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DG EMPLOYMENT, SOCIAL AFFAIRS AND INCLUSION

Evaluation of the Practical Implementation of the EU Occupational Safety and Health (OSH) Directives in EU Member States

SYNTHESIS REPORT

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List of abbreviations and acronyms

Acronym	Definition
ACSH	Advisory Committee on Health and Safety at Work
ACSH (WP)	Advisory Committee on Health and Safety at Work (Working party)
AIL	Analytical intervention logic
APCMA	L'Assemblée permanente des chambres de métiers et de l'artisanat
AT	Austria
ATEX Directive	Directive on the harmonisation of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres
BE	Belgium
BenOSH	Benefits of Occupational Safety
BG	Bulgaria
BusinessEurope	Advocate for growth and competitiveness at European level
CAD	Chemical Agents at Work Directive
CEEMET	European employers' organisation representing companies of the metal, engineering and technology-based industries
CEFIC	European Chemical Industry Council
CIETT	International Confederation of Private Employment Agencies
CMD	Carcinogens or Mutagens Directive
CPM	Common process and mechanism
CSR	Country Summary Report
CY	Cyprus
CZ	Czech Republic
DE	Germany
DG EMPL	Directorate-General Employment
DG ENV	Directorate-General Environment
DG GROW	Directorate-General Enterprise and Industry
DG JUST	Directorate-General Justice
DK	Denmark
DNEL	Derived No-Effect Level
DSE	Display Screen Equipment
DWEA	Danish Working Environment Authority
EASE	European Association for Storage of Energy
ECSA	The European Community Shipowners' Associations
EE	Estonia
EFBWW	European Federation of Building and Woodworkers
EFCI	European Federation of Cleaning Industries
EFFAT	European Federation of Food, Agriculture and Tourism Trade Unions

Acronym	Definition
EHIS	European Health Interview Survey
EL	Greece
EMF	Electromagnetic Field
EODS	European Occupational Diseases Statistics
EPSU	European Federation of Public Service Unions
EQC	Evaluation question Coherence
EQE	Evaluation question on Effectiveness
EQR	Evaluation question on Relevance
ER	Employee Representative for occupational safety and health matters
ES	Spain
ESAW	European Statistics on Accident at Work
ESAW	European statistics on accidents at work
ESENER	European Survey on New and Emerging Risks
ETF	European Transport Workers' Federation
ETUI	European Trade Union Institute
ETUC	European Trade Union Confederation
EU	European Union
EU-OSHA	European Agency for Safety and Health at Work
Eurocoal	European Association for Coal and Lignite
Eurofer	European Steel Association
Eurofound	European Foundation for the Improvement of Living and Working Conditions
Eurometaux	European Association of Metals
Euromines	Recognized representative of the European metals and minerals mining industry
Europêche	Association of National Organisations of Fishing Enterprises in the European Union
Eurostat	Statistical Office of the European Union
EWCS	European Working Conditions Survey
FEVE	The European Container Glass Federation
FI	Finland
FIEC	European Construction Industry Federation
FR	France
FWD	Framework Directive
Glass for Europe	Trade association for Europe's manufacturers of building, automotive and transport glass
HOSPEEM	European Hospital & Healthcare Employers' Association
HOTREC	Hotels, Restaurants & Cafés in Europe
HU	Hungary
ILO	International Labour Organisation
IMA-Europe	Industrial Minerals Association – Europe
IR	Ireland
ISO	International Organization for Standardization
ISSA	International Social Security Association
ISSG	Inter-Service Steering Group
IT	Italy
IWG	Intergovernmental Working Group
JICA	Japan International Cooperation Agency
JISHA	Japan International Safety and Health Association
KR	Key requirement
LFS	Labour Force Survey
LT	Lithuania
LU	Luxembourg
LV	Latvia
MH	Manual Handling
MODERNET	Programme which aims at establishing a network for

Acronym	Definition
	monitoring trends in occupational diseases, such as allergic and infectious diseases and reproductive hazards, and new and emerging occupational risks caused by biological agents
MQ	Mapping question
MSD	Musculoskeletal Disorder
MT	Malta
NACE	(Nomenclature of Economic Activities) is the European statistical classification of economic activities
NIR	National Implementation Report
NL	Netherlands
OECD	Organisation for Economic Co-operation and Development
OEL	Occupational Exposure Limit
OSH	Occupational Safety and Health
PL	Poland
PlasticsEurope	Association of Plastic Manufacturers
PT	Portugal
RAC	Committee for Risk Assessment
REACH	Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC
RO	Romania
SBS	Structural Business Statistics
SCOEL	Scientific Committee on Occupational Exposure Limits
SE	Sweden
Seveso Directive	Directive 82/501/EC was a law aimed at improving the safety of sites containing large quantities of dangerous substances. It is also known as the Seveso Directive, after the Seveso disaster.
SI	Slovenia
SK	Slovakia
SLIC	Senior Labour Inspectors Committee
SME	Small and Medium Enterprise
TS	Tender Specifications
UEAPME	European Association of Craft, Small and Medium-Sized Enterprises
UK	United Kingdom
UNIZO (SME)	UNIZO's platform for growing entrepreneurs
UPEG	'Union Européenne des Producteurs de Granulats' (European Aggregates Associati)
US	United States
VOV	Virksomhedsovervågning (Monitoring Preventive Work Safety and Health Measures at Workplace Level)
WHO	World Health Organisation
WorkSafeBC	Workers' Compensation Board of British Columbia

1 Introduction

This report provides a synthesis of the findings, conclusions and recommendations derived from the project 'Evaluation of the Practical Implementation of the EU Occupational Safety and Health (OSH) Directives in EU Member States', commissioned by the European Commission and conducted by a consortium consisting of COWI A/S, IOM and Milieu. The objective of the project is to evaluate the practical implementation of EU OSH directives in EU Member States with a view to assessing effects and impacts and, based on the identified strengths and weaknesses, putting forward possible improvements to the regulatory framework. The evaluation covers a total of 24 OSH directives (see Table 1-1) and their implementation in 27 Member States ([1]).

Under the provisions of the 24 OSH directives, the Member States shall submit a single report to the Commission every five years on the practical implementation of the directives concerned. The first of these National Implementation Reports (NIRs) cover the evaluation period 2007-2012 and were submitted to the Commission by the Member States by late 2013. This obligation of the Member States to report on practical implementation provides the opportunity to take stock of and evaluate various aspects of the practical implementation of the directives. The evaluation is therefore based on the National Implementation Reports, on an extensive mapping and analysis of transposition and implementation of OSH legislation in each Member State, official statistics at the national and EU levels, scientific literature, existing studies and interviews with national and EU stakeholders.

The evaluation is reported by means of a main report that provides a comprehensive overview of crosscutting findings, conclusions and recommendations from the evaluation. The main report includes 24 directive-specific evaluation reports (enclosed in Appendix A in the main report) and 27 Country Summary Reports (CSRs) on the transposition and implementation of all directives in the Member States (enclosed in Appendix B in the main report). Furthermore, the main report is complemented by this synthesis report, providing a summarised version of the key findings, conclusions and recommendations.

The evaluation is guided by a set of questions and evaluation criteria, which are addressed for all Directives and Member States. There are two main sets of questions. The first set is related to the implementation of the Directives in the Member States, and the second set is related to the evaluation. The latter set of evaluation questions addresses the three main evaluation criteria of relevance, effectiveness and coherence.

[1] Croatia was not a part of the EU when the evaluation was initiated and is thus excluded from the Task Specification.

- Relevance: examine the extent to which the aims of the Directives are up to date in addressing needs and issues related to the health and safety of workers – including both current relevance and future relevance based on known trends.

- Effectiveness: analyse if the Directives are achieving what they set out to; how significant these achievements are; and consider the distribution of benefits and costs associated with those achievements.

- Coherence: assess, if any, inconsistencies, overlaps, or synergies that can be identified across and between the Directives and how interrelated the Directives are with other measures and/or policies at the European level, also covering aspects related to health and safety at work, such as EU legislation in other policy areas.

The Synthesis Report is structured as follows:

- Chapter 2 presents the study approach and methodology followed for this complex evaluation covering 24 Directives and 27 Member States
- Chapter 3 draws out the findings from the 27 Country Summary Reports with regard to the questions on mapping of the implementation of the Directives
- Chapter 4 presents the findings pertaining to the questions on relevance
- Chapter 5 presents the findings pertaining to the questions on effectiveness
- Chapter 6 presents the findings pertaining to the assessment of costs, benefits and broader effects (i.e. chapter 6 concern evaluations questions 5 and 6 under Effectiveness, which due to methodological deviations are presented in a separate chapter)
- Chapter 7 presents the findings pertaining to the questions on coherence
- Finally, chapter 8 presents the conclusions and recommendations arising from the study.

A literature list is included in Appendix A to provide an overview of the published data sources the evaluation builds upon. Other essential sources of information are the Country Summary Reports and the individual directive evaluation reports. These can be found in appendices to the Main Report.

Table 1-1 below provides an overview of the 24 Directives included in the evaluation. In the report, we refer to the Directives by means of their respective abbreviations, added in parenthesis.

Table 1-1 Overview of the 24 Occupational Safety and Health Directives

Type of Directive	Directive
General Directives	**Directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work (Framework Directive)**
	Directive 89/654/EEC concerning minimum safety and health requirements for the workplace (Workplace Directive)
	Directive 2009/104/EC on the minimum safety and health requirements for the use of work equipment by workers at work (Work Equipment Directive)
	Directive 89/656/EEC on the minimum health and safety requirements for the use by workers of personal protective equipment at the workplace (Use of PPE Directive)
	Directive 92/58/EEC on the minimum requirements for the provision of

Type of Directive	Directive
	safety and/or health signs at work (OSH signs Directive)
Type-of-worker Directives	Directive 91/383/EEC supplementing the measures to encourage improvements in the safety and health at work of workers with a fixed-duration employment relationship or a temporary employment relationship (Temporary workers Directive)
	Directive 92/85/EEC on the introduction of measures to encourage improvements in the safety and health at work of pregnant workers and workers who have recently given birth or are breastfeeding (Pregnant/breastfeeding workers Directive)
	Directive 94/33/EC on the protection of young people at work (Young People Directive)
Sector-specific Directives	Directive 92/57/EEC on the implementation of minimum safety and health requirements at temporary or mobile construction sites (Construction Directive)
	Directive 92/104/EEC on the minimum health and safety requirements for improving the safety and health protection of workers in surface and underground mineral extracting industries (Mines and Quarries Directive)
	Directive 92/91/EEC concerning minimum requirements for improving the safety and health protection of workers in the mineral extracting industries through drilling (Drilling Directive)
	Directive 92/29/EEC on the minimum safety and health requirements for improved medical treatment on board vessels (Medical treatment on board vessels Directive)
	Directive 93/103/EC concerning the minimum safety and health requirements for work on board fishing vessels (Fishing vessels Directive)
Hazard-specific Directives	Directive 2002/44/EC on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (vibration) (Vibration Directive)
	Directive 2003/10/EC on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (noise) (Noise Directive)
	Directive 2004/40/EC on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (electromagnetic fields) (EMF Directive)
	Directive 2006/25/EC on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (artificial optical radiation) (AOR Directive)
	Directive 1999/92/EC on minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres (ATEX Directive)
	Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens or mutagens at work (Carcinogens or mutagens Directive)
	Directive 98/24/EC on the protection of workers from the risks related to chemical agents at work (Chemical Agents Directive)
	Directive 2009/148/EC on the protection of workers from the risks related

Type of Directive	Directive
	to exposure to asbestos at work (Asbestos Directive)
	Directive 2000/54/EC on the protection of workers from risks related to exposure to biological agents at work (Biological Agents Directive)
	Directive 90/269/EEC on the minimum health and safety requirements for the manual handling of loads where there is a risk particularly of back injury to workers (Manual Handling Directive)
	Directive 90/270/EEC on the minimum safety and health requirements for work with display screen equipment (DSE Directive)

2 Study process and methodology

This chapter presents the methodology applied in the evaluation. It describes the key steps in the evaluation process, the approach to the three evaluation themes of relevance, effectiveness and coherence, as well as the data collection activities undertaken and the key challenges and limitations pertaining to data.

2.1 Introduction

The objective of the assignment is to evaluate the practical implementation of the OSH directives in EU Member States with a view to assessing their relevance, effectiveness and coherence and identifying possible improvements to the regulatory framework. The focus of the evaluation is the 24 EU OSH directives in 27 Member States (Croatia not included) in the period 2007-2012.

The evaluation is structured into three main tasks: 1. Mapping the practical implementation at the national level in the Member States; 2. Evaluating the directives according to the criteria of relevance, effectiveness and coherence; 3. Recommendations.

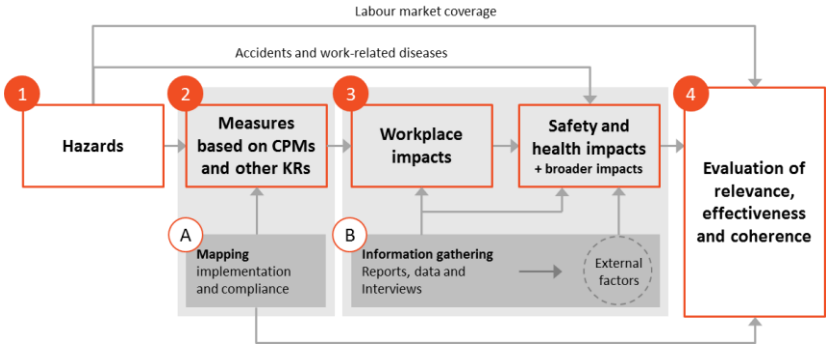
2.2 Four steps in the evaluation process

The Framework Directive and the 23 related Directives sets the general frame for OSH in the Member States. In spite of being of different natures and coverages, the Directives can be structured into four categories: 1. General Directives; 2. Hazard-specific Directives; 3. Sector-specific Directives; and 4. Type-of-worker Directives (see Table 1-1).

This section describes the generic and overall methodology applied in the analysis of the *acquis* as a whole and of each individual Directive. Yet, because of the unique character of each of the 24 directives, they cannot be analysed fully within a single, unique methodological approach. Hence, while the overall methodology remains comparable across directives, the exact analytical approach is directive-specific and dependent on aspects such as directive characteristics and data availability.

The methodology follows four analytical steps and two input steps (A and B), as shown in Figure 2-1. Input step A is related to the mapping of the implementation of the Directives, while Input step B concerns data collection.

Figure 2-1 Steps in the evaluation methodology



Source: COWI evaluation team

In the sections below, we describe each of the four analytical steps.

2.2.1 Step 1: Hazards

The first step in the methodology is to identify and clarify which hazards are addressed by each directive. Understanding these hazards constitutes the basis for assessing the three evaluation criteria:

- *Relevance*: Having a clear picture of the hazards that each directive is intended to address is necessary for developing an understanding of the scope of the labour market covered by the directive, the development in the workforce coverage of each directive, and thus for investigating whether the directive is fit for purpose.

- *Effectiveness*: Understanding the hazards is also important for assessing whether the Directive has been effective in reducing them. This makes it possible to identify and establish a set of operational indicators for measuring workplace and safety and health impacts.

- *Coherence*: Lastly, understanding the hazards makes it possible to identify where Directives overlap each other, and to identify additional relevant policies/developments.

2.2.2 Step 2: Common Processes and Mechanisms and other Key Requirements

Step 2 in the methodology is to identify the most important provisions in each directive, the so-called key requirements (KR). For each directive, including the Framework Directive, a table is developed that presents KRs in a structured manner. These tables are presented in each of the 24 directive-specific evaluation reports.

An important element in understanding the KRs is to distinguish the 'Common Processes and Mechanisms' (CPMs) from other KRs. The CPMs are defined in the Framework Directive and are mirrored in the individual directives. They constitute the core of the OSH *acquis* and are the minimum requirements that all establishments must implement. Therefore, they provide a basis for the comparative analysis across the 24 Directives. The CPMs thus represent the key elements in an OSH management approach (cf. Table 2-1).

Other key requirements, on the other hand, are directive-specific requirements, i.e. further provisions, some of which can be seen as fundamental to the intended outcome of a specific directive. In such cases, because of their fundamental nature, these further provisions are regarded

as additional key requirements and are therefore included in the KR tables within that specific directive report.

Table 2-1 CPMs and their definitions in the Framework Directive (89/391/EC)

Common Processes and Mechanisms	Definition in framework Directive (89/391/EC)
Conducting a Risk assessment	Art. 6(3a): Evaluate 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. Art. 9(1)(a): Be in possession of an assessment of the risks to safety and health at work, including those facing groups of workers exposed to particular risks.
Internal and/or external preventive and protective services	Art. 7: Designate one or more workers to carry out activities related to the protection and prevention of occupational risks for the undertaking and/or establishment.
Information for workers	Art. 10: Take measures so that workers and/or their representatives in the undertaking and/or establishment receive information.
Training of workers	Art. 12: Ensure that each worker receives adequate safety and health training, in particular in the form of information and instructions specific to his workstation or job.
Health surveillance	Art. 14: Ensure that workers receive health surveillance appropriate to the health and safety risks they incur at work.
Consultation of workers	Art. 11: Consult workers and/or their representatives and allow them to take part in discussions on all questions relating to safety and health at work.

