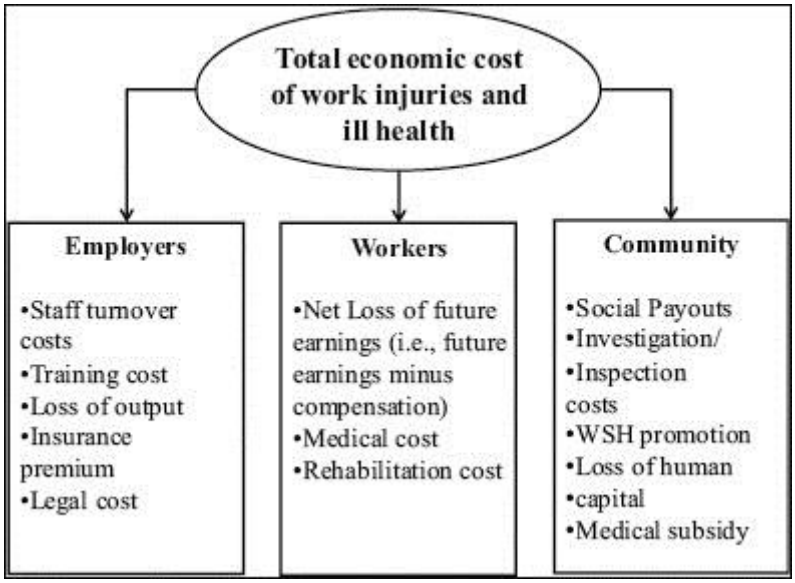


Figure 4-6: Cost items borne by employers, workers, and the community[69]

Specific confirmation of these factors were provided by industry associations that participated in the telephone interviews, as shown in the tables below. Whilst the limited numbers make it difficult to assert that the responses are representative of the entire industry, it is clear that with only a very few exceptions, the majority of those interviewed indicated that there had been moderately positive or large positive impacts for companies in the construction sector arising from the EU health and safety legislation assessed. Further information from the telephone interviews and the OPC is provided in Section 5.3 and in Annex 5.

[69] Takala J. et al. (2014): Global estimates of the burden of injury and illness at work in 2012, Journal of Occupational and Environmental Hygiene, 11(5), pp326-337, available at:

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4003859/

Table 4-19: Responses to the question "To what extent have the measures [under the OSH Framework Directive] contributed to the following benefits for companies in the construction sector?" - Response from Industry Associations during the telephone interviews						
	Large positive impact (++)	Moderate positive impact (+)	No impact (+/-)	Moderate negative impact (-)	Large negative impact (--)	Don't know
Reduction in the number of workers exposed to occupational risks	5	3	1	0	0	1
Fewer work days lost to work related injuries and ill-health	3	6	0	0	0	1
Improved wellbeing and job satisfaction among workers	2	5	2	0	0	1
Increased productivity	3	4	2	0	0	1
Increased employee retention	2	1	3	0	0	3
Reduced insurance premiums	2	1	2	1	1	3
Reduced legal costs	1	4	2	0	0	3
Reduced business risks	3	5	1	0	0	1
Total number of responses to this question: n = 10						

Table 4-20: Responses to the question "To what extent have the measures [under the Directive on Temporary or Mobile Construction Sites] contributed to the following benefits for the construction sector?" - Response from Industry Associations during the telephone interviews						
	Large positive impact (++)	Moderate positive impact (+)	No impact (+/-)	Moderate negative impact (-)	Large negative impact (--)	Don't know
Reduction in the number of workers exposed to occupational risks	3	3	0	0	0	0
Fewer work days lost to work related injuries and ill-health	3	2	1	0	0	0
Increased productivity	3	2	1	0	0	0
Reduced insurance premiums	0	2	2	1	0	1
Reduced legal costs	0	2	2	1	0	1
Reduced business risks	0	3	1	1	0	0
Total number of responses to this question: n = 6						

Table 4-21: Responses to the question "To what extent have the measures [under the Directive on the Manual Handling of Loads] contributed to the following benefits for companies in the construction sector?" - Response from Industry Associations during the telephone interviews						
	Large positive impact (++)	Moderate positive impact (+)	No impact (+/-)	Moderate negative impact (-)	Large negative impact (--)	Don't know
Reduction in the number of workers exposed to occupational risks	1	2	0	0	0	1
Fewer work days lost to work related injuries and ill-health	1	2	0	0	0	1
Fewer workers with back injuries / back pain related to the manual handling of loads at work	1	2	0	0	0	1
Increased productivity	2	1	0	0	0	1
Reduced insurance premiums	0	1	2	0	0	1
Reduced legal costs	0	2	1	0	0	1
Reduced business risks	1	2	0	0	0	1
Total number of responses to this question: n = 4						

Table 4-22: Responses to the question "To what extent have the measures [under the Asbestos Directive] contributed to the following benefits for companies in the construction sector?" - Response from Industry Associations during the telephone interviews						
	Large positive impact (++)	Moderate positive impact (+)	No impact (+/-)	Moderate negative impact (-)	Large negative impact (--)	Don't know
Reduction in the number of workers exposed to asbestos	1	2	0	0	0	1
Fewer work days lost as a result of ill-health resulting from exposure to asbestos	1	0	1	0	0	2
Increased productivity	0	0	2	0	0	2
Reduced insurance premiums	0	0	2	0	0	2
Reduced legal costs	0	0	2	0	0	2
Reduced business risks	0	1	1	0	0	2
Total number of responses to this question: n = 4						

4.3.2 Increased productivity

The survey conducted by the EU-OSHA in 2014 found that around 67% of those interviewed undertake measures related to OSH to increase productivity, although there are significant variations across countries.

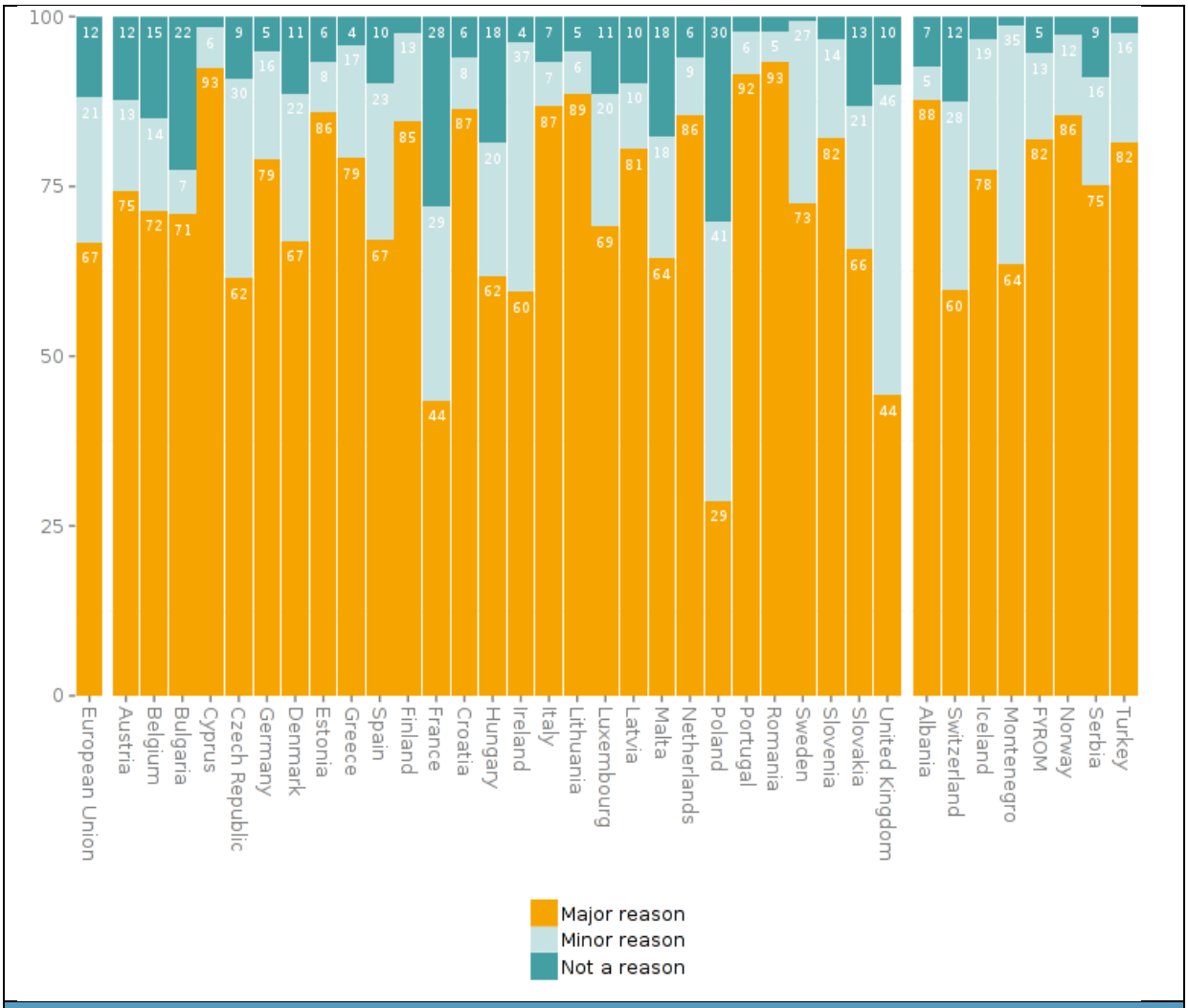


Figure 4-7: Increasing productivity as a reason for addressing health and safety in the establishment
Source: EU-OSHA (2016): European Survey of Enterprises on New and Emerging Risks (ESENER-2), available at https://osha.europa.eu/en/surveys-and-statistics-osh/esener/2014

The adoption of prevention measures at work is expected to generally reduce the risks to workers (if implemented properly) also resulting in fewer work days lost with obvious benefits to companies, such as increased productivity and reduced costs. It is also noted that the adoption of measures to improve worker safety can in themselves provide opportunities for increased productivity, e.g. making use of devices to assist with manual handling of loads can allow larger loads to be shifted further and quicker, resulting in increased productivity.

Avoiding accidents

Direct costs for companies of accidents at work have been estimated at **32% of the gross salary of an employee**[70]. These direct costs include the following:

- Salaries paid during health investigations and care;
- Insurance premiums paid;
- Uninsured healthcare costs;
- Loss of turnover from stopping production;
- Indemnity payments; and
- Finding a substitute for the worker on sick leave.

If the gross salary, based on the SCM, for craft and related trades workers is €30,408 per year, the direct cost (or benefit) to the company of (avoiding) an accident could thus be estimated at **€9,764 per accident (NB: it is uncertain how these relate to the number of ill-days however**). The Auprila Auditores 2016 – PREVEM-CEEI study mentioned above notes that indirect costs are five times the direct costs (with indirect costs including additional items such as costs of investigation, reduced productivity of the workforce, physical damages to equipment, faulty products, etc.).

The UK HSE has estimated that, as a rough guide, the average cost of uninsured losses is 10 times the cost of insurance premiums[71]. It is estimated that the uninsured losses for an accident at work can amount to €407 per employee per year[72]. HSE research reveals that the average cost of settling a compensation claim following a manual handling accident is €5,590[73].

The Belgian NVAB-CNAC uses the following general rule of thumb: **every euro** that a construction company invests in prevention measures returns **€1.8** for avoided accident costs and non-recoverable cost with the insurer.

The following table sets out the different types of cost associated with a falling accident for a construction company, with the different assumptions given. **The total cost for a construction company of a falling accident is estimated at around €5,253** (EU-OSHA, 2002). This is based on data on falling accidents and associated costs in the construction sector from the Netherlands and estimates yearly accident costs for a construction company with 100 employees through the summing up of a number of cost factors utilising available data.

[70] Auprila Auditores 2016 – PREVEM-CEEI, available at: http://auprila-auditores.com/prevemceei/principal.htm. It is noted that this figure comes from a single source, is an average across all sectors and may not be applicable to all companies across the EU. The figure is used as the basis for subsequent calculations which may be uncertain as a result.

[71] Health and Safety Commission (nd): Reduce risks-cut costs – The real costs of accidents and ill health at work, available at https://www.rbkc.gov.uk/pdf/Reduce%20risks%20and%20cut%20costs%20in%20the%20workplace.pdf

[72] ROSPA website (nd): Costing Accidents – The business case, available at http://www.rospa.com/occupational-safety/advice/costing-accidents/

[73] Barbour Guide (nd): Manual Handling, available at http://www.she.stir.ac.uk/documents/ManualHandling.pdf

Table 4-23: Costs of falling accidents for a construction company		
Cost factor	**Explanation**	**Costs estimate (€)**
Costs of sick leave	The cost depends on the way the company deals with sick leave. On average 100/80 accidents with 14.7 lost workdays may be expected.	Not given
Replacement costs	In 28% of cases of sick leave, the worker is replaced. Interim personnel and overtime lead to costs that are about 120% of gross daily wages. 28% replacement * 120% replacement costs * 14.7 lost workdays * EUR 124.8 gross daily wages * 100/117 falling accidents	527
Lost production	About 28% of cases of sick leave leads to subcontracting of lost turnover. The costs (wages + overhead + profit) are estimated at twice the gross wages. 28% lost income * 200% costs * 14.7 workdays * EUR 124.8 gross daily wages * 100/117 accidents	878
No costs	In 34% of cases of sick leave, the work is done by colleagues or by the injured worker when recovered. In these cases, there is no additional costs for sick leave.	No costs
Administrative and organisational overhead	Total of administration, occupational safety and health services and planning of rehabilitation 100/80 accidents * 0.5 workdays * EUR 124.8 administration costs + EUR 25 OSH service costs + 100/117 accidents * 6% with a long period of sick leave * EUR 500 cost of a rehabilitation plan	129
Cost for disability increase of future premiums	In the Netherlands, every case of permanent disability leads to an increase of future premiums for a period of five years. The total premiums amount of extra premiums can be discounted for its present value. 100/117 accidents with sick leave * 1% leading to disability * EUR 60,610 (total discounted future extra premiums)	518
Lost income as a result of interrupted production	It is assumed that an accident with no sick leave leads to one hour of lost production that is made up in overtime, accidents with sick leave give half a workday of lost production on a construction site and severe accidents interrupt production on the site for three days 100/117 * 0.5 lost workdays * 10 assumed number of workers on a site *EUR 124.80 gross daily wages * 200% costs of lost income + 100/117 *6% severe accidents * 3 lost production days * 10 assumed number of workers on the site * 200% costs of lost income	1,451
Liabilities	In the Netherlands, workers can claim compensation if the employer has been negligent. Claims vary with the severity of the injury. Compensations are given for both injuries and lost future earnings. 100/117 * 1% accidents leading to permanent disability * EUR 20 000 assumed compensation.	71
TOTAL estimated yearly falling accident costs		**5,253**
Source: EU-OSHA (2002): Inventory of socioeconomic costs of work accidents, https://osha.europa.eu/en/tools-and-publications/publications/reports/207		

The savings to a company of avoiding an injury are thus not too dissimilar among the studies reviewed above. For the purposes of this evaluation, **an average figure of €7,000 per company and accident has been assumed[74] for non-fatal injuries.**

The cost of fatalities is deemed to be considerably higher. **The cost of fatalities to employers has been estimated at £98,300 per case in the UK (£2013, UK HSE[75]), or around €128,000, whereas in Belgium, it has been estimated at €56,722[76].**

[74] Adjustment by inflation not considered to be necessary.

The following table shows the accident rate after the enacting of national legislation implementing the Directive on Temporary or Mobile Construction Sites. The main objective of the EU OSH Strategy 2007-2012 was 'an ongoing, sustainable and uniform reduction in accidents at work and occupational diseases'. In this context, an ambitious goal was set for all MS to achieve an **overall 25% reduction** in the total incidence of accidents at work by 2012. There appears to be a relationship between the introduction of the legislation and accident rates, but the figures vary widely (-42% to +96% over c10 years to 2005). The median across the figures would imply **a reduction of 19% in accident rates**. However, it is difficult to conclude how much of the reduction is due to the Directive vis-à-vis the national implementing legislations or other reasons (e.g. trade union activities, economic activity, increased safety awareness, more effective enforcement, etc.). Such other factors would likely play a greater role as time goes on with less of the subsequent change being attributed to the original legislation.

Table 4-24: Incidence rate of workplace accidents (per 100,000 workers) in the year when EU Directive 92/57/EEC was implemented in each country. Construction (NACE F). Loss of more than three work days (absence of four days or more) (except Poland and Romania)[77]

Country	Date of national legislation for 92/57/EEC	Accident rate when law was enacted	Accident rate in 2005	% change in accident rate
Belgium	1999	9508	5510	-42.0%
Denmark	1994	3904 (refers to 1995)	4264	+9.2%
France	1994	12248	9712	-20.7%
Germany	1998	9810	6136	-37.5%
United Kingdom	1995	2885	2382	-17.4%
Ireland[78]	1995	1337	2560	+91.5%
Italy	1996	6459	1557	-75.9%
Spain	1997	12870	11166	-13.2%
			Median*	**-19%**

** Note that the median is preferred in this instance to avoid distortions due to the very large changes in some countries*

[75] Appraisal values or 'unit costs', available at: http://www.hse.gov.uk/economics/eauappraisal.htm

[76] NAVB-CNAC - "Investir dans la prevention, ça rapporte!", in: Constructiv info no.12, 1st trimestre 2016 (accessed at www.constructiv.be)

[77] Martínez Aires D, Rubio Gámez M & Gibb A (2010): Prevention through design: The Effect of European Directives on Construction workplace accidents, available at https://dspace.lboro.ac.uk/dspace-jspui/handle/2134/6245

[78] The high change in percentage have been explained by the Irish Health and safety Authority with changes over that period in the way the accident data was calculated and with a period of growth in that time which tends to have an impact on accident rates.

The Commission Staff Working Document 'Evaluation of the European Strategy 2007-2012 on health and safety at work[79]' concluded that due to the lack of up-to-date statistical data, it was not possible to establish with accuracy whether the 25% target was reached in 2012.

It noted however a reduction, according to Eurostat estimates of 26.8% in the incidence of non-fatal accidents at work in the EU-15 between 2007 and 2010. For the EU-27, the data series only starts in 2008. It shows a reduction of around 25% in the incidence of non-fatal accidents at work between 2008 and 2010. On the basis of these data, and assuming that there was no deterioration during the last two years of the strategy, it is possible to conclude that by 2012, the 25% target would have been broadly reached. In fact, the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on an EU Strategic Framework on Health and Safety at Work 2014-2020[80] indicated that a "reduction of 27.9% in the incidence rate of accidents leading to absences of more than three days was achieved in the EU between 2007 and 2011.

Some estimates of the scale of savings from avoiding injuries are provided in the table below. A 10% reduction in fatal and non-fatal cases resulting from the legislation has been assumed based on the Commission's working document and taking into account the likelihood that some of the reduction in accidents/fatalities observed can be attributed to exogenous factors. This is not believed to be unreasonable, as the lack of application of preventive measures because of legislative requirements would more likely have increased the number of accidents in a greater proportion. An annual figure of €358m is estimated in terms of financial savings to companies from reducing fatal and non-fatal injuries. The figure should be read with caution, due to the number of assumptions applied. In the event that only a 5% reduction in the accident rate would be attributable to EU OSH legislation, the annual figure would be €179m, rising to €537m if the reduction were 15%.

Table 4-25: Benefits to companies (costs savings) from reducing fatal and non-fatal incident rates in the construction sector (EU-28)

Estimated cases avoided in	2008	2009	2010	2011	2012	2013	Cases avoided (2008-2013)
Fatal accidents	126	116	105	96	87	79	608
Non-fatal accidents	62,631	54,866	50,453	47,987	41,841	37,825	295,603
Savings for construction companies (period 2008-2013, €m)							**€ 2,147m**
Average savings per year for the construction sector (€m)							**€ 358m**

It is noted that savings estimates are based on cost estimates for fatal and non-fatal accidents of €128,000 and €7,000 respectively. In the event that these are lower (as they may be since the costs for fatal accidents are based on UK costs which may be higher than in some other MS, in particular Romania and Poland among the 10 countries where calculations are focused), the overall amount would be lower.

[79] SWD(2013) 202 final, utilising Eurostat, European Statistics on Accidents at Work. These estimates cover NACE Rev 2 branches A_CN for 2008 and NACE Rev 1.1 branches A_D-K for 2007

[80] COM(2014)332 final, based on European Statistics on Accidents at Work (ESAW), Eurostat estimate. Data for NACE Rev. 2 sectors A C-N

Avoiding ill-health

As for occupational health, data from the UK indicates that ill-health in the construction sector accounts for around 72% of the estimated injury cost (HSE, 2013[81]), adding €257m to the annual saving for the EU based on the 10% figure assumed for the reduction in the accident rate due to EU OSH legislation. Since the precise figure for the reduction in accident rates is uncertain, applying scenario figures of 5% and 15% would produce a range of €129m to €386m for ill-health costs. **The total benefits resulting from OSH legislation could therefore be estimated at around €615m (based on a 10% reduction in the accident rate).** Total savings over the period 2004-2014 could then be calculated to be in the range of €5.7bn to €10.4bn.

If lower and upper bound figures above for the costs avoided from non-fatal accidents[82] are used (€5,253 and €9,764) to calculate annual savings, the savings would range from €234m – €425m (assuming a 5% reduction in accidents resulting from the Directive) to €701m – €1,274m (based on a 15% reduction in accidents resulting from the Directive). Again, these figures should be read with caution due to the assumptions used. Table 4-26 below provides a summary of the estimated savings using different scenarios for the cost of non-fatal accidents and different percentages for the reductions in accidents due to the legislation. Overall, the range for savings varies from €2.9bn to €15.6bn over the 2004-14 period.

Table 4-26: Estimates of savings resulting from OSH legislation based on different costs for non-fatal accidents and percentage reduction in accidents due to legislation

Item	Estimated savings					
	5%		10%		15%	
	Annual	2004-14	Annual	2004-14	Annual	2004-14
Fatal accident cost €128,000 Non-fatal Accident cost = €5,253	234m	2.9bn	467m	5.7bn	701	8.6bn
Fatal accident cost €128,000 Non-fatal Accident cost = €7,000	308m	3.8bn	615m	7.5bn	923	11.3bn
Fatal accident cost €128,000 Non-fatal Accident cost = €9,764	425m	5.2bn	850m	10.4bn	1,274	15.6bn

Although it is believed that the Asbestos Directive and bans on the use of asbestos (see Box below) should lead to a reduction in workers' exposure to asbestos and therefore a reduced risk of asbestos-related diseases in the construction sector, it is still too early to see the benefits of the Asbestos Directive and associated bans, in terms of worker health and therefore productivity, due to the relatively long latency period for asbestos-related diseases. In Ireland, one MS authority noted that "no impact" had yet occurred (as a result of the Asbestos Directive) in terms of the number of

[81] Costs to Britain of workplace injuries and new cases of work-related ill health1 by industry 2013/14 (Costs expressed in 2013 prices), available at: http://www.hse.gov.uk/economics/costing.htm

[82] Overall values for savings as a result of accidents avoided are driven by the costs of non-fatal accidents due to the relatively smaller number of fatalities. Varying the value of fatal accidents avoided using an amount of approximately €57,000 identified for Belgium does not change the overall value of benefits significantly, so has not been carried out here.

work days lost as a result of ill-health caused by exposure to asbestos. However, in the UK, one MS authority indicated that there had been a "significant positive impact" in terms of the number of work days lost as a result of ill-health resulting from exposure to asbestos, perhaps reflecting the future benefits that are anticipated to arise.

Bans on Asbestos

Directive 1999/77/EC banned all types of utilisation of asbestos from 1st January 2005. The 2003 Asbestos Directive (2003/18/EC) then banned the extraction of asbestos and the manufacture and processing of asbestos products. The prohibition of supply and use of Asbestos is now covered by the REACH Regulation.

13 EU countries had already adopted a ban on the use of asbestos by the year 2000. The remaining 15 countries adopted a ban between 2000 and 2013, although most had already enacted legislation that partly prohibited the use of various forms of asbestos. Nine countries (Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Romania and Slovakia) joined the EU after 2004 and are therefore likely to have banned the use of asbestos during the accession process.

The application of asbestos by means of the spraying process has been prohibited since the 1983 Directive (as specified in Article 5). The 2009 Asbestos Directive goes further by stating that: "The application of asbestos by means of the spraying process and **working procedures that involve using low-density (less than 1 g/cm^3) insulating or soundproofing materials which contain asbestos shall be prohibited**."

Benefits will also arise to companies from avoiding ill health as a result of the prevention of musculoskeletal and other occupational health problems. The manual handling of loads is an important risk factor for musculoskeletal disorders. Approximately 60% of workers in the construction sector are exposed to manual handling of loads and musculoskeletal disorders are some of the most common forms of ill health among construction workers. It has been estimated that up to 30% of the EU's construction workforce may be affected by musculoskeletal disorders[83]. Whilst data on the specific number of workdays lost to musculoskeletal disorders in the construction sector is difficult to identify, in the event that such problems are reduced through the compliance with the various measures required by the different pieces of health and safety legislation, benefits will arise to companies as a result of fewer days being lost to absence. Similarly, wider social benefits, in terms of less pain and income lost for workers and costs to the State, that may have to support a person unable to work, are also avoided. Whilst the latter societal costs are not within the scope of this study, they are likely to be significant.

[83] EU-OSHA (no date): Musculoskeletal disorders in construction, available at: http://www.osha.mddsz.gov.si/resources/files/pdf/E-fact_01_-_Musculoskeletal_disorders_in_construction.pdf

Avoiding fatalities

NAVB-CNAC conducted a study on the cost of fatal work accidents in construction in Belgium[84]. Whilst the study concluded that not all costs are quantifiable (e.g. pain, moral and psychological suffering), many are and include:

- Costs to the victim:
  - Loss of wages and bonuses
  - Reduction of professional skills
  - Loss of time due to medical treatment
  - Non-reimbursed medical expenses

- Costs to family and friends:
  - Financial loss
  - Additional costs

- Costs to colleagues:
  - Loss of time because of evacuation of the victim etc.
  - Possible loss of bonuses
  - Increased work pressure
  - Education and guidance of replacement workers

- Costs to the company:
  - Internal audit
  - Loss of production
  - Damage to equipment
  - Loss of quality
  - Training and education for new employers
  - Technical disturbances
  - Organizational disturbances
  - Increased production cost
  - Increased insurance cost
  - Administration cost
  - Sanction

- Costs to society:
  - Loss of production
  - Early costs for social security
  - Early retirement
  - Medical and re-integration costs

The study estimated that the cost of a fatal accident in construction in 2013 amounted, on average, to just over €300,000, of which almost €57,000 should be booked in the accounts of the involved construction company as non-recoverable, with the remainder being carried by the company's accident insurer, the wider construction sector or society as a whole.

[84] NAVB-CNAC - "Investir dans la prevention, ça rapporte!", in: Constructiv info no.12, 1st trimestre 2016 (accessed at www.constructiv.be)

The study also showed that the net profit of the company decreased on average by just over 2% in the year during which the fatal accident occurred. In a sector characterised by small margins (3% - 4% average yearly net profit in Belgium), there is clearly a financial incentive to preventing fatal accidents at work.

Nevertheless, one of the Belgian stakeholders interviewed suggested that with all these figures, it is extremely difficult to determine what percentage of these costs/benefits are caused by (or are the result of) European directives. Before the European OSH directives, Belgium already had health and safety legislation in place, and even without this national legislation, a company would take prevention measures. This is also likely to be the case in many other MS.

4.3.3 Other direct benefits

There are a number of other obvious benefits from complying with legislation, e.g. in terms of reducing sanctions and legal costs, improving reputation and reducing business risks. These benefits however are difficult to quantify and can vary significantly by country and year.

Avoiding sanctions

Avoiding sanctions appears to be a major reason why companies in the construction sector seek to address health and safety in their establishment. ESENER-2 reported that 81% of establishments view avoiding fines and sanctions as a major reason to comply with the OSH legislation, without significant variation across countries.

Fines can vary in value according to national legislation, so it is difficult to extrapolate. In Hungary for instance, fines can be imposed up to 10 million HUF (about €33,100)[85]. In the UK, the maximum penalty for a breach of the duties contained in the Health and Safety at Work Act (in a Magistrates' Court) is an unlimited fine or imprisonment for a term not exceeding 6 months or both (for offences committed on or after the 12th March 2015). In the Crown Court, the maximum penalty is an unlimited fine or imprisonment not exceeding two years or both.[86]

Following inspections, the different inspectorates can also put restrictions on production which may have larger detrimental impacts for a company.

Finally, it is worth noting that some countries have increased the level of fines following inspections and, in some cases, infringements can be regarded as a criminal offence.

[85] Milieu (2012): Enforcement of Fundamental Workers' Rights, study for the European Parliament, available at: http://www.europarl.europa.eu/RegData/etudes/etudes/join/2012/475115/IPOL-EMPL_ET(2012)475115_EN.pdf It is noted that the figure provided in this document says "10 billion HUF (about €33,100)" but at an exchange rate of approximately 300 HUF = €1, this is more likely to be 10 million HUF.

[86] UK HSE (2016): Penalties, available at: http://www.hse.gov.uk/enforce/enforcementguide/court/sentencing-penalties.htm

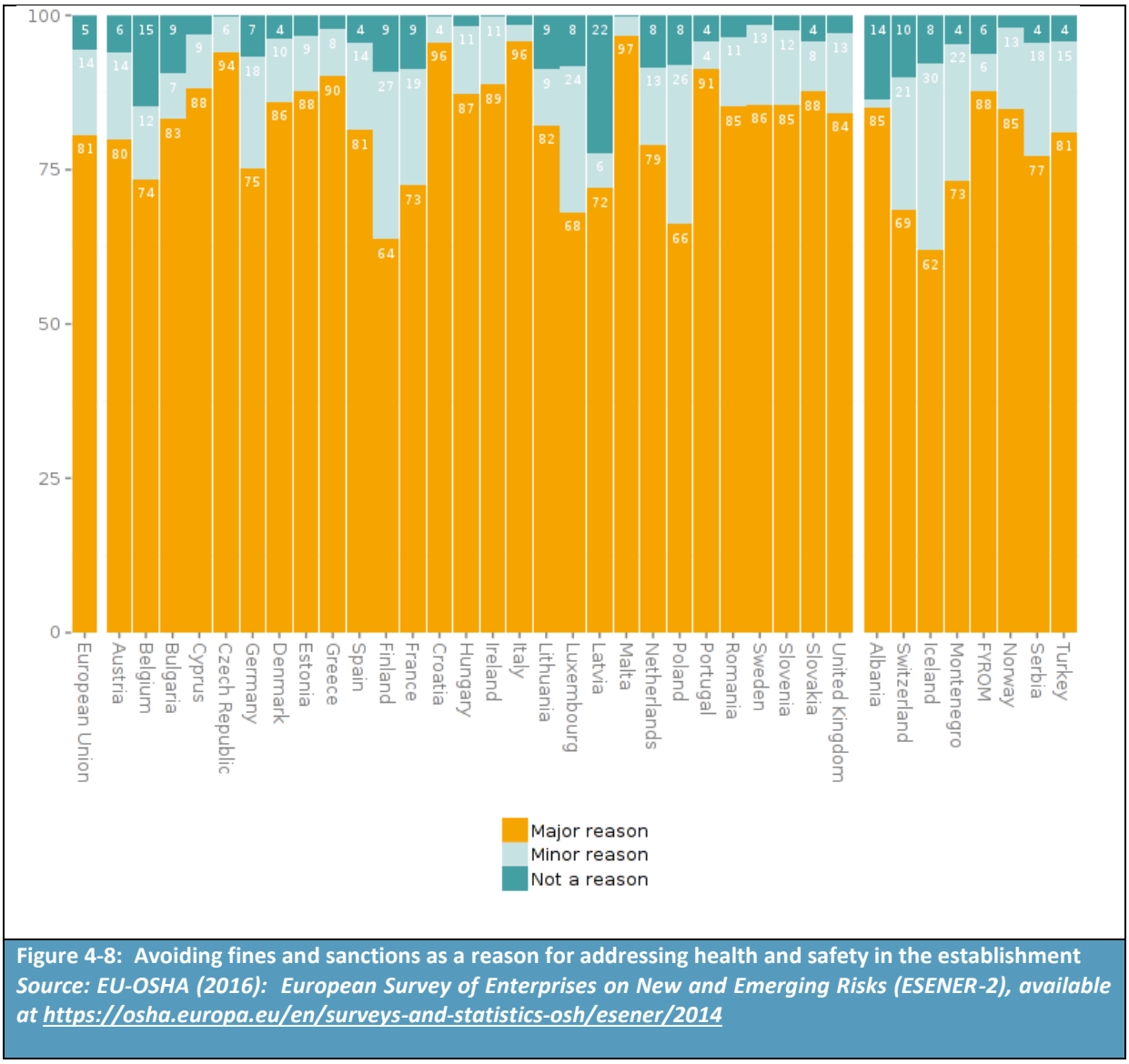


Figure 4-8: Avoiding fines and sanctions as a reason for addressing health and safety in the establishment
Source: EU-OSHA (2016): European Survey of Enterprises on New and Emerging Risks (ESENER-2), available at https://osha.europa.eu/en/surveys-and-statistics-osh/esener/2014

Maintaining reputation

Another direct benefit identified by companies from applying OSH legislation is maintaining a good reputation. The EU-OSHA survey reported that across Europe, 81% of companies indicated that maintaining reputation was a major reason for addressing health and safety. It is difficult to estimate these benefits in monetary terms however.

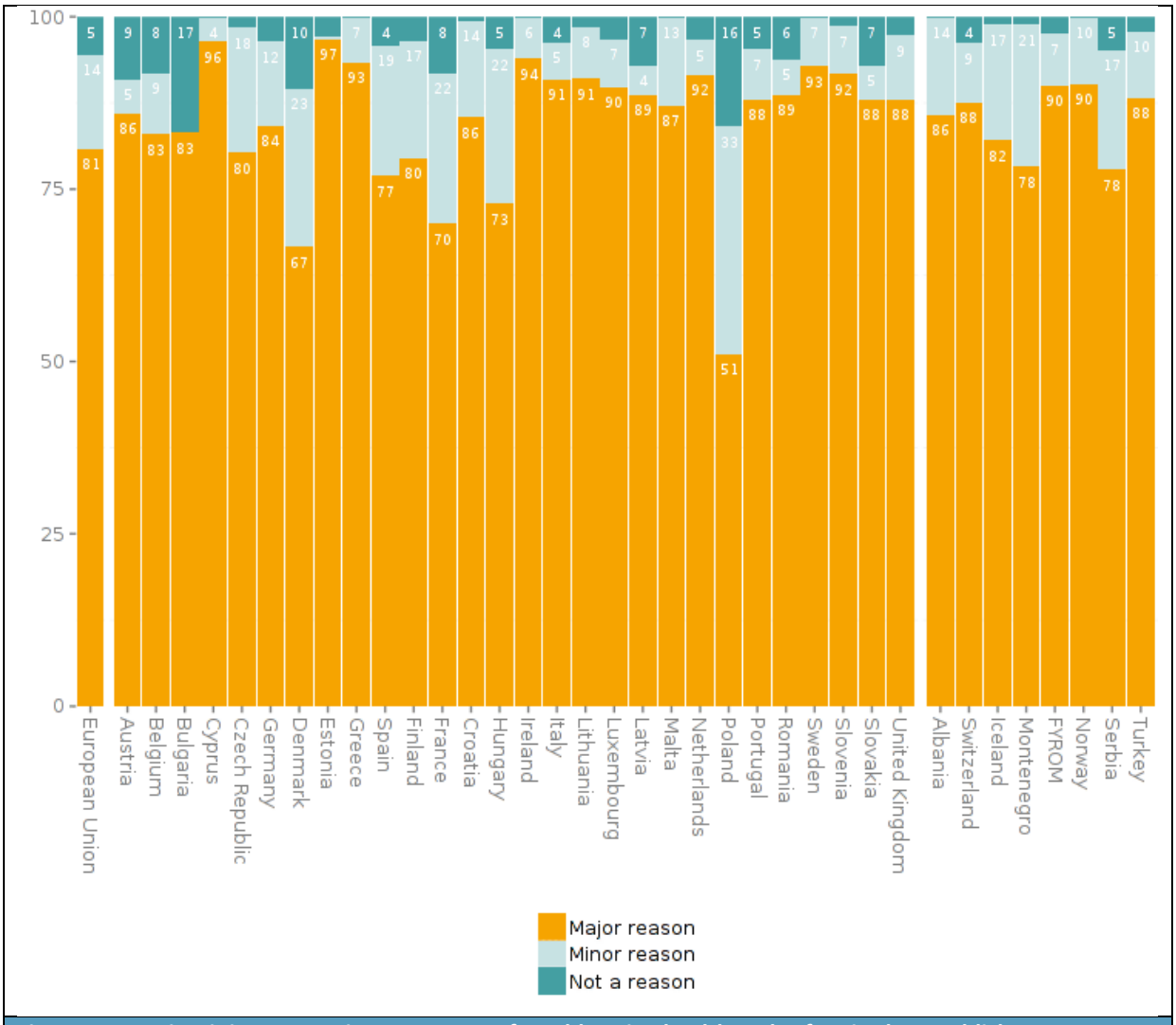


Figure 4-9: Maintaining reputation as a reason for addressing health and safety in the establishment
Source: EU-OSHA (2016): European Survey of Enterprises on New and Emerging Risks (ESENER-2), available at https://osha.europa.eu/en/surveys-and-statistics-osh/esener/2014

Improved clarity and legal certainty

Stakeholders responded that the OSH Framework Directive clarified certain provisions which had already existed in their national system to protect the health and safety of construction workers.

It is noted in the first Recital of the 2009 Asbestos Directive that in the interests of clarity and rationality, the 1983 Directive and its amendments should be codified. In Ireland, HSA (2010) note that the Health and Welfare at Work (Exposure to Asbestos) Regulations 2010[87] (which transpose the 2009 Asbestos Directive in Ireland) provide a clear framework of responsibilities and duties that will be beneficial for those involved in managing the risks of exposure to asbestos at work.

[87] The Safety, Health and Welfare at Work (Exposure to Asbestos)(Amendment) Regulations 2010 (S.I. No. 589 of 2010), available at: http://www.hsa.ie/eng/Legislation/Acts/Safety_Health_and_Welfare_at_Work/Exposure_to_Asbestos_-_SI_589_-_2010/589_of_2010.pdf

In theory, enhanced legal clarity should reduce the overall amount of time needed by enterprises to familiarise themselves with the applicable legislative requirements. Given that the 2009 Asbestos Directive is a codified version of the 1983 Directive and its amendments, it will be particularly beneficial for firms that are new to the market (i.e. it will make it easier for new firms to identify the applicable legislative requirements)[88]. In this regard, enhanced legal clarity can be viewed as a benefit in terms of 'avoided costs' associated with familiarisation[89].

In theory, benefits may also have accrued in terms of compliance - if firms are more easily able to identify the applicable requirements, they may be better able to ensure they are compliant.

Stakeholders that participated in the telephone interviews were asked whether the four OSH Directives have made it easier to identify the rules in place in other MS of the EU. Their answers are provided in the Table below.

Table 4-27: The Directive has made it easier to identify the rules in place in other Member States of the EU (i.e. it has enhanced legal certainty) – Number of stakeholders that agreed with this statement during the telephone interviews

	Impact						Total
	++ Large positive	+ Moderate positive	+/- No impact	- Moderate negative	-- Large negative	Don't know	
OSH Framework Directive							
MS authorities	4	2	1	0	0	2	9
Industry associations	1	4	3	1	0	0	9
Companies	2	4	4	0	0	1	11
Total	7	10	8	1	0	3	29
Directive on Temporary or Mobile Construction Sites							
MS authorities	2	2	1	0	0	2	7
Industry associations	1	1	2	0	0	0	4
Companies	2	2	3	1	0	1	9
Total	5	5	6	1	0	3	20
Directive on the Manual Handling of Loads							
MS authorities	2	2	1	0	0	2	7
Industry associations	1	1	1	0	0	0	3
Companies	1	2	5	0	0	2	10
Total	4	5	7	0	0	4	20
Asbestos Directive							
MS authorities	1	1	1	0	1	2	6
Industry associations	0	1	1	0	0	0	2
Companies	0	1	1	0	0	0	2
Total	1	3	3	0	1	2	10

[88] Firms that were already operating before 2009 are already likely to have been familiar with most of the provisions and are therefore unlikely to have benefitted from avoided costs of familiarisation.

[89] It is pertinent to note that the overall number of companies operating in the construction sector has been declining in recent years, and so the benefits of enhanced legal clarity in terms of 'avoided costs of familiarisation' are unlikely to be significant.

The table clearly shows that very few respondents indicated that the legislation had a negative impact in terms of legal clarity, with the vast majority reporting a large positive or moderately positive outcome. A significant number did however suggest that the legislation had made no impact at all. This could potentially be due to the fact that whilst the legislation introduced at an EU-wide level has clarified the minimum provisions required at MS level, the differences that still exist with different national authorities introducing additional or stronger requirements still provides a barrier to understanding the legal situation for construction companies wishing to work in other MS.

4.3.4 Improved competition

Consultation with stakeholders has shown a general agreement that the legislation has helped to create a more even playing field for competition but the impacts have been noted to be more noticeable within the same MS rather than across countries.

However, it has been noted by some Belgian stakeholders that foreign construction companies (especially from East European Countries) working in their country (for example as a subcontractor), have a lower safety level (or other interpretation of the OHS directives) and lower minimum hourly wages, and as a result have a competitive advantage in comparison to Belgian companies.

Table 4-28: The Directive has helped to level the playing field for companies operating in my country – Number of stakeholders that agreed with this statement during the telephone interviews

	Impact						Total
	++ Large positive	+ Moderate positive	+/- No impact	- Moderate negative	-- Large negative	Don't know	
OSH Framework Directive							
MS authorities	0	5	1	0	0	2	8
Industry associations	3	4	2	0	0	0	9
Companies	2	4	4	0	1	0	11
Total	5	13	7	0	1	2	18
Directive on Temporary or Mobile Construction Sites							
MS authorities	1	1	1	0	0	4	7
Industry associations	2	1	1	0	0	0	4
Companies	1	2	3	2	0	3	11
Total	4	4	5	2	0	7	22
Directive on the Manual Handling of Loads							
MS authorities	1	1	1	0	0	3	6
Industry associations	0	1	2	0	0	0	3
Companies	1	2	5	0	0	2	10
Total	2	4	8	0	0	5	19
Asbestos Directive							
MS authorities	0	0	1	0	1	3	5
Industry associations	0	0	2	0	0	0	2
Companies	0	1	1	0	0	0	2
Total	0	1	4	0	1	3	9
Note: Companies were asked the extent to which they agreed that "The Directive has helped my company to compete with other companies in my country (i.e. it has levelled the playing field within my country)"							

Table 4-29: The Directive has helped to level the playing field for companies operating throughout the EU – Number of stakeholders that agreed with this statement during the telephone interviews							
	Impact						Total
	++ Large positive	+ Moderate positive	+/- No impact	- Moderate negative	-- Large negative	Don't know	
OSH Framework Directive							
MS authorities	0	5	1	0	0	2	8
Industry associations	3	3	2	1	0	0	9
Companies	2	4	3	1	1	0	11
Total	5	12	6	2	1	2	28
Directive on Temporary or Mobile Construction Sites							
MS authorities	1	1	1	0	0	3	6
Industry associations	1	1	2	0	0	0	4
Companies	1	3	3	1	0	1	9
Total	3	5	6	1	0	4	19
Directive on the Manual Handling of Loads							
MS authorities	1	1	1	0	0	3	6
Industry associations	0	1	2	0	0	0	3
Companies	1	2	4	0	1	2	10
Total	2	4	7	0	1	5	19
Asbestos Directive							
MS authorities	0	0	1	0	1	3	5
Industry associations	0	0	2	0	0	0	2
Companies	0	1	1	0	0	0	2
Total	0	1	4	0	1	3	9
Note: Companies were asked the extent to which they agreed that "The Directive has helped my company to compete with companies operating in other EU Member States (i.e. it has levelled the playing field internationally)"							

4.3.5 Improved wellbeing

These benefits are direct to workers but will also benefit the business in the long-term as productivity and job satisfaction are likely to improve due to reduced ill-health and number of injuries.

Stakeholders that participated in the consultation agreed that health and safety measures have impacted wellbeing among workers. As shown in Table 4-19 in Section 4.3.1, most industry associations that participated in the consultation were of the view that the OSH Framework Directive has improved wellbeing and job satisfaction among workers. Research by insurance provider Aviva, showed that 61% of workers said they would work harder for an employer that has invested in their health.

It is difficult however to estimate these impacts with any accuracy. One possible way of capturing these is to measure the increased productivity for companies (as in section 4.3.2). However, there are specific difficulties with some of the Directives considered. For instance, as outlined in Section 4.3.2, although it is believed that bans on the use of asbestos should lead to a significant reduction in exposure to asbestos and a considerably reduced risk of asbestos-related diseases in the

construction sector in the coming years, is still too early to see the benefits of the Asbestos Directive (in terms of worker health) in the occupational disease statistics due to the amount of time it takes for asbestos-related diseases to develop.

4.4 The direct costs to companies from environmental protection

4.4.1 Disposal of construction and demolition waste

Provided proper separation of waste streams is carried out, most of the materials in CDW can be recovered and reused. For example, metal can be taken to a recycling facility, while wood can be chipped and used in medium-density fibreboard (MDF). If, however, recovery of the materials is not possible, the final alternative for the waste holder is to dispose of it at a landfill site.

The study team attempted to collect data on the costs for landfilling of CDW in the selected EU countries. This focused on "gate fees" and landfill taxes imposed by the countries. Transportation costs would be an additional burden to the companies, but it was not possible to calculate them at the time, due to there being too many unknown parameters.

A caveat to the current approach is that not all countries have gate fees or landfill taxes specifically for CDW. Furthermore, in many countries different prices apply to different regions or the prices are defined through a free market mechanism, so there is no single price. To counteract these issues, various approaches were followed, as described below:

- **Belgium** consists of three federal states, each with its own legislation on waste. Different fees apply in Flanders, Brussels and Wallonia. An average was used for the different fees.
- **Denmark** has a single price consisting of a landfill tax and a gate fee for recyclable materials. The country has a very high recovery rate, so very little waste reaches landfill.
- Prices for **France** are derived for a "non-hazardous waste storage facility" and include a storage unit cost of 1-8 €/tonne of non-hazardous waste.
- **Germany's federal regions** each have separate fees and taxes and it was not possible to collect them all. The price used was derived from a sorting facility's website[90] and is based on two waste streams, namely "rubble", which includes concrete, tiles, etc., and construction site waste which includes special materials such as plasterboards, composites and aerated (e.g. Ytong) concrete bricks
- In **Poland** and **Romania,** no fees or taxes were identified.
- In **Italy**, no fees or taxes were identified in the literature review, but interviews with Italian stakeholders revealed that a free market mechanism applies. There is a 1-10 €/tonne landfill tax for inert municipal solid waste and the total cost for MSW is between 80-104 €/tonne[91], but it is not known whether this would apply to CDW as well.
- **Ireland** had no information on the costs either. It is assumed that the costs would be similar to those of the UK.
- **Spain** applies different landfill taxes per region. Three of the regions (Madrid, Catalonia and Murcia) also apply additional gate fees for landfill, but their level is unknown.

[90] EVA, Abfallgebühren und Entsorgungspreise an den Wertstoffhöfen, webpage, http://eva-abfallentsorgung.de/preise-und-gebuehren.html

[91] CEWEP (2015): Landfill taxes & bans. http://cewep.eu/media/cewep.eu/org/med_557/1406_2015-02-03_cewep_-_landfill_inctaxesbans.pdf

- The **UK** has a £2.60 per tonne landfill tax for inert waste and costs £82.60 per tonne for other waste, along with a range of £8-49 per tonne of gate fees for non-hazardous waste landfills.

The following table shows the average cost per country to dispose of CDW to landfill.

Table 4-30: Assessment of annual cost to dispose of construction waste to landfill

Country	Mineral waste from construction to landfill* (tonnes)	Average tariff (€/tonne)	Cost (€m)
Belgium	736,356	€ 57.60	€ 42
Denmark	190,452	€ 113.00	€ 22
France	12,056,544	€ 31.50	€ 380
Germany	15,728,930	€ 60.00	€ 944
Ireland	1,052	€ 35.00	€ 0
Italy	8,101,631	€ 92.00	€ 745
Poland	361,768	€ 48.90	€ 18
Romania	529,810	€ 27.00	€ 14
Spain	8,081,269	€ 22.50	€ 182
United Kingdom	5,945,128	€ 40.20	€ 239
		Total	**€ 2,586**

**Quantities derived from Eurostat 2012 data on waste and recovery rates for each MS presented in Bio by Deloitte (2016): Resource Efficient Use of Mixed Waste*

As noted in the previous section, the ten focal countries for this study represent about 80% of the construction sector in the EU. Therefore, it could be assumed that the total cost of disposal to landfill for CDW for the EU-28 would be increased by 25% of the sum of costs for the ten countries (i.e. € 2,586m), resulting in a total cost of **€ 3,232m for the EU-28.**

These figures have been based on average landfill tariffs identified in the 10 focal MS. Ranges can be estimated based on the lower and higher costs identified in these MS, and these would be approximately €1,970m to €3,200m for the 10 MS and €2,460m to €4,000m for EU-28.

However, estimating the proportion of the total costs that can be attributed to the WFD, in particular to the introduction of the waste hierarchy, is not a straightforward task. The gate fees for inert and non-hazardous waste landfills, for example, are governed by free market rules. Estimating the fees that landfills charge by category of waste would imply conducting a survey at least on a representative sample of landfills in Europe. An attempt was undertaken by the *APAT- Agenzia per la Protezione dell'Ambiente e per i Servizi tecnici* (now ISPRA) in Italy, but the research was conducted in 2005 before the WFD entered into force, and only two Italian regions (out of 20) were surveyed[92]. In addition to any regulation, other parameters, such as land use are also significant, so no clear picture can be drawn.

This information cannot be derived directly either from the interviews. Consultees were unable to say if some costs stemming from national legislation (including administrative costs) are associated with the European law. This is particularly true with the WFD which, in cases such as Italy or Spain, only slightly modifies a previous national law that would continue to be in force irrespective of whether or not the WFD were in place. Taking Italy as an example, the WFD is transposed "as it is", i.e. the national legislation is a literal translation of the European law. The relevant Italian law for

[92] Bazzucchi L. (2005): La Valutazione del Prezzo dello Smaltimento in Discarica dei Rifiuti Speciali.

any environmental matters is the "*Testo unico ambiente 152/2006*", and any Italian stakeholder will refer to that law when dealing with waste. The Law (205/2010) that transposed the WFD simply modified some articles of the Law 152/2006, and, in any case, a stakeholder will never know if such modification is due to the national or to the European legislation. So, in some cases, the introduction of landfill taxes may have been as a direct result of the WFD, as MS choose this route to achieving the targets set out in the Directive, whereas in others, such charges were already in existence before and therefore not really attributable to the Directive (although these may possibly have been at different levels with only the changes then being attributable to the WFD).

Regarding costs (and benefits) of the WFD, the consultation activity has provided a mixed picture. An EU industry association whose members manufacture construction products remarked that although the some construction products can be recycled/reused, the costs (e.g. of transport and testing) and administrative burdens can be significant at EU and national level. For this reason, the industry association thinks that the WFD has slightly negative impacts on "increased reuse of materials" and "reduced legal costs". On the other hand, the association's members have improved their waste management systems in their factories between 2004 and 2014. Waste and packaging waste are collected and sorted, involving some costs. This initiative is well received by the employees. As a consequence of the better waste management systems at company level, the reduced environmental impact is perceived as the main benefit of the WFD.

An Irish national authority noted that the WFD has helped to lower the costs of waste management. However, initially the costs would have been higher e.g. co-disposal was common practice. It was noted that conducting an assessment focused on construction waste is sometimes difficult and where economics dictate, different waste fractions are kept separate, e.g. top soil and clay since they are generally valuable resources.

While one Romanian construction company has noted that the costs of waste management significantly increased, especially after the issue of Law 211/2011, stakeholders' overall appear to view the WFD as very positive, especially when considering its benefits in terms of reduced environmental impacts, improved corporate image, increased reuse of materials, reduced risks to employees' health, reduced insurance premiums, and reduced legal costs.

4.4.2 Environmental Impact Assessment

Several types of cost result from the requirement to carry out an EIA, an overview of the types of costs incurred is provided in the table below.

Table 4-31: EIA Costs

Cost type	Details
Costs of drawing up an EIA report	These costs result from gathering information and drawing up a report for the purposes of EIA
Administrative costs	These are costs incurred during both the screening and EIA verification stages of the process. Costs will depend on the time taken to carry out screening in order to decide whether EIA should be undertaken, and time taken to verify an EIA report, should one be required
Costs relating to legal disputes	Under the EIA Directive it is possible for either members of the public or developers to appeal a decision made by a planning authority, these are the costs incurred from these proceedings
Costs of possible delays as a result of EIA	Costs may arise due to the time taken to grant or refuse a development consent (a decision that is based on EIA)

It is important to note that these costs may not always be directly attributable to the EIA Directive. For instance, EIA was first introduced in France in 1976 via the *Loi de protection de la nature*, and as confirmed by one stakeholder, the level of requirements has not changed significantly in France under the European EIA Directive. Similarly, although environmental statements were only voluntary in the UK prior to the implementation of the EIA Directive 85/337/EEC and by extension, the codified EIA Directive 2011/92/EU, it was suggested by one stakeholder that similar requirements were to be implemented in the UK at a later stage.

Because the EIA Directive 2011/92/EU is a codified version of 85/337/EEC, it is only those MS (such as Poland) that joined the EU during or after 2004, that could have been significantly impacted by the codified version during the period 2004–2014. However, all countries that have joined the EU in 2004 and afterwards already had systems for impact assessment of projects similar to the EU EIA.

Costs incurred also vary in each MS depending on the manner in which they assess those projects listed in Annex II – in some MS assessment will be carried out on a case-by-case basis, and in others, mandatory thresholds will be set. The number of EIAs carried out in each MS also varies, as does the time taken for MS authorities to verify an EIA and these differences, in turn, also result in different levels of costs.

Costs to developers of drawing up an EIA report

It is estimated that approximately 20,000 EIAs are carried out each year within the EU[93]. There are three main categories[94]:

- Infrastructure (40%): covers energy, transport, water management and waste management;
- Development (30%): covers urban and industrial development concerns;
- Other (30%): accounts for all categories not covered by the above two headings including recreation, agriculture, mining, extraction, military concerns, etc.

In the Commission's Impact Assessment for the review of the EIA Directive, it is estimated that an EIA costs developers an average of €41,000 (with a range of €35,000 to €53,000) and that this represents approximately 1% of a total project cost. According to two industry associations representing companies within the extractive industry (one based in France and one in Germany), costs of carrying out an EIA for a project within the extractive industry may be significantly higher; one industry association estimated that costs may reach up to approximately 40% of a total project cost, while the other estimated that carrying out an EIA can result in costs that range from €200,000–€1,000,000. It was furthermore stated that extensive assessments have to be commissioned because the extraction of mineral resources from an open pit is likely to have significant impacts on the environment, and if an extraction is not possible due to refusal on the basis of EIA, then extractive companies are unable to simply move from one site to another, because extraction is only possible in the limited number of places (wherever a mineral exists). In addition to this, there is often forest, arable land or conservation areas covering the areas where minerals can be extracted, which again limits the number of places where extraction is possible. It is also noted

[93] EC (2012): *Executive Summary of the Impact Assessment*, Staff Working Document for proposed amendment of Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment, COM(2012) 628 final, dated 26.10.2012

[94] GHK (2010), *Collection of information and data to support the Impact Assessment study of the review of the EIA Directive*, report for DG Environment.

that in particular cases, higher costs of EIAs are often related to the need of Appropriate Assessments under the Habitats Directive.

According to one industry association, costs of EIA are increasing as more detailed information needs to be provided for analysis. It was also stated that studies concerning biodiversity and water management are, in particular, becoming increasingly specialised and require a significant amount of expertise, which in turn increases costs.[95]

Furthermore, according to a construction company based in Spain, if a development has to be put on hold for any reason, the EIA may no longer be relevant once the development is resumed (due to changes in the environment), and this can either result in an ineffective EIA, or in additional costs to developers resulting from the need to draw up a new one. So, for the purposes of this assessment, an estimate of the costs can be based on the number of EIAs of particular relevance to the construction sector (i.e. 30% of the total) at a cost of €35,000 - €53,000. This equates to a cost of (20,000 x 30% x €35,000) – (20,000 x 30% x €53,000) = **€210m - €318m per year for 'developers'.** It is noted that these figures are based on ex-ante impact assessment rather than actual outcomes and are therefore subject to a degree of uncertainty. Furthermore, the impact assessment reports these costs as being those likely to be incurred by the developer and not necessarily the construction industry, and whilst developers would attempt to pass on some costs to the end-user (i.e. their customers), it would be expected that developers would try and negotiate profit margins down for the construction sector in order to maintain their own profits and there may also be some shrinkage in demand overall.

The administrative costs

Whilst not a direct cost to the construction sector, it is estimated in GHK (2010), that the average number of days to process an EIA by MS authorities is 32 days (based on limited availability of data and ranging from 5 days in Czech Republic to 100 days in Denmark), and that the average number of staff employed by MS to process EIAs is 52 (ranging from 3 in Malta to 160 in Greece). Relative levels of costs will however vary in each MS due to the level of flexibility provided in the Directive. The average amount of time taken for the various stages of the EIA process in each MS also varies; these figures are also provided in the table below.

Although this is not a direct cost to the construction sector, there may be indirect costs for companies caused by the delay.

Table 4-32: Average duration of the EIA procedure by stage (months)

Member State	Screening	Scoping	Environmental study	Public Consultation	Final Decision	Total
Austria				1.50		11.00*
Belgium	1.00	1.00	6.3	1.00	3.00	12.30
Cyprus	1.00	1.00	6.00	1.00	1.50	10.50
Czech Republic	0.50	0.50	3.00	2.50	1.00	7.50
Denmark	3.00	1.00	12.00	2.00	3.00	21.00
Estonia	0.75	1.00	1.00	1.00	1.00	4.75
Finland	1.50	3.00	6.00	2.00	2.00	14.50
France		1.50		4.00	2.00	7.50
Germany		2.50	9.00	2.00		13.50
Greece	1.00	2.00	1.00	2.00	1.00	7.00

[95] RPA (2016): consultation minutes

Table 4-32: Average duration of the EIA procedure by stage (months)						
Member State	**Screening**	**Scoping**	**Environmental study**	**Public Consultation**	**Final Decision**	**Total**
Ireland		0.43**				
Latvia	0.75	1.00	2.00	0.75	2.00	6.50
Malta	1.00	0.75	6.00	0.75	2.00	10.50
Poland***	1.00	1.00		0.75	2.00	
Slovakia	1.00	0.50	0.75	0.75	2.00	5.00
Spain****	3.00	3.00	18.00		3.00	27.00
United Kingdom	0.10	0.50	0.75			
Average (months)	**1.20**	**1.29**	**5.48**	**1.57**	**1.96**	**11.3**

GHK (2010), Collection of information and data to support the Impact Assessment study of the review of the EIA Directive, p.18
* Austria: average duration of months was calculated as 11 months (average of 10 and 12 months).
**Based on range of 0.1 – 0.75 months, average was taken (0.425 months)
*** Information is based on the maximum timeframes required under the Polish legislation. In practice, those timeframes can be lower or higher.
**** Information is based on the maximum timeframes required for projects to be approved by the Central State Administration. In practice, those timeframes can be lower or higher.

Costs relating to legal disputes

According to Article 11 of the EIA Directive, all MS are to ensure that members of the public concerned 'have access to a review procedure before a court of law or another independent and impartial body established by law to challenge the substantive or procedural legality of decisions, acts or omissions subject to the public participation provisions of this Directive'. This Article therefore enables members of the public, who have sufficient interest, to challenge decisions made with regard to EIA. Successful examples (e.g. an appeal being granted against a planning decision) of the public challenging decisions on whether or not to conduct EIAs or their outcomes are available. An example of a member of the public making use of these provisions comes from the UK, where in July 2013, Denbighshire County Council granted planning permission for two wind turbines. In this case it was decided by the planning officer in charge that an EIA was not required, and this decision was subsequently successfully challenged by a local resident via a Judicial Review.[96]

However, it is thought that the majority of legal costs relate to instances where screening decisions made by public authorities are challenged by developers or third parties.[97] It has also been suggested that an EIA, by encouraging public participation, may reduce overall net legal costs, keeping them below what they might have been if cases are referred to courts.[98] Given that the

[96] England and Wales Court of Appeal (Civil Division) Decisions, accessed on 18/04/16 at: http://www.bailii.org/ew/cases/EWCA/Civ/2015/1232.html

[97] European Commission (2012): Impact assessment accompanying the document 'Proposal for a directive of the European parliament and of the council amending directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment', p.105. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012SC0355&from=EN

[98] Frans Oosterhuis (2007): Costs and Benefits of the EIA Directive. Report by Frans Oosterhuis for the European Commission. P.11. Available at: http://ec.europa.eu/environment/eia/pdf/Costs%20and%20benefits%20of%20the%20EIA%20Directive.pdf

overall costs of EIA are estimated to be less than 1% of the total project costs (and generally paid by developers), this suggests that overall legal costs to the construction sector are likely to be limited.

Costs of possible delays resulting from EIA

A study carried out by Lee and Brown (1992) in the UK indicates that EIA has not significantly impacted the length of the decision making process. During this study, approximately half of those interviewed stated that EIA has not impacted on the length of the decision making process, while the remaining half were evenly divided between those who thought that EIA had increased the length of the decision making process, and those who thought it had even shortened it. [99] Another study has suggested that costs resulting from delays due to EIA are usually for those projects listed in Annex II for which EIA is not compulsory and it has been decided at a late stage that an EIA is required.[100]

As seen above, the time taken to complete an EIA can however vary significantly from MS to MS, and as confirmed by a MS authority, it can also vary from project to project:

> *[T]he preparation of an Environmental Impact Statement (EIS) by a developer for submission to the competent authority has no set time period and will primarily be limited to the complexity and location of the project in question.*

The length of time it takes to complete an EIA can potentially lead to delays (and subsequent costs) in the overall implementation of construction projects. Consequently, an option considered for detailed assessment in the Commission's Impact Assessment for amending Directive 2011/92/EU (SWD(2012) 355 final) and considered to be beneficial was to specify maximum time-frames for the different stages of the EIA process, in order to prevent costs resulting from significant delays.[101]

4.5 Benefits to companies from application of environmental protection

4.5.1 Direct benefits to companies

Companies might be expected to benefit from reusing and recycling materials (e.g. by saving on gate fees and disposal of waste as well as reducing the need to buy new products). as long as recycled materials are less expensive than virgin ones. In relation to the EIA Directive, the main direct benefit to companies is reduced costs associated with reduced (legal) uncertainty as to when environmental concerns need to be accounted for in the development/planning process. However, assigning monetary values to such savings is difficult.

4.5.2 Other benefits (indirect)

European legislation can have indirect benefits on business and employment by fostering the development of some economic activities such as those linked to recycling and the circular economy.

---

[99] Ibid., P.10.

[100] Kessel, H.J.B.A. van, T.J. Boer, B.G.M. Roelofs en K.A. Klein Koerkamp (2003), Evaluatie m.e.r. 2003. Novio Consult, Nijmegen.

[101] P.21 http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012SC0355&from=EN

For instance, some studies have shown that the promotion of recycling activities (under the WFD) can have positive impacts on the economy. For example, WRAP (2015) has estimated that an additional 1.2 million new jobs can be created across Europe in the circular economy up to 2030.

Furthermore, a report by an Italian environmental association[102] argues that there is a huge market opportunity with the development of circular economy (i.e. recycle/reuse) for materials from the construction sector, especially after the transposition of the WFD into the national legislative system. Firstly, there are work and entrepreneurial opportunities, as an increase in recycling activities will lead to an expansion of value chains in new sectors. Secondly, a reduction of the quarry levy is expected. This is because the recovery target for materials (i.e. 70%) corresponds to 23 million of tonnes of material that will allow the closure of 100 sand and gravel pits in one year. Finally, a positive environmental impact is expected in terms of a reduction in greenhouse gas emissions.

The European Commission in its communication *On Resource Efficiency Opportunities in the Building Sector*[103] pointed out that economic benefits could be expected for manufacturers when using recycled material from the construction sector. In addition, recycling material results in job growth in deconstruction, sorting and recycling of construction materials. This is typically local work and would create new job opportunities in Europe.

However, the Commission also argues that recycling of CDW often faces barriers related to two distinct market failures: the environmental damage cost is neither internalised in the landfill fees nor in the cost of virgin materials, with the consequence that recycled material could be more expensive than new materials; and the fact that the costs of dismantling, separation and processing the waste are usually borne by the company involved in the demolition phase, while the benefits of using recycled materials will give an advantage mostly to companies involved in the production of materials. In other words, along the construction value chain, companies do not have the same economic incentives to reuse/recycle. These two market failures coupled with weak waste management infrastructure prevent the further development of recycling/reusing activities and, therefore, landfilling or backfilling remain the preferred alternatives.

The purpose of the EIA Directive is to protect the environment and to encourage public participation in the process and this would be appear to be borne out in practice.

4.6 Impacts on SMEs

For this study, particular focus has been given to the **impacts on SMEs**, defined by the European Commission as those enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding €50 million, and/or an annual balance sheet total not exceeding €43 million. More than 99% of enterprises in the European construction sector are SMEs and, as a result, it is important to specifically consider any impacts that EU legislation has had on these types of enterprises.

More information on the impacts on SMEs is provided below, following the European Commission's guidelines and SME test tool.

[102] Legambiente (2015): Recycle – la sfida nel settore delle costruzioni. http://www.legambiente.it/sites/default/files/docs/dossier_recycle_2015_-_def.pdf

[103] European Commission (2014): *On Resource Efficiency Opportunities in the Building Sector.* *http://ec.europa.eu/environment/eussd/pdf/SustainableBuildingsCommunication.pdf*

4.6.1 Overview

As shown in the table below, more than 99% of enterprises in the European construction sector have less than 250 employees and therefore fall under the European Commission's definition of a SME. SMEs also make up more than 70% of turnover in the sector (Table 4-34).

Table 4-33: Number of enterprises in the construction sector in 2013 by employment size class

	Employment size					
	Total	Micro	Small		Medium	Large
		0-9	10-19	20-49	50-249	250+
Construction contractors	3,170,708	2,991,577	117,701	46,312	13,441	1,246
Construction products	404,461	328,606	36,346	22,866	16,407	3,436
Mining and quarrying	16,130	11,948	2,121	1,286	531	245
Professional services	974,676	938,852	20,662	10,115	4,297	747
Total	4,565,975	4,270,983	176,830	80,579	34,676	5,674
Total (%)	**100.0%**	**93.5%**	**3.9%**	**1.8%**	**0.8%**	**0.1%**
Source: Eurostat						

Table 4-34: Turnover in the construction sector in 2013 by employment size class (billions €)

	Employment size					
	Total	Micro	Small		Medium	Large
		0-9	10-19	20-49	50-249	250+
Construction contractors	1,019.09	385.92	103.42	120.03	196.43	213.29
Construction products	692.73	63.00	55.76	96.77	230.11	242.15
Mining and quarrying	36.00	4.55	3.91	6.56	10.41	10.58
Professional services	318.75	101.47	28.99	37.58	57.91	92.80
Total	2,066.57	554.93	192.08	260.95	494.86	558.82
Total (%)	**100%**	**27%**	**9%**	**13%**	**24%**	**27%**
Source: Eurostat						

While data do not appear to be available on the levels of self-employment in the European construction sector, it is anticipated that the overall level of self-employment is likely to be high, particularly among construction contractors and providers of professional services. This is important because some costs associated with the legislation being assessed might not fall on SMEs or those that are self-employed (e.g. costs associated with communication and consultation of workers will not affect a company that comprises one employee).