Source: Framework Directive

In order to perform a full assessment of a directive's relevance, effectiveness and coherence, it is essential to understand how OSH hazards, interventions and desired results are interlinked. We therefore use the intervention logic approach in order to analyse the KRs. Our initial analysis of the directives showed that the change processes involved in the implementation of the directives are highly complex and involve many different actors and different levels of action, which are not easily depicted in directive-specific intervention logics. Three main levels of actors are involved – the EU, Member States and establishments – each with specific roles and actions which are interlinked and mutually influence each other. Thus, a two-pronged approach to using intervention logics was developed: 1. directive-specific intervention logics; 2. An overall 'generic' intervention logic representing the entire *acquis* of 24 directives and reflecting the main activities, outputs, results and impacts – and their causal links.

2.2.3 Step 3: Impacts

Step 3 of the methodology consists of identifying and establishing an overview of quantifiable indicators of workplace impacts, and an overview of existing data, i.e. official statistics, on workplace impacts.

Generally there are two types of such impacts. The first relates to *direct* events affecting the health of workers, such as occupational accidents. The second relates to *latent* health problems, such as those occurring as a result of an exposure to risks arising from work conditions.

In terms of immediate impacts, for example, even if a directive has successfully managed to reduce the number of occupational accidents by addressing the relevant safety hazards, it is hard to measure this impact based on a 2007-2012 analysis period if the directive was implemented in e.g. 1992. To do this requires data on occupational accidents as far back as 1992 and such data is not necessarily available. Instead, a few examples of national statistics may be given to illustrate, for

instance, how fatal accidents have evolved since the beginning of 1990s. An analysis of occupational accidents across 2007-2012 showing, for example, consistently low numbers could however provide an indication of the directive's continued relevance.

The same argument holds true concerning latent work-related health problems inasmuch as the latency period of the effect falls before the 2007-2012 analysis period.

2.2.4 Step 4: Answering the evaluation questions

The aim of Step 4 is to answer the evaluation questions of relevance, effectiveness and coherence. In line with the directive-specific approach, for relevance and effectiveness these questions are answered (i) directive by directive with results presented in the directive-specific evaluation reports, and (ii) across the directives. For coherence, the analysis is first made across the *acquis* and based on these findings, a directive-by-directive assessment is made.

2.3 Relevance

Relevance deals with assessing the extent to which a particular intervention is consistent with the needs and problems experienced by the target groups. In the case of the OSH directives, the essential issue is therefore whether or not the directives address the OSH risks prevalent within the EU Member States. In the context of this report, relevance is assessed against two time frames: EQR1: current relevance (2014) and EQR2: future relevance (2020).

2.3.1 Facts and figures

Data related to relevance is established through a combination of examining relevant statistics; drawing on the expert knowledge of subject experts; and seeking the knowledge and opinions of appropriate stakeholders. In other words, a mixture of quantitative and qualitative sources are used, relying on the knowledge of subject experts and that of national experts (including information gleaned from their desk studies and interviews), to formulate an overview of both the current and likely future relevance of the provisions of each Directive. Four topics have initially been identified which contribute to the relevance of each Directive:

- Number of Member States where the directive is potentially relevant
- Proportion of EU workforce to whom the directive is potentially relevant
- Severity/Extent of risks intended to be addressed by the directive
- Degree to which the directive reflects current working methods and available technologies and the risks associated with these.

Each of these topics are sequentially examined as part of the relevance assessment for each directive. For further detail on the methodology of each step, we kindly refer to the methodology section of the Main Report.

2.4 Effectiveness

The seven questions on effectiveness have been categorised in two main groups: 1. Impacts and objective achievement of the Directives and 2. Costs and benefits of the Directives. This grouping reflects the consideration that several of the evaluation questions share the same characteristics (e.g. in terms of inputs, data collection tools or outputs) and that important links exist between the questions in terms of the output of one question feeding directly into another.

The following section presents the data collection activities to answer evaluation questions under each group.

2.4.1 Impact and objective achievement of Directives (EQE1-EQE4 and EQE7)

The first group of questions focuses on the extent to which the Directive has had any safety and health impacts (EQE1), whether derogations and transitional periods (EQE2) have influenced the effectiveness of the Directives, and to what extent the Common Processes and Mechanisms (EQE3) and sanctions and other related enforcement activities (EQE4) have contributed to the effectiveness of the Directives. To the extent possible, the output of the evaluation questions in this group is expressed in terms of percentages of change in, e.g., levels of exposure, occurrence of occupational accidents and occupational diseases and other related health problems that can be attributed to a given Directive.

The first step in analysing the effectiveness of the individual Directive is therefore to establish a link between the Directives and occupational risks, accidents, diseases and other work-related health problems, as accounted for in the available register-based and survey data.

This analysis is nuanced through interviews with OSH stakeholders at the EU level and national stakeholders. During both national and EU stakeholder interviews, we ask stakeholders to make a quantitative assessment of specific evaluation questions. A simple five-scale scoring system is applied. Further information about the scoring system can be found in the methodology section of the Main Report.

2.4.2 Costs and benefits: EQE5-EQE6

The most preferable method for assessing costs and benefits is a cost-benefit analysis (CBA).The core question in a CBA is to assess whether or not a programme, policy or intervention is worth undertaking by considering whether or not the benefits outweigh the costs. However, the CBA is one of the most comprehensive types of economic evaluations, and conducting a CBA at the European-level is even more challenging, because collecting the necessary data is very time-consuming. To date, the main challenge relates to the lack of comparable data on both costs and benefits related to the OSH *acquis* at the national and EU levels. Thus, it is beyond the scope of this evaluation to conduct a full CBA.

Therefore, the evaluation consists of qualitative assessment of: 1) costs, 2) benefits and 3) profitability from an enterprise perspective. The evaluation draws on available literature, interviews with EU and national stakeholders and the results from the evaluation of the implementation, effectives and coherence of the various Directives. We triangulated these data sources to discuss and asses which costs and benefits arise from implementation of the *acquis* for different groups of stakeholders. We primarily focus on enterprises, workers and governments.

We did, however, face several methodological challenges regarding the interviews and the literature review. First, the majority of EU and national stakeholders reported that their knowledge was limited and therefor refrained from answering. Moreover, very few provided a quantitative assessment on the magnitude of the costs and burdens, and only few stakeholders had strong opinions on the topic. Second, the literature review revealed several shortcomings regarding the availability, relevance and methodological quality of the available literature. Most importantly, we did not identify any full CBA of the OSH legislation that looked at the societal perspective at either the national or European levels, and at the enterprise level, economic evaluations are still in their infancy, and the methodological quality is generally poor (Uegaki, 2010; EU-OSHA, 2014e).

2.5 Coherence

Coherence essentially concerns the extent to which the intervention logic of a particular directive is non-contradictory and does not contradict other interventions with similar objectives ([2]). The assessment of coherence considers the internal logic between the OSH directives as well as the external coherence between the OSH directives and other measures and policies at EU level. Two main questions are addressed as part of this assessment.

2.5.1 Inconsistencies, overlaps, or synergies across and between the directives? (EQC1) ([3])

Our methodological approach involves three activities: identification of overlaps, identification of inconsistencies and final assessment.

First, we identify potential overlaps between directives. This is done through the identification and comparative analysis of Common Processes and Mechanisms and Key Requirements on a pan-directive level. Our preliminary findings are supplemented by additional analysis of the directives, also looking into definitions and clauses in the directives, which contain a 'without prejudice to…' reservation.

Secondly, we identify inconsistencies by assessing three different components: Contradictory requirements; inconsistencies in the drafting of CPMs and inconsistencies in the drafting of KRs. This analysis cover all CPMs and KRs for all directives.

Finally, all findings are collectively assessed to provide one final assessment of internal coherence.

2.5.2 Coherence and complementarity of OSH directives with other measures and/or policies at the European level (EQC2)

In EQC2, we assess how the OSH directives interrelate with other measures and/or policies that also cover aspects related to health and safety at work. For this purpose, we address two main questions: 1. For EU policies: We assess the extent to which the objectives of the OSH directives are coherent with objectives of other EU policies and international instruments. 2. For EU legislation: A similar question as EQC1 above, only this time focusing on non-OSH EU legislation.

Our methodology for assessing coherence with EU policies is based on a desk study approach, during which we analyse and compare the objectives of OSH directives with those of relevant policy documents and international instruments. We analyse whether other EU policies support or complement the OSH directive objectives (consistency), whether they contradict these objectives or hinder their achievement (inconsistencies) and to what extent they might do so (inconsistent, partially inconsistent, or consistent).

In addition to mapping overlaps and inconsistencies in EQC1, we also map interfaces and gaps. We focus on analysis of EU OSH legislation and a limited amount of targeted non-OSH legislation identified through desk research and with the support of the Commission. We complement our findings with information from the interviews of EU and national stakeholders.

([2]) E.g. EU evaluation guidelines, 2004, p. 39

([3]) Ref. to Glossary of terms for definitions.

Results of the interviews at the national and EU levels on the one hand complement the identification of non-OSH EU legal acts and, on the other hand, provide additional information on the evaluation of coherence between OSH and non-OSH EU legislation. Relevant information to the evaluation of coherence has been extracted from the NIRs.

2.6 Input step A: Mapping of national implementation

One major source of information for the evaluation is Input step A: Mapping of national implementation, which entails mapping practical implementation of all 24 OSH directives in 27 Member States. The mapping exercise provides a general overview of the transposition of the Directives in the national legal frameworks and gives an overview of how the requirements are put into practice in the Member States. The mapping results are compiled in Country Summary Reports (CSRs) for each Member State, which are included in the Main Report (cf. Appendix G) and reported in an aggregated form in Chapter 3 of this report.

In each of the 27 Member States, the mapping exercise is performed by independent national experts selected on the basis of their OSH experience. The national experts gather data in two phases. The first consists of a desk study of available data. The second phase consists of interviews with relevant, national stakeholders.

2.7 Input step B: Information gathering

In addition to the legislation and Directives to be evaluated, the study relies on three key data sources: 1) Existing studies, 2) official statistics and 3) interviews. The use of each data source is described below.

2.7.1 Studies

The Commission has made numerous relevant documents available for the evaluation, the most important of which are the following:

- National implementation reports (NIRs)
- Practical implementation reports, Commission communications and other policy documents
- Other existing studies.

National Implementation Reports

According to provisions of the Framework directive and 23 other directives in the field of health and safety of workers at work, every five years, the Member States shall submit a single report to the Commission on practical implementation of the directives concerned. The first reports cover the period from 2007 to 2012 and were submitted by the Member States by 2013. The structure and questionnaire for these national practical implementation reports is defined in a Commission Decision (C(2011) 9200) and contains a section with the principles and points common to all

directives concerned, and another that deals with particular aspects of each directive, as well as a list of the directives concerned ([4]).

These NIRs are a very important source of information for the evaluation. The NIRs are used extensively in relation to the mapping exercise under Task 1 and are particularly useful in relation to informing on the prevailing legal framework in the Member States, the measures taken to ensure compliance (enforcement and soft measures), and the level of compliance with the requirements of the directives. The NIRs are also used extensively in the evaluation of relevance, effectiveness and coherence.

By providing data for the mapping exercise, the data from the NIRs feeds into the directive reports in the same way as other data from the mapping of national implementation of the directives.

Practical implementation reports, Commission communications and other policy documents

Both the Commission and the European Parliament have produced important studies and communications on OSH that will inform the study, either at the directive level or on specific aspects such as costs. The Commission's practical implementation reports are also a key source of information, particularly for the assessment of the directives. Practical implementation reports are based on studies by independent consultants, and these contain relevant and often recent information on the practical implementation and effects of the directives.

Other existing studies

Existing studies also include other analyses at directive or Member State-level or on a specific topic, e.g. costs and benefits of OSH. Particular focus is on identification of studies concerning SMEs and microenterprises.

2.7.2 Official statistics

At the onset of the present evaluation, a review of official statistics was conducted to establish the availability of data sources to serve as a basis for assessing the directives. The reviewed focused on comparing the expected impacts of the directives identified in the intervention logics with available data from EU, national or other data sources. Official statistics are important for the relevance assessment, particularly for determining the composition of the workforce and the proportion of the workforce likely to be exposed to a given risk or working in a specific sector. Four main sources of EU data have been identified and are reviewed and used in the evaluation. These four main sources are the following:

- European Working Conditions Survey (EWCS)
- Enterprise Survey on New and Emerging Risks (ESENER)
- European Labour Force Survey (EU-LFS) ad hoc modules on Accidents at work and other work-related health problems
- European Statistics on Accidents at Work (ESAW)

([4]) C(2011) 9200 final COMMISSION DECISION of 20.12.2011 defining the structure and questionnaire for the practical implementation report to be drawn up by the Member States regarding Directive 89/391/EEC, its individual Directives, and Directives 2009/148/EC, 91/383/EEC, 92/29/EEC and 94/33/EC.

2.7.3 Interviews – national stakeholders

Interviews with national stakeholders have been completed for all 27 Member States. In total, 540 interviews have been carried out with national stakeholders across the Member States.

National experts were asked to undertake up to 20 interviews with national stakeholders, according to the following prioritisation: National authorities (1-4 interviews); Labour inspectorates (2-4 interviews); Workers' representatives (5-7 interviews); Employers' representatives (5-7 interviews); Other national stakeholders (1-3 interviews).

While overall it was possible to achieve the goal of interviewing 20 stakeholders per Member State and in most cases to also achieve the goal of a balanced representation of stakeholder groups, it must be reiterated that 20 *relevant* interviews were not achievable in all cases given the differences between Member States.

2.7.4 Interviews - EU stakeholders

59 EU stakeholders were contacted for interviews, and 44 of these accepted to participate in an interview. The selection of stakeholder organisations interviewed for the evaluation is based on a list of proposed organisations collated by the evaluation team combined with feedback/comments by the Commission and the Advisory Committee on Safety and Health.

As indicated in Table 2.2, 44 interviews have been carried out. In some cases multiple persons from a single organisation have been interviewed. Thus, 31 EU organisations were interviewed which include 17 employer organisations, 5 worker organisations, 3 DGs, 3 EU agencies and bodies, 3 other OSH knowledge institutions.

Table 2-2 EU stakeholders interviewed

Employer organisations		
BusinessEurope	Eurometaux	IMA-Europe
FEVE	UEPG	Euromines
FIEC	CEFIC	UNIZO (SME)
EFCI	HOSPEEM	APCMA
CEEMET	HOTREC	UEAPME
EASE	Europêche	
Worker organisations		
ETUI	EFBWW	ETF
EFFAT	EPSU	
Representatives of the European Commission		
DG GROW	DG EMPL	DG JUST
EU agencies and bodies		
SLIC	EU OSHA	Eurofound
Other OSH knowledge organisations		
ISO	Hamburg Advice Centre on Work & Health	Modernet

Source: EU stakeholder interviews

2.7.5 Validation seminar

The objective of the seminar held in Brussels on 9 December 2014 was to consult stakeholders on preliminary findings, results and conclusions. The seminar was an important event for the evaluation, since it provided critical input to the evaluation process, served to highlight key issues of concern to a selection of OSH stakeholders and pointed to possible conclusions and recommendations. In all, 57 stakeholders managed to participate. In advance of the seminar, stakeholders had been provided with a discussion paper structured around five themes to steer the discussion ([5]). The stakeholders attending the seminar did not represent any official views and opinions of the social partners, but provided very helpful reactions and viewpoints. The inputs from the seminar have been used by the evaluation team as additional background knowledge from stakeholders with long OSH experience to complete conclusions and recommendations in the individual directive reports and as input for the main report.

2.8 Limitations of the methodology and data availability

This section briefly presents several limitations to the methodology that we have encountered and that have been managed during the evaluation process, including foremost issues related to the quality and availability of quantitative data as well limitations concerning the interview-based qualitative data.

2.8.1 Quantitative data

Quantitative data relating to exposure to the hazards covered by each Directive as well as data on health impacts (occupational diseases) is only available to a limited extent, and the data sets which are available have shortcomings. In particular, EU-wide data on occupational diseases is highly limited and national data is fragmented and difficult to compare inter alia due to differing systems for recognition of occupational diseases in the Member States. However, for each Directive, sources of data relating the safety or health risks covered are explored both at EU level and at the national level, to provide as comprehensive a picture as possible.