The challenges faced by SMEs regarding OSH have been analysed in a recent project undertaken by the European Agency for Safety and Health at Work, although this study covers all sectors and not just construction[104]. According to the report, there is considerable evidence pointing towards a greater risk of serious injuries and fatalities in smaller companies than in larger organisations, the main reasons being:

[104] EU-OSHA (2016): A critical review of safety and health in micro and small enterprises

- the weak economic position of many SMEs and the low investment they are able to make in OSH infrastructure;
- the limited knowledge, awareness and competence of their owner-managers in relation to both OSH and its regulatory requirements;
- limited capacity to manage their affairs systematically; and
- their attitudes and priorities, given the limited resources at their disposal and their concerns for the economic survival of their business, in which OSH has a low profile.

The majority of stakeholders that participated in the telephone interviews indicated that national and EU legislation pertaining to the construction sector is causing problems or challenges for SMEs (Table 4-35)[105].

Table 4-35: Responses to the question "Are SMEs faced with any specific problems or challenges in complying with the legislative requirements pertaining to the construction sector? Do these problems/challenges arise as a result of EU legislation, or as a result of the way the legislation has been implemented at a national level?"

	MS Authorities	Industry Associations	Total
Yes – EU legislation is causing problems/challenges for SMEs	2	4	6
Yes – National legislation is causing problems/challenges for SMEs	2	3	5
No	1	1	2
Don't know	1	1	2
Total number of responses	**6**	**9**	**15**
Note: Companies were not asked this question.			

One MS authority from Poland noted that compliance with occupational safety and health regulations is a serious problem for SMEs. This stakeholder noted that entrepreneurs explain that they face economic difficulties caused by the failure of investors to comply with their financial obligations, price competition as well as staff fluctuations resulting in the need for further occupational health and safety training and medical examinations, as well as costs associated with the need to equip staff with PPE, clothing and footwear. In Spain, a MS authority reported that incidents tend to be higher among SMEs but that the reasons for this could be varied, for example, a lack of knowledge and awareness of legislation and/or lack of resources. Indeed, in the UK one industry association noted that SMEs do lack resources.

A MS authority from Germany noted that while problems arise especially for the smallest companies, safe and healthy working must not be dependent on the size of the company. A similar view was also expressed by a MS authority from Ireland which noted that while the requirements of the EU Directives and national legislation are challenging for smaller contractors, they are also beneficial.

Stakeholders noted that, in Ireland, the Health and Safety Authority has developed a number of initiatives to help small companies to comply, including BeSMART (a free online risk assessment and safety statement tool), SSWP (Safe System of Work Plans – tool to aid small contractors identifying

[105] Note that one European industry association noted that European legislation tends to pose less of a difficulty for SMEs than national legislation.

and implementing safe systems of work based on pictograms), template Safety and Health plans, Codes of practice and guidance documents. Similarly, in the UK, the Health and Safety Executive has also developed lots of good advice to assist SMEs.

Some specific data on compliance costs for SMEs related to actions to meet OSH legislation based on a UK HSE study[106] have been presented earlier (see sub-sections 4.2.1 and 4.2.2). As shown in the table below, it has been estimated that the cost for implementing various health and safety actions is comparatively higher for SMEs than for larger enterprises.

Table 4-36: Average expenditure per employee for action taken in relation to the Manual Handling Regulations (UK, 2003)[107]

Actions	Average spend per employee (£)			
	0-49 employees	50 – 249 employees	250-4,999 employees	5,000+ employees
Employment/training a specialist	£288.86	£37.91	£3.06	£5.04
Risk assessments – manual handling	£130.70	£23.31	£2.63	£1.40
Work practice changes	£2,855.05	£57.66	£41.85	£5.99
Work environment changes	£594.44	£71.86	£8.22	£5.77
Load changes	£222.10	£33.56	£3.24	£0.03
New equipment	£745.18	£118.32	£11.31	£17.53
PPE	£302.89	£31.67	£4.13	£1.80
Training and information	£194.76	£37.25	£3.04	£5.96
Reviewing assessments	£145.86	£21.46	£3.39	£0.59
Occupational health	£400.98	£51.48	£6.18	£6.75

Source: HSE (2003): Costs of compliance with health and safety regulations in SMEs, available at http://www.hse.gov.uk/research/rrpdf/rr174.pdf
Note: Multiple sectors

The disparity is likely to be a result of economies of scale when purchasing PPE, equipment and training, the ability of larger organisations to adopt generic RA processes, and the presence of in-house specialists. The findings in terms of the expenditure on the various actions to comply with the Manual Handling Regulations in the UK are shown in the figure below. Expenditure is greatest in the areas of changing work practices and purchasing new equipment, and least for risk assessments and reviewing assessments.

[106] HSE (2003): Costs of compliance with health and safety regulations in SMEs, available at http://www.hse.gov.uk/research/rrpdf/rr174.pdf

[107] HSE (2003): Costs of compliance with health and safety regulations in SMEs, available at http://www.hse.gov.uk/research/rrpdf/rr174.pdf

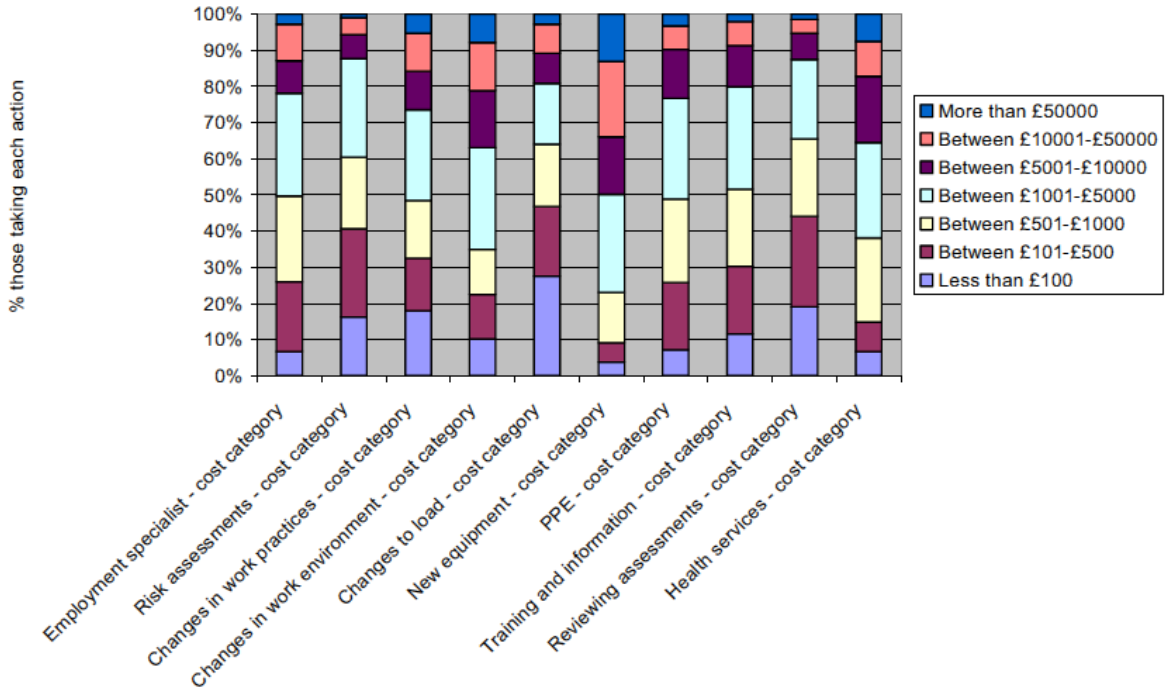


Figure 4-10: Expenditure in actions to meet Manual Handling Regulations (UK, 2003)[108]

4.6.2 Costs of conducting RA for SMEs

As noted in Section 4.2.1, the cost of a RA can be assumed to be around €4,000. It is likely that the risk assessment will be reviewed/adapted on a routine basis, rather than being completely redone each time. Consequently, it has been assumed that the initial assessment will be updated every five years with updates/revisions costing 10% of the full assessment per year. This equates to an annual spend of €1,120 per enterprise.

According to the EU-OSHA, 83% of companies regularly carry out a RA.

Based on these assumptions and data on the total number of enterprises in the construction industry in the EU, the following two tables set out an estimate of the total cost of RAs in the ten focal countries (Table 4-37) and in the EU-28 (Table 4-38) by size of enterprise. The total cost is estimated to be highest for micro-enterprises, simply due to the number of micro-enterprises in the sector. It should, however, be noted that this is likely to be an overestimate of the total costs, as smaller enterprises are more likely to be sub-contracted to larger companies (that may undertake the RA for the whole project). However, the associated workers may still be required to attend risk briefings – which will effectively be time spent on the RA process.

[108] HSE (2003): Costs of compliance with health and safety regulations in SMEs, available at http://www.hse.gov.uk/research/rrpdf/rr174.pdf

Table 4-37: Total cost for conducting risk assessments in the 10 focal countries (€ million, 2013)						
Sector	Company size (persons employed)					Total
	1 to 9	10 to 19	20 to 49	50 to 249	250+	
Construction contractors	1,806.3	79.7	28.8	7.9	0.8	1,925.0
Construction products	170.8	23.6	14.0	8.1	1.4	218.0
Mining and quarrying	6.4	1.1	0.5	0.1	0.0	8.4
Professional services	624.2	14.4	7.1	3.1	0.6	581.0
Total	**2,607.7**	**118.8**	**50.4**	**19.2**	**2.7**	**2,732.4**
Note: *Assumes 83% of companies undertake a risk assessment* *Cost of risk assessment: €1,120 per annum (based on a cost of €4,000 per risk assessment, undertaken every 5 years plus a recurring cost of 10%, or €400, per year)*						

In the event that both a lower figure of €2,000 as well as the €4,000 figure for the average cost of a RA is considered, and prices adjusted using GDP price deflators to account for different costs in different MS, the range within which costs would be expected to lie would be approximately €1,365m - €2,732m for the 10 countries considered (Table 4-37). Uplifting this figure by 25% for the EU-28 as a whole brings the total cost of conducting RAs to an estimated €1,707m – €3,415m in the EU-28 (Table 4-38).

Table 4-38: Total cost for conducting risk assessments in the EU-28 (€ million, 2013)*						
Sector	Company size (persons employed)					Total
	1 to 9	10 to 19	20 to 49	50 to 249	250+	
Construction contractors	2,257.8	99.6	36.0	9.8	1.0	2,406.3
Construction products	213.5	29.5	17.4	10.2	1.7	272.5
Mining and quarrying	8.0	1.4	0.7	0.2	0.0	10.5
Professional services	780.2	18.0	8.9	3.8	0.7	726.3
Total	**3,259.6**	**148.5**	**63.0**	**24.0**	**3.4**	**3,415.5**
**cost for 10 countries uplifted by 25% for the EU-28*						

By comparing the annual cost of RAs for a company (assumed to be €1,120 per year for the UK, and amounting to €1,104 for the EU as a whole making use of price deflators) to data on average turnover per enterprise, it is possible to ascertain the types of enterprises which find RAs more/less affordable. The table below shows the annual cost of RAs per enterprise as a percentage of turnover per company. As shown in the table, RAs only account for a very small proportion of turnover per enterprise. Nevertheless, the data show that the cost of conducting RAs is comparatively higher for SMEs than it is for larger enterprises (i.e. the cost accounts for a larger proportion of turnover per company). In the event that calculations are done on the basis of a lower annual average cost of RAs of €560 instead of €1,120, the same conclusion results but with RAs representing a lower percentage of turnover.

Table 4-39: Cost of risk assessments as a % of turnover per company in 2013 (%)						
Sector	Company size (persons employed)					Total
	1 to 9	10 to 19	20 to 49	50 to 249	250+	
Construction contractors	0.79%	0.12%	0.04%	0.01%	0.00%	0.32%
Construction products	0.53%	0.07%	0.02%	0.01%	0.00%	0.06%
Mining and quarrying	0.27%	0.06%	0.02%	0.01%	0.00%	0.05%
Professional services	0.94%	0.07%	0.03%	0.01%	0.00%	0.31%
**Cost for risk assessments assumed to be €1,120 per company per year*						

The Commission's Communication on an EU Strategic Framework on Health and Safety at Work 2014-20 highlighted that there are different approaches to practical implementation of OSH legislation across MS and that these are often influenced by the extent to which measures are implemented across different sectors and by different sizes of companies. The report acknowledges the difficulties faced by SMEs in particular and that compliance within this group of companies was generally lower. Reasons for this include a lack of resources and expertise, difficulties in meeting requirements and an absence of any guidance, as well as lack of enforcement.

In particular, the report recognises that SMEs generally face relatively higher costs to implement the various measures required by legislation. Whilst the report recognises initiatives in the 2007-12 Strategy designed to assist SMEs such as the online interactive RA tool developed by EU-OSHA, it is clear that more assistance is required to enable SMEs to comply at a greater level. It argues for simpler and more efficient solutions to be put in place as well as providing tailored guidance and support to micro and small enterprises to facilitate RA.

4.6.3 Cost of training for SMEs

In order to determine whether or not the cost of training is 'affordable' for companies in the construction sector, it is possible to compare the total cost of training to levels of turnover per employee. As indicated in the table below, the turnover per worker is highest for large enterprises (with >250 employees) and lowest for small enterprises (with 10 to 19 employees).

Table 4-40: Turnover per person employed in the construction sector in 2013 (Construction Contractors) (EUR)						
Country	Company size (persons employed)					Total
	1 to 9	10 to 19	20 to 49	50 to 249	250+	
Belgium	97,622	95,202	131,339	326,738	464,318	155,182
Denmark	56,822	47,013	79,003	179,666	218,505	98,411
France	86,926	40,658	54,292	106,468	178,446	87,970
Germany	38,262	42,207	65,404	119,314	188,040	62,516
Ireland	123,876	112,411	148,117	288,186	397,324	167,989
Italy	77,900	95,802	130,498	217,993	211,391	95,346
Poland	51,055	70,023	92,478	119,869	134,450	72,795
Romania	50,377	26,116	36,109	55,262	77,176	46,893
Spain	75,953	101,238	105,013	172,138	218,798	101,487
United Kingdom	128,009	83,515	89,026	255,407	329,219	170,115
Rest of Europe	53,150	71,405	93,960	161,332	199,705	89,806
EU 28	**70,421**	**63,839**	**83,740**	**160,639**	**222,503**	**95,071**
Source: Eurostat (calculated as total turnover for the sector divided by total number of employees)						

The following table presents estimates of the cost of training for a single worker relative to turnover per employee.

Assuming that each employee undertakes one day of training per year, the annual cost to an average construction firm would be 0.27% of turnover per employee. On average, the cost to microenterprises (<10 workers) would be proportionately higher, at an estimated cost of 0.37% of turnover per employee. The cost for large companies (with more than 250 workers) would be proportionately lower, at an estimated annual cost of 0.12% of turnover for each employee. This concurs with empirical data from the UK (covering multiple sectors) which shows that smaller organisations (with less than 50 workers) spend comparatively more on providing information and training to workers in relation to health and safety than larger organisations (i.e. companies with >250 employees) (Entec UK Ltd., 2003).

In terms of geographical variation, the affordability of training would be lowest for small enterprises (10 to 19 employees) in Denmark (at 0.81% of turnover per employee) and highest for large companies (with >250 employees) in Belgium (at 0.07% of turnover per employee).

Table 4-41: Total cost of training per person as a proportion of turnover per employee – Assuming training last 1 day per year

Country	Company size (persons employed)					Total
	1 to 9	10 to 19	20 to 49	50 to 249	250+	
Belgium	0.34%	0.34%	0.25%	0.10%	0.07%	0.21%
Denmark	0.67%	0.81%	0.48%	0.21%	0.17%	0.38%
France	0.34%	0.72%	0.54%	0.28%	0.16%	0.33%
Germany	0.77%	0.70%	0.45%	0.25%	0.16%	0.47%
Ireland	0.24%	0.27%	0.20%	0.11%	0.08%	0.18%
Italy	0.36%	0.30%	0.22%	0.13%	0.13%	0.30%
Poland	0.39%	0.29%	0.22%	0.17%	0.15%	0.28%
Romania	0.33%	0.64%	0.46%	0.30%	0.22%	0.35%
Spain	0.32%	0.24%	0.23%	0.14%	0.11%	0.24%
United Kingdom	0.21%	0.31%	0.30%	0.10%	0.08%	0.15%
Rest of Europe	0.43%	0.32%	0.24%	0.14%	0.11%	0.26%
EU 28	**0.37%**	**0.41%**	**0.31%**	**0.16%**	**0.12%**	**0.27%**

4.6.4 Costs of consultation with workers in SMEs

Generally, the costs associated with consulting with workers are not expected to be large (see Section 4.2.4). Indeed, it is anticipated that the smaller the enterprise, the lower the associated costs. A one-person enterprise, for example, would not need to spend time consulting with workers; and a small enterprise might use informal methods of consultation; while a large enterprise might need to take a more formal approach, e.g. by having an employee forum, consultative committee or trade union.

4.6.5 Costs of health monitoring for SMEs

As explained in Section 4.2.5, the Asbestos Directive sets specific requirements for the health surveillance work workers, in particular, it requires that an assessment of each workers' state of health is carried out once every three years for as long as exposure continues (Article 18(2))

In order to examine whether or not such health examinations are 'affordable' for the construction sector, it is possible to compare the total cost of a medical examination to levels of turnover per employee in the construction sector. Assuming that a medical examination costs €153 and is undertaken once every three years, the annual cost to a company in the UK would be €51. The table below presents an estimate of the annual cost of a medical[109] examination relative to annual turnover per employee, and is based on varying costs for medical examinations across MS using GDP price deflators.

Table 4-42: Cost of a medical examination relative to annual turnover per employee – Assuming the cost of medical examinations is €51 per year per employee

Country	Company size (persons employed)					Total
	1 to 9	10 to 19	20 to 49	50 to 249	250+	
Belgium	0.05%	0.05%	0.04%	0.02%	0.01%	0.03%
Denmark	0.11%	0.13%	0.08%	0.03%	0.03%	0.06%
France	0.06%	0.13%	0.09%	0.05%	0.03%	0.06%
Germany	0.13%	0.12%	0.07%	0.04%	0.03%	0.08%
Ireland	0.04%	0.05%	0.03%	0.02%	0.01%	0.03%
Italy	0.06%	0.05%	0.04%	0.02%	0.02%	0.05%
Poland	0.05%	0.04%	0.03%	0.02%	0.02%	0.04%
Romania	0.05%	0.09%	0.06%	0.04%	0.03%	0.05%
Spain	0.06%	0.04%	0.04%	0.02%	0.02%	0.04%
United Kingdom	0.04%	0.06%	0.06%	0.02%	0.02%	0.03%
EU 28	0.07%	0.07%	0.06%	0.03%	0.02%	0.05%

The costs are highest at the EU-28 level for small companies with 1-9 and 10-19 employees (0.07% of turnover per employee) and lowest for companies with more than 250 employees (0.02% of turnover per employee).

It should be noted however, that the cost for a company of providing medical examinations for staff is likely to vary (perhaps significantly) between MS and that national rules that go beyond the requirements of the Directive (e.g. by requiring more frequent medical examinations) will also influence the costs.

4.6.6 Other direct costs on SMEs

Given that SMEs are responsible for most of the European construction industry's output, a substantial proportion of the overall responsibility for improvement waste management practices in the construction industry falls on SMEs. A study by Williams & Turner (2011)[110] in the UK has identified a number of barriers that exist to sustainable waste management on small-scale

[109] The cost of an examination in the UK has been adapted using GDP deflators for calculations for other MSs and for the EU as a whole to account for the fact that the cost of an examination in the UK may be higher than other countries such as Poland, Romania etc.

[110] Williams ID and Turner DA (2011): Waste management practices in the small-scale construction sector, available at: http://eprints.soton.ac.uk/346322/1/003p_Williams.pdf

construction sites. They identify that the greatest barrier is the perceived low financial incentive for such practices.

Difficulties have also been cited in relation to the concept of extended producer responsibility (for waste) which, it is reported, most SMEs and particularly micro-enterprises find difficult to apply in practice, due to its financial, organisational and administrative requirements.[111]

4.7 Cumulative costs and benefits

This sub-section presents the summary of the findings above, setting out the cumulative costs and benefits associated with the implementation of the OSH and environmental legislation for the construction sector.

OSH legislation

It is difficult to compare the costs and benefits of the above legislation on an equal footing, since although the costs are more easily quantified, the benefits of the legislation are significantly more uncertain.

The general belief is that investing in health and safety pays off. This view was shared by the vast majority of stakeholders that participated in the consultation. It was also highlighted in a conference held in 2010 and organised by the BENELUX countries, the Dutch Ministry of Social Affairs and Employment, EU-OSHA and TNO[112]. Indeed, participants reported on studies undertaken in two MS which found that for every euro invested there were savings at the company level of €2.20 and €2.89 respectively. However, it has also been reported that employers tend to be somewhat unaware of the business case for OSH, with a study in Spain reporting that employers do not consider investing in safety is financially profitable (López-Alonso M et al., 2013).

The efficiency of investing in OSH

A 2011 study published by the European Commission concludes that when an enterprise brings together several measures into a comprehensive programme a positive return can be expected from investments in occupational safety and health. The study included the construction sector, with regard to back injuries and occupational health (exposure to epoxy). Measures included: a) investing in a winch and a lifting aid for bricks; b) additional training; c) general instructions and special instructions for new employees, focusing on the use of PPE; and d) new PPE.

Based on an analysis of 401 cases of accidents at work and 56 prevention projects in companies the benOSH study argues that developing and implementing prevention measures should be considered as investments generating a reduction or elimination of avoidable costs linked to accidents and ill-health. The study concludes that investing in health and safety creates benefits - equal to the reduction of the avoidable costs – that add value to the firm. If the benefit-cost-ratio is larger than 1 the benefits in economic terms are larger than the costs in economic terms. For the 56 prevention projects the benOSH study calculates an average benefit-cost ratio between 1.29 (the conservative assumption) and 2.18 (a more optimistic assumption). For the construction sector the benefit-cost ratio ranged from 0.9 to 3.5.

Source: European Commission (2011): Socio-economic costs of accidents at work and work related ill health. Key messages and case studies, Luxembourg.

[111] UEAPME (2014): Position Paper, UEAPME position on the Revision of the EU Waste Policy and Legislation, available at: http://www.ueapme.com/IMG/pdf/Final_UEAPME_PP_on_Waste_Revision_-_April_2014.pdf

[112] "Investing in OSH – how benefits beat the costs", 17-18/09/2014 , Amsterdam. Information available at: https://osha.europa.eu/en/tools-and-publications/seminars/the-benefits-of-investing-in-osh

Table 4-43 (see below) summarises the costs of the legislation under consideration, as calculated in the above sections. **The total cumulative costs (over the period 2004-14) for the OSH legislation are estimated at €63 - €147bn.** It should be noted that this equates to less than 1% of the turnover of the sector over the same period even at the higher level of costs.

There is little doubt that moves towards improved OSH within the construction workplace have led to reductions in the incidence rate of workplace accidents and diseases (although in the case of asbestos, these benefits will not be seen for many years). It has been estimated above that the direct benefits to the construction sector (i.e. cost savings) associated with improved OSH are of the order of €234m - €1,274m per annum. Bearing in mind that the number of accidents on an annual basis will likely vary with the level of construction activity, estimates of the value of cost savings for the period 2004-2014 can be derived by adjusting the figure calculated for 2013 by taking into consideration the relative turnover for the sector in each of the other years in the period. Thus, the **total cumulative benefits (over the period 2004-14) for the OSH legislation are estimated to lie in the range of €2.9bn to €15.6bn**. However, it has not been possible to quantify many of the other benefits arising due to a lack of data identified either through the literature review or through consultation with company and industry stakeholders. In particular, valuation of benefits such as improved reputation, reductions in legal costs and sanctions, improved legal clarity and certainty and impacts on competition has not been possible.

In addition, there are multiple and significant benefits for society as a whole that arise from health and safety improvements (e.g. reduced costs of injury and illness for individuals and for MS in terms of social security payments where they fall on the social security system rather than on the employer), but estimations of these are outside the scope of this current study.

Environmental legislation

In relation to the selected environmental legislation, the analysis of costs and benefits is more complex. In relation to waste, most of the materials in CDW can be recovered and reused. However, where recovery of the materials is not possible, the final alternative for the waste holder is to dispose of it at a landfill site. Although precise costs are difficult to determine, estimates suggest associated costs in the region of **€ 3.2 bn per annum** (based on a range €2.4bn – €4bn). Since the WFD has only recently been implemented, the cumulative costs will perhaps be a factor of two higher. However, such costs cannot be attributed directly to the WFD since there have always been costs associated with CDW disposal and, in some countries, the changes introduced by the WFD have been minor due to existing national legislation.

The main benefits associated with the WFD are (or will be) associated with the development of the circular economy in terms of protecting the environment as well as creating opportunities in terms of jobs and innovation.

In relation to the EIA Directive, the cost estimated based on the number of EIAs of particular relevance to the construction sector (i.e. 30% of the total) is estimated to be in the range of €210m-€318m per year for 'developers' which would equate to a **total cumulative cost (over the period 2004-14) for the EIA Directive of €2.6bn - €3.9bn.** However, as for the WFD, such costs cannot be attributed directly to the EIA Directive as there has been existing national legislation for many years in most, if not all countries. Some of the costs may be transferred to the final owner through increased prices, and this may mean that the construction sector does not bear the full costs as it may instead be considered part of the service that is asked and delivered by the construction sector as part of the contract paid by the final owner. However, such additional costs may mean that demand is eventually reduced (in particular for marginal projects), leading to reduced profits for the construction sector. It is also noted that the construction sector is highly dependent on other

market factors, not just concerning the sector itself, but also, for example, financial markets (as shown by the 2008 crisis). As a result, if the conditions are favourable, costs arising from legislation will be passed on to clients but in harsher economic conditions, the sector may have to bear the costs itself.

In terms of benefits, the main direct benefit to companies is reduced costs associated with reduced (legal) uncertainty as to when environmental concerns need to be accounted for in the development/planning process. However, assigning monetary values to such savings is difficult. In addition, the purpose of the EIA Directive is to protect the environment and to encourage public participation in the process and this would be appear to be borne out in practice. Wider societal benefits arising from the EIA Directive include, among others, healthier local environments (e.g. forests, water sources, agricultural potential, recreational potential, aesthetic values, and clean living in urban areas) and maintenance of biodiversity. By going through the EIA process and considering, removing and mitigating potential negative impacts, future potential clean-up or restoration costs may also be avoided. However, such costs would most likely be the responsibility of developers rather than construction companies themselves.

The majority of environmental benefits are likely to fall outside the sector (e.g. protection of the environment) and were therefore by definition excluded from the scope of this study. Consequently, the analysis is partial and it is difficult to make concrete conclusions in terms of overall costs and benefits of the legislation analysed.

Summary of Costs to the construction sector

Costs arising from OSH and environmental legislation for the construction sector are summarised in Tables 4-43 and 4-44 below.

Table 4-43: Summary of Estimates of Costs to the Construction Sector associated with selected EU OSH legislation

Item	Summary of assumptions	Costs (€2013m)	Observations	Frequency	Cumulative Costs (2004-14*)
Costs of risk assessments	83% of all companies in construction sector undertake RA; Average costs of RA: €560 - €1,120 per annum (based on initial €2,000 - €4000 plus 10% (€200 - €400) per annum updates) All sub-sectors affected.	1,700 - 3,400	Not possible to apply different costs of RA conducted internally or by external providers.	Frequency may vary according to sub-sector. Perhaps more frequent for temporary or mobile construction sites and less so for the rest	€21bn - 42bn
Costs of applying preventive measures	66% companies apply preventive measures. Measures included are: Work practice changes; Work environment changes; Load changes; New equipment; PPE at an average costs of €25k per company. Sectors affected: Construction	23,700 – 47,000	May overestimate the costs as not all companies will apply all measures	Unlikely to occur every year. As such, measures assumed to be 'one-off' over period 2004-14	€23.7bn - €47bn

Table 4-43: Summary of Estimates of Costs to the Construction Sector associated with selected EU OSH legislation					
Item	**Summary of assumptions**	**Costs (€2013m)**	**Observations**	**Frequency**	**Cumulative Costs (2004-14*)**
	contractors, Construction products and Mining and quarrying but excluding prof. services.				
Costs of information and training	1 employee per company trained for between 1 and 5 days 82% provide training Average cost per training (value of time lost + cost of training course) €903. Range is €259 - €1,547. Sectors affected: Construction contractors, Construction products and Mining and quarrying but excluding prof. services.	685 -4,000	May underestimate the impacts as costs of providing information are not included and can vary significantly from negligible to significant. Also assumes one employee trained for each company, which although low, may compensate with the high level of compliance.	Likely to occur every year	€8,3bn - €48.9bn
Costs of consultation	4 Hours of a senior officials and managers. The hourly rate is €41.5 according to the SCC If employees consulted twice a year, costs per company are estimated at €332 per year per company 65% companies consulting regularly based on ESENER-2. Sectors affected: Construction contractors, Construction products and Mining and quarrying but excluding prof. services.	700	May underestimate the impacts as consultation may be more frequent. On the other hand, figures by ESENER appear high as to the percentage of companies consulting.	Annual costs	€8.5bn
Health monitoring and surveillance	Applied to the average employee numbers across band except for larger companies where assumption is 250 employees. Number of companies from 2013 statistics Assumes 52% of total number of companies undertaking health monitoring and record	13 - 20	May underestimate the impacts	Annual costs	€0.16bn-€0.24bn

Table 4-43: Summary of Estimates of Costs to the Construction Sector associated with selected EU OSH legislation					
Item	**Summary of assumptions**	**Costs (€2013m)**	**Observations**	**Frequency**	**Cumulative Costs (2004-14*)**
	keeping. Applies to Construction contractors, Construction products and Mining and quarrying but excluding prof. services as these are assumed to use national health systems. Costs per employee based on SCM, ranging from €1.98 to €2.97 across EU (best estimate €2.58)				
Appointment of coordinators	Applies to companies under construction contractor sub-sector. Assumes all companies with more than 20 workers employ at least one construction coordinator at a costs of €2000 per company	112	May overestimate the impacts as compliance has been assumed to be 100% in absence of data	Annual costs	€1.4bn
				Total	**€63-147bn**
** Note that cumulative cost multiplier takes account of varying levels of construction activity over the period 2004-2014*					

Table 4-44: Summary of Estimates of Costs to the Construction Sector associated with selected EU Environment legislation					
Item	**Summary of assumptions**	**Costs (€2013m)**	**Observations**	**Frequency**	**Cumulative Costs (2004-14*)**
Cost of disposal of CDW	Range of tariffs identified for each of MS (various). Mineral waste (tonnes) from construction to landfill calculated for 10 MS from Eurostat data (2012) and uplifted to EU-28	2,460 – 4,000	Gate fees for CDW vary widely leading to uncertainty in the estimates. Overestimates the overall cost due to the fact that fees cannot be broken down into those attributed to WFD and those to national legislation.	Annual costs	Uncertain as only recently implemented

Table 4-44: Summary of Estimates of Costs to the Construction Sector associated with selected EU Environment legislation					
Item	**Summary of assumptions**	**Costs (€2013m)**	**Observations**	**Frequency**	**Cumulative Costs (2004-14*)**
Cost of EIAs	20,000 x 30% of EIAs of relevance to the construction sector conducted annually Cost range €35,000 to €53,000 per EIA	210 - 318	Overestimates cost as all MS that joined the EU in 2004 already had some form of assessment of projects similar to EU EIA. Costs may be passed on to developers (so overestimates costs to the construction sector), though not always, particularly in times of economic difficulties and may also result in lower demand	Annual costs	€2.6bn – €3.9bn
				Total	**€2.6bn – €3.9bn**
** Note that cumulative cost multiplier takes account of varying levels of construction activity over the period 2004-2014*					

Summary of Benefits to the construction sector

The following table sets out the benefits identified for construction companies arising from implementing the measures prescribed under the six pieces of legislation evaluated. As indicated previously, it has not been possible to place quantitative or monetary values on many of these due to the absence of data.

Table 4-45: Summary of Estimates of Benefits for the Construction Sector associated with selected EU OSH and Environment legislation					
Item	**Summary of assumptions**	**Benefits (€2013m)**	**Observations**	**Frequency**	**Cumulative Benefits (2004-14*)**
OSH legislation					
Avoided costs due to accidents/ill-health	Value based on assumed 5-15% accidents are avoided due to legislation. Cost of fatal and non-fatal accidents of €128,000 and €5,253 - €9,764 Average annual figure used as data only available for all 10 focal countries for 2008-13 and multiplied over period 2004-14 Assume ill-health costs are 72% of accident costs.	€234m - €1,274m	Estimates include losses due to lost production/productivity, replacement staff, liability payments etc.	Annual	€2.9bn – €15.6bn

Table 4-45: Summary of Estimates of Benefits for the Construction Sector associated with selected EU OSH and Environment legislation					
Item	**Summary of assumptions**	**Benefits (€2013m)**	**Observations**	**Frequency**	**Cumulative Benefits (2004-14*)**
Enhanced Reputation	81% of companies surveyed by EU-OSHA reported addressing health and safety issues to improve reputation.	Unable to estimate value.	Companies' reputations enhanced with workers as well as more widely when seen to be looking after employees safety and health.	-	-
Avoided legal costs/ sanctions	ESENER-2 reported that 81% of establishments view avoiding fines and sanctions as a major reason to comply with the OSH legislation, without significant variation across countries.	Unable to estimate		Annual	
Reduced insurance premiums		Unable to estimate		Annual	
Improved clarity and legal certainty			Stakeholders responded that the OSH Framework Directive clarified certain provisions which had already existed in their national system to protect the health and safety of construction workers. Likely result in increased compliance.		
Improved competition			Consultation with stakeholders has shown a general agreement that the legislation has helped to create a more even playing field for competition but the impacts have been noted to be more noticeable within the same MS rather than across countries.		
Environmental legislation					
Improved clarity and legal certainty		Unable to estimate value	Companies will be clear when they are expected to undergo EIA	-	-
				Total	**2.9bn – 15.6bn**
** Note that cumulative cost multiplier takes account of varying levels of construction activity over the period 2004-2014*					

The OPC carried out for this study highlighted a number of general views on the impact of the various pieces of legislation on costs and benefits for the construction sector. Regarding the environmental legislation, the majority of respondents indicated that the legislation had resulted in only relatively slight increases in costs for both the EIA Directive (54%) and the WFD (60%). Only a relatively small proportion of respondents indicated that costs had increased significantly (27% for the WFD and 17% for the EIA Directive).

A similar picture arose for the health and safety legislation and these results are presented in Table 4-46. Respondents tended to identify costs as being significant when measures were associated with purchasing equipment, employing additional staff or making organisational changes as compared to other measures relating to providing information, monitoring and reporting. However, whilst the number of respondents was low (particularly for companies), companies themselves did, in most cases, indicate higher levels of costs than did, for example, national authorities.

Overall, the proportion of respondents indicating that there were significant benefits was noticeably higher than those indicating there were significant costs. It is noticeable that measures which stakeholders generally considered had incurred significant costs, were the measures with the highest proportion of respondents identifying significant benefits. The most notable exceptions relate to the provision of information, where only 13% of respondents believed that the measure had incurred significant costs, whereas 64% felt that significant benefits had arisen, and the evaluation of risks to the health and safety of workers where 13% indicated that the measure incurred significant costs but 72% felt that it resulted in significant benefits. It is noticeable in fact that for all of the measures where only a relatively small percentage of respondents (13% or lower) felt there were significant costs, a large proportion (40% - 72%) felt that significant benefits had been achieved.

Table 4-46: Results from Open Public Consultation – Health & Safety Costs

Activity	Significant costs	Moderate costs	Significant benefits	Moderate benefits
Employing dedicated health and safety personnel (either in-house or externally)	33%	40%	68%	20%
Appointing one or more coordinators for health and safety matters	37%	37%	64%	12%
Purchasing Personal Protective Equipment	30%	57%	56%	36%
Implementing protective organisational measures	26%	44%	64%	32%
Drawing up a safety and health plan	26%	44%	43%	29%
Information and training for workers on health and safety	13%	80%	64%	32%
Evaluation of the risks to the health and safety of workers	13%	77%	72%	16%
Monitoring workers' health	13%	60%	56%	32%
Reporting on occupational accidents	0%	41%	40%	36%

Similar results were observed for the measures associated specifically with manual handling of loads, where 14-32% of respondents indicated that costs associated with making organisational changes and purchasing equipment were significant but 50-57% felt that benefits were significant. Furthermore, measures associated with training and providing information were considered by 4%-

7% of respondents as incurring significant costs, but 35-43% felt that significant benefits resulted from these measures, suggesting that even low cost measures can provide significant benefits.

Results from the OPC in relations to questions on the costs and benefits arising from measures required by the Asbestos Directive tended to suggest that a higher proportion of respondents were of the view that significant costs were incurred for some measures. Figure 4-11 below shows that 40% of respondents suggested that costs were significant for storing, transporting and cleaning materials and equipment contaminated with asbestos dust, as well as for measuring asbestos fibres in the air at the workplace. However, even for these measures, 38% - 80% of respondents indicated that only moderate or no costs were incurred for the different measures identified.

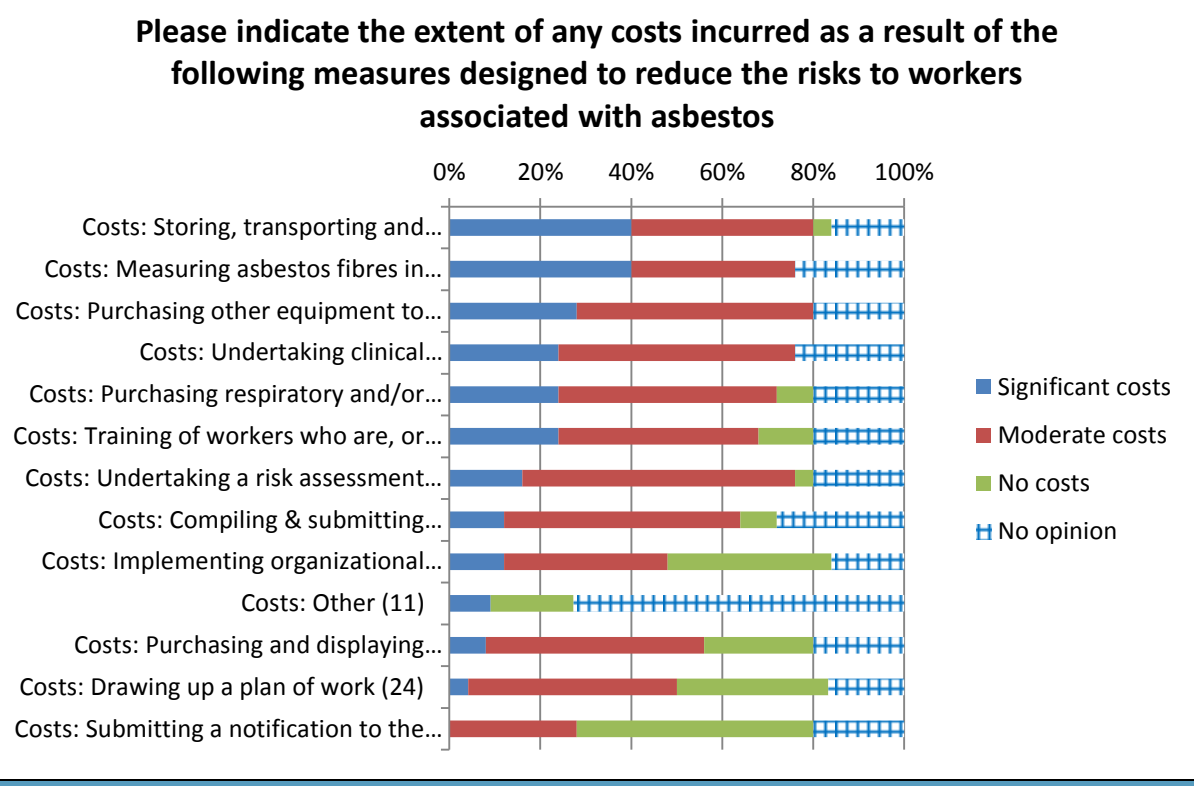


Figure 4-11: OPC results regarding costs arising from measures associated with the Asbestos Directive

Total cumulative costs for OSH identified in Table 4-43 above are therefore estimated to be in the range €63bn – €147bn, with corresponding benefits estimated at €2.9bn - €15.6. However, it is noted that it has not been possible to quantify/monetise many of the benefits arising to companies from implementing OSH legislation, suggesting that the estimates of the benefits are an underestimate. In addition, as stated previously, there are multiple and significant benefits for society as a whole that arise from health and safety improvements (e.g. reduced costs of illness), but estimations of these are outside the scope of this current study.

The feedback from the OPC and interviews with stakeholders, generally indicates that the perception among those consulted is that significant benefits have arisen at moderate costs. The overall estimates for costs and benefits made utilising the available data in Section 4 are likely to either overestimate the total costs or underestimate the total benefits or both. It is clear however, that the costs estimated, even if they are overestimated, represent less than 1% of the sector's overall turnover and as such represent a small part of the sector's overall value.

Distribution of Costs and Benefits

Data from consultation and literature has not been identified at sufficient levels of granularity to apportion the costs identified under the various different measures across the various sub-sectors involved in the construction sector. Costs will fall most heavily on sub-sectors where activities are inherently more risky and where there are greater numbers of companies and they employ a greater number of staff (i.e. mostly on construction contractors). Similarly, the benefits identified previously will also accrue in the sectors where most measures are taken, with construction contractors again being most prevalent.

The preceding cost data has been based on the analysis of the likely distribution of costs set out in the box below which identifies those sub-sectors most likely to incur costs arising from the different measures required under each of the pieces of legislation.

Distribution of costs across the four construction sub-sectors (mining and quarrying, construction products, construction contractors and professional services)	
Measure (cost)	***Area of Impact***
	Common Measures across all Directives
Conducting a risk assessment	This measure will likely affect companies in all 4 sub-sectors, leading to costs across the sector.
Ensuring internal and/or external preventative and protective services	The measure will primarily impact the mining and quarrying, construction contractors and construction products sub-sectors. It is unlikely that companies providing professional services will need to carry out many measures under this requirement.
Information and training for employees	Whilst all sub-sectors might be affected, professional services will be the least affected by this requirement as they employ limited numbers of people and most of the construction related risks arise in the other sub-sectors
Consultation of workers	Costs are expected to fall mostly on the mining and quarrying, construction contractors and construction products sub-sectors.
Health monitoring and record keeping	It is expected that the costs from this measure would fall more on companies in the mining and quarrying, construction contractors and construction products sub-sectors, with professional service companies primarily using national health systems.
Costs of familiarising with the legislation	Companies in all sub-sectors would be required to engage in familiarisation activities.
Appointment of coordinators	***Directive on Temporary and Mobile Construction Sites*** It has been assumed that only companies from the construction contractor sub-sector will be affected by this measure
Prior notification	***Directive on Temporary and Mobile Construction Sites and Asbestos Directive.*** Costs under this measure would likely only apply to companies operating in the construction contractors sub-sector.

Distribution of costs across the four construction sub-sectors (mining and quarrying, construction products, construction contractors and professional services)	
Measure (cost)	***Area of Impact***
Disposing of construction and demolition waste	***Waste Framework Directive*** This measure is particularly relevant to those companies operating in the construction contractors and mining and quarrying sub-sectors.
Preparing an EIA	***Environmental Impact Assessment Directive*** Costs resulting from EIAs are generally borne directly by the developer and not the construction sector per se. However, it is likely that where these are significant, developers will attempt to negotiate cost reductions from construction contracting companies in order to keep their own costs down.

4.8 Accounting for BAU and identification of costs and benefits attributed to EU legislation

The costs utilised to generate estimates of the costs to the construction sector resulting from implementing the different measures required by the 6 different pieces of legislation have been based primarily on data obtained through the literature review and supplemented with limited information obtained though consultation (interviews with stakeholders). They represent the overall cost of carrying out the activities required, but do not reflect the additional cost of complying with the EU legislation over and above the costs which the sector would have incurred in its absence (i.e. due to solely national legislation or as a result of measures that companies would have taken anyway in order to plan and implement work, protect staff etc.). As such, the estimates presented in this report are likely to be overestimated when considering the costs associated with EU legislation alone.

Similarly, the quantified figures identified for the benefits arising from the legislation do not account for other factors such as national legislation and measures companies take in order to reduce and recycle waste and protect the environment. They too will be overestimated (although it is noted, that many benefits arising from environmental legislation have not been able to be quantified).

The degree to which the costs and benefits are overestimated, and therefore the extent to which they are attributable to the Directives is extremely difficult to determine. For example, considering multiple pieces of OSH legislation at the same time and the interrelated nature of the different measures relating to health and safety makes it impossible to determine the impact of individual activities on any changes in the level of accidents. However, the OPC results (see Annex 5 for more detail) indicated that the majority of participants felt that the costs arising from OSH and environmental legislation were relatively limited, and the benefits generally significant. The following two tables reproduce the results from the OPC to questions regarding the overall benefits and costs from different OSH measures.

Table 4-47: Benefits arising from different OSH measures					
Measures	**Significant benefits**	**Moderate benefits**	**No benefits**	**No opinion**	**Total**
Carrying out an evaluation of the risks to the health and safety of workers (25)	72%	16%	8%	4%	100%
Employing dedicated health and safety personnel (either in-house or externally) (25)	68%	20%	4%	8%	100%
Information and training for workers on health and safety (25)	64%	32%	0%	4%	100%
Implementing protective organisational measures (25)	64%	32%	0%	4%	100%
Purchasing Personal Protective Equipment (25)	56%	36%	4%	4%	100%
Monitoring workers' health (25)	56%	32%	8%	4%	100%
Reporting on occupational accidents (25)	40%	36%	12%	12%	100%
Other (6)	17%	0%	0%	83%	100%
Average (except "Other")	**60%**	**29%**	**5%**	**6%**	**100%**

Table 4-48: Costs arising from different OSH measures					
Measures	**Significant costs**	**Moderate costs**	**No costs**	**No opinion**	**Total**
Evaluation of the risks to the health and safety of workers (30)	13%	77%	7%	3%	100%
Employing dedicated health and safety personnel (30)	33%	40%	23%	3%	99%
Information and training for workers on health and safety (30)	13%	80%	3%	3%	99%
Implementing protective organisational measures (27)	26%	44%	26%	4%	100%
Purchasing Personal Protective Equipment (30)	30%	57%	10%	3%	100%
Monitoring workers' health (30)	13%	60%	27%	0%	100%
Reporting on occupational accidents (29)	0%	41%	52%	7%	100%
Other (9)	0%	11%	33%	56%	100%
Average (except "Other")	**18%**	**57%**	**21%**	**3%**	**100%**

As the two tables show, when excluding "Other"), an average of 78% of respondents indicated that costs across all measures were moderate or low, with 89% indicating that the benefits were moderate or significant.

Given the high level of overall costs calculated in comparison with the benefits in this study, it is possible that the costs attributable to the EU legislation on OSH will likely be significantly lower than estimated, but the benefits are likely to be reduced to a smaller extent (particularly given the fact that a number of benefits have not been quantified). If it is assumed that 50% of the costs and 75% of the benefits are attributed to the EU legislation, the overall costs from OSH legislation would be approximately €32bn - €74bn and the benefits would be €2.2bn - €11.7bn.

As regards the environmental legislation under consideration, as indicated above, it has not been possible to place monetary values on the benefits arising, but in the event that costs attributable to the EU legislation were 50% of those calculated, this would amount to approximately €1.3 bn - €2.0bn.

5 Ex-post Evaluation

An evaluation starts by finding out how the situation has evolved since the intervention began, how the intervention has been implemented and/or applied, and what has happened/is happening to different stakeholders.

This Section summarises the findings of the evaluation for the different criteria:

- **Relevance:** This Section looks at whether the legislation under this study is still relevant to the problem under consideration.
- **Coherence:** This Section looks at whether the different pieces of legislation under the scope of the study are working together towards the same goals but also examines the linkages with other pieces of legislation affecting the sector.
- **Effectiveness:** This Section looks at whether the different pieces of legislation have been effective in delivering their objectives.
- **Efficiency:** This section looks at the costs and benefits of implementation. It is important to note that when there are commonalities between the different Directives, impacts may be reduced or enhanced. For example, the costs of implementation may be lower, and benefits may be cumulative**.**
- **EU Added value:** This Section looks at whether the changes observed are due to EU intervention, as opposed to other factors, such as national legislation or market changes.

The findings are supported by consultation and the literature review.

5.1 Relevance

Table 5-1: Relevance criterion	
'Relevance' is ascertained with reference to the needs or identified problems that necessitated the introduction of the EU legislation. It may be the case that the problem that the legislation initially sought to address is no longer relevant/exists or that the objectives of the legislation no longer accord with the wider goals of the European Commission. It could also be the case that technological or scientific advances have made some of the policy goals of some legislation defunct for some sub-sectors.	
Evaluation Question	**Judgement Criteria**
To what extent are the different EU acts identified relevant to the needs and challenges identified for a competitive and sustainable construction sector?	Degree to which EU legislation meets the needs of industry in terms of remaining **competitive whilst protecting workers and the environment** Obsolete provisions which are no longer relevant or superseded by other legislation

5.1.1 To what extent are the different EU acts identified relevant to the needs and challenges identified for a competitive and sustainable construction sector?

Some of the directives under the scope of this study are not particularly relevant for some of the construction sub-sectors being considered; while some directives are clearly very relevant for particular sub-sectors. The Asbestos Directive, for example, is clearly very relevant for construction contractors who might come into contact with asbestos at their place of work, but is not particularly relevant for companies that manufacture construction products and equipment as the use of

asbestos in construction products is banned throughout the EU. Likewise, the WFD is very relevant for construction contractors but does not apply to waste from the extractive industries[113].

The following figure highlights where there are strong linkages between the directives and sub-sectors under the study scope.

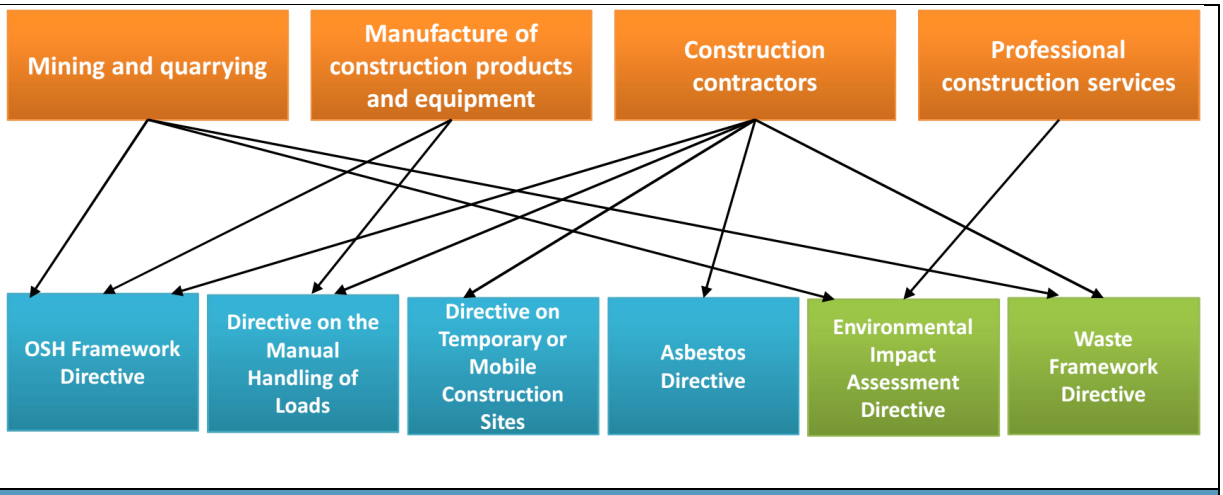


Figure 5-1: Relevance of the directives to the sub-sectors being considered in this study

Table 5-2 summarises the relevance of the six directives for the four sub-sectors being considered in this study.

Table 5-2: Relevance of different directives considered under the study for different sub-sectors

Sub-sector	Most relevant directives	Justification
Mining and quarrying	Directive 89/391/EEC occupational safety and health framework	Mines and quarries can be hazardous environments – the possibility of a flood, fire, explosion or collapse has the potential to simultaneously affect a large number of people. The OSH Framework Directive sets out measures to encourage improvements in the safety and health of workers in the workplace.
	Directive 2011/92/EU on environmental impact assessments	The aim of the EIA Directive is to encourage developers to consider, form the outset, all potential impacts on the environment likely to result from a development. In line with Article 4(1) and Annex I of the Directive, certain quarries and open-cast mines must be subject to an EIA.
Manufacture of construction products and equipment	Directive 89/391/EEC occupational safety and health framework	The OSH Framework Directive applies to all sectors of activity, including the manufacture of construction products and equipment. It will continue to be relevant as new risks emerge for workers involved in the manufacture of construction products and equipment. For example, nanotechnology is transforming

[113] Article 2(2)(d) of the WFD explicitly excludes the following from the scope of the Directive: "waste resulting from prospecting, extraction, treatment and storage of mineral resources and the working of quarries covered by Directive 2006/21/EC of the European Parliament and of the Council of 15 March 2006 on the management of waste from extractive industries".

Table 5-2: Relevance of different directives considered under the study for different sub-sectors		
Sub-sector	**Most relevant directives**	**Justification**
		construction, but we are only beginning to understand the possible hazards for workers who handle these materials.[114] The OSH Framework Directive applies to nanomaterials, even though it does not refer to them explicitly.[115]
	Directive 90/269/EEC on manual handling of loads	Regularly lifting, carrying or handling heavy loads can cause serious injuries and a large proportion of workers in the construction sector are required to manually handle loads while at work. While construction contractors are the most likely to have a fatal accident while at work, it is workers in the manufacturing sector (which includes the manufacture of construction products and equipment) that have the largest number of non-fatal accidents.[116] This Directive lays down minimum health and safety requirements for the manual handling of loads where there is a risk particularly of back injury to workers.
Construction contractors	Directive 89/391/EEC occupational safety and health framework	Construction contractors are one of the most at risk groups of workers of having fatal or non-fatal accidents while at work in the EU).[117] The OSH Framework Directive lays down general principles concerning the prevention and protection of workers against occupational accidents and diseases. It serves as the basis for the implementation of Directive 1992/57/EEC on temporary or mobile construction sites (see below), as well as the 22 other specific Directives covering specific risks connected with safety and health in the workplace.
	Directive 90/269/EEC on manual handling of loads	See the section above on manufacture of construction products and equipment.
	Directive 92/57/EEC on temporary or mobile construction sites	The Directive on Temporary or Mobile Construction Sites is the eighth daughter Directive under the OSH Framework Directive, and was developed to tailor the principles of the Framework Directive specifically to the construction sector and to supplement them with more stringent and specific provisions for the construction sector.
	Directive 2009/148/EC on exposure to asbestos at work	The Asbestos Directive aims to protect workers' health by laying down limit values and specific requirements in relation to asbestos. Asbestos is the leading cause of occupational cancer in the EU and the burden of asbestos-related cancers is particularly high among construction workers. Many millions of tonnes of asbestos remain in buildings throughout the European Union, posing a significant risk to construction contractors' health.

[114] Industrial Safety & Hygiene News (2015): Nanomaterials present new OSH questions, available at: http://www.ishn.com/articles/102544-nanomaterials-present-new-osh-questions

[115] European Agency for Safety and Health at Work (2016): Managing nanomaterials in the workplace, available at: https://osha.europa.eu/en/themes/nanomaterials

[116] Eurostat (2015): Accidents at work statistics, available at: http://ec.europa.eu/eurostat/statistics-explained/index.php/Accidents_at_work_statistics

[117] Eurostat (2015): Accidents at work statistics, available at: http://ec.europa.eu/eurostat/statistics-explained/index.php/Accidents_at_work_statistics

Table 5-2: Relevance of different directives considered under the study for different sub-sectors		
Sub-sector	**Most relevant directives**	**Justification**
	Directive 2008/98/EC waste framework directive	Construction and demolition waste (CDW) is one of the heaviest and most voluminous waste streams in the EU. The WFD sets a specific target for the quantity of CDW produced in the EU. It requires MS to take any necessary measures to achieve a minimum target of 70% (by weight) of CDW by 2020 for preparation for re-use, recycling and other material recovery, including backfilling operations using non-hazardous CDW to substitute other materials.
Professional construction services	Directive 2011/92/EU on environmental impact assessments	The EIA Directive requires MS to adopt all measures necessary to ensure that, before development consent is given, projects likely to have significant effects on the environment by virtue, inter alia, of their nature, size or location are made subject to a requirement for development consent and an assessment with regard to their effects on the environment. Thus, the EIA Directive is of particular relevance to construction professionals (e.g. architects) who may be required to tailor their design according to the outcome of the EIA.

The Commission's strategy for the sustainable competitiveness of the construction sector sets out five key objectives:

- stimulating favourable investment conditions;
- improving the human-capital basis of the construction sector;
- improving resource efficiency, environmental performance and business opportunities;
- strengthening the Internal Market for construction; and
- fostering the global competitive position of EU construction enterprises.

For the six pieces of legislation considered relevant to the needs and challenges identified for a competitive and sustainable construction sector over the period 2004-14, they should have made a contribution to one or more of these objectives.

The four OSH Directives can be seen to be making a contribution to improving the human capital basis of the sector since they contribute to increasing the quality of the workforce by improving the safety and health of workers through the reduction in workplace risk and avoidance of accidents, as well as protecting workers from exposure to asbestos. As indicated in Section 4, the benefits from the Directive include reductions in accidents, absences from work and corresponding increases in productivity which are key drivers to an enterprise's competitiveness.

The WFD and EIA Directive also contribute to the overall strategy for the sector through their contribution to improving resource efficiency (via reduction in waste and increased recycling and re-use) and improvements in environmental performance. The EIA Directive has helped ensure that thousands of construction projects have been assessed for their environmental impacts and as a result, mitigation measures have been put in place to ensure that any negative environmental impacts are eliminated or reduced.

Analysing the relevance of the legislation in greater detail, there are three key needs that the legislation must address in order to ensure the construction sector is competitive and sustainable, namely (i) that the legislation must not impose a significant burden on enterprises, (ii) must prevent damage to the environment and (iii) must protect workers' health and wellbeing. The following two

sections explore the extent to which the different EU acts are relevant to the needs identified for a competitive and sustainable construction sector.

Worker health and safety

Although there have been big improvements over recent years in reducing the number and incidence rate of injuries to construction workers, construction remains a high-risk industry and accounts for the largest percentage of fatal accidents among all economic activities in the EU.[118]

Some headline indicators are as follows:

- More than one in five (22.2 %) fatal accidents[119] at work in the EU-28 took place within the construction sector in 2012, despite the EU construction sector only accounting for 9.5% of the total EU workforce (defined as NACE Section F, and based on 2015 data).
- The manual handling of loads is an important risk factor for musculoskeletal disorders. Approximately 60% of workers in the construction sector are exposed to manual handling of loads and musculoskeletal disorders are some of the most common forms of ill health among construction workers. It has been estimated that up to 30% of the EU's construction workforce may be affected by musculoskeletal disorders[120].
- According to the World Health Organisation, approximately half of the deaths from occupational cancer are estimated to be caused by asbestos (although this includes non-work related cases). According to the UK Health and Safety Executive, asbestos is the biggest occupational disease risk to construction workers.

Whilst there appears to be a clear downward trend in the rate of non-fatal accidents for the focal MS (see Annex 3), there are variations at the individual MS level year-on-year. When it comes to fatal accidents, whilst there is a downward trend in the majority of MS which are the focus of this study, it seems that in some countries the incidence for fatal accidents has decreased from 2008-2011 and then increased again.

The following graphs show the incidence rate[121] for non-fatal accidents at work in the construction sector (NACE Section F) in the 10 MS over the period 2008 to 2013. It shows that in Spain and Italy in particular there is a very clear declining trend in the rate of non-fatal accidents among construction workers. The graph shows that:

- The rate of non-fatal accidents was lower in 2013 than it was in 2008 in all ten MS;
- The rate of fatal accidents was also lower in 2013 than 2008 with the exception of Ireland, France and the UK;
- Most countries experienced an increase in non-fatal accident rates between 2010 and 2011.

[118] Eurostat (2015): Accidents at work statistics, available at: http://ec.europa.eu/eurostat/statistics-explained/index.php/Accidents_at_work_statistics

[119] A fatal accident at work refers to an accident at work which leads to the death of a victim within one year of the accident.

[120] EU-OSHA (no date): Musculoskeletal disorders in construction, available at: http://www.osha.mddsz.gov.si/resources/files/pdf/E-fact_01_-_Musculoskeletal_disorders_in_construction.pdf

[121] Incidence rate is the number of accidents per 100,000 workers employed

Possible reasons for the observed trends are explained fully in Annex 3 and include:

- The fact that the benefits of OSH legislation may have been achieved long before 2008 in some countries. Thus in some countries there does not appear to be a steep declining trend.
- The fact that there has been an increase in the number of migrant workers and cross-border activity within the EU and that this has put pressure on the management of health and safety in some countries (e.g. as observed in the UK).

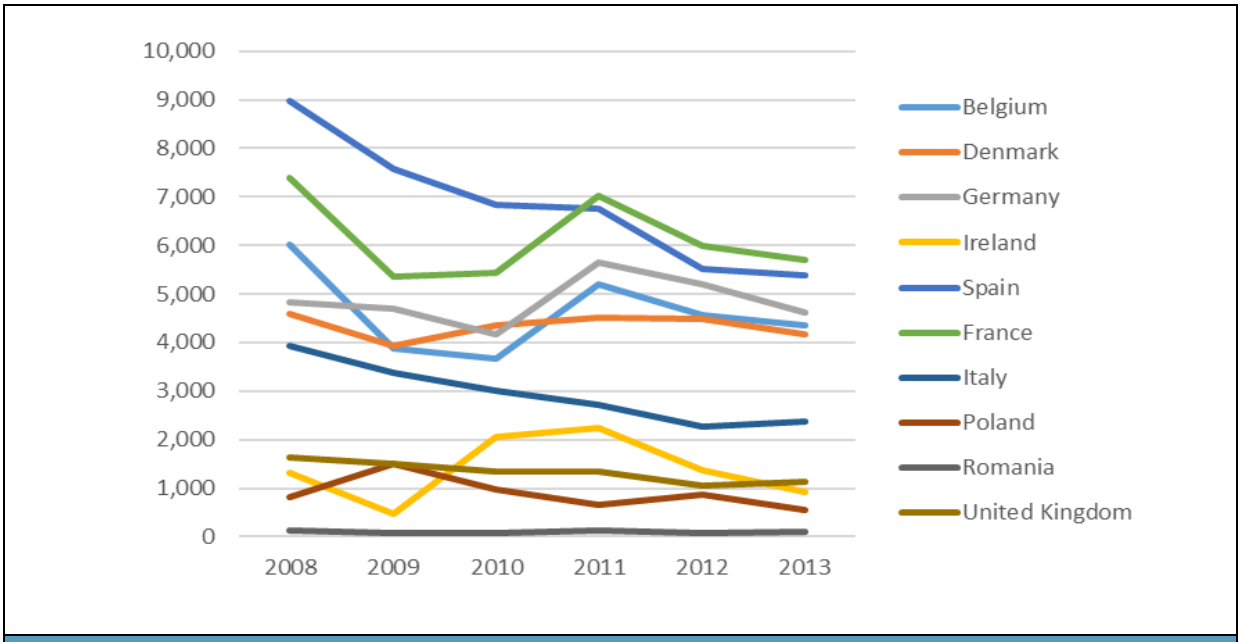


Figure 5-2: Incidence rate for non-fatal accidents at work in the construction sector (NACE Section F), selected countries – 2008-2013. Source: Eurostat

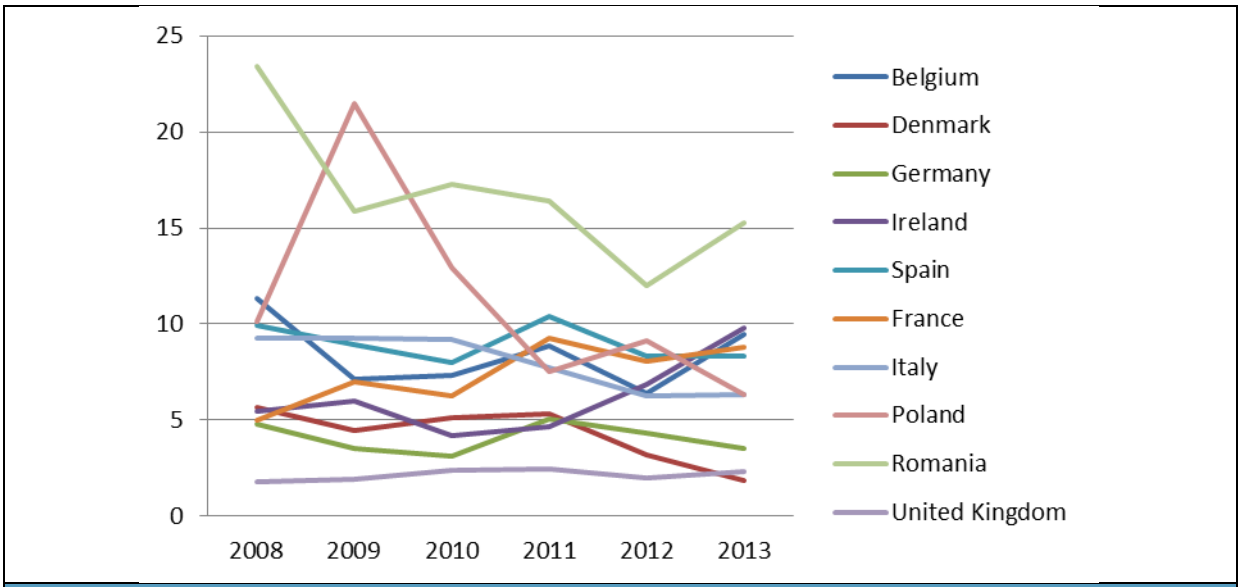


Figure 5-3: Incidence rate for fatal accidents at work in the construction sector (NACE Section F), selected countries – 2008-2013. Source: Eurostat

One industry association from Belgium noted that although the purpose of the European legislation was to harmonize European health and safety rules, **in countries other than Belgium, the health and safety rules are much less stringent and this can lead to unfair competition and 'social dumping'**. It has been reported that foreign construction companies do not abide by the Belgian health and safety rules, for example one industry association from Belgium has reported that:

- In Belgium, a crane driver has to follow a certain education and has to be certified/attested. While a foreign company might provide a paper that looks like a certificate, it may be in a foreign language (so cannot be understood), it is usually of a lower standard than the Belgian certificate[122].
- In Belgium, construction workers must have a medical examination once a year - it is compulsory. In contrast, foreign construction workers are not obliged to do that.