As described above, the evaluation primarily uses the following four different types of official quantitative EU data: European Working Conditions Survey (EWCS), European Survey on New and Emerging Risks (ESENER), Labour Force Survey (LFS) ad-hoc modules on accident at work and work-related health problems and European Statistics on Accidents at Work (ESAW). These datasets are all limited by various factors (for example, level of sector detail, lack of comparability across years, only focus on selected groups of respondents, etc.) which we take into consideration when using the data in the evaluation. An overview of key limitations to each EU data source is provided in the Main Report.

2.8.2 Interview data

In the following section, we present the challenges and limitations faced during this evaluation in relation to the collection of interview data. Each challenge is followed by the mitigation performed by the evaluation team in response.

([5]) Theme 1: Do the Directives work as intended? Theme 2: How do we manage the major ongoing risks of MSDs and Psychosocial risks? Theme 3: Maintaining the relevance of the Directives. Theme 4: How do we best manage chemical risks (including nanoparticles)? Theme 5: Challenges in implementation of OSH legislation - enforcement and SMEs.

- Obtaining an equal number of interviews of EU level worker and employer organisations proved to be difficult: fewer worker than employer organisations exist at the EU level, and some of the interviewed worker organisations declined during first contact, referring to the European Trade Union Institute.

  Mitigation: The evaluation team has been sensitive not to let the views put forward by the different social partners be dependent on the number of interviews undertaken (i.e. worker organisation and employer organisation views/comments have been analysed following the content of the arguments and not the number of interviews undertaken). Furthermore, when calculating average scores of interview data (provided in the form of scores from 1-5), the four stakeholder groups (authorities, employers, workers and others) have been weighed equally irrespective of the number of respondents within each group.

- Depth of knowledge: When interviewing EU stakeholders, it turned out to be important to keep in mind that some of the interviewees, particularly the worker organisations, represent large organisations covering heterogeneous industries and a variety of different occupational risks and directives. As a result and unsurprisingly, the interviewees mainly provided information on those directives of which they had personal knowledge and/or experience. Several interviewees also pointed out that they are not sufficiently close to the workplace to provide any details on the actual impacts at the workplace. Finally, the level of directive-specific knowledge of the interviewees varied. While some interviewees had specialised knowledge about the content, key requirements and derogations, others had more general knowledge about OSH legislation and generic CPMs.

  Mitigation: Observations about the knowledge of stakeholders are not particular to this evaluation. but common to most evaluation processes. Most stakeholders do not have a full overview of the evaluation objective or all of the evaluation questions. Their point of reference is usually their own sector or speciality, and they use this to provide as elaborate answers as is possible, also on issues outside their immediate speciality. Fortunately, different stakeholders possess different levels of knowledge. Triangulating these different levels of knowledge is the mechanism that the evaluation team has used when trying to establish an acceptable level of evidence for findings and conclusions. The evaluation team has collected data from several different sources including interview-based data per directive. For those directives where interview data has been less detailed, other data sources have been identified to ensure as much detail as is practically possible taking into consideration the time and the resources available for data collection for each of the 24 directives.

- Narrow/specific directives: in the case of some sector-specific directives, only a few stakeholders proved relevant to interview. For example, in the case of the fishing sector directives, it was not possible to obtain broader coverage because only one of the relevant organisations agreed to participate. In other cases, the interviews focused narrowly on the sector-specific directive, providing strong sector-based knowledge and evidence on the evaluation question.

  Mitigation: The evaluation team has been aware of the need to collect data from a number of different data sources, including interviews. On those sector-based directives where only few stakeholders have been identified and interviewed, we have made extra efforts in searching for additional data and found, for example, research-based data from Member States.

- Coverage of SMEs: While a number of sector-based organisations commented on SME issues, and the main stakeholder on the area, UEAPME, participated in interviews, it was not possible to find a relevant and equivalent worker organisation for SMEs.

  Mitigation: The evaluation team has discussed, to the extent possible, the SME issue when interviewing worker organisations and received views/comments on SMEs as well. This issue was specifically covered at the Validation Seminar.

- In those Member States where few stakeholders were identified or interviewed during the primary interview phase, an additional effort was made to increase the number of interviews and obtain a better balanced stakeholder representation. This was the case for: CZ, HU, IE, PL, and UK. In some Member States, it was not possible to reach 20 interviews due to the following: a lack of relevant interviewees, lack of cooperation by stakeholders, very centralised OSH systems (and thus few stakeholders), relatively small size of the Member State, and conflicts between interview periods and holiday seasons. Some of these challenges led to cases where the difference between contacted stakeholders and stakeholder who agreed to participate is high. This is the case for AT, EE, FR, IR, MT, PL, SE and SI.

3 Implementation in Member States

This chapter presents the synthesised answer to the seven mapping questions (MQs) posed in the evaluation. The chapter is structured according to the mapping questions and thus includes a section for each question.

3.1 Common Processes and Mechanisms (MQ1)

MQ1: Across the Member States, how are the different Common Processes and Mechanisms foreseen by the Directives put in place, and how do they operate and interact with each other?

The first Mapping Question focuses on how Member States have designed their national legal frameworks to reflect the requirements deriving from the Common Processes and Mechanisms (CPM), but also covers specific provisions (Key Requirements), which can be seen as fundamental to the intended outcome of that Directive, e.g. provisions on limit values. Since the coverage of a given directive, i.e. provisions on scope and relevant definitions, may also be relevant to the evaluation, such requirements were also included in the mapping as Key Requirements.

3.1.1 How are the CPMs reflected and articulated in the national legal framework?

Most of the Member States (22) have transposed the main principles and requirements, principally from the Framework Directive, in one single act, usually the framework law on OSH, alternatively the Labour Code and/or the Public Health Act. This national framework legislation was not necessarily newly adopted after the entry into force of the Framework Directive. A few other Member States (5) have adopted another approach, whereby the main principles and requirements are split between different laws. However, such instances are generally linked to the way legislation is shaped in a given country, and the main requirements and principles set in the Framework Directive are still transposed through primary legislation.

National legislation often reflects the structure of the EU OSH legislation, with a framework law complemented with by-laws which transpose each individual Directive. The three OSH directives aiming at protecting vulnerable workers (Young People Directive, Temporary Workers Directive, and Pregnant/breastfeeding workers Directive) constitute an exception as they are often transposed through a specific act and secondary legislation or directly, through the main OSH act or the Labour Code (16 MSs).

Furthermore, several Member States have transposed the two OSH directives on the mineral extracting industry (i.e. Mines and Quarries Directive and the Drilling Directive) through several pieces of secondary legislation or through, for example, the national Mining Act and secondary legislation (9 MSs). The same trend, although to a lesser degree, can be noticed for the two OSH directives on vessels (i.e. Fishing Vessels Directive and the Medical treatment on board vessels Directive) (5 MSs). This is explained by the fact that these two sectors, the mining and the maritime sectors, are traditionally regulated by a distinct body of legislation, which encompasses all rules related to these particular sectors.

Finally, a few MSs have not transposed some of the individual OSH directives. There are two main reasons for this non-transposition: the particular directive is not relevant for a specific MS (e.g. the vessels directives are of no use to land-locked MSs which do not have ships sailing their flags) or the Member State has only transposed a former version of the current individual directive. However, in the latter case it is unlikely that changes introduced by the new directive have been reflected.

The EMF Directive is no longer valid (since 28 June 2013) because it has been repealed by the new Directive 2013/35/EU. As a result, most Member States never actually transposed the EMF Directive. Exceptions are IT, LV, LT, HU, AT, RO, SK and SE.

In terms of sectors, while the national OSH legislation is applicable to both the private and the public sector, only four Member States (AT, FR, LU and PT) have implemented separate, distinct OSH legislation for the public and the private sector. In such cases, the public sector legislation often refers to general (private sector) occupational health and safety legislation as directly applicable. Therefore, differences between private and public sectors in terms of OSH requirements and levels of compliance would not, as a rule, be justified by variance in the applicable legislation.

3.1.2 Are there differences between the Directive's requirements and the national requirements?

The OSH directives lay down minimum requirements, which means that the national legislation can be different (i.e. impose more detailed or protective measures), but cannot set requirements that contradict those of the directives, such as less stringent limit values. Discrepancies between the directive's requirements and the transposing legislation cover instances where the text of the national transposing legislation is different from the directive's requirements and could lead to the non- or partial application of the CPMs due to contradiction between the national provision and the corresponding one in the directive. Instances of observed discrepancies are rather rare ([6]).

There are many instances where the national legislation goes beyond the requirements of the directive. For example, in relation to the Construction Directive, several Member States impose minimum qualifications with regard to coordinators, or require a signed document for the appointment of a health and safety coordinator for a construction site and of his/her acceptation. A considerable number of Member States set more stringent limits for some substances than the Chemical Agents Directive, or have limits for substances for which there is no EU limit. Eleven Member States have included domestic servants in the definition of 'worker' when transposing the Framework Directive, setting a broader scope of application. In relation to the Young People

([6]) However, it should be underlined that the evaluation does not equate a full conformity checking exercise.

Directive, a large number of Member States have set a broader scope e.g. extending the scope to trainees and young students studying in technological or vocational college, applying the national transposing legislation to all work done for employers, principals, customers and those responsible for schools who let minors do work for them or study, or covering self-employment of young people.

Finally, an overview of the number of infringement cases for problems of conformity per OSH directive can help to understand where MSs have most often struggled to correctly (or more often timely) transpose a particular directive. Most cases of infringement relate to the transposition of the Framework Directive. A large majority of the cases are now closed. One of the typical instances of non-conformity seems to be a failure to make the Framework Directive provisions applicable to the public sector, or regarding the use of public installations. Another typical non-conformity is the imprecise implementation of Art. 5(1) – i.e. of the employers' duty to ensure the safety and health of workers in every aspect related to their work. Other outliers are noted for Directive 1999/92/EC (ATEX), Directive 2002/44/EC (vibration), Directive 2003/10/EC (noise), Directive 2006/25/EC (AOR), and Directive 98/24/EC (chemical agents). Most of these cases are non-communication cases, hence are linked to a delay in transposition rather than a faulty transposition.

3.1.3 Does the national legislation make for provisions for how the CPMs interact with each other across one directive?

The national legislation transposing the Framework Directive does not always include all CPM provisions, or regulates them only partially. Indeed, the national framework legislation often sets out the general principles of the CPMs, but it is the implementing (secondary) legislation which actually fully transposes all CPM requirements. The CPMs which are most often subject to separate secondary legislation are ‘health surveillance’ (14 Member States) and to a lesser extent ‘preventive and protective services’ (8 Member States).

In addition, individual CPMs are sometimes fully or partly regulated through a specific legal act. Of the 27 Member States, 17 countries have transposed one or more CPMs through secondary legislation. This is in particular the case for the CPMs that relate directly to a broader institutional and organisational context, namely, again, preventive and protective services and health surveillance, and to a lesser extent, consultation of workers.

With regard to preventive and protective services, the Member States tend to lay down their own rules as to whether the employer, the workers (in the internal preventive and protective services), or the external preventive and protective services are responsible for the implementation of the health and safety measures in the undertaking on the basis of the legal requirements contained in the framework OSH legislation.

As part of the specific legislation on health surveillance, Member States have also often set specific rules and guidelines regarding medical examinations and their periodicity.

In terms of interactions between the CPMs, as a consequence of a national overarching structure similar to the OSH *acquis* structure, the main principles and requirements can be found in the national framework law. while specific additional requirements are set out in the by-laws transposing the individual directives, for example. in relation to risk assessment, the specific risks or parameters to assess. The specific by-laws include provisions specifying interactions between CPMs across directives, generally by cross-references to the OSH framework act, but this does not seem to always be done in a systematic fashion and cross-references are not sufficient as such to ensure a coherent and cohesive approach across legislation.

3.2 Derogations and transitional periods (MQ2)

MQ2: What derogations and transitional periods are applied or have been used under national law under several of the Directives concerned?

3.2.1 Derogations

Derogations are provisions which explicitly allow Member States to derogate from certain requirements contained in a directive. They are provided by nine Directives: the Use of PPE, Construction, OSH signs, Pregnant/breastfeeding workers, Young People, Chemical Agents, Vibration, Noise, and the EMF Directives. All derogations are accompanied by conditions which need to be fulfilled before and/or after derogation is permitted.

Member States have used some derogations to a large extent, namely the derogations laid down in Chemical Agents Directive from the prohibition of the use of certain chemical agents; two of the derogations provided by the Young People Directive have been used extensively, one relating to employment of adolescents for their vocational training and one concerning the prohibition of night work for young people in the case of adolescents and in specific areas of activity. The same remark can be made in relation to the two derogations provided by the Vibration Directive and the derogation laid down in the Noise Directive.

Other derogations have been applied to a far lesser extent.

3.2.2 Transitional periods

Transitional periods are periods of time in which Member States are exceptionally awarded an extended deadline for the implementation of particular provisions of the directives. They constitute a basic tool to help authorities to adapt the implementation of directives to the actual capacities and characteristics of, e.g. establishments in the Member State or sectors, that may need a period of time to adopt or implement the provisions of a particular directive. Most of the transitional periods are not applicable anymore, as the deadlines for implementation of the provisions in question have already passed. However, these periods should be taken into consideration to explain delays in implementation of certain directives. The transitional periods were applicable to eight directives only: The Drilling, Mines and Quarries, Fishing Vessels, Vibrations, Noise, Work Equipment, DSE and ATEX Directives.

About half the Member States have applied transitional periods in the implementation of most of the Directives for which such a possibility was provided. In the vast majority of cases, Member States who opted for the application of transitional periods have also respected them. The number of Member States that have not respected the given deadlines for each directive is very limited.

3.3 Compliance (MQ3)

MQ3: What are the differences in approach to and degree of fulfilment of the requirements of the EU OSH directives in private undertakings and public-sector bodies, across different sectors of economic activity and across different sizes of companies, especially for SMEs, microenterprises and self-employed?

In this section, we provide conclusions on the degree of compliance with EU OSH directives. First, we assess compliance from a broad, overall perspective, and subsequently we assess compliance

with each of the six CPMs: Risk assessment, preventive and protective services, information of workers, training of workers, health surveillance and consultation of workers.

To shed light on compliance ideally involves the assessment of two equally important aspects of compliance: quantity and quality. Quantity concerns the measurable outputs of the implementation of the OSH *acquis*, while (a minimal level of) quality of those outputs is equally important in order for an establishment to be in compliance. Thus, to measure the level of compliance, on the one hand, entails measuring the share of establishments that implements specific requirements contained in the OSH *acquis*, such as for example the basic requirement to formulate an OSH management plan. This is measured quantitatively, most often by means of surveys, and is a prerequisite for OSH compliance.

On the other hand, compliance is not achieved solely by producing the required output, such as through the formulation of an OSH management plan. The plan may be incomplete, it may lack essential elements, may not take all risks into account, may not be well executed etc., all of which undermines compliance, as the Directives contain requirements which are essentially quality- and content-oriented, rather than activity oriented.

A review of available compliance data revealed that while we are able to assess the quantitative aspect of compliance (with some reservations), we cannot establish a systematic framework for evaluation of the qualitative aspect. Also, when assessing and concluding on the quantitative data, a challenge lies in the lack of targets in the directives, which means that there are no established, predefined minimal requirements for compliance to measure the findings up against. Furthermore, data may be reported in different forms and may point in different directions, which makes a compiled conclusion difficult to make in a transparent manner.

We have therefore established the following five compliance categories, which we shall use to classify survey results from very poor quantitative compliance to very good quantitative compliance, as illustrated in Table 3-1. The same methodological approach is applied in those cases where interviewed stakeholders have provided a compliance score from 1-5.

Table 3-1: Interpretation of quantitative data for compliance

Assessed compliance (share of surveyed establishments)	Assessed compliance (interview scores from 1-5)	Category	Interpretation
90 % - 100 %	4.3 to 5.0	A	Very good quantitative compliance
75 % - 89 %	3.5 to 4.2	B	Good quantitative compliance
60 % - 74 %	2.7 to 3.4	C	Moderate quantitative compliance
40 % - 59 %	1.9 to 2.6	D	Poor quantitative compliance
0 % - 39 %	1.0 to 1.8	E	Very poor quantitative compliance

Source: COWI evaluation team

Note: Ranges used for the interpretation of survey data are established based on an expert assessment of the proportion of establishments that could be expected to comply with national provisions and which would result in sufficient worker coverage in order to qualify for the five compliance categories. Ranges used for the interpretation of interview scores are defined according to the intuitive understanding of each score as applied by interviewees.

3.3.1 Overall compliance

As illustrated in Table 3-2, quantitative evidence reveals a moderate to good overall level of compliance across the EU and across establishment sizes.