As well as accidents and fatalities, construction is also a high risk industry in terms of occupational health, and there is a high prevalence of cancer cases. The UK Health and Safety Executive notes that construction accounts for over 40% of occupational cancer deaths and cancer registrations, based on 2005 figures (UK HSE, 2015). It estimated that past exposures in the construction sector caused over 5,000 occupational cancer cases annually and approximately 3,700 deaths. The most significant cause of these cancers is asbestos (70%) followed by silica (17%), working as a painter and diesel engine exhaust (6-7% each).

Although all ten of the selected MS have introduced a ban on products containing asbestos (see Table A3-6 in Annex 3), many millions of tonnes of asbestos remain in buildings and buried at waste sites. The potential for workers to be exposed to asbestos (and thus the relevance of the Asbestos Directive) will, therefore, continue for the foreseeable future.

Stakeholders that participated in the consultation were very aware of the risks posed to human health by exposure to asbestos and many noted that the measures set out in the Asbestos Directive are vital for protecting workers' health. Stakeholders noted that although the measures do cause some costs for industry, the costs are quite modest relative to the dangers. Many stakeholders have identified that the benefits (to society overall) far outweigh the costs and that the Asbestos Directive is extremely important for construction workers but also for other people who might come into contact with asbestos (like residents, pupils or workers in a building with asbestos).

Consultation with the sector shows that while asbestos is still a significant concern (in relation to the refurbishment/demolishing of buildings), there is also a lot of concern about long-term occupational exposure to other dangerous substances, such as silica dust, mineral wool, lead, solvents, wood dust or hazardous substances in waste. For example, one company from the UK remarked that:

> *"The directive was introduced too late and the effects of Asbestos in the Work Place are still at such a level that an adequate benchmark to fully understand the effects on workers is still to be determined. The UK stated in 2004 that Asbestos related deaths would peak in 2011, currently it is still rising. Effort should be concentrated on looking at other potential products used in the construction industry i.e. foreseeable risk e.g. silica dust, mineral wools etc."*

When asked whether they are aware of any obsolete measures in the health and safety legislation pertaining to the construction sector (at EU or MS level), nine out of the ten respondents that answered this question indicated that they are not (see Table 5-3 below). The one stakeholder that

[122] It is noted, however, that if the profession is regulated in both countries, the mechanisms from the Professional Qualification Directive apply in principle.

did identify obsolete measures noted that these are "on chemicals" but did not elaborate any further.

Table 5-3: Responses to the question "Are you aware of any obsolete measures in the health and safety legislation pertaining to the construction sector (at EU or Member State level)?" - Responses from MS authorities and Industry Associations during the telephone interviews			
	MS Authorities	Industry Associations	Total
Yes	0	1	1
No	4	5	9
Note: Companies were not asked this question. *Total number of responses to this question: n = 10*			

Environment

In terms of sustainability, the construction sector is considered to be one of the main sources of environmental pollution in the world and potentially has massive direct and indirect impacts on the environment.[123] From material extraction, processing and the manufacture of construction products, through the physical construction of buildings/works, to disposal of construction waste, the construction sector has an environmental impact over its entire life cycle.

The European Commission is currently carrying out a study on the existing situation of CDW in the EU[124]. Early results from this study show that while nine countries are already fulfilling the WFD's target, or are close to it (namely Austria, Belgium, Denmark, Estonia, Germany, Ireland, Lithuania, the Netherlands and the UK), eight countries report comparably low recycling rates. Nevertheless, the findings of this study suggest that the 70% recycling target in the WFD should be achievable for most MS and that best practice in Europe shows that recycling rates over 80% or 90% are feasible. It concludes that **for those countries which are already achieving a higher re-use, recovery and recycling rate, the WFD does not provide an incentive to achieve higher targets.** It has been suggested that, in theory, differentiated targets for these MS could be set in the WFD or in national legislation.[125]

Caution should be exercised however when analysing data on CDW. It has been reported that no reliable data currently exist on the recovery and recycling rates of CDW in the EU. One industry association has alleged that some MS are using back-filling to demonstrate compliance with the target. For example, filling a mining excavation with building waste and classing this as recycling. The industry association indicated that Germany had achieved a recycling rate of 90% due to the practice of back-filling.

The table below presents data on the recovery rate from non-hazardous CDW from the UK over the period 2010 to 2012. The data indicates that the UK is already well above the 70% target set by the WFD.

[123] Enshassi et al. (2014): An evaluation of the environmental impacts of construction projects, available at: http://www.scielo.cl/scielo.php?pid=S0718-50732014000300002&script=sci_arttext&tlng=en

[124] DG Environment study being implemented by BIO and Deloitte et al, details available at http://ec.europa.eu/environment/waste/studies/mixed_waste.htm

[125] Ecologic Institute, Umweltbundesamt Österreich & RIMAS (2013): Ambitious waste targets and local and regional waste management, Report for the European Union and the Committee of the Regions, available at: http://cor.europa.eu/en/documentation/studies/Documents/2013-waste-target-and-regional-waste-management/waste-target-and-regional-waste-management.pdf

Table 5-4: Recovery rate from non-hazardous construction and demolition waste, UK, 2010-12[126]			
	Generation (000 tonnes)	Recovery (000 tonnes)	Recovery rate (%)
2010	45,419	39,129	86.2%
2011	47,067	40,622	86.3%
2012	44,786	38,759	86.5%
Excludes excavation waste			

In terms of the EIA Directive, stakeholders that participated in the OPC were asked for their opinion regarding the criteria and thresholds for determining when an EIA is required to be carried out. The majority (67%) of stakeholders that responded indicated that the criteria for EIA are about right, while a quarter of respondents indicated that the criteria are too high. Most respondents (63%) indicated that EIA legislation captures the majority/all of the right projects and that most/all of the right projects require an EIA. However, a small proportion (22%) indicated that some types of projects that should have an EIA do not currently require one under the legislation.

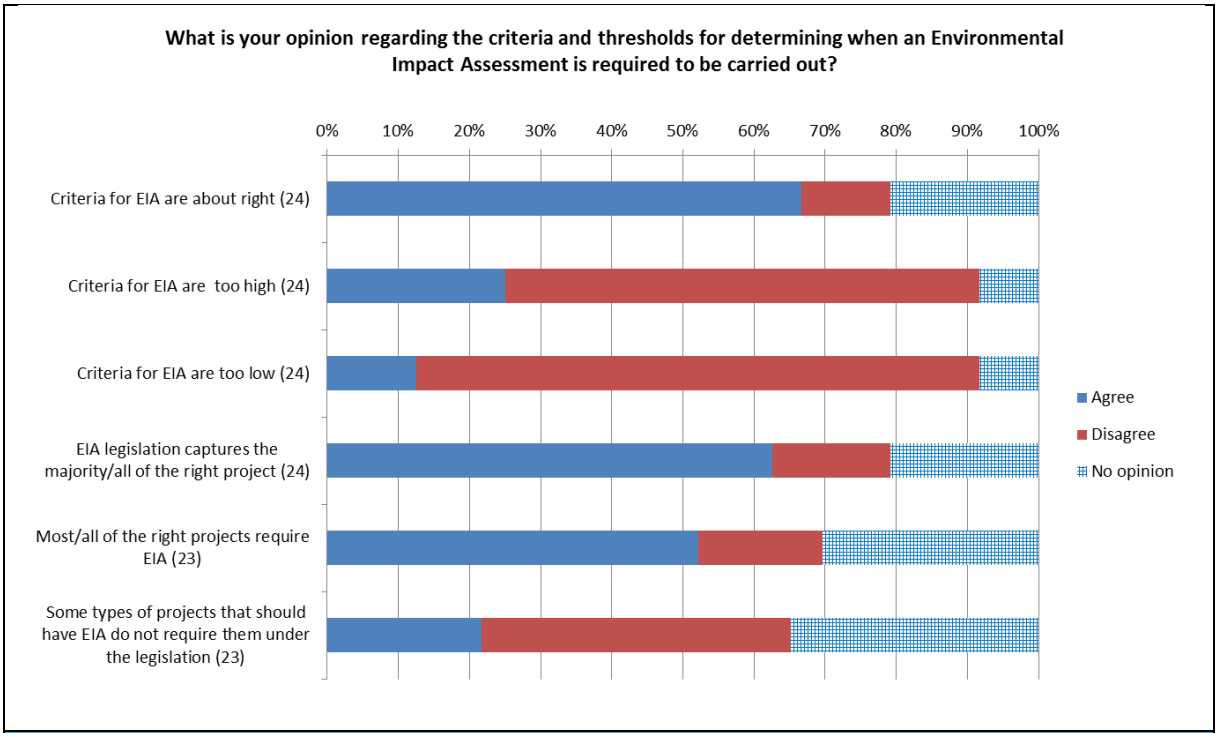


Figure 5-3: Response to the Open Public Consultation (Professionals, Citizens and Authorities)

As indicated in the table below, stakeholders have not identified any obsolete measures in the environment legislation pertaining to the construction sector (at EU or MS level). However, it should be noted that only a very small number of respondents provided an answer to this question.

[126] Defra (2015): UK Statistics on Waste, available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/487916/UK_Statistics_on_Waste_statistical_notice_15_12_2015_update_f2.pdf

Table 5-5: Response to the question "Are you aware of any obsolete measures in the environment legislation pertaining to the construction sector (at EU or Member State level)?" – Responses from MS authorities and Industry Associations during the telephone interviews			
	MS Authorities	Industry Associations	Total
Yes	0	0	0
No	0	3	3
Note: Companies were not asked this question. *Total number of responses to this question: n = 3*			

5.2 Coherence

Table 5-6: Coherence criterion	
In terms of assessing the coherence of the EU legislation, this section considers how the various aspects of the legislative acts interact to work towards the results and impacts by looking at the objectives, inputs, activities and outputs of the single pieces of legislation. This section looks at the synergies or inconsistencies between the six legislative acts that are the focus of the study, but also considers the interaction between these legislative acts and the wider EU acquis pertaining to the construction sector where specific issues have been identified.	
Evaluation Question	**Judgement Criteria**
Are there any inconsistencies, overlaps (e.g. in terms of scope and definitions) or gaps that can be identified across the identified EU legal acts? if yes, which are the inconsistencies, overlaps or gaps?	Inconsistent definitions and/or scope Overlaps between Directives Major gaps in provisions/measures
To what extent can the inconsistencies and overlaps be attributed to provisions in the existing EU legislative framework or to implementation and/or transposition at national (including regional and local) level and/or to existing national legislative frameworks?	EU legislation or national transposition/legislation as source of inconsistencies or duplication
To what extent do all the analysed pieces of EU legislation work together sufficiently well and provide the construction sector with a clear and predictable regulatory framework?	Clear and predictable framework – clarity and consistency in definitions and procedures, scope and treatment of exceptions

5.2.1 To what extent do all the analysed pieces of EU legislation work together sufficiently well and provide the construction sector with a clear and predictable regulatory framework?

Worker health and safety

The OSH Framework Directive was introduced with the aim of introducing minimum safety and health requirements throughout Europe. One of the key provisions of the OSH Framework Directive is article 16(1), which allows the European Council, acting on a proposal from the European Commission, to adopt individual directives on *inter alia* the areas listed in the annex to the Directive[127]. Nineteen directives are currently in force within the meaning of article 16(1). The OSH

[127] List of areas referred to in the Annex to the OSH Framework Directive: Work places, work equipment, personal protective equipment, work with visual display units, handling of heavy loads involving risk of back injury, temporary or mobile construction sites, fisheries and aquaculture.

Framework Directive, with its common legal framework and general principles, applies in full to all the areas covered by the individual directives, with the individual directives containing more stringent and/or specific provisions (addressing specific risk, tasks, sectors and/or groups of workers). This helps to ensure a high degree of synergy between the Framework Directive and the individual directives.

MS authorities and companies that participated in the telephone interviews were asked whether they would agree that the different pieces of EU legislation complement each other and work together to provide a clear and predictable regulatory framework. Overall, the majority of stakeholders that answered this question indicated that the legislation is coherent,. However, it was also noted that it is down to companies to implement the provisions in a manner which is consistent, both within and across MS.

Table 5-7: Responses to the question "Would you agree that the different pieces of EU legislation complement each other and work together to provide a clear and predictable regulatory framework (i.e. legislation is coherent)?" – Responses from MS authorities and companies during the telephone interviews

	MS Authorities	Companies	Total
Yes	5	4	9
No	0	2	2
Don't know	1	2	3
Note: Industry associations were not asked this question. *Total number of responses to this question: n = 14*			

Environment

The prime objectives of the WFD and the EIA Directive relate to the protection of the environment and the promotion of sustainable development. While both directives impact the construction sector, they cover different aspects. As shown above, in Table 5-7, most stakeholders said that the different pieces of EU legislation complement each other and work together to provide a clear and predictable regulatory framework.

5.2.2 Are there any inconsistencies, overlaps (e.g. in terms of scope and definitions) or gaps that can be identified across the identified EU legal acts? If yes, which are the inconsistencies, overlaps or gaps?

Worker health and safety

The OSH Framework Directive contains principles concerning the prevention and assessment of risks, the protection of safety and health, the elimination of risks and accident factors, the informing, consultation and balanced participation and training of workers and their representatives and describes the obligations and responsibilities of employers and workers. These requirements are repeated to varying degrees within each of the OSH Directives. The following table sets out the key requirements of the OSH directives with reference to the specific articles of the directives.

Table 5-8: OSH Directives – Summary of main requirements				
Key requirements	**Directive 89/391/EEC Occupational Safety and Health Framework**	**Directive 90/269/EEC on Manual Handling of Loads**	**Directive 92/57/EEC on Temporary or Mobile Construction Sites**	**Directive 2009/148/EC on Exposure to Asbestos at Work**
Introduction of risk assessment methods	✓ (Art. 6 and 9)	✓ (Art 4 (a))	✓ (Art. 3[3] and 4)	✓ (Art 3(2))
Taking internal and/or external preventative and protective services	✓ (Art. 7 and 8[1])	✓ (Art 4[2])	✓ (various articles)	✓ (Art 7(4))
Provision of information and training for employees	✓ (Art. 10 and 12)	✓ (Art 6)	✓ (Art 11)	✓ (Art 4(4), 17 and 14)
Need to consult with workers	✓ (Art. 11)	✓ (Art 7)	✓ (Art 11 and 12)	✓ (Art 3(5), 7(3) and 12)
Health monitoring and record keeping.	✓ (Art. 9 and 14)			✓ (Art 18)
1: Refers too to emergency measures 2: Refers to the provision of workstation in particular 3: In the context of this Directive, Article 3 sets out a requirement to draw a safety and health plan, in accordance with Article 5 and also a prior notice (in accordance with Annex III) if sites meet specific criteria (>30 working days and >20 workers simultaneously; or >500 person days).				

An example for the requirement to conduct a risk assessment is shown in the Table below.

Table 5-9: Risk Assessment: Consistency in Legislative Requirements

Article 6(3) of the OSH Framework Directive provides that:

> *3. Without prejudice to the other provisions of this Directive, the employer shall, taking into account the nature of the activities of the enterprise and/ or establishment:*
>
> *(a) evaluate the risks to the safety and health of workers, inter alia in the choice of work equipment, the chemical substances or preparations used, and the fitting-out of work places.*
>
> *Subsequent to this evaluation and as necessary, the preventive measures and the working and production methods implemented by the employer must:*
>
> - *assure an improvement in the level of protection afforded to workers with regard to safety and health*
> - *be integrated into all the activities of the undertaking and/ or establishment and at all hierarchical levels*

Article 3(2) of the Asbestos Directive provides that:

> *2. In the case of any activity likely to involve a risk of exposure to dust arising from asbestos or materials containing asbestos, this risk must be assessed in such a way as to determine the nature and degree of the workers' exposure to dust arising from asbestos or materials containing asbestos.*

Article 4(a) of the Directive on the Manual Handling of Loads provides that:

> *Wherever the need for manual handling of loads by workers cannot be avoided, the employer shall organize workstations in such a way as to make such handling as safe and healthy as possible and:*

(a) assess, in advance if possible, the health and safety conditions of the type of work involved, and in particular examine the characteristics of loads, taking account of Annex I

Information from a structured analysis of the provisions of the Directives suggests the following:

- There are significant synergies between the Manual Handling Directive and the OSH Framework Directive. No information has been found to suggest there are any coherence issues between the Manual Handling Directive and other EU legislation and policies.

- The recitals of the Directive on Temporary or Mobile Construction Sites state that the provisions of the OSH Framework Directive are fully applicable without prejudice to more restrictive and/or specific provisions contained in the Directive on Temporary or Mobile Construction Sites. No information has been found to suggest that there are any coherence issues between the Directive on Temporary or Mobile Construction Sites and the OSH acquis at an EU level.

- There are significant synergies between the Asbestos Directive and the OSH Framework Directive. For example, both Directives require a risk assessment to be carried out, the taking of internal and/or external preventative and protective services, the provision of information and training for employees, the consultation of workers and health monitoring and record keeping.

When asked whether they are aware of any synergies between the various pieces of health and safety legislation pertaining to the construction sector, one stakeholder noted that framework directives, such as the OSH Framework Directive, and its daughter directives must, by definition, have synergies.

Table 5-10: Responses to the question "Are you aware of any overlaps or synergies between the health and safety legislation pertaining to the construction sector?" – Responses from MS authorities and Industry Associations during the telephone interviews

	MS Authorities	Industry Associations	Total
Yes	0	2	2
No	3	3	6

Note: Companies were not asked this question.
Total number of responses to this question: n = 8

MS authorities and industry associations that participated in the telephone interviews were asked whether they were aware of any gaps in the health and safety legislation . In response :

- One MS authority noted that, in Poland, occupational health and safety legislation lacks sufficient duties and responsibilities for the investor (both at the investment/design stage, as well as during projects' implementation). As a result, investors are not interested in the safe execution of the works. This is seemingly in contrast to the view expressed by an industry association from Germany that noted that the Directive on the Manual Handling of Loads has moved the cost of prevention from the employer to the party that has commissioned the building. Actually, Directive 92/57/EEC does state in its article 4 that "The project supervisor, or where appropriate the client, shall take account of the general principles of prevention concerning safety and health referred to in Directive 89/391/EEC during the various stages of designing and preparing the project.." It is possible that the multi-layered structure of many construction projects, with multiple levels of contracting, leave some confused over who the ultimate responsibility lies with. In particular, the term "where appropriate" above is to a degree ambiguous. However article 7 of Directive 92/57/EEC establishes : "Where a client or project supervisor has appointed a coordinator or coordinators to perform the duties referred to in Article 5 and 6, this does not relieve the client or project supervisor of his responsibilities in that respect".

- One MS authority in Poland noted that in Polish legislation, there are no regulations or requirements pertaining to occupational health and safety while handling tower cranes, including the crane operator's working time.

- Another MS authority (from Spain) noted that it is sometimes not clear what the legislation applies to, particularly those works that do not require a health and safety plan, for example emergency works (e.g. demolition of a building that is at risk of falling down).

- Several stakeholders have highlighted that there are still discrepancies in terms of the way the legislation is transposed and implemented across MS and that there are differences in terms of levels of compliance.

- In Germany, one industry association noted "We would like to point out that more has to be done in order to boost the ailing construction sector. Construction rates are still below their 2008 pre-crisis levels while there is a growing lack of affordable housing across EU Member States. EU legislation can provide solutions to this crisis, for example by providing better financial instruments to promote investments into buildings. However, there are also shortcomings when it comes to existing regulation. The sector remains burdened by a very large body of unclear, conflicting or overlapping legislation that prevents rather than encourages innovation and growth."

Specific reference to psychosocial risks has been identified as a potentially important gap in the legislative framework pertaining to occupational safety and health in the European construction sector. Even though the OSH Framework Directive asks employers to ensure workers' health and safety in every aspect related to work, 'addressing all types of risk at source', it does not explicitly mention the terms 'psychosocial risk' or 'work-related stress'. While some MS do not explicitly mention psychosocial risks in their legislation transposing the OSH Framework Directive (e.g. Luxembourg, Romania and Spain), others highlight that psychosocial risks or mental health do need to be considered as part of OSH (e.g. Denmark, France, Finland, Greece and Sweden). For example, French legislation covering health and safety at work, as set out in the French Labour Code, covers

not only the physical but also the mental wellbeing of workers. It states, for example, that the employer should carry out prevention measures taking into account not only aspects of the work place that could affect the physical health of workers, but also 'social relations and the influence of environmental factors, particularly risks related to bullying and sexual harassment...'[128]. If the health and safety committee (CHSCT) or the delegated employee (for those companies with fewer than 50 employees) in charge of overseeing the health and safety of workers notices anything likely to affect either the physical or mental health of an employee, they are to raise it with the employer who must then resolve the issue[129].

Others require psychosocial risk assessments (e.g. Bulgaria, Germany, Latvia, Portugal and the United Kingdom) and a few advocate the involvement of a psychosocial risk expert (Austria and Belgium).

Some of the key psychosocial risk factors identified to be encountered within the construction sector include time pressure and deadlines, undeclared work, low control, high demands (physical workload), training (or lack thereof), job certainty, safety climate, skill under-utilisation, responsibility for safety of others, safety compliance, hours of exposure, tenure, harassment/discrimination, lack of communication, posture, high turnover and unsafe work practices.[130]

Several associations had perceived potential overlaps between OSH legislation and chemicals legislation (such as REACH). An example of an overlap with associated additional administrative costs relates to RAs. RAs for the workplace may account for the exposure and risk management of chemicals (under, for example, Directive 98/24/EC on risk related to chemical agents at work which is under the OSH Framework). It is acknowledged that there is a major difference between this type of RA and that required under REACH in that RAs under REACH focus on the chemical and its uses while RAs under OSH focus on the worker and their exposure to various hazards. As such, the RAs are conducted in different ways.

Nevertheless, there can be an apparent overlaps in some specific circumstances. By way of example, there may be additional requirements under the REACH Regulation to prepare a 'downstream users chemical safety report' on the precise nature of the workplace exposure and the associated risk management measures where the Safety Data Sheets and exposure scenarios from product suppliers do not cover the intended use[131].

[128] Article L4121-2 of the French Labour Code, accessed at: https://www.legifrance.gouv.fr/affichCode.do;jsessionid=EEA2AB6131247AF920CE91CC204EB875.tpdila16v_3?idSectionTA=LEGISCTA000006178066&cidTexte=LEGITEXT000006072050&dateTexte=20160908

[129] Article L2313-2 of the French Labour Code, accessed at: https://www.legifrance.gouv.fr/affichCode.do;jsessionid=EEA2AB6131247AF920CE91CC204EB875.tpdila16v_3?idSectionTA=LEGISCTA000006189540&cidTexte=LEGITEXT000006072050&dateTexte=20160908

[130] European Agency for Safety and Health at Work (2011): Innovative solutions to safety and health risks in the construction, healthcare and HORECA sectors, available at: https://osha.europa.eu/en/tools-and-publications/publications/reports/innovative-solutions-OSHrisks

[131] ECHA (2016): How downstream users can handle exposure scenarios - Practical Guide 13, available at https://echa.europa.eu/documents/10162/13655/du_practical_guide_13_en.pdf

Although the report does not have to be submitted to European Chemicals Agency (ECHA), it must be available for inspection by MS authorities. A 2013 article in the journal Chemical Watch notes that:[132]

> *"the risk assessment processes of REACH and OSH Directives are significantly different: the former has a generic approach which allows the use of various models for exposure estimation, while the latter has one approach, which is more task specific. Better alignment between the different pieces of legislation is needed… with priority being given to the integration of information on end-used and other mixtures with other data within safety data sheets."*

One MS authority in Romania has noted that some of the provisions of Directive 2004/37/EC on the protection of workers from risks related to exposure to carcinogens or mutagens at work (as amended by Directive 2014/27/EU[133]) is applicable in the case of asbestos. Article 1(4) of that Directive 2004/37/EC states "As regards asbestos, which is dealt with by Directive 83/477/EEC (4), the provisions of this Directive shall apply whenever they are more favourable to health and safety at work."

Environment

No coherence issues have been identified between the WFD and EIA Directive.

It has been noted that there are overlaps between the WFD and Directive 2006/21/EC on the Management of Waste from the Extractive Industries[134]. The Directive on the Management of Waste from the Extractive Industries recognises backfilling as a waste recovery operation while the WFD has a restrictive view of the notion of recovery. For instance, excavated soil is considered to be waste by the WFD.

One industry association, from Germany, has noted that, to some extent, the definition of waste in the WFD and the definition of waste for the mining sector are inconsistent. This can be explained with the example of topsoil which has been excavated in order to reach the sand and gravel underneath it. The stakeholder explained that, at first, this soil has to be put to one side (while the sand and gravel is extracted). In Spain, this makes it a "waste", even though it could be a perfectly usable product for someone else. Another example would be the process of extracting gravel and sand from an area with a high ground water level (wet dredging). Fine sand which accumulates in the treatment phase that cannot be immediately used is classified as a waste and cannot be used any more. If, after the excavation works are complete, the pond or lake is going to be restored for human use, the fine sand that accumulated during the excavation works cannot be used (e.g. to create a beach) because the sand has already been classified as a waste. These cases highlight where the definition of waste appears not to be sensible.

---

[132] Chemical Watch (2013): Inconsistencies emerge in mixtures assessment, available at: https://chemicalwatch.com/13290/inconsistencies-emerge-in-mixtures-assessment

[133] Directive 2014/27/EU of the European Parliament and of the Council of 26 February 2014 amending Council Directives 92/58/EEC, 92/85/EEC, 94/33/EC, 98/24/EC and Directive 2004/37/EC of the European Parliament and of the Council, in order to align them to Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures, available at: http://eur-lex.europa.eu/legal-content/en/TXT/PDF/?uri=CELEX:32014L0027

[134] Directive 2006/21/EC of the European Parliament and of the Council of 15 March 2006 on the management of waste from extractive industries and amending Directive 2004/35/EC, available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32006L0021

It should be noted that Article 2(2)(d) of the WFD explicitly excludes waste from the extractive industries from its scope:

> ***WFD Article 2(d)***
>
> *The following shall be excluded from the scope of this Directive to the extent that they are covered by other Community legislation:*
>
> *… (d) waste resulting from prospecting, extraction, treatment and storage of mineral resources and the working of quarries covered by Directive 2006/21/EC of the European Parliament and of the Council of 15 March 2006 on the management of waste from extractive industries*

However whilst the WFD does not cover waste resulting from *prospecting, extraction, treatment and storage,* a company in the mining and quarrying sector is impacted like any other company in the economy as long as "normal" waste is concerned. The WFD is otherwise coherent in that mining and quarrying companies are subject to its regulations the same as all other economic actors.

5.2.3 To what extent can the inconsistencies and overlaps be attributed to provisions in the existing EU legislative framework or to implementation and/or transposition at national (including regional and local) level and/or to existing national legislative frameworks?

Worker health and safety

Stakeholders have generally found it difficult to discern between the impacts of the directives and the impacts of national legislation. On the whole, stakeholders consulted for this study referred to national legislation when asked about inconsistencies and overlaps, either in their own country or in other MS. As shown in Table 5-11 below, some MS have set more stringent requirements with regard to specific aspects of the OSH Framework Directive.

Table 5-11: Key requirements of the OSH Framework Directive and their implementation in the case study MS – Analysis of whether more stringent, detailed or broader requirements been put in place at a MS level

Key requirements	Relevant Articles	Have more stringent, detailed or broader requirements been put in place at a MS level?								
		BE	DK	FR	DE	IE	PL	RO	ES	UK
Conducting a risk assessment	6(3), 9(1)(a)	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Ensuring preventive and protective services	7(1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Information for workers	10	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes
Training of workers	12	No	Yes	No	No	No	Yes	Yes	Yes	No
Health surveillance	14	Yes	Yes	Yes	No	No	Yes	No	No	No
Consultation of workers	11, 6(3)(c)	No	Yes	Yes	No	No	Yes	Yes	No	No

In Denmark, one industry association noted that there are inconsistencies or overlaps between the provisions of the OSH Framework Directive and the provisions of other EU health and safety legislation in relation to chemicals, but that these are mostly a result of "over-implementation" in

Denmark. Denmark has held on to an old regulation from the 1960s and it is this which is reportedly causing an issue of inconsistency/overlap.

Environment

As noted previously, some overlaps and inconsistencies have been identified in terms of the definition of waste in the WFD and the definition of waste for the extractive industries. However, it has not been possible to discern, on the basis of the information available, whether this issue is related to the EU Directives or to their transposition and implementation at a national (or local) level.

5.3 Effectiveness

Table 5-12: Effectiveness criterion	
This section looks at how effective the EU legislation has been in terms of fulfilling, or progressing towards, the objective of achieving a competitive and sustainable construction sector.	
Evaluation Question	**Judgement Criteria**
To what extent has the identified EU legislation contributed to achieving the objectives of a competitive and sustainable construction sector?	Degree to which EU legislation meets the needs of industry in terms of remaining competitive whilst protecting workers and the environment
To what extent do 'shortcomings' in EU legislation, or in its implementation/transposition at a national level, impact on the performance of the construction sector?	
What are the obstacles that still stand in the way of achieving the objectives of a competitive and sustainable construction sector?	
What are the unintended positive or negative consequences and collateral effects of the EU legislation in question?	Identification of effects not anticipated from legislation (positive and negative) Identification of objectives not fulfilled

5.3.1 To what extent has the identified EU legislation contributed to achieving the objectives of a competitive and sustainable construction sector?

As shown in Table 5-13 below, a clear majority of stakeholders indicated that EU legislation in the areas of the environment and health and safety has positively contributed to the European Commission's goal of achieving a competitive and sustainable construction sector.

Table 5-13: Responses to the question "To what extent has EU legislation in the areas of environment and health and safety contributed to achieving a competitive and sustainable construction sector?" – Responses given during the telephone interviews				
	MS Authorities	Industry Associations	Companies	Total
Large positive impact (++)	2	2	3	7
Moderate positive impact (+)	2	3	5	10
No impact (+/-)	0	0	1	1
Moderate negative impact (-)	0	0	1	1
Large negative impact (--)	0	0	1	1
Don't know	2	2	1	5
Total number of responses	**6**	**7**	**12**	**25**

When asked what the effect has been of EU health and safety and environment legislation on the global competitive position of EU companies operating in the construction sector, nine stakeholders out of the 15 that responded to this question indicated that it has had a positive impact on their position in the wider global market. Nevertheless, one industry association in Romania has noted that Romanian manufacturers producing construction products are at a competitive disadvantage relative to their non-EU neighbours who have less stringent (environmental) legislation. Two German companies also cited a negative impact on their position in the wider global market[135]. One company (citing a positive impact) explained that it has created good practice that can be exported to countries outside of the EU.

Table 5-14: Telephone interviews, responses to the question "What has been the effect of EU health and safety and environment legislation on the global competitive position of EU companies operating in the construction sector?"				
	MS Authorities	Industry Associations	Companies	Total
It has had a positive impact on their position in the wider global market	2	0	7	9
It has not had any impact on their position in the wider global market	0	0	3	3
It has had a negative impact on their position in the wider global market	0	1	2	3
Total number of responses	**2**	**1**	**12**	**15**

Worker health and safety

"Social sustainability" is the least defined and least understood of the three pillars of sustainability (i.e. social, economic and environmental) but is widely recognised to encompass occupational health and safety. In addition to improving the social sustainability of the construction sector, improvements in OSH may also enhance its competitiveness and economic sustainability.

Stakeholders that participated in the OPC were asked about the extent to which the four OSH directives covered by this study have contributed to various benefits. As shown in the following four

[135] One company was a construction contractor and the other a provider of professional services (architect). Both were based in Germany.

figures, the vast majority of respondents (>80%) indicated that the OSH directives have reduced risks to workers' health and safety (a small proportion of respondents indicated that the directives have had no impact in this regard but no stakeholders indicated a negative effect).

Most stakeholders also identified that the OSH directives have reduced the number of work days lost to work related injuries and ill-health in the construction sector. Although a smaller proportion of stakeholders (58%) identified that the Asbestos Directive has reduced the number of work days lost, compared to the OSH Directive (90%), it is likely that this reflects the long latency period for asbestos-related diseases, which often arise after a person has retired.

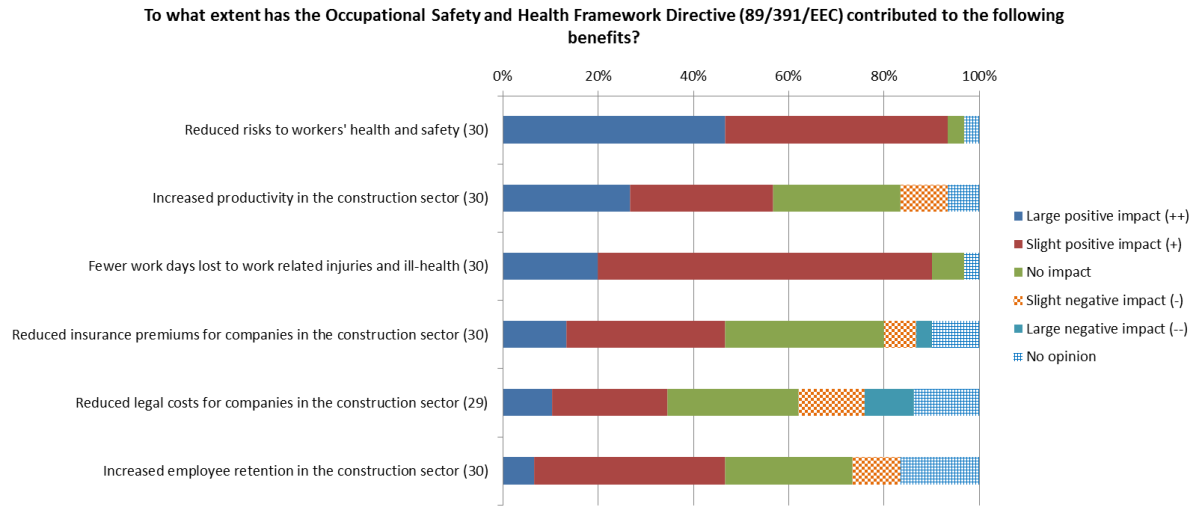


Figure 5-4: Responses to the Open Public Consultation (Professionals, Citizens and Authorities)

More than half (57%) of the respondents to the OPC indicated that the OSH Framework Directive had increased productivity in the construction sector, with workers unions in particular citing a large positive impact in this regard. However, one company, one industry association and one NGO cited a slightly negative impact in terms of productivity. Stakeholders had more mixed views regarding the extent to which the OSH Framework Directive had reduced legal costs for companies in the construction sector; some stakeholders cited a large positive impact, others cited a large negative impact and most stakeholders cited no impact at all.

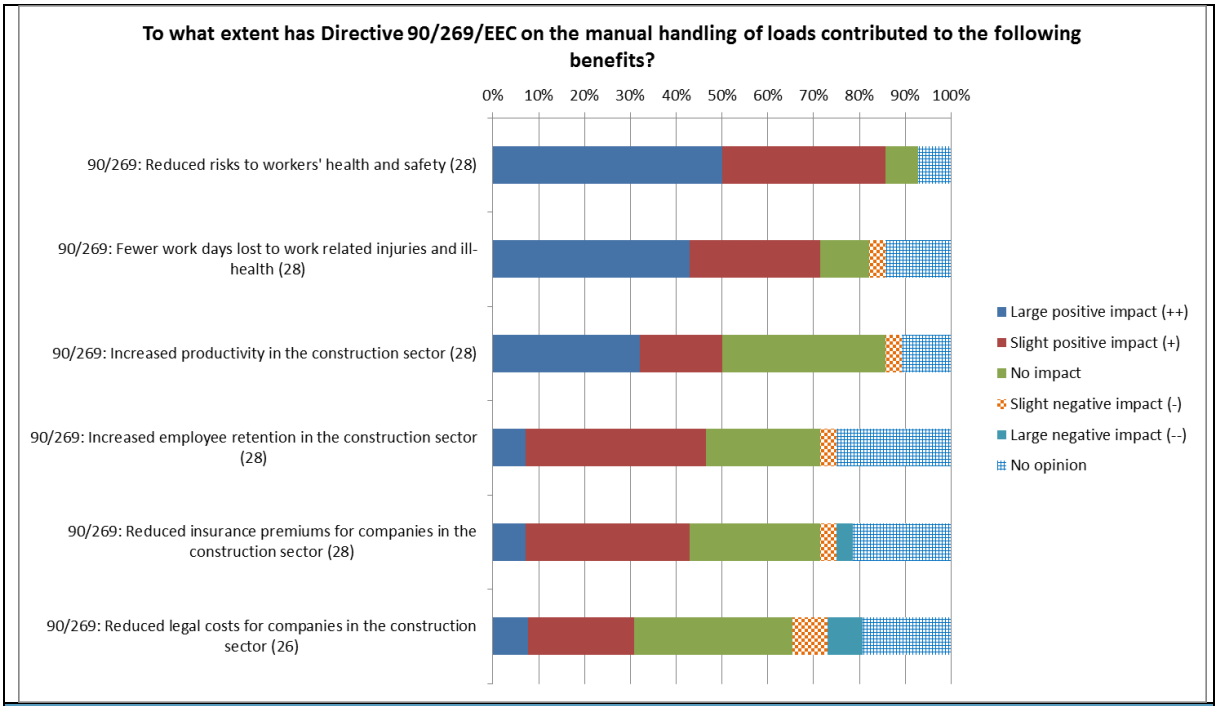


Figure 5-5: Responses to the Open Public Consultation (Professionals, Citizens and Authorities)

Half the respondents to the OPC indicated that the Directive on the Manual Handling of Loads had increased productivity in the construction sector. Stakeholder interviews with industry associations included the view that requirements to introduce preventive/protective measures for workers in relation to the manual handing of loads had led to the introduction of equipment which also increased productivity, with heavier loads being able to be moved around more quickly and efficiently, leading to increases in productivity. Most stakeholders also agreed that the Directive had increased employee retention in the construction sector (46%) and reduced insurance premiums (43%).

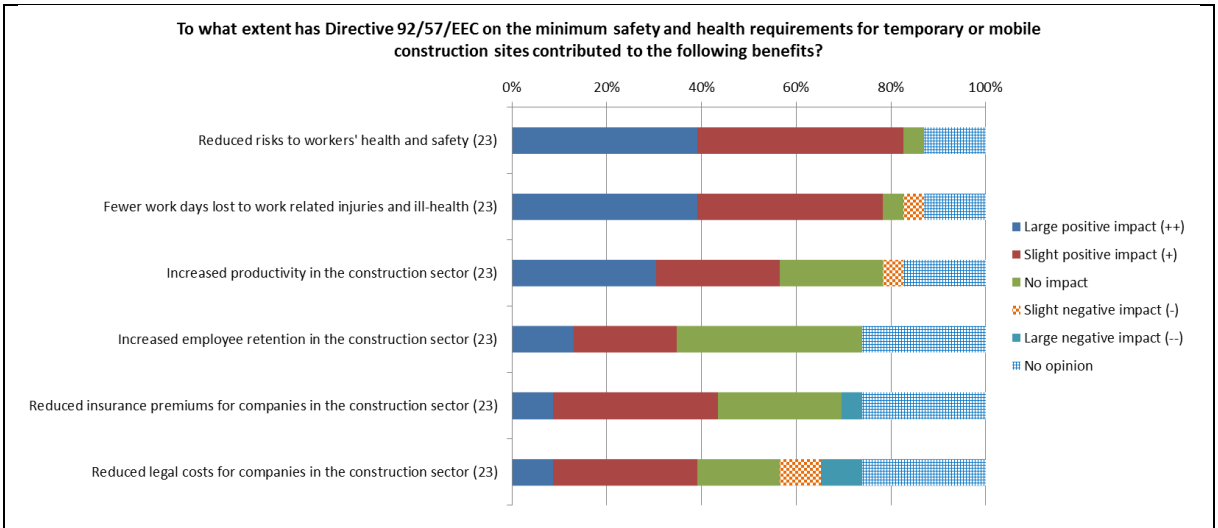


Figure 5-6: Responses to the Open Public Consultation (Professionals, Citizens and Authorities)

Most stakeholders (46%) have indicated that the Asbestos Directive has increased employee retention in the construction sector, with no stakeholders citing a negative impact in this regard.

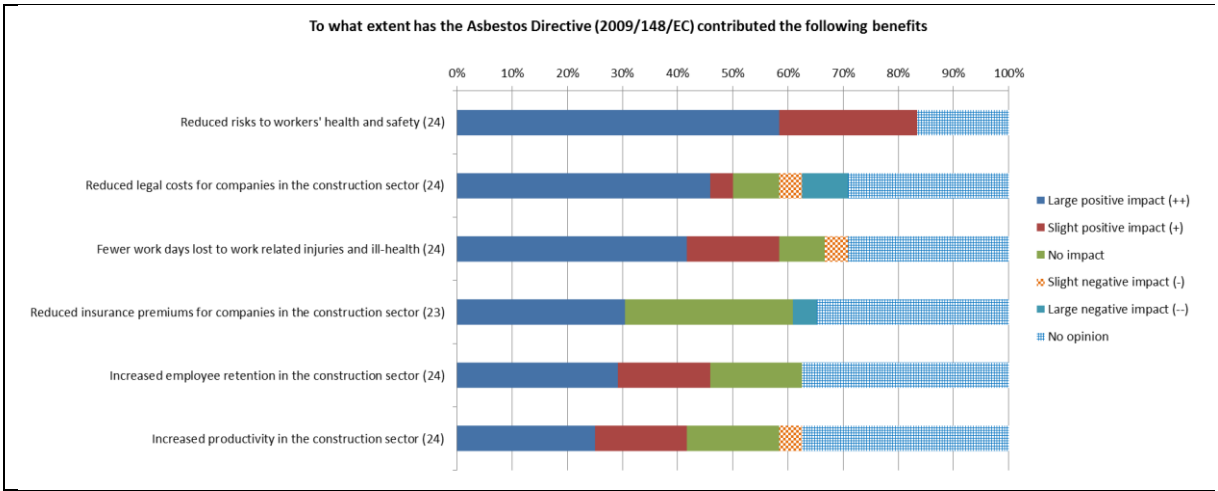


Figure 5-7: Responses to the Open Public Consultation (Professionals, Citizens and Authorities)

As noted earlier, in the EU-28 as a whole, the incidence rate[136] of fatal and non-fatal accidents at work in the construction sector has shown a steady decline between 2008 and 2013. A first look at the statistics would thus suggest that the legislation has been effective in reducing the number of fatal accidents and non-fatal injuries. Indeed, a 2014 survey conducted by the EU-OSHA (ESENER-2)[137] showed that most businesses in the construction sector agreed that one of the main reasons for addressing health and safety was to meet the legal obligations (see Figure 5-8 below). Across Europe, 86% of those who responded to the ESENER-2 Survey agreed that the legislation was the major reason for improved OSH.

[136] The incidence rate of non-fatal or fatal accidents at work is the number of serious or fatal accidents per 100,000 persons in employment

[137] European Survey of Enterprises on New and Emerging Risks (ESENER) is an extensive survey looking at how safety and health risks are managed in European workplaces.

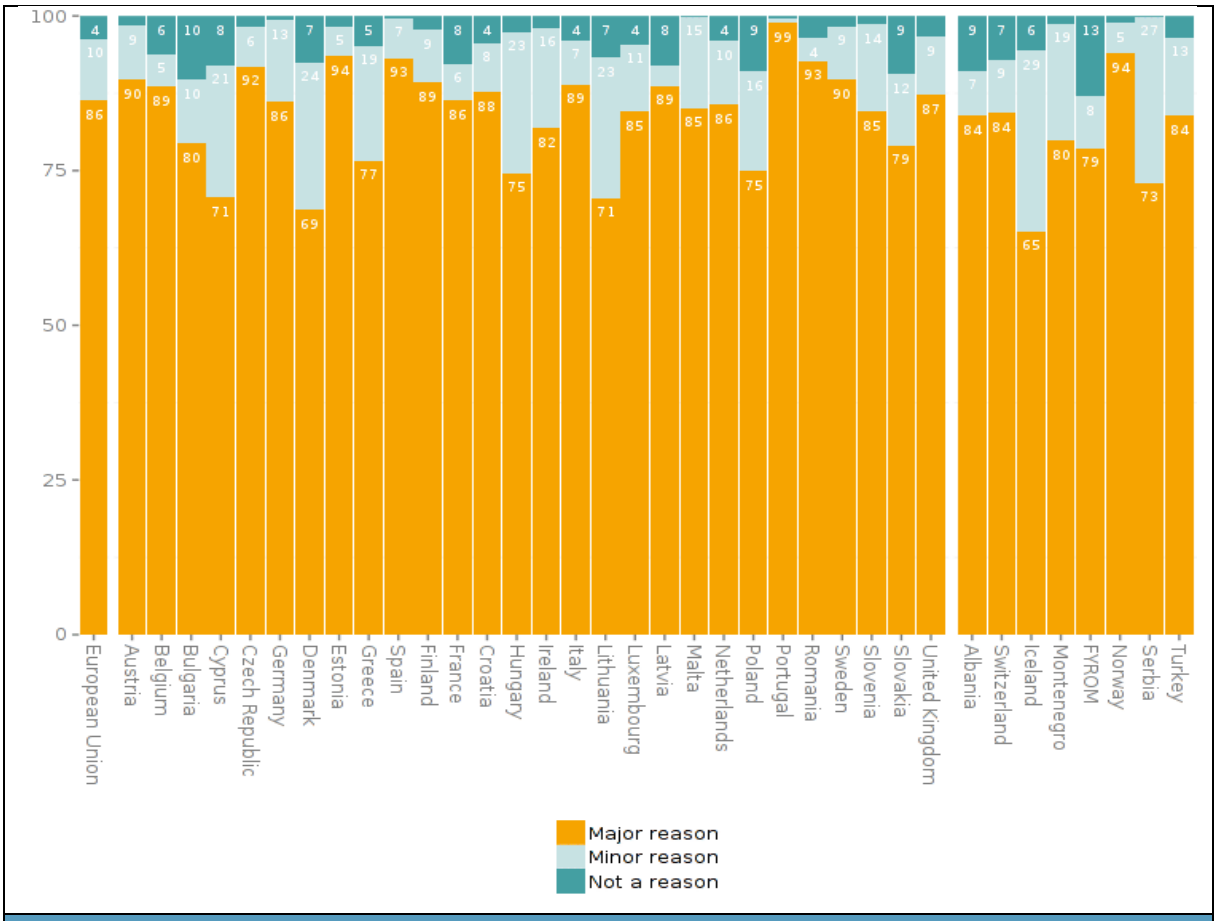


Figure 5-8: OSH legislation as one of the main reasons for addressing health and safety. Construction sector ESENER-2: https://osha.europa.eu/en/surveys-and-statistics-osh/esener/2014

In our own consultation, MS authorities were asked which of the measures in the OSH Framework Directive have had the greatest impact in terms of improving the health and safety of construction workers (see Table 5-15). It is noteworthy that all the MS authorities that responded were of the view that the measures introduced by the OSH Framework Directive had resulted in a positive impact (or no impact) in terms of improving health and safety. In particular, carrying out an evaluation of the risks to the health and safety of workers was identified as having a large positive impact.

One MS authority from Denmark noted that the OSH Framework Directive did not introduce any measures that Denmark did not have already at some level, although the requirement for the workplace assessment to be in writing, and the hierarchy in relation to prevention set out in annex 1 was new. In Finland, an industry association noted that risk evaluation, training and using new technology reduces accidents and diseases (and has additional benefits in terms of increasing long-term productivity). An EU industry association noted that having dedicated staff in charge of implementing and monitoring health and safety is ensuring a good level of protection for workers.

Table 5-15: Responses to the question "Which of the following measures have had the greatest impact on improving the health and safety of construction workers?" – Responses by MS Authorities to question on the OSH Framework Directive during the telephone interviews						
	Large positive impact (++)	Slight positive impact (+)	No impact	Slight negative impact (-)	Large negative impact (--)	Don't know
Provision of information and training for workers on health and safety	5	4	0	0	0	0
Carrying out an evaluation of the risks to the health and safety of workers	7	1	0	0	0	0
Purchasing protective equipment	3	5	0	0	0	0
Implementing protective organizational measures	5	3	0	0	0	0
Keeping a list of occupational accidents	4	3	0	0	0	0
Reporting on occupational accidents	3	4	0	0	0	0
Employing dedicated health and safety personnel (either in-house or externally)	4	2	1	0	0	0
Monitoring workers' health	4	3	1	0	0	0
Consulting with workers about issues relating to safety and health at work	5	2	1	0	0	0
Taking measures relating to first aid, firefighting and the evacuation of workers	3	3	2	0	0	0
Industry associations and companies were not asked this question *Total number of responses to this question: n = 9*						

MS authorities have identified that the various measures introduced by the Directive on the Manual Handling of Loads have positively contributed to improving health and safety in the construction sector (Table 5-16).

Table 5-16: Responses to the question "Which of the following measures have had the greatest impact on improving the health and safety of construction workers?" – Responses by MS Authorities to question on the Directive on the Manual Handling of Loads during the telephone interviews						
	Large positive impact (++)	Slight positive impact (+)	No impact	Slight negative impact (-)	Large negative impact (--)	Don't know
Carrying out an assessment of the characteristics of the load, physical effort required, characteristics of the working environment and requirements of the activity in order to make the manual handling of loads as safe and healthy as possible	3	4	0	0	0	0
Providing indications/information on the weight and centre of gravity of heavy loads	3	4	0	0	0	0

Table 5-16: Responses to the question "Which of the following measures have had the greatest impact on improving the health and safety of construction workers?" – Responses by MS Authorities to question on the Directive on the Manual Handling of Loads during the telephone interviews						
	Large positive impact (++)	Slight positive impact (+)	No impact	Slight negative impact (-)	Large negative impact (--)	Don't know
Providing workers with information and training on the way to handle loads correctly, and the risks if not done correctly	3	4	0	0	0	0
Consulting with workers (or their representatives) on matters related to the manual handling of loads and worker health and safety	3	4	0	0	0	0
Purchasing equipment and implementing organizational measures to avoid the need for the manual handling of loads by workers	4	3	0	0	0	0
Purchasing equipment and implementing organizational measures to reduce the risk involved in the manual handling of loads	4	3	0	0	0	0
Organising workstations in such a way as to make the manual handling of loads as safe and healthy and possible	3	4	0	0	0	0
Industry associations and companies were not asked this question *Total number of responses to this question: n = 7*						

In Romania, one MS authority noted that during inspections, labour inspectors have found that increasingly more companies have taken steps to reduce the manual handling of loads, for example:

- Redesigning the process flows;
- Providing workstations with specific work equipment that is modern and certified;
- Implementing best practice on manual handling of loads;
- Training workers in relation to the manual handling of loads;
- Implementing ergonomic arrangements for workplaces;
- Clearing access roads before starting loading/unloading operations; and
- Distributing working tasks according to each workers' specific physical condition.

One industry association from Germany has noted that there has been remarkable progress in the information and training of workers in medium size companies but that a lot of things still need to be done, e.g. to limit the weight of construction material bags that are handled manually by workers.

One MS authority noted that one of the key challenges in Ireland is that there is very little reporting of occupational diseases related to musculoskeletal disorders; most of the accidents reported relate to an acute back injury. The statistics that are available indicate the prevalence of musculoskeletal disease is still high and this is something that needs to be investigated further across different sectors. The stakeholder noted that historically across the EU, there has been too much emphasis on the benefits of training and not enough focus on the need to design improved systems of work that avoid or reduce unfavourable ergonomic conditions in the workplace. It has been noted that the Health and Safety Authority is doing further statistical research related to occupational diseases and that the focus of their inspections is very much on the need for effective Ergonomic Risk

Management that places the emphasis on improved work system design to reduce musculoskeletal risk.

Stakeholders that participated in the telephone interviews were asked which of the measures introduced by the Directive on Temporary or Mobile Construction Sites have had the greatest impact in terms of health and safety. Responses to this question are provided in Table 5-17. One industry association from Germany explained that, in practice, the health and safety coordinator carries out several tasks (e.g. work organisation, cooperation between companies and subcontractors and between different occupations on the construction site). The stakeholder noted that the:

> *"preventive potential of a health and safety coordinator is high and a cost-effective way to avoid risks in construction".*

One MS authority from Denmark noted that while there has been a decline in fatal accidents between 2004 and 2014, there has not been any marked decline in serious work-related accidents (long term sick leave) nor in attrition. While the lack of a marked decline might, in part, be because some of the immediate gains of the OSH measures were made before 2004, the stakeholder noted that there is room for significant improvement in this area of OSH, and that compliance is still a significant problem in Denmark. It has been suggested that compliance could be increased through increased control or increased fines[138]. The stakeholder also noted that more information is available now about the situations in which serious accidents might occur. This can provide companies with the opportunity to focus on where it is most important to work on prevention.

In Belgium, one MS authority noted that there has not been any impact associated with complying with the minimum safety and health requirements for construction sites set out in Annex IV to the Directive, because similar requirements were already in place in Belgium before the Directive came into force. Similarly, a MS authority from Finland has noted that the measures introduced by the Directive on Temporary or Mobile Construction Sites (Table 5-17) are part of normal business operations and cannot be separated from the business-as-usual. It appears reasonable that normal business operations will require some degree of accounting for health and safety provision in order for construction projects to proceed efficiently, it is difficult to account for the extent to which this will be the case in monetary terms. A discussion of this is provided in Section 4.8 above.

Table 5-17: Responses to the question "Which of the following measures have had the greatest impact on improving the health and safety of construction workers?" – Responses by MS Authorities to question on the Directive on Temporary or Mobile Construction Sites during the telephone interviews

	Large positive impact (++)	Slight positive impact (+)	No impact	Slight negative impact (-)	Large negative impact (--)	Don't know
Appointing one or more coordinators for health and safety matters	5	4	0	0	0	0
Drawing up a health and safety plan	4	5	0	0	0	0
Complying with the minimum safety and health requirements for construction sites set out in Annex IV to the Directive	2	5	1	0	0	0
Industry associations and companies were not asked this question						

[138] The MS authority from Denmark noted that fines are significantly higher in 2016 than they were in 2004.

The various measures introduced by the Asbestos Directive were also perceived by MS authorities to have positively contributed to improving the health and safety of construction workers. It was noted that because asbestos-related diseases have a long latency period, the full benefits may not have been realised yet (and would mainly accrue at a societal level rather than for construction firms in any event).

Interestingly, in Portugal, the 2009 Asbestos Directive has not yet been transposed, although the 2003 Asbestos Directive (Directive 2003/18/EC) has been transposed by Decree-Law 266/2007, of 24 June (ASB DL).

Table 5-18: Responses to the question "Which of the following measures have had the greatest impact on improving the health and safety of construction workers?" – Responses by MS Authorities to question on the Asbestos Directive during the telephone interviews

	Large positive impact (++)	Slight positive impact (+)	No impact	Slight negative impact (-)	Large negative impact (--)	Don't know
Undertaking a risk assessment in cases where an activity is likely to involve a risk of exposure to asbestos	4	2	0	0	0	0
Provision of information and training to workers who are, or are likely to be, exposed to dust from asbestos	4	2	0	0	0	0
Consulting with workers (or their representatives) about the risks arising from exposure to asbestos	3	3	0	0	0	0
Undertaking clinical surveillance of workers	4	2	0	0	0	0
Submitting a notification to the responsible authority	4	2	0	0	0	0
Compiling and submitting information to a national register, indicating the nature and duration of the activity and the exposure to which workers have been subjected	3	2	0	0	0	1
Purchasing and displaying warning signs	3	3	0	0	0	0
Measuring asbestos fibres in the air at the workplace	3	3	0	0	0	0
Purchasing respiratory and/or other personal protective equipment to minimize exposure to asbestos	4	2	0	0	0	0
Purchasing other equipment to minimize exposure to asbestos	4	2	0	0	0	0
Implementing organizational measures to reduce exposure to asbestos	4	2	0	0	0	0
Storing, transporting and cleaning materials and equipment contaminated with asbestos dust	3	3	0	0	0	0
Drawing up a plan of work	4	2	0	0	0	0

Industry associations and companies were not asked this question
Total number of responses to this question: n = 9

Results from interviews with companies and industry associations regarding the extent to which the different measures set out in Table 5-15 have contributed to various benefits at the company level are presented in Table 5-19 below. As the table shows, industry associations and companies have attributed several other benefits to the OSH directives, including:

- Increased employee retention;
- Reduced insurance premiums;
- Reduced legal costs; and
- Reduced business risks.

The majority of respondents have clearly indicated that the measures have resulted in largely positive or slightly positive impacts, although under the Asbestos Directive measures, more tended towards no impact for some of the anticipated benefits.

Table 5-19: To what extent have the health and safety measures listed in the previous question contributed to the following benefits for your company / for companies in the construction sector? – Answers from companies and industry associations

	Large positive impact (++)	Slight positive impact (+)	No impact (0)	Slight negative impact (-)	Large negative impact (--)	Don't know / no opinion
OSH Framework Directive						
Reduction in the number of workers exposed to occupational risks	10	7	2	0	0	2
Fewer work days lost to work related injuries and ill-health	8	9	1	0	0	2
Improved wellbeing and job satisfaction among workers	6	10	2	1	0	2
Increased productivity	5	11	2	1	0	2
Increased employee retention	4	7	4	0	0	4
Reduced insurance premiums	4	5	4	1	1	4
Reduced legal costs	3	8	6	0	0	4
Reduced business risks	7	9	3	0	0	2
Directive on the manual handling of loads (90/269/EEC)						
Reduction in the number of workers exposed to occupational risks	3	8	1	0	0	2
Fewer work days lost to work related injuries and ill-health	3	7	2	0	0	2
Fewer workers with back injuries / back pain related to the manual handling of loads at work	3	8	1	0	0	2
Increased productivity	4	7	1	0	0	2
Reduced insurance premiums	2	4	5	0	0	2
Reduced legal costs	1	4	6	0	0	3
Reduced business risks	2	5	3	0	0	3
Directive on temporary or mobile construction sites (92/57/EEC)						
Reduction in the number of workers exposed to occupational risks	4	6	3	0	0	1
Fewer work days lost to work related injuries and ill-health	4	4	5	0	0	1
Increased productivity	4	4	3	1	0	1

Table 5-19: To what extent have the health and safety measures listed in the previous question contributed to the following benefits for your company / for companies in the construction sector? – Answers from companies and industry associations						
	Large positive impact (++)	Slight positive impact (+)	No impact (0)	Slight negative impact (-)	Large negative impact (--)	Don't know / no opinion
Reduced insurance premiums	1	3	7	1	0	2
Reduced legal costs	1	3	7	1	0	2
Reduced business risks	1	5	5	1	0	1
Asbestos Directive (2009/148/EC)						
Reduction in the number of workers exposed to asbestos	1	3	1	0	0	1
Fewer work days lost as a result of ill-health resulting from exposure to asbestos	1	1	2	0	0	2
Increased productivity	0	1	3	0	0	2
Reduced insurance premiums	0	1	3	0	0	2
Reduced legal costs	0	1	3	0	0	2
Reduced business risks	0	2	2	0	0	2

Some stakeholders also identified non-legislative measures that have had a positive impact on health and safety. For example, the provision of guidance documents by MS authorities (or competent scientific bodies assisting with implementation) was also identified as having a positive impact on workers' health and safety[139]. The observed reduction in the incidence rate of fatal accidents and non-fatal injuries in the EU may also have been influenced by other factors (e.g. industry initiatives, better enforcement or a perceived increase in the risk of litigation). One French industry association noted that:

> *"The construction sector has observed a significant fall of occupational accidents for many years. However, it is difficult to determine what is at the origin of this progress: EU directive, national legislation, voluntary involvement of construction companies and occupational branches (with the French OPPBTP support), technic and technology innovations, etc. Probably, it results from a cumulative impact."*

An EU industry association, noted that:

> *"Since 1989, there was for sure improvements in regards to protection of workers' health and safety. Companies' own standard and voluntary commitment have also helped improving the situation."*

Thus, it is not possible to attribute the full benefits, in terms of reduced accidents/fatalities, to the EU legislation.

In terms of the effectiveness of the legislation, stakeholders that participated in the OPC were asked to indicate the extent to which they agree with certain statements (Figure 5-9 below). Overall:

[139] In Romania, one MS authority noted during the telephone interviews that a series of manuals have been developed containing, among other things, recommendations on the maximum loads to be manipulated by age, sex, type of handling (lifting, carrying, pulling) and their frequency.

- 71% of respondents indicated that workers are protected against the risks posed to their health by exposure to asbestos (17% of respondents disagreed);
- 69% of respondents indicated that workers are protected again the risks posed to their health by the manual handling of loads (20% of respondents disagreed); and
- 74% of respondents indicated that workers are protected against the risks posed to their health on temporary or mobile construction sites (12% of respondents disagreed).

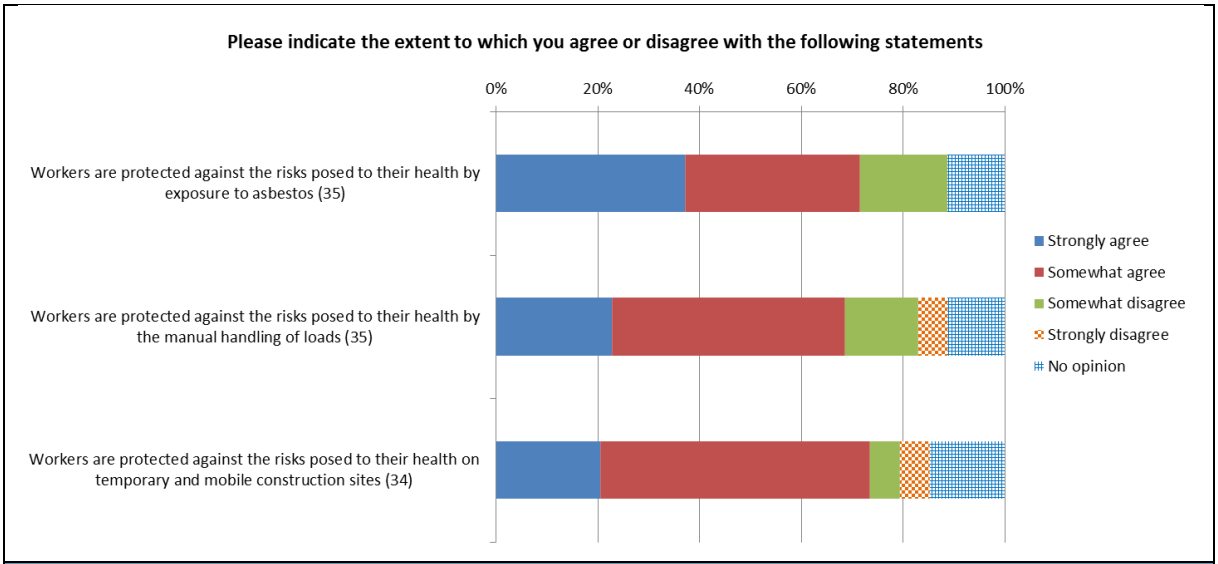


Figure 5-9: Responses to the Open Public Consultation (Professionals, Citizens and Authorities)

In terms of competitiveness, although several industry associations responding to the consultation have noted that the OSH Framework Directive helped to level the playing field within the EU[140], one industry association and one NGO from Belgium noted that companies from outside Belgium often have a lower standard of health and safety and that this can lead to companies in Belgium being at a competitive disadvantage.

Table 5-20: The Directive has helped to level the playing field within the EU – responses from Industry Associations during the telephone interviews

	Large positive impact (++)	Slight positive impact (+)	No impact	Slight negative impact (-)	Large negative impact (--)	Don't know	Total
OSH FWD	3	3	2	1	0	0	9
Manual Handling of Loads	0	1	2	0	0	0	3
Temporary or Mobile Construction Sites	1	1	2	0	0	0	4
Asbestos Directive	0	0	2	0	0	0	2

In this regard, it is worth noting that the level of cross-border trade in construction products within the EU is relatively low (on the whole, construction products are bulky, heavy and of relatively low value; they therefore tend to be sold to 'local' markets, rather than transported internationally).

[140] One industry association from Germany has also noted that Annex IV of the Directive on Temporary or Mobile Construction Sites "*establishes a level playing field for the whole industry*".

Thus any impact in terms of levelling the playing field is more likely to be observed in relation to construction services (i.e. construction contractors, or professional services).

In Ireland, it has been noted that the implementation of the 2010 Regulations was anticipated to have a positive effect on national competitiveness by ensuring that Irish Regulations correspond closely with the Directive and that of other EU MS.[141]

When asked whether the Directives have helped to level the playing field within each MS (see Table 5-21 below), most industry associations indicated that they had either had a positive impact, or no effect.

Table 5-21: The Directive has helped to level the playing field within my country – responses from Industry Associations during the telephone interviews

	Large positive impact (++)	Slight positive impact (+)	No impact	Slight negative impact (-)	Large negative impact (--)	Don't know	Total
OSH FWD	3	4	2	0	0	0	9
Manual Handling of Loads	0	1	2	0	0	0	3
Temporary or Mobile Construction Sites	2	1	1	0	0	0	4
Asbestos Directive	0	0	2	0	0	0	2

An industry association from Germany has noted that the OSH Directive "sets fair and reasonable requirements".

Environment

Most stakeholders that participated in the consultation considered "sustainability" to mean "environmental sustainability", as opposed to a broader definition of sustainability which encompasses environmental, social and economic aspects.

As shown in Figure 5-10 below, more than half (57%) of the stakeholders that responded to the OPC indicated that the environment is adequately protected against harm caused by the construction industry, while over a third (37%) of stakeholders disagreed. Thus stakeholders provided quite mixed views regarding the extent to which the environment is adequately protected.

[141] HSA (2010): Regulatory Impact Assessment (RIA – Draft Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations (S.I. No. … of 2010), available at http://www.hsa.ie/eng/Legislation/Regulatory_Impact_Analysis

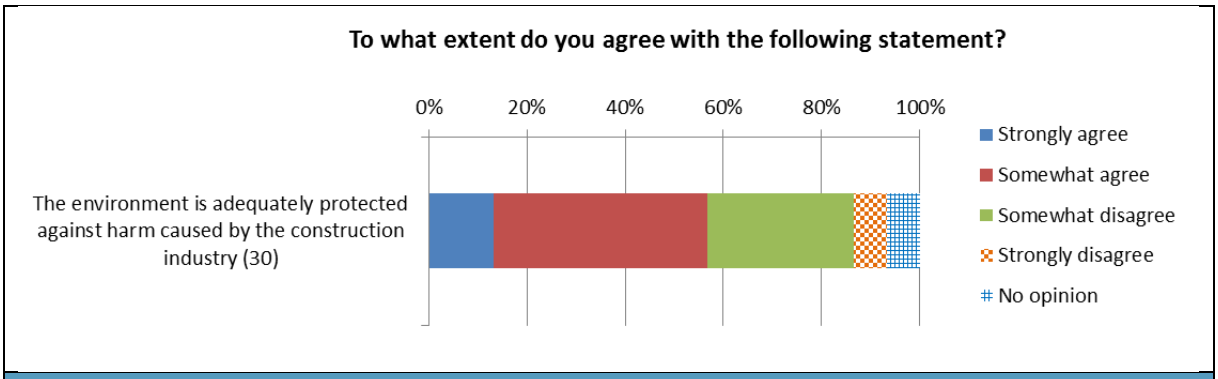


Figure 5-10: Responses to the Open Public Consultation (Professionals, Citizens and Authorities)

In the telephone interviews, stakeholders were asked about the extent to which the environment directives have helped to reduce environmental impacts. In response, one MS authority from Poland and one MS authority from the UK said that the EIA Directive had resulted in a "large positive impact" in terms of reduced environmental impacts. No stakeholders indicated any negative impacts on the environment as a result of the EIA Directive.