Table 3-2: Evidence table: Overall OSH compliance, all establishment sizes

Source	Variable	Finding	Category
EU stakeholder interviews	Compliance according to EU stakeholders, score 1-5	3.65	B
ESENER, MM155	Existence of documented OSH policy, % of all establishments	79 %	B
ESENER-2, Q166	Existence of a safety and health representative, % of all establishments	58 %	D
Conclusion for overall OSH, all establishment sizes: Moderate to good overall quantitative compliance			

Source: See column 1, and COWI evaluation team

However, compliance varies significantly from Member State to Member State. For example, within the group of establishments with 10 to 19 employees, Greece has for the lowest share of establishments that have an OSH policy plan (33 % - very poor overall quantitative compliance), while, for the same group in the United Kingdom, ESENER reported a share of 98 %. For the group with large establishments, Poland has the lowest share (71 %), while 100 % of the managers interviewed in Estonia, Latvia, Slovakia, Sweden and United Kingdom state that they have an OSH policy or action plan (ESENER; 2009, MM155).

There is no indication that compliance is measurably higher in the public sector compared to the private sector, which corresponds to the findings of MQ1 above, that MSs generally do not distinguish between the public and private sectors when transposing the directives.

Table 3-3 shows the analysed quantitative data on overall compliance by size of establishment.

Table 3-3: Evidence table: Overall OSH compliance, by size of establishment

Source	Variable	Finding	Category
Establishment size not specified			
EU stakeholder interviews	Proportion of interviewees who expressed that SMEs within their respective areas are struggling more with compliance than larger enterprises	77 %	-
NIR data	Proportion of the 27 MSs that have explicitly expressed that compliance is more challenging to SMEs compared to large establishments	70 %	-
<10 employees (micro establishments)			
National stakeholder interviews	Extent to which national legislation transposing the Directive(s) has affected establishments' behaviour for securing of OSH, score from 1-5	2.5	D
ESENER, MM155	Existence of documented OSH policy, % of all establishments	-	-
ESENER, MM355	Existence of a safety and health representative, % of all establishments	-	-
Conclusion for micro establishments: Cannot be assessed			**-**
10 to 19 employees (small establishments)			
National stakeholder interviews	Extent to which national legislation transposing the Directive(s) has affected establishments' behaviour for securing of OSH, score from 1-5	3.2[1]	C
ESENER, MM155	Existence of documented OSH policy, % of establishments	70 %	C
ESENER, MM355	Existence of a safety and health representative, % of establishments	51 %	D
Conclusion for establishments with 10 to 19 employees: Poor overall quantitative compliance			***D***
20 to 49 employees (small establishments)			
National stakeholder interviews	Extent to which national legislation transposing the Directive(s) has affected establishments' behaviour for securing of OSH, score from 1-5	3.2[1]	C
ESENER, MM155	Existence of documented OSH policy, % of establishments	76 %	B
ESENER, MM355	Existence of a safety and health representative, % of establishments	63 %	C
Conclusion for establishments with 20 to 49 employees: Moderate overall quantitative compliance			***C***
50 to 249 employees (medium establishments)			
National stakeholder interviews	Extent to which national legislation transposing the Directive(s) has affected establishments' behaviour for securing of OSH, score from 1-5	3.2[1]	C
ESENER, MM155	Existence of documented OSH policy, % of establishments	84 %	B
ESENER, MM355	Existence of a safety and health representative, % of establishments	75 %	B
Conclusion for establishments with 50 to 249 employees: Good overall quantitative compliance			***B***
250 to 499 employees (large establishments)			
National stakeholder interviews	Extent to which national legislation transposing the Directive(s) has affected establishments' behaviour for securing of OSH, score from 1-5	4.0[2]	B
ESENER, MM155	Existence of documented OSH policy, % of establishments	88 %	B
ESENER, MM355	Existence of a safety and health representative, % of establishments	83 %	B
Conclusion for establishments with 250 to 499 employees: Good overall quantitative compliance			***B***
500+ employees (large establishments)			
National stakeholder interviews	Extent to which national legislation transposing the Directive(s) has affected establishments' behaviour for securing of OSH, score from 1-5	4.0[2]	B
ESENER, MM155	Existence of documented OSH policy, % of establishments	90 %	A
ESENER, MM355	Existence of a safety and health representative, % of establishments	88 %	B
Conclusion for establishments with 500+ employees: Very good overall quantitative compliance			***A***

Source: See column 1, and COWI evaluation team

Note: [1] [2] During national stakeholder interviews, respondents were asked about micro establishments, SMEs and large establishments only. They were not asked to distinguish between all six sizes of establishments. Therefore, the reply indicated for small and medium-sized establishments ([1]) with 10 to 19, 20 to 49 and 50 to 249 employees, respectively, is identical. Likewise, the reply indicated for large establishments ([2]) with 250 to 499 and those with more than 500 employees is also identical.

Though there are variances between Directives and Member States, it is an overall observation in the evaluation that both EU and national stakeholders assess compliance with Directive requirements as higher in large establishments compared to SMEs and micro-establishments. This is supported by the Flash Eurobarometer and, as shown in the Table above, by ESENER data on compliance. An aggregated interpretation of the findings on quantitative compliance, shows that overall compliance increases with the size of the establishment:

- Micro establishments: Cannot be assessed (limited evidence points to poor overall quantitative compliance)
- 10 to 19 employees: **Poor overall quantitative compliance**
- 20 to 49 employees: **Moderate overall quantitative compliance**
- 50 to 249 employees: **Good overall quantitative compliance**
- 250 to 499 employees: **Good overall quantitative compliance**
- 500+ employees: **Very good overall quantitative compliance**

The smaller level of compliance in SMEs corresponds to the findings for several Directives, such as the Construction Directive, the ATEX Directive, the Medical treatment on board vessels Directive and the Vibration Directive. However, in contrast, some Directives have not resulted in differences in compliance levels for SMEs compared to larger establishments (e.g. Biological Agents Directive and the AOR Directive). This propensity is mirrored in several National Implementation Reports, where Member States have elaborated on difficulties faced by SMEs in implementing Directives, while several MSs also emphasised the opposite (ref. e.g. the National Implementation Reports), namely that they have no evidence that SMEs experience greater difficulties than larger enterprises.

Segregating quantitative data by establishment size into establishments with and without a safety and health representative shows that this lower level of compliance in smaller establishments to a large extent is coupled with the lack of a safety and health representative (Table 3-4).

Table 3-4 Evidence table: Overall OSH compliance, by size of establishment and OSH employee representation

Source	Variable	Finding	Category	Finding	Category
10 to 19 employees (small establishments)		**Companies without OSH representative**		**Companies with OSH representative**	
ESENER, MM155	Existence of documented OSH policy, % of establishments of same size	56 %	D	83 %	B
ESENER, MM161	Safety and health checks conducted on a regular basis, % of establishments of same size	77 %	B	90 %	A
20 to 49 employees (small establishments)					
ESENER, MM155	Existence of documented OSH policy, % of establishments of same size	63 %	C	85 %	B
ESENER, MM161	Safety and health checks conducted on a regular basis, % of establishments of same size	83 %	B	93 %	A
50 to 249 employees (medium establishments)					
ESENER, MM155	Existence of documented OSH policy, % of establishments of same size	71 %	C	87 %	B
ESENER, MM161	Safety and health checks conducted on a regular basis, % of establishments of same size	89 %	B	94 %	A
250 to 499 employees (large establishments)					
ESENER, MM155	Existence of documented OSH policy, % of establishments of same size	80 %	B	89 %	B
ESENER, MM161	Safety and health checks conducted on a regular basis, % of establishments of same size	94 %	A	97 %	A
500+ employees (large establishments)					
ESENER, MM155	Existence of documented OSH policy, % of establishments of same size	76 %	B	91 %	A
ESENER, MM161	Safety and health checks conducted on a regular basis, % of establishments of same size	94 %	A	97 %	A

Source: See column 1, and COWI evaluation team

As established above, safety and health representation is considerably less frequent in small establishments compared to larger establishments (e.g. only 51 % of establishments with 10 to 19 employees in 2009 had an internal OSH representative). As the table shows, even small establishments with employee representatives have a good or very good overall quantitative compliance, while the corresponding group of establishments without safety and health representation have poor to moderate quantitative compliance.

Thus, although it is positive that 58 % of surveyed establishments do have an H&S representative, this gap of 42 % constitutes significant room and potential for improvement of overall OSH compliance, particularly in SMEs. There is a considerable lack of representation in some sectors, particularly in the Agriculture, forestry and fishing sector. This is worrying, because the Agriculture, forestry and fishing sector is a high-risk sector in the context of occupational safety and health.

3.3.2 Compliance with the CPMs

The first CPM of the Framework Directive, and the cornerstone of implementation of the OSH *acquis*, is the requirement that enterprises shall regularly conduct risk assessments. In the context of SMEs, we find that the share of establishments that regularly undertake risk assessments increases with the size of establishments. This correlation remains, when compliance rates are adjusted for the fact that small- and medium-sized establishments are slightly more inclined to take the necessary follow-up actions after having identified a risk during a health and safety check, which is a prerequisite for compliance. Generally, most establishments, independent of size, take the necessary follow-up actions, once risks have been identified (91 %). However, SMEs are

slightly more likely to take full action (as opposed to part action), while larger establishments seem to take more actions of different types than SMEs.

According to survey data, quantitative compliance with the requirement to perform risk assessments is generally good to very good. The most common reasons for not conducting risk assessments on a regular basis are the fact that hazards and risks are already known and that establishments believe themselves to have no major problems. This is particularly true for the smallest establishments.

ESENER (2009) data also clearly shows that the share of risk assessments being performed by internal staff increases along with the size of the establishment – a correlation that is confirmed in the recent ESENER-2 data (EU-OSHA, 2015). The use of internal staff compared to external staff varies considerably between MSs. According to ESENER-2, the highest share of internally performed risk assessments is found in Denmark (76 % of establishments), the United Kingdom (68 %) and Sweden (66 %). The lowest shares are found in Slovenia (7 %), Croatia (9 %) and Spain (11 %). Overall, there is a tendency that, in Northern and Western-European MSs, risk assessments are more often performed by internal staff than in southern and Eastern-European MSs.

Some challenges with compliance stemming from provisions and characteristics of individual directives have also been identified. For instance, the Pregnant/breastfeeding workers Directive has given rise to some shortcomings in compliance at the enterprise level, mainly because employers find it difficult to identify special risks for pregnant and breastfeeding women (i.e. to include this aspect into the risk assessment), and secondly, because they find it difficult subsequently to identify suitable work accommodations (red. Pregnant/breastfeeding workers Directive).

On the overall level, according to ESENER-2, 76 % of all enterprises in EU-28 carry out risk assessments on a regular basis, although compliance varies considerable from MS to MS ranging from 94 % of establishments in Italy and Slovenia down to 37 % in Luxembourg. In Table 3-5, we have summarised quantitative compliance levels for all MSs based on ESENER-2 data (cf. **Error! Reference source not found.**).

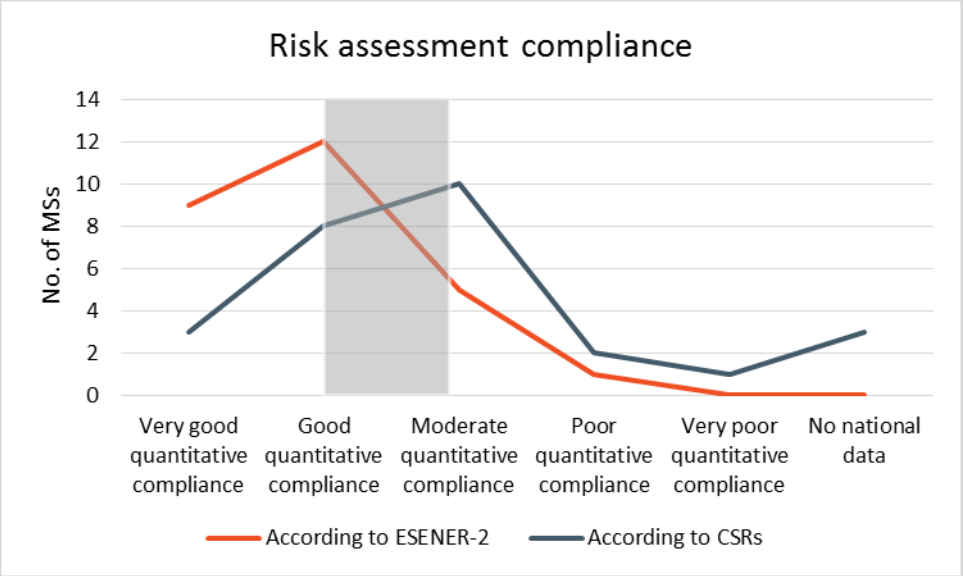
Table 3-5 Quantitative compliance with risk assessment, by MS, based on ESENER-2

Assessed compliance	Interpretation	Compliance category	MSs
90 % - 100 %	Very good quantitative compliance	A	IT, SI, DK, UK, BG [5]
75 % - 89 %	Good quantitative compliance	B	ES, RO, LV, SE, CZ, HU, PL, PT, LT [9]
60 % - 74 %	Moderate quantitative compliance	C	FI, NL, IE, EE, BE, DE, MT [7]
40 % - 59 %	Poor quantitative compliance	D	SK, AT, FR, CY, EL [5]
0 % - 39 %	Very poor quantitative compliance	E	LU [1]

Source: EU-OSHA (2015), ESENER-2, COWI analysis

However, as national, non-ESENER data assessed by national experts and reported in the CSRs consistently places compliance with the requirement to perform risk assessments at a lower level than ESENER-2 across EU-27, Figure 3-1 compares national data to the ESENER-2 findings.

Figure 3-1: Quantitative risk assessment compliance, combined assessment



Source: EU-OSHA (2015), ESENER-2, CSRs, COWI analysis

The Figure illustrates the number of MSs that comply with the risk assessment requirement to each of the five levels. The blue line shows the national experts' assessment and the red line is a graphical illustration of the ESENER-2 data in Table 3-5 above. Based on the count and level of each MS, an average ESENER-2 compliance level across MSs has been calculated to correspond to good quantitative compliance (with an average value of 4.07, where 4.0 equals good compliance). In comparison, CSR data has been calculated to correspond to moderate quantitative compliance (with a value of 3.04 where 3.0 equals moderate compliance). The grey area thus highlights the most realistic level of compliance in establishments across MSs based on an aggregated assessment of available quantitative data.

In sum, we thus conclude that from a quantitative perspective, compliance with the requirement to perform risk assessments ranges from moderate to good compliance (illustrated by the grey square in the figure above), with large establishments in some MSs being in very good compliance and small establishments in other MSs displaying poor compliance.

Moving to the second CPM of **preventive and protective services**, the evaluation shows that SMEs and micro enterprises have a higher degree of non-compliance with preventive and protective services compared to large establishments. Compliance tends to be highest in sectors which have traditionally been acknowledged to have more occupational accidents and diseases, such as Mining and quarrying, Manufacturing, Electricity, gas and water supply and Health and social work. Furthermore, evidence suggests that psycho-social and ergonomic risks are addressed by specific experts to a limited extent, although it should be noted that these issues may be covered by a general health and safety consultancy.

An aggregated assessment of the collected evidence reveals a good quantitative compliance with preventive and protective services across MSs and all sizes of establishments, as illustrated in Evidence Table 3-6.

Table 3-6: Evidence table: Preventive and protective services compliance, all establishment sizes

Source	Variable	Finding	Category
ESENER, MM150	Use of preventive and protective services, be it in-house or contracted externally, % of all establishments*	94.68 %	A
CSRs	Calculated average value of compliance based on national data	3.74	B
NIRs	Involvement of preventive services, in the sense of Article 7 of Directive 89/391/EEC (framework), in the risk prevention measures.	N.A.	N.A.
Conclusion for preventive and protective services, all establishment sizes: Good quantitative compliance			***B***

Source: See column 1, and COWI evaluation team

Note: * MM150: Managements were not specifically asked about preventive and protective services. They were asked to define which of the following health and safety service they used in their establishments: An occupational health doctor, a safety expert, a psychologist, an ergonomics expert, a general health and safety consultant or none of the above. Data illustrates 100 % of respondents minus the proportion of managers who reported to have none of the health and safety services assigned to the establishment, which were provided as response options.

In the context of the third CPM on OSH **information to workers**, evidence suggests that quantitative compliance with the CPM on general OSH information for workers across MSs is very good and the quality of the information provided seems adequate across all sizes of establishments in establishments with an employee representative. However, the assessed ESENER compliance indicators are extracted from the ESENER survey of employee representatives and therefore only reflects compliance in those 69 % of establishments that have an assigned employee representative. In light of our previous finding that safety and health representatives have a significant positive impact on the level of compliance, we therefore estimate that the level of compliance across MSs in establishments with employee representatives is good quantitative compliance, while it is likely to be somewhat lower in establishments without.