Table 5-22: Telephone interview, responses to the question "To what extent have the following benefits been realised as a result of the EIA Directive?" – Reduced environmental impacts

	Large positive impact (++)	Slight positive impact (+)	No impact	Slight negative impact (-)	Large negative impact (--)	Don't know
MS authorities	2	0	0	0	0	0

Industry associations and companies were not asked this question
Total number of responses to this question: n = 2

A large proportion of stakeholders (71%) responding to the OPC indicated that the requirement to carry out an EIA for certain projects has helped to reduce the environmental impacts of construction projects (Figure 5-11).

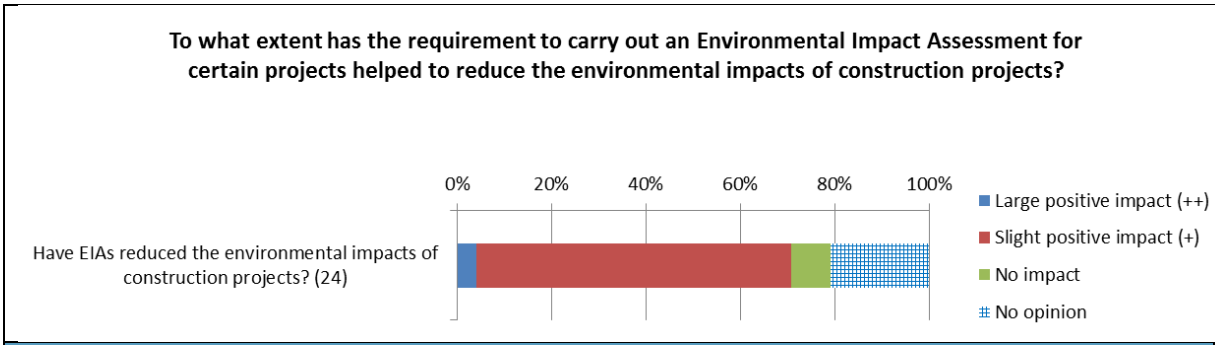


Figure 5-11: Responses to the Open Public Consultation (Professionals, Citizens and Authorities)

Industry associations and companies were generally of the view that legislation on waste had contributed to environmental benefits. One EU industry association noted that recycled/reused materials can be used in the ceramics industry, but that the costs (e.g. transport and testing) and administrative burdens can be significant at EU and national level.

Table 5-23: Telephone interviews, responses to the question "To what extent has legislation on waste contributed to the following benefits?" – Reduced environmental impacts						
	Large positive impact (++)	Slight positive impact (+)	No impact	Slight negative impact (-)	Large negative impact (--)	Don't know
Industry associations	2	3	2	0	0	0
Companies	4	2	1	0	0	2
MS Authorities were not asked this question *Total number of responses to this question: Industry associations (n = 7), Companies (n = 9)*						

Stakeholders that participated in the OPC were asked about the extent to which EU legislation on waste had contributed to some specific benefits (see Figure 5-12). In response to this question, 92% of respondents indicated that it had reduced environmental impacts. More than three quarters (77%) of respondents indicated that EU waste legislation had reduced risks to human health and 77% indicated that the legislation had improved resource efficiency. A small proportion (19%) of respondents did nevertheless identify that EU waste legislation had resulted in a negative impact in terms of the legal costs faced by companies in the construction sector.

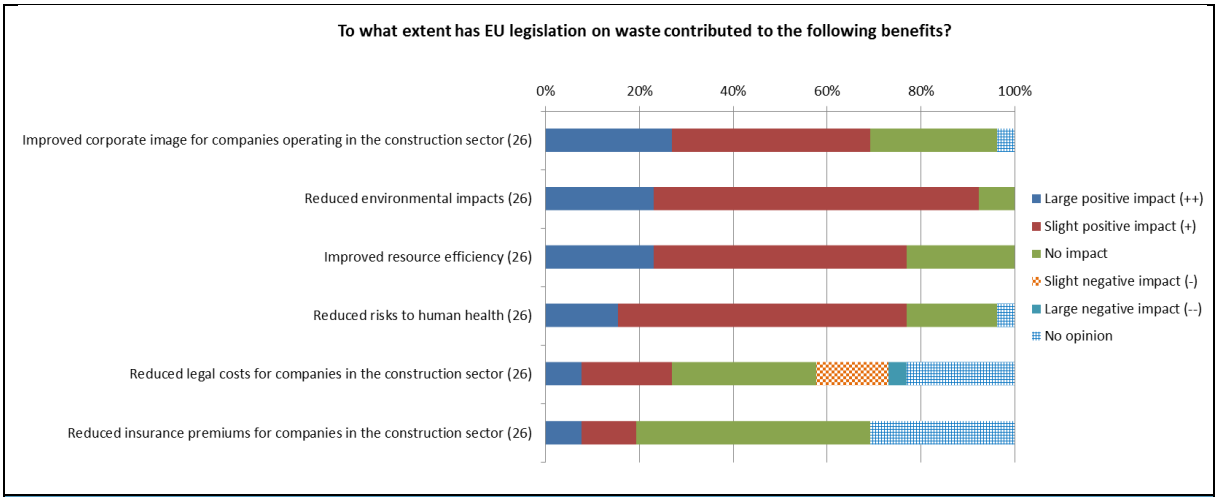


Figure 5-12: Responses to the Open Public Consultation (Professionals, Citizens and Authorities)

When asked about the extent to which the directives have helped to level the playing field within their country, most stakeholders said the WFD and EIA Directive had produced a positive impact in this regard.

Table 5-24: The Directive has helped to level the playing field within my country – responses from Industry Associations during the telephone interviews							
	Large positive impact (++)	Slight positive impact (+)	No impact	Slight negative impact (-)	Large negative impact (--)	Don't know	Total
WFD	1	3	2	0	0	1	7
EIA Directive	1	2	2	0	0	0	5

When asked whether the WFD has helped to level the playing field within the EU, most stakeholders indicated that there has either been a positive impact or no impact in this regard. One Industry Association from Denmark noted that the WFD has had a slightly positive impact in terms of making it easier to identify the rules in place in other MS, but that it depends on national implementation. The stakeholder noted that a directive is less clear than a regulation. An EU Industry Association similarly noted that sometimes national legislation and the EU directives do not look much alike due to the practice of "gold plating"[142].

Table 5-25: The Directive has helped to level the playing field within the EU – responses from Industry Associations during the telephone interviews

	Large positive impact (++)	Slight positive impact (+)	No impact	Slight negative impact (-)	Large negative impact (--)	Don't know	Total
WFD	0	2	4	1	0	0	7
EIA Directive	1	2	2	0	0	0	5

5.3.2 To what extent do 'shortcomings' in EU legislation, or in its implementation/transposition at a national level, impact on the performance of the construction sector?

Worker health and safety

Generally, it is believed that the EU has had an influence on the harmonisation of OSH practice and policies by providing and implementing an extensive common legal framework, but also by continuous coordinating action (e.g. including research programs and supporting relevant agencies and networks). Nevertheless, information from literature review and consultation suggests that considerable differences may still exist within the EU in terms of the transposition and implementation of the OSH Framework Directive and related directives. Indeed, it appears that most (if not all) countries have implemented requirements that are more stringent or more detailed than those laid down in the four OSH Directives (as previously discussed). As discussed in Section 5.3.1, this may present a barrier to cross-border trade in construction products and reduce the competitiveness of construction firms in countries with additional requirements. Companies contacted for this study noted that although the impacts could be positive within each individual country, the impacts across borders were less noticeable, with difficulties to understand other countries' legislation when the language of the transposing legislation was not English.

Internal market legislation seeks to develop and enhance the ability of companies to operate across the EU and in the construction sector, this would translate into an increased ability of construction forms being able to compete on an equal footing across MS. However, whilst EU legislation on OSH has created minimum standards for OSH applicable in all MS (and thus to a degree contributed to levelling the playing field for all companies), it has not prevented divergence in the requirements, nor the ease with which companies can obtain the required information regarding their obligations. In this sense, companies from outside a MS still face barriers in competing with companies based within, leading potentially to fewer companies being likely to operate on a cross border level.

[142] This stakeholder noted that countries like the UK and France are very good at gold plating.

A major shortcoming of the EU legislation (as identified by stakeholders and in the literature) was that it does not properly account for psychosocial risks. In a UK survey of construction professionals undertaken by the CIOB in 2005, 68.2% of respondents indicated that they had suffered from stress, anxiety or depression as a direct result of working in the construction industry.[143] A more recent survey in the UK has found that 64% of construction workers are suffering from stress and 76% have at some point suffered stress in the workplace[144]. Of the people that responded to this survey, 30% had taken time off work due to stress.

For companies, the financial implications of psychosocial risks are associated with deterioration of productivity, higher levels of absenteeism and employee turnover[145]. National studies have shown for example that about a fifth of staff turnover can be related to stress at work[146], and that among employees who state that they 'always work under pressure', the accident rate is about five times higher than that of employees who are 'never' subject to pressurised work[147]. One industry association that responded to the OPC (from Finland) noted that:

> *"Construction workers' pay the price of badly managed and badly protected, physically and mentally challenging work by their well-being, health and even life."*

The stakeholder noted that unattractive working conditions and environment are not only a problem for workers, they are also a problem for businesses as the recruitment of young skilled workers is not easy and high levels of turnover in the workforce mean high costs for companies. Thus, it can be concluded that psychosocial risks impose a significant financial burden on enterprises in the construction industry and reduce its competitiveness and (social and economic) sustainability.

Environment

Stakeholders have indicated that national legislation transposing the directives often goes beyond the minimum requirements of the directives and that national legislation can be quite different to the EU directives and corresponding legislation in other MS. It is possible that this may pose a barrier to cross-border trade in construction products/services. For example, one company from Spain has noted that sometimes it is more difficult to trade within the EU than it is to trade outside of the EU due to differences in the way the directives have been implemented across EU MS.

In Germany, one industry association has noted that due to maximum allowable concentrations for certain pollutants in Germany, soil polluted with geogenic contaminants (i.e. naturally occurring

[143] CIOB (2006): Occupational Stress in the Construction Industry, available at: https://www.ciob.org/sites/default/files/CIOB%20research%20-%20Occupational%20Stress%20in%20the%20Construction%20Industry%202006_0.pdf

[144] UCATT (2016): UCATT finds high levels of stress and mental illness among construction workers, available at: https://www.ucatt.org.uk/ucatt-finds-high-levels-stress-and-mental-illness-among-construction-workers

[145] EU-OSHA (2014): Calculating the cost of work-related stress and psychosocial risks, European Risk Observatory Literature Review, available at: https://osha.europa.eu/en/tools-and-publications/publications/literature_reviews/calculating-the-cost-of-work-related-stress-and-psychosocial-risks

[146] CIPD (2008): Annual Survey Report 2008, Recruitment, Retention and Turnover, available at: http://www.cipd.co.uk/NR/rdonlyres/BE3C57BF-91FF-4AD0-9656-FAC27E5398AA/0/recruitmentretentionturnover2008.pdf

[147] European Foundation for the Improvement of Living and Working Conditions, Work related stress, 2007. Available at: http://www.eurofound.europa.eu/ewco/reports/TN0502TR01/TN0502TR01.pdf

contaminants) must be deposited instead of being back-filled in equally contaminated areas. The stakeholder noted that this results in companies using virgin materials for backfilling instead of the previously present material and that this situation is in conflict with the circular economy goals.

5.3.3 What are the obstacles that still stand in the way of achieving the objectives of a competitive and sustainable construction sector?

Worker health and safety

The ESENER-2 survey asked participants about the main difficulties in addressing health and safety in the construction sector. Figure 5-13 shows the proportion of establishments in the EU-28 that reported various factors to be a 'major difficulty'. As shown in the Figure, ~45% of surveyed establishments in the EU-28 reported that the complexity of legal obligations poses a major difficulty. Approximately 35% of surveyed establishments noted that paperwork poses a major difficulty and about 25% of respondents indicated that a lack of staff or time and a lack of money were major issues.

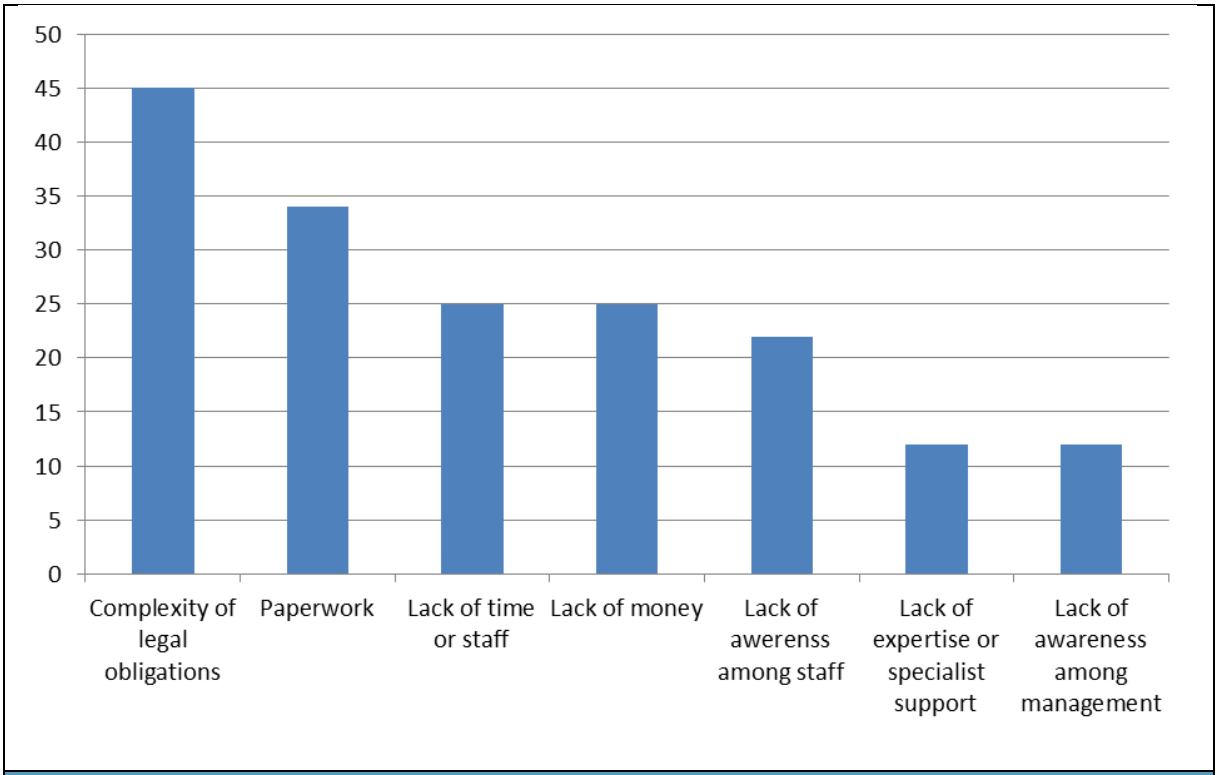


Figure 5-13: Major difficulties in addressing health and safety in the construction sector (% establishments, EU-28), ESENER-2: https://osha.europa.eu/en/surveys-and-statistics-osh/esener/2014

This accords with earlier findings[148] in relation to the Directive on Temporary or Mobile Construction Sites which suggest that most compliance problems have been related to the *"scope of the*

[148] Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions on the practical implementation of Health and Safety at Work Directives 92/57/EEC (temporary and mobile sites) and 92/58/EEC (safety signs at work),

legislation, definitions, the designation of coordinators, project preparation and execution, and the responsibilities of clients, project supervisors, coordinators and employers."

In the consultation undertaken for this study, stakeholders have identified a number of obstacles to the Commission's objective of achieving a competitive and sustainable construction sector. The main obstacles identified by stakeholders are as follows:

- National legislation which goes beyond the minimum requirements is perceived by some stakeholders as an obstacle to competitiveness on the EU market (i.e. companies that must abide by more stringent legislation may be less competitive, relative to their international counterparts). Similarly, EU health and safety and environment legislation is perceived by some stakeholders as reducing EU companies' competitiveness on the global market. This appears reasonable since it would be difficult for companies from a reputational point of view to adopt less stringent health and safety measures on construction projects outside of the EU. In addition, costs incurred in the EU and contributing to a company's overall cost base may also impact on their competitiveness overseas.
- High levels of non-compliance and low levels of enforcement in some MS have been cited as an obstacle by some stakeholders. In Belgium, for example, one industry association has noted that the legislation in place is good but that it goes wrong in the application. The enforcement, inspection and control of the regulation is insufficient and this is the biggest problem. It has been suggested that the Belgian government gives too little budget to the national inspection services. Stakeholders have identified that non-compliance appears to be higher among SMEs. The reasons for this are varied but may include a lack of awareness and knowledge of the legislation and/or a lack of resources.
- Stakeholders have identified that SMEs in particular find it difficult to comply with the legislation. This is important given that SMEs make up the vast majority of enterprises in the sector and that the size of EU construction companies appears to be shrinking over time. Indeed, several stakeholders have noted that the number of one-person enterprises is increasing and that this poses a potential issue in terms of health and safety. In Romania, one MS authority has noted that SMEs may have insufficient funds to replace/upgrade work equipment and that modern work equipment necessary for handling heavy loads is very expensive. A Belgian industry association has noted that bigger companies can appoint a health and safety manager to keep abreast of health and safety rules, but SMEs cannot afford this. One MS authority in Germany has however noted that minimum standards for safe and healthy working must not be dependent on the size of the company.

In relation to the OSH Framework directive:

- One industry association in the UK has noted that neither of the Framework Directive's definitions of "employer" and "worker" include the self-employed, and nor are they covered as a group. A MS authority from Poland has noted that the sector is increasingly dealing with entrepreneurs and people providing work on a basis other than an employment contract and a Romanian MS authority noted that there is a problem for independent workers because they are not covered by the OSH Directive.
- A MS authority from Poland has noted that the Polish legislation that transposes the OSH Framework Directive lacks duties and responsibilities for the investor in terms of

---

COM(2008) 698 final, available at: http://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A52008DC0698

occupational safety both at the investment design stage, as well as in its implementation. This means that investors are not interested in the safe execution of the works.

- A MS authority from Denmark has noted that there is a potential for the health assessments under the OSH Framework Directive to be used incorrectly. The stakeholder has noted that there is a risk that rather than the main focus being on workplace assessments and preventive health and safety measures, health checks of workers with good health outcomes will be used as the basis for decisions on health and safety measures needed – which is a problem as some poor health outcomes will only show many years later.

In relation to the Directive on Temporary or Mobile Construction Sites:

- One industry association in Belgium has noted that although the Directive requires there to be a health and safety coordinator for the design phase, there is often a lack of cooperation between health and safety coordinator and the architect. Furthermore, health and safety plans are not always being made for smaller construction projects. As a result, risks are more or less "built in" to the project before the construction phase even begins. Thus one point for future improvement of the Directive is that more attention should be given to risk evaluation and assessment in the design phase.
- In Belgium, one industry association has noted that the requirement to have a first-aider on all temporary or mobile construction sites imposes important costs on construction companies.

In relation to the Asbestos Directive:

- It has been noted that a significant problem for SMEs and smaller businesses is the requirement to organise medicals, notifications and record keeping when staff resources are limited.[149]
- While many MS have provided training courses for demolition, building and maintenance workers and others who work with the removal of asbestos containing materials, there is a lack of sufficient standards applicable throughout Europe.[150]
- One industry association in the UK noted that there are still some issues around the identification of asbestos.
- An industry association from Germany has suggested that compliance with the training requirements should be improved. The stakeholder noted that this is particularly the case for workers who are not working in specialised asbestos removal companies but who may be exposed to asbestos in their work (like carpenters, electricians or painters).
- One industry association in the UK noted that the cost of training can be an issue, particularly for SMEs.
- One industry association in the UK noted that inconsistencies surrounding the prescriptive requirements of the Asbestos Regulations and the CDM Regulations can make interfacing difficult.
- One industry association from France has noted that although the legislative framework has led to an improvement of preventive measures concerning the removal of asbestos, the cost of the measures is so huge for building owners that too few works can be undertaken under

[149] HSENI (2012): The Control of Asbestos Regulations (Northern Ireland) 2012 (S.R. 2012 No. 179), Impact Assessment, available at: https://www.hseni.gov.uk/sites/hseni.gov.uk/files/publications/%5bcurrent-domain%3Amachine-name%5d/impact-assessment-sr2012-179.pdf

[150] EESC (2015): Opinion of the European Economic and Social Committee on 'Freeing the EU from asbestos', (2015/C 251/03), available in the OJEU at: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014IE5005&from=EN

good conditions. The stakeholder noted that in France, the gold-plating of the Asbestos Directive has led to complex and costly rules which are difficult to fulfil and that this has resulted in an increase in undeclared work.

- Several stakeholders have noted that the limits for asbestos exposure should be reduced. For example, one MS authority from Finland has noted:

"In EU, 15,500,000 employees are employed within the construction sector. The Asbestos Directive can therefore be regarded as relevant to 7.2% of the EU workforce. One investigation showed that there are in EU about 4,700 deaths from asbestosis and about 1,300 from mesothelioma. Another study proposed in EU about 5,000 male deaths from mesothelioma in every year. There is epidemiological evidence to support a lowering of the limit, which would serve to increase the ongoing relevance (and effectiveness) of the Asbestos Directive".

In relation to the Directive on the Manual Handling of Loads:

- One MS authority from Finland has noted that:

"Manual Handling Directive 90/268/EEC should cover more completely and as a systems approach the prevention of MSDs [musculoskeletal disorders] (Modern Ergonomics Approach not nowadays covered)."

Environment

As noted previously, the main obstacles for the WFD are the lack of reliable and consistent data on the amount of CDW arising in Europe, and the fact that many countries already appear to be achieving the targets set out in the WFD (thus there is no incentive for further improvements). In addition, one MS authority from Ireland has noted that there needs to be more emphasis on reducing waste at the design stage (e.g. among architects, quantity surveyors etc.).

In relation to the EIA Directive, one industry association from the mining and quarrying sector has noted that it is very expensive to conduct an EIA (the stakeholder noted that the cost of an EIA can account for up to 30-40% of the total cost of a project). For an EIA, extensive assessments have to be commissioned because the extraction of mineral resources in an open pit mine can have an impact on the soil, landscape and the water. If, for example, extraction is not possible because of a negative EIA, then the extractive companies cannot simply move on to another location, because the extraction of mineral resources is only possible in places which contain mineral resources. It is often the case that the mineral deposit lies underneath a forest, arable land or nature conservation zone and, very often, these uses are favoured. The requirements for EIAs are becoming more stringent with the revision of the Directives and the compliance with the requirements are already very bureaucratic in their current form.

5.3.4 What are the unintended positive or negative consequences and collateral effects of the EU legislation in question?

Worker health and safety

Stakeholders have identified several unintended (positive and negative) impacts from the implementation of EU OSH legislation:

- **The legislation may act as a driver for innovation**: One industry association from Germany has noted that "health & safety and environmental protection are drivers for innovation in the construction sector and should be further developed."
- **The legislation may help to improve productivity:** Several stakeholders have noted that the unsafe and inefficient handling of heavy loads can result in higher time consumption and less productivity. In Belgium, one industry association has noted that good equipment, measures, information and training increase productivity. Similarly, a MS Authority from Finland has noted that although the OSH actions incur small to moderate costs, investing in these actions will save substantial amounts in lost work days, increased productivity, etc. An industry association from Germany has noted that the use of technical aids is an integrated part of a modern construction sector. Lifting materials with a hoist or crane speeds up the pace of work. The stakeholder noted that there are a lot of helpful tools and techniques which can help to increase productivity.
- **The legislation may improve the corporate image and reputation of the sector:** Several stakeholders have noted that investing in OSH measures is vital for improving the corporate image of the construction sector. One industry association from Germany has noted that this, in turn, will help to make the sector more attractive for new and qualified workers.
- **The legislation may increase the potential for litigation:** A company from the UK noted that although accidents and incidents have been driven down, the "claims culture" has been driven up. The stakeholder noted that this has made organisations risk averse instead of applying OSH in a pragmatic way which allows the construction industry to flourish.

Environment

As noted above, one industry association from Germany has identified that EU environment legislation may act as a driver for innovation in the construction sector. A company from Spain has also noted that the EIA directive has created jobs in consultancy and laboratory services.

A report by the Institute of Environmental Management and Assessment[151] in the UK has identified several areas where EIA can deliver added value:

- providing a constructive problem solving tool enabling effective decision-making;
- generating improvements in design, often saving resources;
- facilitating community involvement and harnessing the benefits this can bring;
- effectively managing risk, budgets, programme and quality; and
- delivering net environmental gain.

[151] IEMA (2011): The State of Environmental Impact Assessment in the UK, Special Report, available at: https://oldsite.iema.net/system/files/iema20special20report20web.pdf

5.4 Efficiency

5.4.1 Introduction

The key area of analysis is the extent to which the costs and benefits arising from the different pieces of legislation are compatible with the objectives of the Commission's "Strategy for the sustainable competitiveness of the construction sector and its enterprises" being as follows:

- stimulating favourable investment conditions;
- improving the human-capital basis of the construction sector;
- improving resource efficiency, environmental performance and business opportunities;
- strengthening the Internal Market for construction; and
- fostering the global competitive position of EU construction enterprises.

Table 5-26 sets out the efficiency criterion and key evaluation questions to which the economic analysis contributes.

Table 5-26: Efficiency criterion

Efficiency considers the relationship between the resources used by an intervention and the changes generated by it (which may be positive or negative). It describes the **administrative and regulatory burdens** associated with the legislative provisions, taking into account whether there are any simplified procedures designed to alleviate these burdens. Where there is an excessive burden or gross inefficiency, its root or cause is identified. Equal attention must also be given to those measures which significantly alleviate the burden of compliance with a view to the potential value of adopting such procedures in other horizontal legislation.

Evaluation Question	Judgement Criteria
What are the cumulative costs and benefits associated with the implementation and transposition of identified EU legislation for the construction sector, in particular for its SMEs?	Costs and benefits for construction companies arising from EU legislation and any differences due to transposition at National level Distributional impacts between small and large firms
Are the benefits achieved at costs that are affordable for the sector, or is there evidence that the legislative requirements have caused unnecessary regulatory burden for the construction sector?	Identification of alternative means of achieving legislative objectives
How do the cumulative costs and benefits differ across the EU?	Difference in costs and benefits for construction firms located in different MS
What factors influence the costs and benefits, in particular with regard to national transposition?	Identification of national provisions or transposition leading to higher/lower costs or benefits
How are the various aspects related to inefficiencies and unnecessary burden addressed by Member States and the affected industry sector in terms of cooperation and coordination?	Degree of co-operation between MS authorities and construction sector

5.4.2 What are the cumulative costs and benefits associated with the implementation and transposition of identified EU legislation for the construction sector, in particular for its SMEs?

As indicated in Section 4, the cumulative costs associated with implementing the measures required by OSH legislation have been estimated at €63bn - €147bn over the period 2004-14. Associated benefits arising as a result of a reduced number of fatal and non-fatal accidents are calculated to be in the range of €2.9bn – €15.6bn. However, as noted previously, there are significant benefits that would accrue to society (e.g. in terms of reduced health costs) which are not accounted for here as they are outside the scope of the study which is focused on the costs and benefits to the construction sector.

Similarly, for the environmental legislation, cumulative monetised costs for the period are estimated to be in the range €2.6bn - €3.9bn, but it has not been possible to monetise benefits to the construction sub-sectors in terms of enhanced reputation, legal clarity and certainty and the establishment of a level playing field. Again, significant benefits in terms of improvements in environmental impacts (e.g. on biodiversity, amenity values etc.) that are not accounted for here as they are outside of the scope of this current study. Moreover, some costs, such as those resulting from an EIA, are more likely to be borne by other actors (in this case, the developer, who might however try to recoup at least some of these costs through negotiations with the contractor).

Given that SMEs represent more than 99% of enterprises in the construction sector, the vast majority of the cumulative costs will be borne by SMEs. In relation to benefits, SMEs in the construction contractors sub-sector employing less than 250 people accounted for approximately 91% of all employees, with 9% being employed by those companies with more than 250 staff. This would suggest that the majority of benefits in terms of cost savings from a reduction in accidents accrue to SMEs, although larger companies are likely to be benefitting from economies of scale as the measures implemented are spread over a greater number of employees than the costs.

The EU-OSHA (2016) report on health and safety in micro and small enterprises has pointed to the fact that there are greater risks of serious injuries and fatalities in SMEs but that they are less able to afford investments in OSH infrastructure, have more limited knowledge and capacity than their larger counterparts. Table 4-36 in Section 4 illustrates that SMEs incur much higher expenditures (sometimes more than 100x) per employee on a range of the measures required by the OSH legislation. However, whilst this is the case, it is noted that the overall expenditure per employee even for smaller companies is not dramatic.

5.4.3 Are the benefits achieved at costs that are affordable for the sector, or is there evidence that the legislative requirements have caused unnecessary regulatory burden for the construction sector?

When comparing the total cost for the sector with the turnover of the sector, the costs of dealing with OSH are less than 1%. The greatest costs appear to be related to the provision of preventive measures, including technical measures and organisational measures as well as undertaking RAs.

It is acknowledged (as discussed in Section 4.6) that some costs are much more expensive for SMEs (cost as a percentage of turnover) than for large companies. For example, the cost of RAs has been estimated at 0.79% of turnover for construction contractors employing 1 to 9 people in the EU in

2013, but this figure was only 0.01% for those employing 50 to 249 and negligible for those companies with more than 250 employees. So even within SMEs there is significant variation and the smaller the company, the more costly OSH measures are in relation to a company's turnover.

However, with overall costs estimated to be less than 1% of turnover, it would seem that the costs are affordable and this view is echoed by stakeholders interviewed by telephone who have often noted that the costs are 'moderate', particularly in relation to the benefits. Indeed, the majority of stakeholders consulted via telephone interviews and in the OPC described the impacts as being significantly or moderately positive.

5.4.4 How do the cumulative costs and benefits differ across the EU?

There are likely to be some differences across the EU in terms of costs and benefits. This is not only because the size of the sector varies significantly across the EU but also because the MS have applied the provisions to different levels. In 2014, around 92% of UK workplaces surveyed claimed that they undertook regular health and safety risk assessments. This is more than most EU countries including Spain (90%), Germany (66%) and France (56%) but lower than Italy (95%). Additionally, three quarters of UK workplaces used internal staff to carry out their risk assessments, which was considerably higher than the EU average of just under 50%" (HSE, 2015, p.5).

Moreover, concerning specific costs such as health surveillance of workers, the arrangements vary substantially between EU MS. This is also because the Framework Directive allows health surveillance to be provided as part of a national health system . For the construction industry, in several countries a health examination is periodically offered to all construction workers (EU-OSHA, 2014[152]) .

5.4.5 What factors influence the costs and benefits, in particular with regard to national transposition?

As highlighted by the consultation, the application of the measures under the OSH directives and the national legislation are in principle effective in the reduction in incidence rates. However enforcement within the MS has been highlighted as a key factor influencing the costs and benefits.

However, it is noted that national legislation in many MS involved many of the measures.

5.4.6 How are the various aspects related to inefficiencies and unnecessary burden addressed by Member States and the affected industry sector in terms of cooperation and coordination?

It has been highlighted that the availability of guidance at MS level can be regarded as a positive output towards the understanding of the legislation and also showing a high degree of cooperation. There are several guidance documents available regarding loads and machinery as well as for dealing with asbestos. These guidance documents, although they are not enforceable, appear to be followed by industry to a large degree.

[152] Health in the Construction Industry, https://oshwiki.eu/wiki/Health_in_the_Construction_Industry#Technical_measures

5.5 EU Added value

Table 5-27: Added value	
Evaluating EU added value will require an assessment of the **outputs** and **impacts** of the EU legislation. In essence, this will draw on the findings of 'effectiveness' and 'efficiency' to determine the overall added value.	
Evaluation Question	**Judgement Criteria**
What is the added value of the different acts identified for the construction sector, especially for SMEs?	Identification of benefits (or reduced costs) arising from action at EU level as opposed to action taken at individual MS level
What would happen to the construction sector if that legislation or some of its specific provisions were to be removed?	Likely change in behaviour of companies regarding actions to protect workers or the environment
Do the needs and challenges addressed by the legislative acts continue to require action at EU level?	Degree to which MS legislation differs across countries and from EU minimum

5.5.1 What is the added value of the different acts identified for the construction sector, especially for SMEs?

When asked whether the identified EU legislation provides added value to enterprises, in particular SMEs, compared to national legislation alone, three stakeholders (out of the nine that responded to this question) indicated that it had (see table below). While MS authorities and industry associations appear to have provided somewhat opposite views, it is not possible to draw any definitive conclusions based on the small number of responses to this question.

Table 5-28: Telephone interviews, responses to the question "Does the identified EU legislation provide added value to enterprises, in particular SMEs, compared to national legislation alone?"			
	MS Authorities	**Industry Associations**	**Total**
Yes	3	0	3
No	1	2	3
Don't know	1	2	3
Total number of responses	**5**	**4**	**9**
Note: Companies were not asked this question.			

One EU level industry association (that stated "don't know") noted that it is tempting to say "yes" because it gives a more stable EU directive and it is self-evident that EU directives were needed in countries where there was no existing health and safety legislation. However, similar legislation could have been put in place at a MS level. As a result, the answer to this question is not clear. The stakeholder noted that the Commission's Strategy for 2014-2020 shows real added value of an EU framework, with each country allowed to implement it. Sometimes the EU strategy can be a fundamental complementing tool for national legislation – the 2020 framework recognised that the focus should be on SMEs, resources for SMEs and compliance, not more legislation. The stakeholder noted that the new Commission's focus on better regulation is being undertaken in a very good way.

Worker health and safety

There is evidence that the presence of EU OSH legislation may have helped to prevent a weakening of health and safety legislation over time, particularly in the wake of the economic recession. For example, in the UK, one industry association (a workers' union) noted that they fear that the present government views health and safety legislation as "red tape" and a "burden on business" and that this could put workers' lives at risk. The stakeholder noted that they would like to see strong European legislation which is transposed effectively into UK legislation that goes beyond the minimum where necessary.

A MS authority from Belgium noted that although many of the measures already existed in the Belgian legislation, the advantage of European legislation/regulation is the introduction of the notion of continuous improvement. The stakeholder noted that another area where the EU legislation delivers added value is in the applicability of rules not only to employers but also on, for example, trainees and temporary workers. The stakeholder explained that in the last 10 years, the number of labour accidents in Belgium has decreased and that this is partly due to the European directives. A Belgian industry association concurred with this view, noting that although there was already national OSH legislation in place in Belgium, the European legislation was a stimulus to address the health and safety issues more specifically and to convert them into policy actions and regulation. In Germany, one MS authority noted that the identified EU legislation provides added value for enterprises as it establishes a European protection level in a globalised world. Similarly, a MS authority from Belgium has noted that the European legislation gives an equal (minimum) basis for the legislation in each EU country.

Environment

By establishing common minimum standards that all countries must abide by, the EIA Directive and the WFD aim to prevent countries from gaining a competitive advantage by allowing harmful environmental practices. The directives thereby seek to provide added value at the EU level.

Unfortunately, insufficient information is available from stakeholders to assess the added value of the different acts identified for the construction sector, especially for SMEs.

5.5.2 What would happen to the construction sector if that legislation or some of its specific provisions were to be removed?

Clearly, advances in the levels of OSH and environmental protection might be put at risk if the associated legislative requirements were removed. Of course, it could be argued that now that national legislation has embodied the requirements of the EU Directives being considered, their (partial) removal would not, in itself, have any immediate impacts upon the construction sector. For example, in the UK, the manufacturers' organisation EEF believes that, in the wake of a Brexit vote, the UK will retain most, if not all, of the main legislative instruments in the areas of health, safety and the environment[153]. Over time, however, it is possible that a more fragmented approach would develop between different MS.

[153] Woolmer (2016): Health and safety – the impacts of Brexit, available at: https://sm.britsafe.org/health-and-safety-%E2%80%93-impact-brexit-0#sthash.t6Vy118H.dpuf

Worker health and safety

Some of the requirements in the EU acquis are already present in other international legislation and so the effects of removing some specific provisions may be quite minimal in some MS. The International Labour Organization's Safety and Health in Construction Convention (1988) for example puts in place some general provisions to help protect the safety and health of construction workers while at work. These include *inter alia* provisions on co-operation between employers and workers (e.g. Article 5), on the use of personal protective equipment and clothing (Article 30) and on the provision of information and training to employees (Article 33).

As of June 2016, the following EU MS had ratified the Convention: Belgium, Czech Republic, Denmark, Finland, Germany, Hungary, Italy, Luxembourg, Slovakia and Sweden.

It is also possible that some MS would voluntarily put in place similar obligations. In Denmark, one MS authority stated that in the absence of the OSH Framework Directive, Denmark would not have implemented similar obligations. Denmark did not have any plans to implement a written communication requirement for the workplace assessment. Denmark has also tried to exempt small companies from the requirement, but has not been granted permission to do so. In contrast, a Belgian MS authority noted that in the absence of the European directives, there would probably have been a gradual evolution of similar health and safety obligations in the Belgian legislation. Given the benefits of addressing OSH in terms of increased productivity, it is possible that some companies would undertake voluntary actions to reduce occupational risks. Indeed, as shown by the ESENER survey, increased productivity is one of the major reasons for compliance, but so is the desire to avoid fines.

Environment

Some of the requirements of European environmental law originate from broader international agreements and so the impact of removing these obligations at the EU level may not have a significant effect, particularly given that national legislations in different MS may cover them in any event.

Principle 17 of the Rio Declaration on the Environmental and International Development states that:

> *"Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority."*

More specifically, the UNECE Convention on Environmental Impact Assessment in a Transboundary Context, also known as the Espoo Convention, sets out obligations for Parties to assess the environmental impacts of certain activities at an early stage of planning[154]. It lays down the general obligation of States to notify and consult each other on all major projects under consideration that are likely to have a significant adverse environmental impact across boundaries. This is similar to the requirement in Article 7 of the EIA Directive which includes special provisions for cases in which a project implemented in one MS is likely to have significant effects on the environment of another MS.

[154] The Espoo Convention was adopted in 1991 and entered into force on 10 September 1997. The European Union is a party to the convention.

The EIA Directive was amended in 2003 (by Directive 2003/35/EC[155]) to align the provisions on public participation with the Aarhus Convention on public participation in decision-making and access to justice in environmental matters. All 28 MS of the EU are parties to the Aarhus Convention. Thus, some of the requirements of the EIA Directive in terms of public participation would remain in place even if the EIA Directive were repealed.

The EIA Directive provides an integrated legal framework that brings together the requirements of the various pieces of international law, and puts in place additional requirements, and thus there may be dis-benefits in terms of reduced legal clarity if some specific provisions of the EIA Directive were removed.

Unfortunately, stakeholders responding to the consultation have not provided any information on what they believe would happen to the construction sector if the environment directives, or some of their specific provisions, were removed.

5.5.3 Do the needs and challenges addressed by the legislative acts continue to require action at EU level?

The majority of stakeholders participating in the telephone interviews indicated that there is a need for continued action at the EU level to address the needs and challenges (in terms of health and safety and the environment) faced by the construction sector. Nevertheless, it would appear (based on the small sample of responses received) that the views of companies are more mixed, with four out of the ten companies that responded to this question indicating that there is not a need for continued action at the EU level.

Table 5-29: Telephone interviews, responses to the question "Is there a need for continued action at the EU level to address the needs and challenges (in terms of health and safety and the environment) faced by the construction sector?"

	MS Authorities	Industry Associations	Companies	Total
Yes	5	3	5	13
No	0	1	4	5
Don't know	1	0	1	2
Total number of responses	**6**	**4**	**10**	**20**

One company noted that there is a need for continued action at the EU level because it will allow the level of the Polish construction sector to be maintained at the level required and retained in the EU. This, in turn, will prevent the Polish construction sector from being discriminated against in comparison with competing EU sectors. Following this theme, a Danish construction contractor (that works throughout the world) noted that they would wish for not just EU but global minimum OSH requirements.

[155] Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC, available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32003L0035

Another construction contractor, based in Spain but with international operations, noted that there is a need for continued action at the EU level because there needs to be more similar implementation across MS.

A couple of stakeholders have also mentioned that further action is needed at the EU level to address the difficulties faced by SMEs.

6 Conclusions

Based on the previous analysis, this section sets out the study's conclusions in terms of the relevance, coherence, effectiveness, efficiency and added value of OSH and environmental legislation that has been the focus of the study. After each evaluation question, the consultants' rating in terms of the performance of the legislation with respect to supporting the construction sector is provided in a graphic.

6.1 Relevance

6.1.1 To what extent are the different EU acts identified relevant to the needs and challenges identified for a competitive and sustainable construction sector?

OSH legislation

In conclusion, the four pieces of OSH legislation analysed during this study are clearly still relevant to the needs identified for a competitive and sustainable construction sector. Although the incidence of fatal and non-fatal accidents in the construction sector has reduced over time in the majority of countries studied, the construction sector is still relatively risky for workers when compared with other sectors, and an increasingly mobile workforce across the EU will pose a challenge for maintaining a good standard of health and safety on construction sites. This coupled with the anticipated growth of the sector and the emergence of new risks as working practices evolve over the coming years highlights the importance of maintaining effective health and safety legislation.

There are challenges, however. In order to remain competitive, such legislation must not pose too great a burden for the sector and ideally contribute to improving productivity. By protecting workers from accidents and health risks, the legislation makes a positive contribution to improving the human capital basis of the sector. Ensuring that burdens are not excessive is especially challenging given that the vast majority of companies in the construction sector are SMEs. The analysis (presented in Section 4) indicates that the cost of OSH legislation is relatively small when compared to the overall turnover of the sector, but that the burden on SMEs is higher (relatively) than for larger enterprises.

Environmental legislation

The two pieces of environment legislation analysed during this study are still relevant to the needs identified for a competitive and sustainable construction sector. The construction sector has the potential for significant environmental impacts, not least because it produces one of the heaviest and most voluminous waste streams in the EU. Given that the sector is anticipated to grow over the coming years, there is clearly a need to maintain effective environmental regulation. Most stakeholders have indicated that the criteria and thresholds for determining when an EIA is required are about right and that most of the right projects require an EIA. However, it is noted that some countries are already fulfilling the 70% target in the WFD, and for these countries, the WFD does not provide an incentive to achieve higher targets.

The analysis presented in Section 4 indicates that the cost of environment legislation is relatively small compared to overall levels of turnover in the sector, but that the burden on SMEs is higher (relatively) than for larger enterprises. Through encouraging waste reduction and increased recycling

as well as environmental performance, the legislation contributes to the resource efficiency of the sector and ultimately its competitiveness.

The graphic below provides the consultants' rating for the extent to which the various pieces of legislation remain relevant to the needs of the construction sector.

To what extent are the different EU acts identified relevant to the needs and challenges identified for a competitive and sustainable construction sector?

Key:
1 = Low *3 = Medium* *5 = High*
2 = Medium/Low *4= Medium/High*

6.2 Coherence

6.2.1 To what extent do all the analysed pieces of EU legislation work together sufficiently well and provide the construction sector with a clear and predictable regulatory framework?

OSH legislation

The analysed pieces of EU legislation do complement each other and there are strong synergies between the OSH Framework Directive and the individual OSH directives. Most stakeholders agree that the different pieces of EU OSH legislation complement each other and work together to provide a clear and predictable regulatory framework.

Environmental legislation

The prime objectives of the Waste Framework Directive and the EIA Directive relate to protection of the environment and promotion of sustainable development. While both directives impact the construction sector, they cover different aspects.

The graphic below provides the consultants' rating for the extent to which the various pieces of legislation work together to provide a clear and predictable regulatory framework for the construction sector.

To what extent do all the analysed pieces of EU legislation work together sufficiently well and provide the construction sector with a clear and predictable regulatory framework?

Key:
1 = Low *3 = Medium* *5 = High*
2 = Medium/Low *4= Medium/High*

6.2.2 Are there any inconsistencies, overlaps (e.g. in terms of scope and definitions) or gaps that can be identified across the identified EU legal acts? If yes, which are the inconsistencies, overlaps or gaps?

OSH legislation

No major coherence issues have been identified between the individual OSH directives considered in this study. However, some key gaps have been identified in the legislative framework pertaining to health and safety in the EU, namely that:

- there are perceived to be few duties or responsibilities for the investor; and
- psychosocial risks are not adequately considered

Whilst construction contractors will continue to bear the greatest responsibility (and therefore costs) for ensuring that workers can carry out their work in a safe and healthy environment, the design of construction projects is a key stage in determining the risks that will be faced during the implementation phase. Requiring investors to consider potential health and safety issues at an early stage in the project design would contribute to the minimisation of risks and also to reducing the costs that would ultimately be incurred by contractors having to construct projects with inherently risky designs.

Whilst some MS specifically refer to psychosocial risks, stress or mental health issues, not all MS legislation requires these aspects to be considered and they are a potentially serious source of health risk, contributing to significant work absences and consequently undermining the competitiveness of the sector.

In addition, differing levels of compliance with the various requirements of the legislation across EU MS means that the full aim of ensuring minimum standards are applicable to all construction sector actors is not being fulfilled and that consequently, there is not a completely level playing field.

While it is acknowledged that requirements for risk assessments under OSH directives and legislation on chemicals are quite different, there are apparent overlaps in some specific circumstances which could in terms of requirements on risk assessments have been identified which lead to additional costs lead to some limited additional costs to companies.

Environmental legislation

No coherence issues have been identified between the WFD and EIA Directive. It has been noted that there are overlaps between the WFD and the Directive on the Management of Waste from the Extractive Industries and that the definition of waste in these two directives is inconsistent[156]. The graphic below provides the consultants' rating for the degree to which there are any inconsistencies, overlaps (e.g. in terms of scope and definitions) or gaps that can be identified across the identified EU legal acts.

[156] This inconsistency, primarily affecting the ability to use excavated materials for backfilling or other purposes, is described by means of a practical example provided by an industry association in Section 5.2.2 above

Are there any inconsistencies, overlaps (e.g. in terms of scope and definitions) or gaps that can be identified across the identified EU legal acts? if yes, which are the inconsistencies, overlaps or gaps?	

Key:		
1 = Low	3 = Medium	5 = High
2 = Medium/Low	4= Medium/High	

6.2.3 To what extent can the inconsistencies and overlaps be attributed to provisions in the existing EU legislative framework or to implementation and/or transposition at national (including regional and local) level and/or to existing national legislative frameworks?

OSH legislation

In some instances, it appears that the identified inconsistencies and overlaps pertain to national transposing legislation as opposed to the directives. However, further clarification of this issue has been difficult as stakeholders have generally found it difficult to discern between the impacts of EU legislation and national (transposing) legislation.

Environmental legislation

As noted previously, some overlaps and inconsistencies have been identified in terms of the definition of waste in the WFD and the definition of waste for the extractive industries. However, it has not been possible to discern, on the basis of the information available, whether this issue is related to the EU Directives or to their transposition and implementation at a national (or local) level.

The graphic below provides the consultants' rating for the extent to which inconsistencies and overlaps can be attributed to provisions in the existing EU legislative framework.

To what extent can the inconsistencies and overlaps be attributed to provisions in the existing EU legislative framework or to implementation and/or transposition at national (including regional and local) level and/or to existing national legislative frameworks?	

Key:		
1 = Low	3 = Medium	5 = High
2 = Medium/Low	4= Medium/High	

6.3 Effectiveness

6.3.1 To what extent has the identified EU legislation contributed to achieving the objectives of a competitive and sustainable construction sector?

OSH legislation

There is little doubt that OSH legislation and the measures introduced by the OSH directives have had a positive impact in terms of improving the health and safety of construction workers, particularly in the newer MS. These improvements are likely to have in turn contributed to an increase in productivity through a reduction in the number of days workers are absent from work through having had accidents or through illness.

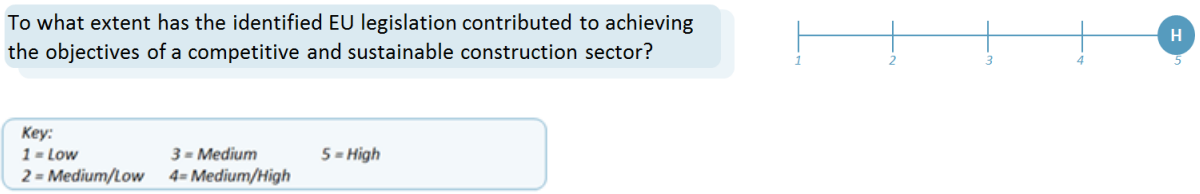
Of course, many MS had already enacted similar legislation before the OSH Directives came into force, meaning that the additional gains from the OSH legislation would have been only marginal. Nevertheless, the presence of EU OSH legislation may have helped to prevent a weakening of health and safety legislation over time, which may have been particularly tempting for national governments when the industry was struggling during the recession. Thus OSH legislation has positively contributed to the objective of ensuring a (socially) sustainable construction sector.

Insufficient information is available, however, to make any firm conclusions on the extent to which OSH legislation has contributed to this objective. Significant costs have certainly been avoided by implementing OSH legislation and as demonstrated in Section 4, the costs associated with implementing a number of the measures required under the legislation represents only a relatively small percentage of construction companies' annual turnover (although it is noted that for SMEs this is a higher percentage and margins for SMEs in the construction sector can be relatively low). Some stakeholders that participated in the consultation noted that the OSH Directives have helped to level the playing field within MS and across the EU, although many also indicated that there have been no effects in this regard. The fact that a number of MS have implemented additional requirements over and above those required by the EU legislation has been a contributory factor in this regard. The variation in requirements across MS also act as a barrier to companies wishing to operate cross-border as they are required to research and apply the different requirements in different MS.

Environmental legislation

Overall, it would appear that the two environment directives considered in this study have positively contributed to improving the (environmental) sustainability of the construction sector. However, their impact on the competitiveness of the sector remains unclear due to significant variations in implementation across MS.

The graphic below provides the consultants' rating for the extent to the legislation contributes to achieving a competitive and sustainable construction sector.



6.3.2 To what extent do 'shortcomings' in EU legislation, or in its implementation/transposition at a national level, impact on the performance of the construction sector?

OSH legislation

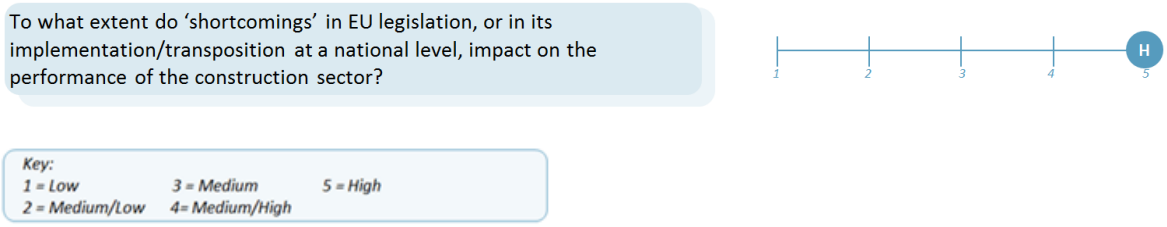
A lack of specific consideration of psychosocial risks has been identified as an important shortcoming of the EU OSH legislation. This shortcoming may affect the construction sector in numerous ways, including reduced productivity, increased levels of absenteeism, higher levels of employee turnover, more accidents/fatalities, and difficulty in recruiting skilled workers, etc.

The fact that many countries have implemented requirements that are more stringent or detailed than those laid down in the four OSH Directives presents a barrier to cross-border trade and reduce the competitiveness of construction firms in countries with additional requirements. Consequently, whilst the legislation has created minimum standards for OSH, it has not prevented divergence in the requirements. As a result, companies from outside of a MS still face barriers in competing with those based inside, leading to a reduction in competition.

Environmental legislation

Differences in national transposition and implementation of the environmental legislation may pose a barrier to cross-border trade in construction products/services. In addition, different approaches to dealing with particular types of waste in different countries (e.g. disallowing the use of soil containing naturally occurring pollutants in backfilling in Germany) means that virgin materials are used instead which is in conflict with circular economy objectives.

The graphic below provides the consultants' rating for the extent to which there are 'shortcomings' in EU legislation, or in its implementation/transposition at a national level, and their impact on the performance of the construction sector. In this case, a high rating indicates limited shortcomings and/or limited negative impacts on the performance of the sector.



6.3.3 What are the obstacles that still stand in the way of achieving the objectives of a competitive and sustainable construction sector?

OSH legislation

A number of obstacles still stand in the way of achieving the objectives of a competitive and sustainable construction sector. In particular, high levels of non-compliance and low levels of enforcement, which are reportedly prevalent in some MS, can be seen as a barrier to achieving the Directives' aims. SMEs, which are by far the largest group of companies in the sector, face particular challenges in complying with the legislation in terms of keeping up with developments in the health

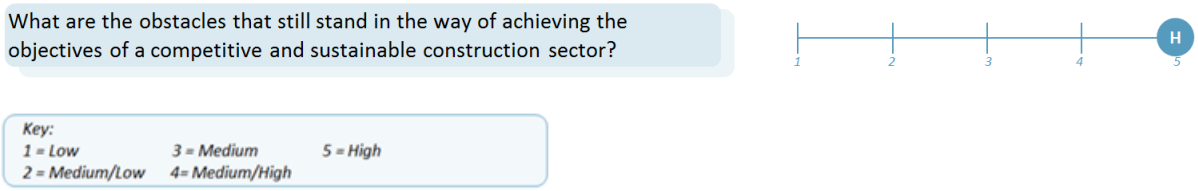
and safety field and finding the necessary resources to purchase health and safety related equipment. It is noted however that overall costs are estimated to be a relatively small proportion of SMEs' average annual turnover.

Whilst there are many significant benefits arising from health and safety legislation in terms of increased productivity and these may outweigh the costs for individual companies), national 'gold-plating' of the legislation poses an obstacle to achieving a competitive construction sector.

Environmental legislation

A lack of reliable and consistent data on the amount of CDW arising in Europe makes it very difficult to assess the impacts of the WFD on the construction sector. The fact that many countries already appear to be achieving the targets set out in the WFD poses a potential obstacle to improving the sustainability of the construction sector. Increasing targets may provide opportunities for increased economies of scale (as more waste would be recycled), thereby reducing costs of recycling and recycled materials, as well as the incentive to design activities to minimise waste arising in the first place.

The graphic below provides the consultants' rating for the performance of the legislation with respect to any obstacles that still stand in the way of achieving the objectives of a competitive and sustainable construction sector. In this case, a high performance corresponds with limited obstacles.



6.3.4 What are the unintended positive or negative consequences and collateral effects of the EU legislation in question?

OSH legislation

The main source for information on unintended impacts arising from the legislation is the companies themselves as well as their industry associations who may compile reports from various members. Stakeholders interviewed by the study have identified several positive impacts that may have arisen from the implementation of EU OSH legislation and which appear feasible, namely:

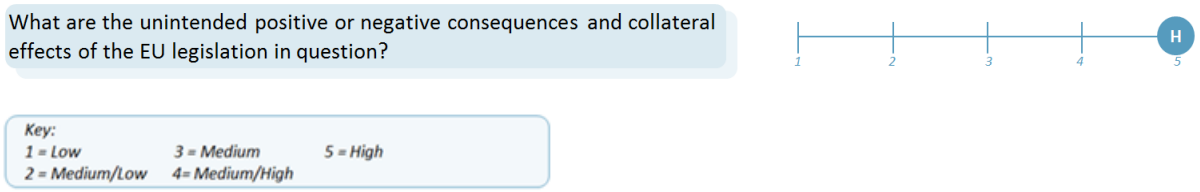
- that the EU legislation may act as a driver for innovation, through encouraging companies to develop innovative solutions to protecting the health and safety of their workers and which at the same time contribute to improving productivity
- corporate image and the reputation of the sector as a whole is improved as companies are seen to care about and protect their employees

One consultee under the study claimed that there had been an increase in litigation following the introduction of legislation in this area and that, as a result, risk averse companies were not applying OSH provisions in a pragmatic way, rather applying many very strict measures in order to avoid being prosecuted in the event of a health and safety incident. However, no evidence was presented to back this up and it is difficult to draw any conclusions on its prevalence.

Environmental legislation

The main unintended benefit from the environmental legislation analysed during this study is the jobs created in the waste management/recycling and environmental impact assessment sectors, although this is not specifically related to the construction sector and should be considered as a wider social benefit. The WFD makes greater volumes of what would otherwise be treated as waste available for recycling and this will have increased business for waste and recycling companies, leading to increased employment. Similarly, the EIA sector has increased significantly over the period 2004-14, with consulting companies engaged to carry out EIAs in relation to construction projects employing more staff to cope with the increased workload.

The graphic below provides the consultants' rating for the performance of the legislation with respect to unintended positive or negative consequences and collateral effects of the EU legislation in question. In this case, a high performance corresponds with positive or only limited negative impacts.



6.4 Efficiency

6.4.1 What are the cumulative costs and benefits associated with the implementation and transposition of identified EU legislation for the construction sector, in particular for its SMEs?

Whilst research has identified sources which demonstrate that the benefits of companies investing in health and safety exceed the value of investments, the available data for this study has generated monetised estimates of costs exceeding benefits by a significant extent. However, it is understood that many of the cost estimates may be overestimated, being as they are derived from limited data often in only a few or even one MS. In addition, it has not been possible to quantify and monetise many of the benefits identified for the OSH legislation, such as enhanced reputation, clarity of the legal situation and establishment of a level playing field.

What is clear is that the majority of those consulted via telephone interviews and the OPC are of the view that the measures required under OSH and environmental legislation have resulted in either large/significant or slight positive/moderate benefits whilst the costs incurred were considered as being moderate. Given that SMEs represent more than 99% of enterprises in the construction sector, the vast majority of the cumulative costs will be borne by SMEs. In relation to benefits, SMEs in the construction contractors sub-sector employing less than 250 people account for approximately 91% of all employees, with 9% being employed by those companies employing more than 250 people. This would suggest that the majority of benefits in terms of cost savings from a reduction in accidents and increased productivity due to fewer workdays lost to ill-health accrue to SMEs, although larger companies are likely to be benefitting from economies of scale as the measures implemented are spread over a greater number of employees.

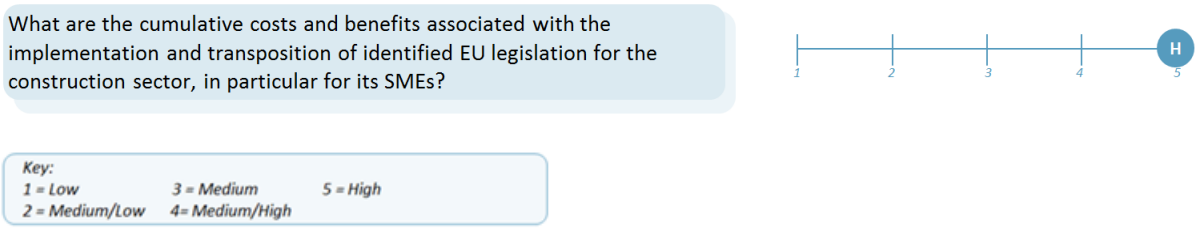
The benefits from implementation of the WFD and EIA have not been subject to quantification or monetisation (particularly in the former case because it is too early to assess). This also contributes to the imbalance between the calculated costs and benefits.

There are differences in the degree to which different actors will be affected by the legislation and the extent to which they will be required to bear costs. Table 6-1 below sets out the sub-sectors within the construction sector most likely to be impacted by the different pieces of legislation in terms of incurring costs. The table also identifies, based on the consultants' judgement, where there may be potential for the different actors to pass on costs further along the supply chain. The main legislation where costs may be passed on is the EIA directive since the developer will be the one responsible for costs incurred (although as noted, they may try to negotiate down costs from contractors in order to protect their profit margins). In most other cases, given the competitiveness of the sector and the fact that as a whole, the construction sector is still to fully recover from the 2008 financial crisis, it is not expected that the majority of the other costs can be passed on.

Table 6-1: Distribution of costs arising from OSH and environmental legislation

Directive	Primary cost bearers	Pass on costs?
OSH Framework Directive	Construction contractors	No
	Manufacturers of construction products and equipment	No
	Mining and quarrying companies	No
Directive on the Manual Handling of Loads	Construction contractors	No
	Manufacturers of construction products and equipment	No
Directive on Temporary or Mobile Construction Sites	Construction contractors	No
Asbestos Directive	Construction contractors	No
Environmental Impact Assessment Directive	Professional construction services	Yes – Investors/Developers
	Mining and quarrying Companies	No
Waste Framework Directive	Construction contractors	Partial – if negotiated as separate price with developers
	Mining and quarrying Companies	No

The graphic below provides the consultants' rating for the performance of the legislation with respect to the cumulative costs and benefits associated with the implementation and transposition of identified EU legislation for the construction sector, in particular for its SMEs. In this case, a high performance corresponds with benefits high benefits and/or low costs.



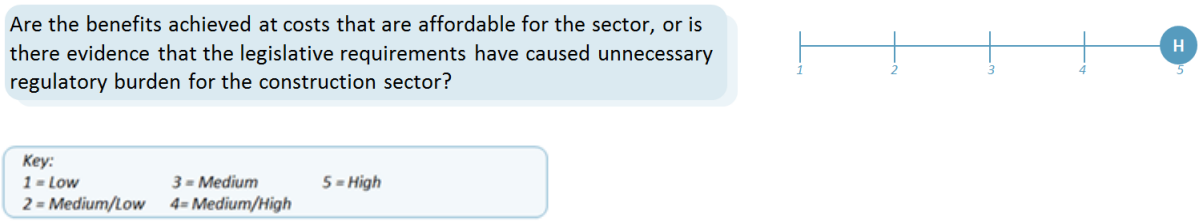
6.4.2 Are the benefits achieved at costs that are affordable for the sector, or is there evidence that the legislative requirements have caused unnecessary regulatory burden for the construction sector?

When comparing the total cost for the sector with the turnover of the sector, the costs of dealing with OSH are less than 1%. The greatest costs appear to be related to the provision of preventive measures, including technical measures and organisational measures as well as undertaking risk assessments.

It is acknowledged (as discussed in Section 4.6) that some costs are relatively expensive for SMEs (i.e. they account for a higher percentage of turnover than for large companies). For example, the cost of risk assessments has been estimated to equate to 0.79% of turnover for construction contractors employing 1 to 9 people in the EU in 2013, but this figure was only 0.01% for those employing 50 to 249 staff, and negligible for those companies with more than 250 employees. So even within SMEs there is significant variation and the smaller the company, the more costly OSH measures are in relation to a company's turnover.

However, with overall costs estimated to be less than 1% of turnover, it would seem that the costs are affordable and this view is echoed by stakeholders interviewed by telephone who have often noted that the costs are 'moderate', particularly in relation to the benefits that the majority of those consulted through telephone interviews and the public consultation described as being significantly or moderately positive.

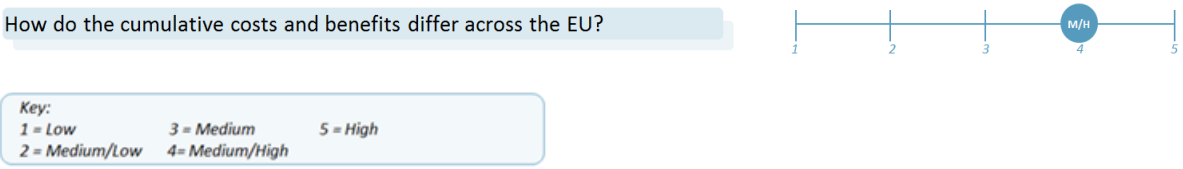
The graphic below provides the consultants' rating for the performance of the legislation in terms of whether the benefits have been achieved at costs that are affordable for the sector, whether they have caused unnecessary regulatory burden for the construction sector In this case, a high performance corresponds with benefits being achieved at a reasonable cost for the sector.



6.4.3 How do the cumulative costs and benefits differ across the EU?

The costs would appear to differ significantly due to differences in the scale of the construction sector between MS but also because some MS appear to have applied more stringent requirements (e.g. say number of coordinators according to company size or record keeping for absences exceeding 1 day rather than 3 as stipulated by the Directive).

The graphic below provides the consultants' rating for the extent to which there is variation in cumulative costs across the EU.



6.4.4 What factors influence the costs and benefits, in particular with regard to national transposition?

As highlighted by the consultation exercise, the application of the measures required under the OSH Directives and in national legislation are in principle effective at reducing the incident rate of accidents. However, enforcement at MS level also appears to be a key factor in the variation of costs and benefits across the EU.

6.4.5 How are the various aspects related to inefficiencies and unnecessary burden addressed by Member States and the affected industry sector in terms of cooperation and coordination?

The availability of guidance at MS level can be regarded as a positive output towards the understanding of the legislation and also showing a high degree of cooperation. There are several guidance documents available (from the 10 focal country investigation) regarding loads and machinery as well as asbestos. These guidance documents, although they are not enforceable, appear to be followed by industry to large degree.

6.5 EU Added Value

6.5.1 What is the added value of the different acts identified for the construction sector, especially for SMEs?

Stakeholders have provided mixed views on whether the identified EU legislation provides added value to enterprises (particularly SMEs) compared to national legislation alone. EU legislation may have provided a stimulus for some countries to improve their existing health and safety regime and has provided a minimum standard of health and safety protection across the EU. The extent to which countries may have implemented similar legislation in the absence of EU legislation cannot be determined.

Regarding environmental legislation, it has not been possible to draw any firm conclusions on the extent to which the different acts have provided added value for the construction sector, especially for SMEs.

6.5.2 What would happen to the construction sector if that legislation or some of its specific provisions were to be removed?

OSH Legislation

It is extremely difficult to say what would happen to the construction sector if OSH legislation, or some of its specific provisions, were removed. While some stakeholders have indicated that MS would implement similar provisions in national law, others have said that this would not be the case. It is likely that companies would implement some voluntary actions where these also serve to increase productivity.

It has been noted that the way in which health and safety legislation has been transposed and implemented in the MS is extremely varied. Over time, it is likely that the removal of EU legislation would lead to an even more fragmentary approach developing between countries.

Environmental Legislation

Some of the requirements of the EIA Directive are already present in other international legislation (e.g. the Rio Declaration, Espoo Convention and Aarhus Convention). Therefore, removing some obligations from the EU acquis may not have any major impact, besides reducing legal clarity, as Member States would remain committed to their implementation through these other obligations.

6.5.3 Do the needs and challenges addressed by the legislative acts continue to require action at EU level?

In conclusion, it would appear that further action is required at the EU level to help level the playing field both within and outside of the EU. Action is also needed at the EU level to help address some of the difficulties faced by SMEs.

HOW TO OBTAIN EU PUBLICATIONS

Free publications:

- one copy:
  via EU Bookshop (http://bookshop.europa.eu);

- more than one copy or posters/maps:
  from the European Union's representations (http://ec.europa.eu/represent_en.htm);
  from the delegations in non-EU countries
  (http://eeas.europa.eu/delegations/index_en.htm);
  by contacting the Europe Direct service (http://europa.eu/europedirect/index_en.htm)
  or calling 00 800 6 7 8 9 10 11 (freephone number from anywhere in the EU) (*).

  (*) The information given is free, as are most calls (though some operators, phone boxes or hotels may charge you).

Priced publications:

- via EU Bookshop (http://bookshop.europa.eu).

Priced subscriptions:

- via one of the sales agents of the Publications Office of the European Union
  (http://publications.europa.eu/others/agents/index_en.htm).

ET-04-15-786-EN-N

Publications Office

doi:10.2873/421771