Table 3-7: Evidence table: Information for workers compliance, all establishment sizes

Source	Variable	Finding	Category
ESENER, ER205	Employees regularly informed about safety and health at the workplace, % of establishments with ERs	**83.7 %**	B
ESENER, ER154	Management provides the necessary information for safety and health representatives to carry out health and safety tasks properly, % of establishments with ERs	87.8 %	B
ESENER, ER155	Employee representatives receive information on time and without having to ask for it, % of establishments with ERs	82.3 %	B
EWCS (2010), q30	Proportion of workers that feel either well or very well informed about the health and safety risks at the workplace, % of all workers	89.6 %	A
Flash Eurobaro-meter 398	Workers who confirm that safety and health information and/or training is available in their workplace, % of all surveyed workers	77 %	B
CSRs	Calculated average value of compliance based on national data	3.6	B
NIRs	Involvement of preventive services, in the sense of Article 7 of Directive 89/391/EEC (framework), in the risk prevention measures.	N.A.	N.A.
Conclusion for information for workers, all establishment sizes: Good quantitative compliance			***B***

Source: See column 1, and COWI evaluation team

On the subject of the CPM related to the **training of workers**, evidence suggests that so-called indirect compliance through training of safety and health representatives (as opposed to workers themselves) on traditional OSH risk, such as accident prevention and fire safety seems to be good. Contrarily, training on prevention and measures related to psychosocial risks and risks associated with exposure to chemical and biological agents, radiation or dust hazards has been provided to less than half of the surveyed ERs. Of these, a total of 53.9 % of safety and health representatives report that they have received a sufficient amount of training. Evidence suggests that ERs working in SMEs tend to be more satisfied with the training they receive than those working in larger establishments. Generally, additional training is desired amongst ERs on all surveyed OSH issues apart from fire prevention.

An aggregated assessment of the collected evidence, points to a moderate quantitative compliance with training of workers across MSs and all sizes of establishments (please note that both variables pointing to a good quantitative compliance are in the very low end of the respective scales, and thus in both cases close to moderate quantitative compliance.). According to national data sources from some MSs, compliance tend to be lower in micro and small establishments, while ESENER data suggests the opposite, namely that more employee representatives in smaller establishments receive training (while being more satisfied with the training they receive) than those working in larger establishments.

Table 3-8: Evidence table: Training of workers compliance, all establishment sizes

Source	Variable	Finding	Category
ESENER, ER160	Sufficiency of training, % of employee representatives	**53.9**	D
Flash Eurobaro-meter 398	Workers who confirm that safety and health information and/or training is available in their workplace, % of all surveyed workers	77 %	B
CSRs	Calculated average value of compliance based on national data	3.7	B
NIRs	Involvement of preventive services, in the sense of Article 7 of Directive 89/391/EEC (framework), in the risk prevention measures.	N.A.	N.A.
Conclusion for training of workers, all establishment sizes: Moderate quantitative compliance			***C***

Source: See column 1, and COWI evaluation team

Pertaining to **health surveillance**, we conclude that quantitative compliance with the CPM of health surveillance seems to be poor across all establishment sizes in those establishments without a safety and health representative, while it seems to be moderate in establishments with an employee representative as shown in Evidence Table 3-9 (wherefore all four findings are at the limit of being categorised within a lower compliance range, note that we have combined the assessments into the lower of the two categories for both establishments with and without employee representatives). Furthermore, quantitative compliance seems to increase with the number of employees. An aggregated assessment of the collected evidence thus reveals a moderate quantitative compliance with health surveillance services on average across MSs and all sizes of establishments.

Table 3-9 Evidence table: Health surveillance compliance, by OSH employee representation

Source	Variable	Finding	Category	Finding	Category
No establishment size defined		**Companies without OSH representative**		**Companies with OSH representative**	
ESENER, MM154	Regular monitoring of employee's health, % of establishments	61 %	C	75 %	B
ESENER, MM152	Regular analysis of causes for sickness absences, % of establishments	41 %	D	62 %	C
Conclusion for health surveillance, all establishment sizes, without and with assigned safety and health representatives		***-***	***D***	***-***	***C***

Source: See column 1, and COWI evaluation team

Concerning **worker consultation**, evidence suggests that consultation of workers to a large extent is achieved by means of safety and health employee representation. As shown in the Evidence Table 3-10 below, employee representatives are consulted to a slightly higher extent in small establishments (84.3 % in establishments with 10 to 19 employees) compared to large establishments (80.6 % in establishments with +500 employees). However, as small establishments are much less inclined to have an employee representative, adjusting for this fact shows that quantitative compliance with consultation of workers generally increases from poor compliance to moderate or good quantitative compliance as the number of employees in the establishment increases.

Table 3-10 Evidence table: Consultation compliance, by size of establishment and OSH employee representation

Source	Variable	Finding	Category	Finding	Category
10 to 19 employees (small establishments)		**Surveyed data (All establishments / Companies with OSH representative)**		**Calculated adjustment for establishments without ERs**	
ESENER, MM355	Establishments with OSH employee representatives, % of all establishments	51.0 %	D	51.0 %*	D*
ESENER, ER209	Employee representatives that have a say in when and where risk assessments or workplace checks are carried out, % employee representatives	84.3 %	B	43.2 %	D
ESENER, ER211	Employee representative involvement in the choice of follow-up actions, % employee representatives	90.8 %	A	46.5 %	D
Conclusion for establishments with 10 to 19 employees: Poor quantitative compliance – consultation of workers					***D***
20 to 49 employees (small establishments)					
ESENER, MM355	Establishments with OSH employee representatives, % of all establishments	63.0 %	C	63.0 %*	C*
ESENER, ER209	Employee representatives that have a say in when and where risk assessments or workplace checks are carried out, % employee representatives	81.4 %	B	51.4 %	D
ESENER, ER211	Employee representative involvement in the choice of follow-up actions, % employee representatives	88.6 %	B	55.9 %	D
Conclusion for establishments with 20 to 49 employees: Poor quantitative compliance – consultation of workers					***D***

50 to 249 employees (medium establishments)					
ESENER, MM355	Establishments with OSH employee representatives, % of all establishments	75.0 %	B	75.0 %*	B*
ESENER, ER209	Employee representatives that have a say in when and where risk assessments or workplace checks are carried out, % employee representatives	80.8 %	B	60.5 %	C
ESENER, ER211	Employee representative involvement in the choice of follow-up actions, % employee representatives	85.3 %	B	63.9 %	C
Conclusion for establishments with 50 to 249 employees: Moderate quantitative compliance – consultation of workers					***C***
250 to 499 employees (large establishments)					
ESENER, MM355	Establishments with OSH employee representatives, % of all establishments	83.0 %	B	83.0 %*	B*
ESENER, ER209	Employee representatives that have a say in when and where risk assessments or workplace checks are carried out, % employee representatives	80.0 %	B	66.3 %	C
ESENER, ER211	Employee representative involvement in the choice of follow-up actions, % employee representatives	82.7 %	B	68.5 %	C
Conclusion for establishments with 250 to 449 employees: Moderate quantitative compliance – consultation of workers					***C***
500+ employees (large establishments)					
ESENER, MM355	Establishments with OSH employee representatives, % of all establishments	88.0 %	B	88.0 %*	B*
ESENER, ER209	Employee representatives that have a say in when and where risk assessments or workplace checks are carried out, % employee representatives	80.6 %	B	70.5 %	C
ESENER, ER211	Employee representative involvement in the choice of follow-up actions, % employee representatives	83.8 %	B	73.4 %	C
Conclusion for establishments with +500 employees: Moderate to good quantitative compliance – consultation of workers					***C - B***

Source: See column 1, and COWI evaluation team

Note: * No adjustment required

Calculated adjustment shows the findings as a percentage of all establishment including those without ERs. Figures are calculated by multiplying proportion of establishments with employee representatives (MM355) with the 'yes' answers to the variable in question. The first column of findings thus does not account for the assumedly considerably lower compliance levels in establishments without ERs while the second column of findings implicitly assumes that establishments without ERs do not consult their workers on OSH matters. Actual compliance is thus likely to be somewhere in between.

On the overall EU-level across MSs and establishment sizes, data on compliance seems to lack consistency. The main reason for this seems to be that those establishments that have employee representatives generally have good quantitative compliance by means of consultation of employee representatives. On the other hand, we cannot assess the extent to which safety and health representatives include the workers they represent, nor the extent to which establishments without employee representatives are in compliance. As a result, we may simply deduct from the collected findings that quantitative compliance is lower than reported by unadjusted ESENER data, and we therefore cautiously conclude that quantitative compliance with consultation of workers ranges from poor to moderate or good.

Table 3-11: Evidence table: Consultation of workers compliance, all establishment sizes

Source	Variable	Finding	Category
ESENER, MM355	Establishments with OSH employee representatives, % of all establishments	**67 %**	C
ESENER, ER102	Establishments (with an OSH representative) that also have a permanent OSH committee or working group consisting of members of management and representatives of the employees, % of establishments with ERs	80 %	B
ESENER, ER209	Employee representatives that have a say in when and where risk assessments or workplace checks are carried out, % employee representatives	81.2 % / 54.8 % (adjusted)	B / D (adjusted)
ESENER, ER211	Employee representative involvement in the choice of follow-up actions, % employee representatives	86.1 % / 58.1 % (adjusted)	B / D (adjusted)
Flash Eurobaro-meter 398	Workers who have been consulted on safety and health issues at work by their employer or by a safety and health representative, % of all workers	62 %	C
CSRs	Calculated average value of compliance based on national data	N.A.	N.A.
NIRs	Involvement of preventive services, in the sense of Article 7 of Directive 89/391/EEC (framework), in the risk prevention measures.	N.A.	N.A.
Conclusion for consultation of workers, all establishment sizes: Moderate quantitative compliance			***C***

Source: See column 1, and COWI evaluation team

3.4 Accompanying actions (MQ4)

MQ4: What accompanying actions to OSH legislation have been undertaken by different actors (the Commission, the national authorities, social partners, EU-OSHA, Eurofound, etc.) to improve the level of protection of safety and health at work, and to what extent are they actually used by companies and establishments to pursue the objective of protecting safety and health of workers? Are there any information needs that are not met?

Accompanying actions are considered at Member State level – mainly based on information presented in the Country Summary Reports prepared as part of the present evaluation – and at EU level – mainly based on information obtained through desk research and interviews with EU level stakeholders. The accompanying actions reviewed include those dated 2007-2012 and are limited to key documents, excluding materials such as documents and actions.

3.4.1 Accompanying actions at Member State level

The accompanying measures identified cover guidance documents (through decisions and other soft measures), guidelines, awareness-raising campaigns, support tools (possibly IT based), education and training actions, and financial incentives (i.e. tax benefits or the possibility to offer reduction of insurance premium to reward organisations for going beyond the legal requirements).

Most accompanying actions and strategies aim at influencing behavioural changes, improving sector- and risk-specific knowledge and implementing legislation. According to the NIRs, the actions are, generally, not only aimed at the relevant social partners, at employers, or at workers, but also at the general public. In all Member States, with no exceptions, guidance documents are by far the most common action undertaken with regard to supporting the implementation of the national legislation transposing the individual directives, including the Framework Directive.

Awareness-raising campaigns and support tools are the next common actions, while education and training actions are less often used. This trend applies to all directives and to all Member States. The role of websites and online tools in disseminating information appears to increase while a number of Member States also make use of financial incentives to encourage establishments to comply with safety and health provisions. None of these financial incentives can be attributed to a specific directive as they are of a more general nature and aim at improving prevention measures in a company as a whole. Most common are insurance premium variations and tax incentives.

The number of accompanying actions varies greatly from directive to directive. The Framework Directive is covered extensively through guidance documents, support tools, campaigns and education and training activities. For the individual directives, the total number of accompanying actions across all Member States varies between approximately 240 (in relation to the Workplace Directive) to approximately nine (in relation to the Medical treatment on board vessels Directive). Other individual directives for which the highest number of accompanying actions has been identified are the Use of PPE Directive, the Chemical Agents Directive and Work Equipment Directive.

Conversely, those directives for which national stakeholders agreed that accompanying actions in the Member States are not sufficient are the OSH signs, Vibration, Noise, Biological Agents, Drilling, Medical treatment on board vessels, Fishing vessels, Pregnant/breastfeeding workers and the Temporary workers Directives.

National stakeholders also mentioned other gaps, not related to a specific directive. This was mainly a need for more targeted guidance and information documents specifically directed towards certain sectors and, especially, SMEs. Given the overall lack of targeted accompanying documents on risk assessments across all sectors and groups of workers, stakeholders consider the development of information actions especially targeted at supporting companies in conducting risk assessment and integrating them in a global OSH policy as a priority.

Many stakeholders have mentioned that, even though information is available, it is often uncoordinated and unsystematic. Gaps were also identified on particular issues such as the ageing workforce and psychosocial issues. This first is corroborated by the relatively low number of accompanying actions identified for the directives which target vulnerable groups of workers. The latter is consistent with the findings from the mapping of compliance in MQ3 above, namely that training on prevention and measures related to psychosocial risks has been provided to less than half of the surveyed safety and health representatives and of these only 53.9 % report that they have received a sufficient amount of training.

3.4.2 Accompanying actions at EU level

The European Union has initiated a number of accompanying actions. Apart from the Commission Guidance document on risk assessment at work (1996), there are also numerous other EU documents that provide guidance or guidelines on specific topics or risks. Notably, the European Commission has published several non-binding guidance documents on good practice for implementing specific OSH directives. These documents clarify the directive and guide its

implementation. Non-binding guidance is available for the ATEX, Chemical Agents, Construction, Vibration, Noise and the AOR Directives ([7]).

EU-OSHA has developed a number of accompanying actions, but EU-OSHA information seems less used than other information. Nevertheless, the Online interactive Risk Assessment (OiRA) IT tool has especially been mentioned in some National Implementation Reports and highlighted during several interviews at national level, as being very useful and well-regarded. Other European institutions, such as the European Chemicals Agency (ECHA) for the chemical sector; have developed accompanying actions to support the implementation of individual OSH directives in specific sectors.

It can therefore be concluded that a number of accompanying actions have been taken at the EU level to encourage the achievement of the safety and health targets of the OSH *acquis* as a whole.

There is a lack of guidance documents and accompanying actions at the EU level in relation to particular individual directives, namely the OSH signs Directive, the Drilling Directive, the two vessel-related directives and the Pregnant/breastfeeding workers Directive.

3.4.3 Use of accompanying actions

ESENER data ([8]) indicate that establishments use information materials and sources from a broad range of bodies and that they rely quite substantially on their in-house health and safety services and contracted health and safety experts. National stakeholder interviews have highlighted that EU-level guidance is unlikely to actually reach individual workers. Therefore, national guidance is seen as the actual catalyst for compliance – even though national guidance is often based upon EU-level guidance. Likewise, it should be noted that health and safety services may very well rely on the materials and guidance produced at the national and EU levels. Establishments also regularly use the accompanying actions (in particular health and safety information) produced by official institutions for health and safety at work.

Practical tools, forms and checklists that enable employers to comply with OSH obligations are considered by stakeholders as the most useful accompanying actions. A practical approach that aims at providing sectoral templates for risk assessment is welcomed by all stakeholders that recognise the potential for simplification and time gained when using such tools. With regard to awareness-raising campaigns, national stakeholders seemed to agree that long-term campaigns usually have a better impact than punctual ones.

3.5 Enforcement (MQ5)

MQ5: What are the enforcement (including sanctions) and other related activities of the competent authorities at national level and how are the priorities set among the subjects covered by the Directives?

([7]) Outside of the OSH *acquis*, there is also a non-binding guide to good practice for implementing Directive 2001/45/EC (work at a height) available.

([8]) ESENER1, question MM173: Has your establishment used health and safety information from any of the following bodies or institutions?

3.5.1 Enforcement authorities

The body competent for OSH inspections varies from one Member State to another depending on the institutional setting of the country. As a rule, the Labour Inspectorate is the main responsible authority (AT, BE, BG, CY, CZ, DE, EE, EL, ES, FR, HU, IT, LT, LU, LV, NL, PT, RO, SE, SI). In most Member States, specific authorities are responsible for certain directives to varying degrees. This is typically the case with mineral-extracting industry directives, vessels directives, chemical agents directives and sometimes vulnerable workers directives. Other specific aspects, e.g. fire safety, may be covered by other inspection bodies. These authorities can be the only ones responsible for enforcement or share responsibility with the main authority in charge of the enforcement of OSH legislation.

There are significant variations between MSs regarding the number of labour inspectors and workers per labour inspector. While the number of inspections remains constant and the number of workers per labour inspector has even slightly decreased, this general picture covers very diverse situations at the national level and there is no common trend across Member States. In some countries, it is clear that the resources devoted to inspections have been drastically cut (see evaluation question 4 for a further examination these differences and developments).

3.5.2 Sanctions

Sanctions are a key element of the enforcement system. Sanctions are understood as administrative or criminal measures taken when an entity is in infringement of the law. Sanctions can be fines and imprisonment, but also a range of other remedial and punitive measures, for example suspension of the activity or improvement notices. In most cases Member States have set both criminal and administrative sanctions, with a limited number of exceptions. Maximum sanctions vary significantly from one Member State to another. As a rule, the same sanctions apply across the whole OSH *acquis*. Traditional sanctions – fines and imprisonment – are complemented by a range of other sanctions or measures the inspectorate can take to ensure the breach of OSH requirements ceases as soon as possible. These can be extremely effective sanctions.

When data is available (and this is rarely the case), case law on OSH matters seems rather limited. This can be partly due to a more pro-active policy of the enforcement authorities who, along their sanctioning functions, also privilege their preventive, advisory and support functions.

3.5.3 Setting of priorities for enforcement

Priorities for enforcement are not set according to directives as such, but rather according to the number of occupational accidents in specific sectors (i.e. where enforcement actions may bring effective results). For instance, the construction sector, which is characterized by a large number of work-related accidents, is often specifically targeted. The results of previous inspections or complaints are also often taken into account. Other criteria often featured across MSs are the priorities set by strategic documents, both at national and EU-level, and sometimes also at the regional level. Typically, the priorities will be set in annual inspection plans or instructions, often building upon overall strategic documents. As a result, priorities are set per sector or sub-sector, group of workers, type of risks, and company size (e.g. several Member States focus on SMEs).

3.6 Vulnerable groups (MQ6)

MQ6: What are the differences of approach across Member States and across establishments with regard to potentially vulnerable groups of workers depending on gender, age, disability, employment status, migration status, etc., and to what extent are their specificities resulting in particular from their greater unfamiliarity, lack of experience, absence of awareness of existing or potential dangers or their immaturity, addressed by the arrangements under question?

Potentially vulnerable workers considered in the mapping exercise include women, ageing workers, workers with disabilities, migrant workers, young workers and workers with a specific status: temporary workers, agency workers, and the self-employed working as employees.

As a rule, in the context of vulnerable workers, national legislation does not go beyond EU requirements. Most MSs have general approaches to vulnerable groups, which are not targeted at specific directives (except in case of those directives specifically designed to address vulnerable groups: Temporary Workers Directive; Pregnant/breastfeeding Workers Directive; Young People Directive). Other groups covered in line with EU legislation are women and workers with disabilities pursuant to Directive 2000/78/EC establishing a general framework for equal treatment in employment and occupation (the Employment Equality Directive). In addition, the OSH *acquis* itself includes provisions on workers with disabilities. Other categories of workers for which national legislation provides specific protection in terms of occupational health and safety are trainees, part-time workers, migrants and older workers.

In most Member States, different strategies, programmes, guidance, campaigns and initiatives target a number of vulnerable groups.

While the need for specific actions focused at particular groups of vulnerable workers is generally recognised, some stakeholders advocate a general approach, which would apply to all without targeting vulnerable workers in particular.

3.7 SMEs and microenterprises (MQ7)

MQ7: What measures have been undertaken by the Member States to support SMEs and microenterprises (e.g. lighter regimes, exemptions, incentives, guidance, etc.)?

OSH-related directives must avoid imposing administrative, financial and legal constraints which would hold back the establishment and development of small and medium-sized undertakings. As a result, the Framework Directive explicitly includes that the size of the undertaking and/or establishment should specifically be taken into account with regard to the CPMs preventive and protective services, risk assessment (in particular related to the drawing up of specific documents), and information for workers.

In the NIRs, many Member States assessed that SMEs in particular face difficulties implementing the Directives' (and transposed national legislation's) requirements in their establishments. In particular, as the Member States are widely differentiated not only in terms of national legislation, but also with regard to key characteristics such as size, sectors, geography and organisational structures, the 'one size fits all' model presented in the directives proves problematic or even irrelevant for many MSs. An additional difficulty relates to the lack of a coherent methodology for risk assessments and the lack of training of inspectorate officials in order to acquire the necessary

knowledge and technical skills to support the SMEs in the implementation of the formal requirements set by the directives. Although being general problems, the NIRs show that they are especially relevant to SMEs, which face heavy administrative burdens and a lack of financial and human resources - especially to record risk assessments. Many national authorities acknowledge that they face particular problems in reaching micro-enterprises and SMEs about occupational safety and health issues; and especially those that are not part of a business federation.

Overall, this contributes to a higher degree of non-compliance among micro-enterprises and SMEs (see Section 3.3). Although, according to national stakeholders, there are some exceptions, namely for SMEs that are doing well financially and that are well aware of safety and health in the workplace or are working in high-risk areas. Furthermore, SMEs that are subcontractors for large establishments, which have integrated quality systems and under stricter control by inspectorates, also tend to have better knowledge of the safety and health regulations.

Member States have, to a varying degree, made use of measures to support SMEs and microenterprises, mainly in complying with the national legislation transposing the Framework Directive provisions. In particular, these provisions (lighter measures, etc.) primarily address general OSH provisions, largely adopted within the Framework Directive, but in practice extending across the whole OSH *acquis*. Member States tend to favour lighter regimes and financial incentives to support SMEs and microenterprises. Note in this context that the SMEs and microenterprises in many Member States make up the majority of the enterprises, and so they are in practice already targeted by the general key requirements.

Eleven Member States (BG, CZ, DE, DK, ES, FI, FR, NL, PT, SE, SK) have introduced specific exemptions for SMEs and micro-enterprises to the key requirements laid down in the Framework Directive, relating in particular to the exemption from the obligation to have an OSH Committee or similar organisation, the exemption from the obligation to have a health and safety representative or worker representative, the non-obligatory nature to comply with the requirements on training of workers, consultation of workers and information for workers or the (written) documentation of risk assessments. All of these exemptions are inherently connected to the number of workers in the establishment. On average, the exemptions will apply in those enterprises with less than 10 workers ([9]).

Another way to support SMEs is to establish a lighter regime for them, which would typically involve differentiating the different types of preventive and protective services to be set up depending on the size of the enterprise. Such lighter regimes can generally only be applied provided that – where applicable – the appointed safety officers have received special training or have the necessary qualifications. In addition, lighter regimes are generally not applicable in establishments where there are high occupational (or other) risks. Fifteen MSs provide lighter regimes for the Framework Directive (BE, DE, IE, ES, HU, IT, LT, LU, LV, NL, PT, RO, SE, SI and SK)

Almost half of the Member States (12) make use of financial incentives for SMEs and micro-enterprises to comply with the Framework Directive (BE, BG, DE, EE, EL, ES, FR, IT, MT, NL, PT,

([9]) Please note that a large majority of the data on SME compliance and employee representation, which was assessed in Section 3.3 above (ESENER) is based on a survey population which does not encompass establishments with less than 10 workers. These exemptions therefore do not affect the evaluation findings presented above to any noteworthy extent.

RO). There is no trend in the type of financial incentives offered and these range from different types of financial support to financial incentives subject to certain conditions or tax credits.

Although no exemptions, lighter regimes or financial incentives are established by Member States in the national legislation transposing most of the individual directives, the particular measures to support SMEs and micro-enterprises in the implementation of their legislation transposing the Framework Directive are equally applicable, given that they relate to procedural aspects which apply to any SMEs whatever the risks or types of workers involved are. Also, several Member States have explained that they do not find additional support to be necessary, as practically all enterprises in these Member States are SMEs and there is hence no need to draw any distinctions. In addition, Member States have put in place a considerable number of accompanying actions, organised awareness-raising events and training sessions (sometimes with the cooperation of inspectors), which can help SMEs better understand the legal requirements laid down in the Directives and ultimately comply with such requirements more easily and effectively. In general, the additional measure most commonly praised by SMEs were the development of publications, e.g. folders, brochures and circulars, websites and educational activities, e.g. training programmes and workshops, which all aim to expand the SMEs' knowledge of health and safety issues in the workplace, thus enabling preventive measures. However, these kinds of measures are mostly applicable to all enterprises, regardless of the size, but can be of particular relevance to SMEs with a view to facilitate the implementation of OSH requirements and reduce the burden of compliance.

4 Assessment of relevance

This chapter provides a synthesis of the findings pertaining to the two evaluation questions on relevance, where the first question is concerned with current relevance and the other with future relevance. The chapter is structured accordingly.

4.1 Current relevance (EQR1)

EQR1: To what extent do the Directives adequately address current occupational risk factors and protect the safety and health of workers?

Three issues can be identified and need to be addressed when considering the relevance of each of the 24 directives. The first is the question of whether or not the need for each directive remains, i.e. whether the risks which they are intended to address are still present. The second concerns the specific content of each directive and asks whether that content is still relevant for current risks. Following on from this there is the related, third, issue of the risks not covered by the directives.

The first of these issues are addressed in this section on current relevance, whereas the other two issues are addressed as part of the section on future relevance (4.2). This section on current relevance presents the assessment of the directives against three main criteria:

- Proportion of Member States covered
- Proportion of workforce covered
- Extent of current risks to health and safety

4.1.1 Proportion of Member States covered

This chapter presents the extent to which the aims of the directives are up-to-date in addressing the needs and issues related to the health and safety of workers. The first task is to determine in how many of the Member States the hazards addressed by each of the directives can be considered to exist; because they are generally relevant, because the sectors covered by sector-specific directives are represented, or because the hazards addressed by risk-specific directives are likely to be found. In almost all cases, we conclude that most of the directives are of relevance to workers and workplaces in all Member States. This applies to all the general and risk-specific directives (including those targeted at specific groups of workers). It also applies to most of the sector-specific directives with the exception of two. No evidence was identified in one Member State (LU) of any industrial activity covered by the provisions of the Drilling Directive; four Member

States (AT, CZ, HU, & SK) were identified with no shipping activity covered by the Medical treatment on vessels Directive and five with no fishing industry covered by the Fishing vessels Directive. In the latter case, it should be remembered that the directive only applies to vessels over a certain size, so this does not indicate the complete absence of any fishing industry.

4.1.2 Proportion of EU workforce covered

The second criterion is to estimate the proportion of the EU-27 workforce the provisions of each Directive are potentially relevant to. This is usually estimated by identifying the main sectors to which a Directive applies, determining the size of the workforce in those sectors, and then calculating this as a percentage of the total EU workforce. This does not assume, for example, that all workers in a chosen sector are necessarily exposed to a particular hazard. However, it does assume that the majority have the potential to be exposed, therefore requiring their employer to consider that potential. The expectation is that omitting workers in specialist sub-sectors who are not counted will be balanced by including all workers in the chosen sectors. This approach is adopted in preference to estimating proportions in sectors. In some cases alternative sources are used as outlined below.

The provisions of three of the general directives (**Framework, Work Equipment, & OSH signs**) relate to some extent in all sectors, and therefore they are relevant to all EU workers (100 %). For the **Use of PPE** Directive, the provisions apply to most sectors, with the exclusion of certain specific groups. However, these are encompassed within much wider sectors and it is not possible to objectively determine the proportion to exclude (and not all Member States apply these exclusions). Six sectors where significant use of PPE is likely and where the provisions of the Use of PPE Directive are considered to apply were therefore identified. It can then be determined that the Use of PPE Directive is of probable relevance to approximately 38 % of the EU-27 workforce. This estimate compares favourably with data from the EWCS, wherein 40 % of respondents indicated that they were required to use PPE as part of their job. For the **Workplace** Directive, again there are exclusions, although the only excluded group which can be determined with any certainty is the extraction industry sector, encompassing 0.37 % of the EU-27 workforce leaving approximately 99.6 % for whom this directive is potentially relevant.

For the **Pregnant/breastfeeding Workers** Directive, it is assumed to be potentially relevant to all female workers of child-bearing age. From Eurostat data, the child-bearing age of females in the EU-27 in 2012 ranged from 15-49 years. This directive can therefore be regarded as potentially relevant to the 33 % of the EU workforce encompassed by this range.

Based on answers in the EWCS 2010 survey to the question ‘What kind of employment contract do you have?’ 13.33 % of the EU workforce were considered to be in temporary employment (and therefore covered by the **Temporary Workers** Directive). Similarly, answers to a question on age indicate that 0.45 % of the EU-27 workforce is ‘a worker under the age of 18 years’ and therefore covered by the **Young People** Directive.

As for the sector-specific directives entailed estimates based on those employed in the relevant sector. These encompassed **Construction** (7.2 %); **M&Q** (0.32 %); **Drilling** (0.05 %); **Medical treatment on vessels** (0.9 %); and **Fishing vessels** (<0.05 %).

The EWCS 2010 survey records that 52.1 % of EU-27 respondents reported that their job involves carrying or moving heavy loads, thus providing a guide to the proportion of the EU workforce to whom the **Manual Handling** Directive is relevant. The same survey identified that 52.76 % of

respondents indicated that their main paid job involved working with computers or using internet / email for professional purposes for a quarter of their time or more, therefore providing a guide to the proportion of the EU workforce to whom the **DSE** Directive is relevant.

Finally, the proportion of the EU workforce to whom the provisions of the various physical, chemical and biological agents directives were of relevance was estimated from indications of the main industrial sectors where such agents were most likely to be encountered. Adopting this procedure the following estimates were obtained: **ATEX** (1.4 %); **Vibration** (20.9-22.1 % - two sources used); **Noise** (25.4 %); **EMFs** (3.7 %); **AOR** (1.6 %-3.3 %, two sources); **CMD** (12.3 %); **CAD** (50 %); **Asbestos** (7.2 %); and **Biological Agents** (20.4 %).

4.1.3 Extent of current risks to health and safety

Subsequent criteria relate to indicators of the extent to which the hazards or risks addressed by a directive remain a potential problem.

Across all sectors, 2012 statistics show that almost two workers (1.91) were killed at work for every 100,000 employed, and over 1,500 were injured. Incidence rates aren't available that would permit these statistics to be broken down by size of enterprise although, as an indication, 169 fatalities were recorded in enterprises employing zero workers (presumably the self-employed) and over 500,000 injuries documented amongst enterprises employing 1-9 workers. From the LFS, across all sectors, 3.0 % of respondents reported that they had experienced an accident at work whilst 12.8 % of respondents across all sectors reported one or more work-related health problems in the past 12 months. As an indicator of the severity and impact of ill health, 42.7 % of those having reported a work-related health problem indicated that they had required time off work as a result.

These statistics on fatal and non-fatal accidents, as well as work-related health problems, clearly demonstrate that the **Framework** Directive, which addresses all OSH risks, retains a strong current relevance. However, the same approach is not appropriate for the **Workplace** Directive, as its provisions cannot readily be related to specific safety or health outcomes. Few stakeholders expressed strong views regarding this directive although comments in the NIRs seem to suggest that the scope and application of the directive are appropriate (and thus remain relevant).

The **Work Equipment** Directive provided a good example of the challenges of identifying appropriate data which could be related to this Directive. Due to changes in the classification of injury causes, recent ESAW data does not enable any suitable analysis of accidents relating to causes relevant to the provisions of the Work Equipment Directive. Some older data (ESAW 2005), giving responses from 16 of the 27 Member States, suggested that approximately 30 % of fatal accidents involved 'contact with a moving object'. 'Moving objects' are not defined and could include mobile plant or parts of equipment, which are covered by the Work Equipment Directive. Non-fatal accidents show a similar trend. This accident data suggests that the provisions of the directive remain relevant. However, identifying specific work-related health problems which are attributable to the risks of work equipment was not possible using the data available.

The **Use of PPE** Directive protects against a wide variety of hazards. Data on the extent of exposure to these hazards by the EU workforce is unhelpful, in that PPE should only be used where the hazards cannot be avoided by other means. However, statistics indicate that some 40 % of the EU workforce are required to use PPE as part of their work, suggesting that the Directive remains relevant to these workers.

Similarly, OSH signs can be used to warn or advise of a wide variety of hazards, courses of action, etc. As such hazards remain present, safety signs remain relevant and the **OSH signs** Directive remains highly relevant to all Member States.

Scientific evidence shows that working conditions like shift work, heavy lifting etc. are unlikely to have a high impact on adverse pregnancy-related outcomes in the foetus, although they might have an impact on the health and well-being of the mother. In contrast, there is strong evidence that certain chemical agents can have negative effects on the foetus and the child. One complication is that many of these risk factors are especially detrimental during the first trimester of pregnancy, often before the employer is made aware of the pregnancy. One complication is that many of these risk factors are especially detrimental during the first trimester of the pregnancy, often before the employer is made aware of the pregnancy. Moreover, childhood cancers are also affected by paternal exposure, for instance to certain chemical substances. The NIRs of only two countries included responses to a specific question as to whether the provisions of the Directive were still appropriate. Given that this was a direct question in the NIR template the low level of responses does not suggest a strong degree of support for the relevance of the **Pregnant/breastfeeding Workers** Directive although some relevant risks clearly remain.

Temporary workers represent a heterogeneous group. Scientific studies suggest that they are at higher risk for experiencing work-related accidents. Some available data, for example from the Construction sector, does suggest a higher risk, which supports the relevance of the **Temporary Workers** Directive.

Data for accidents and ill-health amongst young people (<18 years) present conflicting views. Accident statistics show that they are less than half as likely to experience a fatal injury but around 30 % more likely to experience a non-fatal injury. The reasons for this are unclear. According to health data, young people are also less likely to report the majority of different types of health problems than those over 18, although they do report more injuries (which mirrors the accident statistics) and more skin problems. The reporting of skin problems can be seen as supporting the relevance of the **Young People** Directive as they are often employed in jobs where there is skin irritation and disease. However, it could be argued that all workers in those sectors, regardless of age, require protection. The lower levels of other reported health problems should not be seen as necessarily indicating a lack of relevance for the Young People Directive, because there are many other non-work factors which could have contributed to these figures such as aging and musculoskeletal disorders.

ESAW data shows that the rate of fatal accidents in the construction sector for 2012 was more than three times that for workplaces as a whole, with that for non-fatal accidents almost double. The EWCS survey (2007) identified the construction sector as having the highest incidence of reported exposures to physical risk factors (chemical, biological, ergonomic, noise, temperature; etc.) of all sectors. Evidence from the UK suggests that forms of work-related ill-health are higher in the construction sector than elsewhere, with significantly raised SRRs (Standardised Risk Ratios) for respiratory (3.8), skin (1.6), and musculoskeletal disorders (1.9). Despite this, LFS data (2007) suggests that workers in the construction sector consider themselves to be no more or less healthy than the wider EU-27 workforce. It seems that the construction sector remains a high risk for both injuries and health risks, supporting the ongoing relevance of the **Construction** Directive.

The fatal accident rate in the M&Q sector is approximately six times the EU average. Although not so large, the rate for non-fatal accidents is also higher. A slightly higher percentage of workers in the mines and quarries sectors also report work-related health problems and the number of

persons within the mining and quarrying sector reporting exposure to hazardous factors is relatively high. This, together with limited literature-based data and opinions from stakeholders, supports the suggestion that the **Mines and Quarries** Directive continues to address current occupational health and safety risk factors for workers in this sector and remains relevant.

The rate of fatal accidents in the drilling sector is approximately twice that for workplaces as a whole. In contrast, the non-fatal injury rate in the drilling sector is more than four times lower than that for the whole EU workforce. Data on health issues from the LFS and EWCS only provide data for the whole mineral extraction sector, including the much larger M&Q component. A published overview of occupational exposures and health risks in the offshore oil and gas industry stated, 'Virtually all the health hazards common to industry are present offshore'. Given the extensive array of risks to health encountered offshore (and in other parts of the drilling sector) it seems that the **Drilling** directive remains relevant.

Seafaring is generally considered to be a high-risk occupation, and the incidence of fatal-accidents is higher than in the water transport sector. The **Medical Treatment on vessels** Directive differs from most others, because it does not seek to prevent or eliminate exposure to potentially dangerous working conditions, aiming to ensure adequate health care in case of an accident and illness. Thus, the potential of the directive is to mitigate the effects of accidents and disease. Based on these sources it would appear that a need remains for the provisions of this directive.

The ESAW database only includes fatal accidents data from 11 Member States for the fishing (and aquaculture) sector for 2012. This shows that the rate of fatal accidents in the fishing and aquaculture sector is almost ten times that for EU workplaces as a whole, whilst the rate for non-fatal accidents was almost double. In contrast, LFS (2007) data suggests that workers in the sector consider themselves to have only slightly more health problems (<1 % difference) than the EU-27 workforce. Statistics on exposure to risks from the same survey indicate that 64.8 % of workers in the sector report exposure to factors which could affect their physical well-being, compared with the overall reporting rate of 39.8 %. One caveat is that the figures reflect those working in the industry, not necessarily those working on fishing vessels of a qualifying size. Despite this, the accident statistics suggest little doubt about the continued existence of the risk factors which the Directive aims to alleviate, a conclusion also reflected in NIRs and stakeholder interviews. This indicates a high continued relevance of the **Fishing Vessels** Directive.

Data from the EWCS 2010 survey includes 'backache' although the perceived cause of such pain or discomfort is not recorded. However, the data does shows an apparent dose-response relationship with the percentage of workers reporting backache increasing with the proportion of their day spent involved in handling heavy loads. It is not clear whether this relationship is indicative of causing injury (leading to the symptom of back pain) or whether it indicates that those with back pain are more likely to experience an aggravation of symptoms. However, it would appear that managing the risks associated with manually handling heavy loads (and therefore the **Manual Handling** Directive) remains relevant.

Data from the EWCS 2010 survey shows that approximately a fifth of those who worked with computers (at least 25 % of the time) reported experiencing backache, muscular pains in shoulders, neck and/or upper limbs, or headache or eyestrain. These data support the view that the **DSE** Directive remains relevant.

It is not possible to use accident or injury statistics to assess the extent to which the **ATEX** Directive is still relevant, because there is no data on the prevalence/number of fatal or non-fatal

accidents caused by explosive atmospheres. Likewise, there is no data on the health consequences of such accidents. While workplace environments with the potential for explosion if correct precautions are not taken can still be found, then the need for some form of regulatory management remains and the Directive can be considered to still be relevant.

From the EWCS 2010 data, 23 % of respondents indicated that they were exposed at work to vibration at least 25 % of the time and 13.11 % reported both backache and vibration exposure, giving some insight into the current relevance of this directive. There are many different causes of backache and the vibration might not have been whole-body, so a causal relationship cannot be assumed. However, these figures do appear to provide some indication of the proportion of the EU workforce for whom vibration exposure might be of relevance, supporting the ongoing relevance of the **Vibration** Directive. No collated data are available regarding the EU incidence of vibration-specific diseases such as HAVS.

From the EWCS 2010 data, 29.9 % of respondents indicated that they were exposed at work to 'Noise so loud that you would have to raise your voice to talk to people' at least 25 % of the time, and 6.5 % reported having had 'hearing problems' within the last 12 months. The prior of these variables is often used as a practical guideline to noise levels being sufficient to warrant action and therefore gives some insight into the current relevance of the **Noise** Directive.

The ESAW data for 2008 (onwards) does not contain any category of injury appropriate to EMF exposure and the LFS data does include data relating to EMF exposures. Published research suggests that the use of MRI scanners in hospitals can have acute cardiovascular and memory effects. However, the authors were uncertain whether the evidence was enough to take action. This view was mirrored by EU-OSHA in a review of current and emerging risks in the healthcare sector, which concluded that the health effects of static magnetic fields have not been thoroughly explored, and was supported by the WHO noting that more scientific data are needed to establish the health risks. Similar views have been reached in published reviews. It would seem that evidence of the extent to which EMF risks are a significant problem warranting legislative control in the form of an EU Directive is unclear, and the whole rationale for the **EMF** Directive can be questioned.

In terms of injury caused by AOR exposure, there is very little evidence appropriate to use. What little there is suggests a very low level of actual injury. Care should be taken in concluding that these figures indicate that AOR exposure is of only limited relevance to the EU workforce, because there are a number of longer-term consequences, such as cataracts and skin cancer, which are not captured by these figures. EWCS 2005 statistics indicate that those who report working most of the time exposed to 'Radiation such as X-rays, radioactive radiation, welding light, laser beams' (restricted to those industrial sectors where such exposures are likely to be AOR) are more likely than those less exposed to report that their work gives them problems with their vision. The nature of the problems experienced is not known. To the extent that these problems relate to AOR exposure (which is not known) these figures might provide some limited justification for the ongoing relevance of the AOR Directive in terms of workers possibly at risk. However, given the tenuous nature of any presumed connection, there must be doubt over the current relevance of the **AOR** Directive.

No data on current exposure to carcinogenic and mutagenic substances across the EU-27 are available. Despite these shortcomings, it is clear from a variety of sources that workers in the EU-27 continue to be potentially at risk from exposures to carcinogenic and mutagenic substances, and that there is therefore an ongoing need to control such exposures to remove or reduce the

risks. Data from the individual NIRs show varying levels of occupational cancer (deaths and incident cases) with much missing data and suggestions of under-recording. This material, as well as published substance-specific studies, gives a strong indication that the **CMD** remains relevant.

ESAW statistics on fatal or non-fatal accidents at work do not give any indications as to whether any arose from exposure to chemicals. Statistics are recorded for accidents arising from contact with 'chemical, explosive, radioactive, biological substances – not specified' which, although not exclusively concerning chemicals, shows that in 2005 they accounted for 0.6 % of the total. LFS (2007) data shows that 3.6 % of respondents reported work-related pulmonary disorders as their most serious problem in the last 12 months whilst 1.8 % reported skin problems. Whilst chemical agents were not necessarily responsible for these, they give some insight into health problems commonly related to exposure to chemicals. EWCS 2010 data shows that 16.5 % of respondents reported breathing in smoke, fumes, powder or dust at least a quarter of the time. For breathing in vapours such as solvents and thinners, and handling or being in skin contact with chemical products or substances, the equivalent values were 10.4 % and 14.7 % respectively. The data shows a trend for increasing likelihood of reporting health problems with increasing duration of exposure. These data indicate ongoing need for risk management and the relevance of the **CAD**.

Despite the well-recognised impact of asbestos exposure, there is very little data regarding the actual level of disease from such exposures. One challenge in determining current relevance is the long latency of asbestos-related disease and the fact that symptoms are not specific and do not emerge until the cancer is well-advanced. One estimate suggests approximately 5,000 male deaths (in 1998) from mesothelioma in Western Europe. More recently, another study has suggested 4,738 deaths from asbestosis and 1,260 from mesothelioma across the study period (8-13 years up to around 2013) in a group of six Central and East European countries. Although the use of asbestos is now banned, asbestos can still be found in a considerable number of locations and residual asbestos remains a problem. A recent (2015) opinion of the European Economic and Social Committee (EESC) stated: 'The total removal of all used asbestos and all asbestos-containing products has to be a priority target of the European Union' ([10]). It is clear therefore that the **Asbestos** Directive remains relevant.

No suitable data can be identified at EU level relating to injuries or diseases associated with biological agents. The ESAW database on accidents at work does not differentiate between poisonings and infections. LFS data includes an entry 'infectious diseases'. From this, 1.8 % of respondents indicated that their most serious work-related problem over the preceding 12 months had been an infectious disease. It is not possible to restrict the data to those workers likely to have been exposed to biological agents as part of their work and so the possibility that such problems were acquired through other avenues cannot be excluded. An EU-OSHA Risk Observatory report (2009) stated 'There are only limited data on occupational exposure to infectious biological agents in the EU'. One study estimates that 5,000 workers in the EU, die each year as a result of occupational exposure to biological agents. The number made ill is probably much higher, but is difficult to estimate. The EWCS survey (2007) identifies those 'Handling or being in direct contact with materials which can be infectious'. 78.8 % of respondents stated that they never encountered such exposures suggesting that 21.2 % might, at some time, do so. Clearly this only includes overtly infectious materials. Despite the shortcomings of the data, the cumulative evidence is that

([10]) EESC. Opinion of the European Economic and Social Committee on Freeing the EU from asbestos. CCMI/130 Asbestos.

biological agents remain a significant potential cause of work-related ill-health and that the **Biological Agents** Directive therefore remains relevant.

In sum, this section has dealt with the question of whether or not the need for each Directive remains, i.e. whether the risks which they are intended to address are still present. From a combination of sources of data; the opinions of stakeholders at both EU and national level; and the NIRs, supplemented by evidence from published sources, it can be determined that the risks addressed by most Directives still remain and that the Directives are therefore largely still relevant.

4.2 Future relevance (EQR2)

EQR2: Based on known trends (e.g. new and emerging risks and changes in the labour force and sectoral composition), how might the relevance of the Directives evolve in the future, and stay adapted to the workplaces of the future in light of the horizon of 2020? Does the need for EU level action persist?

This section concerns the specific content of each Directive and asks whether that content is still relevant for current risks. Following on from this there is the related issue of the risks not covered by the Directives, which is subsequently assessed.

4.2.1 Directive-specific issues

A number of specific issues have been identified regarding the provisions of Directives which potentially influence their future relevance. Only those Directives where such issues were identified are discussed in this synthesis.

One area of uncertainty in relation to occupational health and safety lies with those workers who are self-employed, as they are not covered by the provisions of the **Framework** Directive and largely fall outside the scope of EU OSH legislation. On the basis of limited data on fatal accidents, there would also appear to be a relevance of the directive to the self-employed, an issue which is discussed in more detail below (Section 4.2.2). Extension of the provisions of this directive to cover the self-employed would, it seems, increase the reach and effectiveness of the directive and help to improve the safety and health of this important subgroup. However, there is no great support for what might be seen as increasing the relevance of the directive further by widening the scope, e.g. by removing the specific exclusion on the military or police where there is a possible conflict.

A sizeable minority of Member States expressed concerns in their NIRs regarding the definition of a workplace. This partly reflects new ways of working, as well as issues regarding working away from an employer's premises. Some Member States have adopted a wider definition of a 'workplace'. Although specific changes are restricted to one or two Member States, the general impression is that Member States have identified this as a deficiency in the **Workplace** Directive, which impacts on its current and future relevance.

The general form of the **Work Equipment** Directive, and the general nature of the requirements it contains, make it likely that new equipment developed as a result will remain within the (broad) scope of the directive. However, any increase in complexity of equipment will make it even more important that the provisions within the directive are followed, increasing the future relevance of the directive. In response to a NIR template question there is a reasonably clear impression that the concept of 'specific risk', as embodied in Article 6 of the Work Equipment Directive needs to be

more clearly defined and explained. This would help in improving the consistency of its interpretation and application. Although not all Member States specifically endorse such a change, the apparent inconsistency and confusion makes it clear that such change is desirable.

Several stakeholders made references to possible 'new and emerging risks' and the possible need to amend the Directive to reflect these. An EU-OSHA Risk Observatory report identified a number of areas relating to machinery, work processes and technologies considered to constitute 'emerging risks'. However, the precise nature of these risks, and whether they are adequately addressed by the **Work Equipment** Directive, is not clear. As the 'General obligation' (Article 3(1)) is not risk-specific, no change should be necessary.

At times, the emergency services place considerable reliance on PPE. It appears to be a strange anomaly that this group are excluded from the provisions of the **Use of PPE** Directive. A sizeable minority of Member States have not transposed this exclusion and one expert on the ergonomics of PPE, supported by published material, questioned this exclusion. Removing this exclusion would increase the future relevance of the Use of PPE Directive amongst this subset of workers.

It would be beneficial to review the **OSH Signs** Directive with the aim of ensuring its alignment and unproblematic coexistence with EN ISO Standards. This may entail a clarification of, e.g. guidelines pertaining to, the legal hierarchy between the OSH signs Directive and the EN ISO standard as well as a clarification of the formulation in section 1.3, annex 1 of the directive, which states that the pictograms used may be slightly different from or more detailed than those shown in the Directive as long as a corresponding meaning is maintained. This raises a question of the extent to which general derogations are allowed from the Directive causing confusion amongst MSs.

From available evidence, improving for the **Pregnant/breastfeeding Workers** Directive by including risks to men and focussing on fertility in general appears possible.

Temporary workers and **Young Persons** are two of a number of vulnerable groups, and there are some suggestions that their needs might be better addressed collectively (see below).

One aspect addressed in the NIRs related to a fairly widespread concern about the interpretation of the scope of the **Construction** Directive, suggesting a need for clarification to ensure a consistent approach. The degree to which the directive applies to work such as maintenance and cleaning appears to vary and impacts on the perceived relevance of the directive.

The **Mines and Quarries** Directive was adopted at a time when there was a strong deep-coal mining sector within the EU, which has now considerably diminished. There are suggestions that the directive could be 'streamlined' to reflect a stronger emphasis on surface mining (quarries). However, this would not necessarily entail any alternative or different provisions, and can perhaps be seen more as a shift in how the requirements are presented (e.g. in guidance) rather than a need to change any of the legal requirements. Also, new and emerging risks, such as changing workplace demographics (for example increasing numbers of ageing workers); the potential for cybercrime attacks on plant operating systems; the use of nanomaterials in materials processing, and an increasing prevalence of undersea mining were considered relevant and might influence its future relevance. Some stakeholders expressed the view that the more goal-orientated nature of the directive (rather than adopting a prescriptive approach) was of value in helping to 'future-proof' the directive and maintain its relevance with regard to future risks.

A recent (2013) independent evaluation of the implementation of the **Drilling** Directive found a need to update it to improve its current and future relevance. It was found that current good practice in both industry and regulation has moved on since 1992, and is not fully echoed in its provisions. Several specific provisions of the directive were regarded as limited, restricting the relevance of the directive in offering protection to workers.

Some NIRs indicated a need to review and align medicine lists and other provisions of the **Medical Treatment on Vessels** Directive, and its scope, in order to improve its ongoing relevance. Some requirements for medicines are seen as excessive, with concerns about: the fundamental need for them with changes in communications systems (resulting in considerable waste); storage issues on some vessels; and concerns over competencies. Several references were made to the MLC (or ILO) in terms of inconsistencies between their agreement and the directive. Rectifying these, and establishing a more effective means of ensuring consistency in the future, would help to ensure its ongoing relevance.

Although the size of the EU fishing fleet is decreasing, due to the continued existence of risk factors on board fishing vessels, there is no evidence to suggest that the future relevance of the **Fishing vessels** Directive will decrease. No specific amendments or additions to the directive were identified which would impact on this, although some evidence suggests that in order for risk assessments to become an effective risk management tool, the provisions need to be tailored to the specific, changing workplace of fishing vessels (e.g. as a result of changing weather).

Overall, it would seem that the provisions of the **Manual Handling** Directive are addressing the risks relevant specifically to manual handling activities, although there are general doubts over the quality of their implementation, suggesting that insufficient emphasis is placed on reducing risks through improving the design of workplaces. As part of this, scientific evidence questions the value of manual handling training as a risk control measure. There is some evidence for this being used as the main (possibly sole) risk management method. Evidence from the scientific literature documents the ineffectiveness of such training. Whilst education to raise awareness of the risks arising from handling activities remains of value it would seem appropriate for Article 6(2) to be revised to diminish the perceived requirement for training in manual handling techniques.

In their NIRs, many MSs reported the need to review the exemptions in the **DSE** Directive (Article 1(3)) due to the technological advances which have occurred since it was adopted. Strong concerns have also been expressed over the requirements for workstations specified in the Annex to the directive, which is very dated and does not reflect changes in technology and ways of working. It is likely to become more so as further developments in technologies are introduced. In its present form, any amendment upon similar lines is going to become out of date in the way the present one has. Consideration should be given to preparing a less prescriptive text which does not preclude alternative approaches. For example, the current requirements for the chair assume a seated posture and could have a negative impact on the concept of a standing workstation. One of the difficulties is that a prescriptive approach encourages employers to consider that compliance with the Annex is sufficient. Practical experience indicates that often, no actual assessment of the working posture of the worker is carried out. There might be merit in a more ‘enabling’ approach, requiring employers to provide furniture and equipment ‘sufficient to enable the worker to adopt a good working posture’, supported with authoritative information and guidance on good posture. One further specific concern is that Article 9 is factually misleading. The title ‘Protection of workers’ eyes and eyesight’ implies that, contrary to scientific and medical evidence, use of DSE presents a risk of damage. There is some evidence to suggest that workers might experience problems such as visual symptoms, or might adopt adverse physical postures if they cannot see their display

clearly due to visual defects. This appears to be recognised in those MSs where testing is made available to those who report problems, rather than prior to starting work. As written, the Article is misleading and inappropriate and amending it to reflect the current evidence base would enhance the future relevance of the directive.

Researchers have strongly criticised the fact that that the **ATEX** Directive does not adequately differentiate between dust clouds and gases/vapours, and revising this would serve to increase the current and future relevance of the directive.

Although some stakeholders in the EU and at a national level expressed concerns over the technical nature of the **Vibration** Directive, none of these, which are discussed in the directive report, appeared to be shared across other MSs, and none would seem to indicate any need to reconsider the content of this directive to maintain current relevance or increase its future relevance. There appears to be a general view that, since many production processes are being automated, workers are interacting less and less with equipment that vibrates, and it has been suggested that the relevance of the Vibration Directive will reduce over time, although it will remain relevant over the 2020 timeframe.

Consideration should be given to exploring the possible implications for the provisions of the **Noise** Directive of an aging workforce, both in terms of 'older ears' being exposed and of workers working for longer and therefore being exposed to noise for more years.

There appear to be considerable scientific doubts over the value and validity of the **EMF** Directive. The authoritative reviews by WHO and EU-OSHA have questioned the evidence-base for the EMF Directive and have called for more scientific data to establish what the health risks are. Given the uncertainty over the nature and extent of any risks, requiring employers to assess and manage them seems premature. The NIR of one MS (UK) specifically recommends the repeal of this directive. In essence therefore there are strong concerns regarding the current and future relevance of the EMF Directive

Opinions, drawn from interviews with stakeholder and expert groups from a number of Member States, together with material and recommendations from NIRs and representations by expert research groups as to the future relevance of the **AOR** Directive are mixed. Some evidence suggests that it is not at all relevant. One stakeholder recommended that the Directive should be repealed in its entirety, a recommendation formally made by one Member State in its NIR. In contrast, another stakeholder felt that the Directive had great relevance, whilst a number of national stakeholders indicated that it was insufficient in not covering outdoor work and the associated increased risk of skin cancer. This view was endorsed by a skin cancer research group, although countered by other evidence. Recent estimates from the UK suggest that approximately 2 % of deaths from cutaneous malignant melanoma are attributable to occupational exposures to solar radiation, suggesting that these are deaths which are avoidable with appropriate control measures.

Whilst the need for the protection provided by the **CAD** and **CMD** Directives is not in doubt, there are suggestions that their utility (and relevance) could be improved by merging them, although there are very mixed views over this. From a legal perspective, merging the two (CMD and CAD) would provide for a more coherent approach, enhancing the relevance of control in this important field. Discussions at the seminar held as part of the evaluation revealed no clear consensus and appeared to broadly reflect a worker-employer split, with employers favouring a merger but workers preferring to retain two Directives. It was suggested that merging the two might make compliance and risk management easier for SMEs and that merging them would reduce duplication and

remove confusion amongst employers. Others argued that there is no need to merge them as Member States can choose to implement their provisions within a single legislative instrument; and that any such changes would be burdensome for Member States in having to alter legislation.

There were widespread comments relating to the emerging risks associated with nanoparticles and nanomaterials, addressed by the **CAD** (and also the **CMD** for those regarded as potentially carcinogenic). The NIR template specifically asked Member States about this issue. Most appear to indicate that the provisions were adequate, although some considered a new Directive to be required. The general view appeared to be that the framework for assessing and managing risks, outlined in the CAD, should be sufficient but that, in reality, the lack of clear knowledge and understanding of what those risks were made this problematic. Even amongst those who considered the provisions of the CAD to be generally sufficient, there were some who advocated amending or adjusting it to clarify the situation regarding nanoparticles. Scientific opinion from subject-matter experts is that the CAD provisions can be applied to managing any risk from nanoparticles. Recently published (2014) guidance from the European Commission takes this view.

The subject of OELs was mentioned by several stakeholders. Some questioned the evidence-base for some OELs, especially those in the **CMD** where the relationship between the CMD OELs and the Binding OELs in the **CAD** also attracted comment. It was suggested that the rate of introduction of new chemicals into the workplace moved faster than the level of knowledge and awareness of those in authority (such as Inspectors), and the development of OELs, could keep pace with. A concern was expressed that variations in national exposure limits (provided for under the CAD), including where no EU OEL existed, would lead to work being directed towards other countries. The need to review and revise the system of agreeing on limit values for chemicals to ensure the ongoing relevance of these two directives is clear. This is discussed further, alongside issues such as other exposure classification systems such as DNELs (REACH), and alternative approaches such as Control Banding, in the CAD report. An EU worker representative expressed concern that no Binding OELs have been published since those included in the initial CMD. It is noted that the ACSH has published an opinion (Doc. 2011/12) on a proposed amendment of the CMD to introduce further Binding OELs, although it is not known what further progress has been made.

One specific issue relating to the **CMD** is the question of whether or not its scope should be extended to include reprotoxins. Over a third of Member States already accommodate them within their national legislation. However, it is suggested that including consideration of reprotoxins, and how best to control the risks they present, within a wider debate over the future of the CAD and CMD provides the best option given the current lack of detailed data.

As a further issue, the prospect of identifying some carcinogens or mutagens for which an evidence-based safe threshold can be established would generate additional pressures to revise the **CMD**, with its assumption that such thresholds cannot be identified and focus on measures such as substitution and the use of closed systems (as well as an explicit requirement for exposure levels to be reduced as low as technically possible).

It is clear from disease statistics that the **Asbestos** Directive remains relevant and is likely to do so whilst significant quantities of asbestos remain in buildings and other work locations. In relation to clarifying aspects of the Asbestos Directive, and therefore enhancing its future relevance, some stakeholders and NIRs advocated improving the definition of some terms such as ‘sporadic’ and ‘low intensity’, important because of the possible exemption within Article 3(3) from certain duties ‘Provided that worker exposure is sporadic and of low intensity,..’. These concepts are subject to different interpretations within individual Member States. This could become of increasing

importance with the growing attention, in accordance with the European Parliament resolution of 14 March 2013, to locations such as schools and offices where exposures might normally be expected to be sporadic and low intensity. Other terms such as 'non-friable' and 'deterioration of non-degraded materials' are also not defined. The question has been raised of introducing a lower limit value (as already implemented in two Member States with a third adopting a slightly different approach). There is some epidemiological evidence to support a lowering of the limit.

A number of Member States regard the classified list of infectious agents in the **Biological Agents** Directive as out of date. Updating this would clearly improve the current relevance of the Directive. However, to maintain its future relevance it would seem that an efficient mechanism needs to be devised to enable it to be updated regularly and easily. The Directive also needs to be able respond to emerging risks to ensure that the Directive is likely to remain relevant.

4.2.2 Risks not addressed by current Directives

Following on from this consideration of the risks covered by the Directives there is the related issue of those risks not covered (with the exception of the overall provisions of the Framework Directive). Here, the evaluation has identified three areas of widespread concern. These are: 1) MSDs, 2) Psycho-social risks, and 3) Nanoparticles.

MSDs

Firstly, it is widely recognised that some of the hazards giving rise to risks of musculoskeletal disorders are not explicitly addressed by any of the existing individual directives (including DSE and the Manual Handling Directives). There are many workers who experience MSDs whose work does not entail either handling heavy loads or working with computers. Workplace risks of MSDs can arise from repeating or sustaining awkward body postures; repetitive or sustained actions or movements; or the application of excessive force (where the concept of excessive also accommodates the frequency and/or duration of force application). Such risks do not necessarily arise in handling loads or sitting at DSE which are addressed through the two existing directives. Given the importance of MSDs in terms of overall EU sickness absence, this reflects a clear 'gap' in terms of workplace risks for which no specific legislative provision exists at present, and therefore for which no existing directive provides specific protection to workers. This issue has been extensively debated and documented within the EU, with Impact Assessments of alternative approaches and other exploratory actions taken. In particular, industrial repetitive work activities, which may or may not include the application of force, do not fall within the scope of the Manual Handling Directive.

Psychosocial risks

A second area of widespread concern is that of psychosocial risks. Apart from a specific reference to stress as a consequence of work with display screen equipment (which may not actually be justified given the available evidence) none of the individual directives specifically address these risks, despite clear evidence that ill-health attributable to such risks is a significant problem. This reflects another clear 'gap' in terms of workplace risks for which no specific legislative provision exists at present and therefore for which no legislation provides protection to workers.

Nanoparticles or nanomaterials

Thirdly, and possibly less unequivocally, concerns have been expressed regarding the risks associated with nanoparticles. In this case it is less clear whether they are already addressed, as some take the view that they are adequately encompassed by the provisions of the Chemical

Agents Directive whilst others advocate a new directive (as discussed in respect of the Chemical Agents Directive). Suggestions for change to accommodate emerging risks perhaps to some extent reflect national differences in OSH management, where those MSs who adopt a more goal-setting approach are more likely to regard existing provisions as sufficient, whilst those MSs who tend to adopt relatively prescriptive legislation might need to make further prescriptions to clarify the most appropriate methods for controlling the risks associated with working with nanoparticles.

High-risk sectors not specifically addressed

The agriculture sector is widely regarded as one of the most hazardous sectors in the EU. 'The fatal accident rate and that for accidents with more than 3 days absence are some of the highest for any industry' ([11]). A paper to the European Parliament (2012) refers to 'the characteristics of the Agriculture sector with its persistently high and disproportionate levels of fatal and non-fatal injuries and ill-health' (Griffin, 2013). The Framework Directive provides for directives for seven high risk 'areas', including 'Fisheries and agriculture'. Although individual directives have been adopted for the other six, and fishing (rather than fisheries), agriculture remains. Discussions have raised the question of whether this is a legislative gap which should be filled.

The current sector-specific directives do not generally seek to provide broad protection against the risks encountered in those sectors, because many risks are in fact covered by other individual directives. For example, although there are many chemical and physical hazards in the construction sector, the Construction Directive does not seek to address these, focussing on issues such as unsatisfactory organizational options, poor planning, or inadequate coordination. Similarly, the two mineral extraction directives do not address OSH in general within the sector but rather make provisions for what are regarded as factors unique to that sector.

The question to be asked therefore is not, 'is the agriculture sector a high-risk sector?' but 'are there risks, unique to this sector, which are not otherwise addressed?' According to the paper to Parliament, the unique aspect of agriculture is not the common risks but the nature of its workforce. Thus: 'agriculture is unique in terms of workplaces, the vast majority of farmers across Europe are self-employed, self-supervised individuals largely reliant on family labour' and, following on from this, 'while various EU Directives do address certain health and safety issues, self-employed workers are not well covered.' The report concludes: 'The challenges in Agriculture cannot be solved with the same approach as in other sectors, such as construction, as Agriculture is predominately made up of self-employed individuals.' The issue of extending OSH provisions to the self-employed has been raised earlier in relation to the Framework Directive. It would seem that the challenges of the agriculture sector should provide a particular impetus to such considerations.

Vulnerable groups

It could be argued that self-employed workers, especially in the agriculture sector, are a form of vulnerable group – although they are not usually regarded as such. OSH directives include three aimed at specific vulnerable groups: the **Pregnant/breastfeeding Workers**, **Young People** and **Temporary Workers** Directives. However, a consistent theme to emerge in discussions with stakeholders and in reviewing published work on OSH and vulnerable groups are ageing workers. There is a clear recognition that the age profile of the EU workforce is changing, with a gradual increase in the proportion of older workers (and consequently in the average age) within the workforce. This is not a directive-specific issue. It is possible that any increased risks are best

[11] http://www.beswic.be/en/sector/agriculture/index_html

assessed and action taken within the existing framework of provisions. Nevertheless, such workers clearly face additional or enhanced risks which could perhaps best be addressed by considering the whole concept of vulnerable groups, including aging workers (and possibly the self-employed) within the context of the Framework Directive.

5 Assessment of effectiveness

This chapter provides the synthesis of the evaluation with regard to five out of seven evaluation questions on effectiveness. Two questions, EQE5 on costs and benefits and EQE6 on broader impacts, have been merged and are addressed separately in chapter 6.

5.1 Effect on occupational safety and health (EQE1)

EQE1: To what extent has the Directive influenced workers' safety and health, the activities of workers' representatives, and the behaviour of establishments?

The assessment of this evaluation question is conducted in two stages. First, we examine the actual changes and improvements which have occurred at workplaces as a result of implementing the OSH *acquis*. Secondly, we analyse how these changes have influenced the safety and health of workers and ultimately reduced occupational accidents and work-related diseases.

5.1.1 Workplace impacts

Evidence on the effectiveness of the OSH *acquis* at improving establishment behaviour from 2007-2012, and thus achieving impacts at workplace-level is sparse and to a limited extent self-contradictory. On the one hand, a considerable level of compliance seems to be maintained and increases with the size of the establishment, just as a significant proportion of managers consider their OSH management policy to have had some positive impact on safety and health in the establishment. According to ESENER data, 88 % of establishments in the EU-27 conduct risk assessments on a regular basis and 91 % of these have taken action in response to identified risks. This effectively means that 80 % of all establishments have taken measures to improve working conditions (notwithstanding the number of remaining, unidentified risks.). This gives no insight into the quality either of the conducted risk assessment (e.g. number of unidentified hazards), or the follow-up action. Qualitative data from national and EU interviews suggests that working conditions have improved, e.g. on account of increased awareness and information of OSH amongst workers, which is promising.

On the other hand, (limited) data points to a potential deterioration of working conditions in the EU-28 over the last five years, although these findings should be assessed with due caution.

The fact that workplace impacts cannot be assessed over time has the primary consequence that possible improvements to the safety and health of workers cannot be unequivocally linked to any

workplace impacts and consequently to the national transpositions induced by the *acquis* itself. This effectively means that a causal relationship between identified OSH-related improvements and the directives cannot be established. As a result, we cannot quantify to what extent safety and health trends result from the national transpositions of OSH legislation and to what extent changes are caused by other factors, such as improved technology, structural changes to the labour force, etc. However, the fact that managers consider the existence of national legal provisions as the most important reason for addressing OSH at the enterprise level means that the directives do seem to have a considerable potential impact on establishment behaviour in relation to OSH management. We therefore proceed to assessing the trends in exposure to health-related risks without a fundamental knowledge of whether establishments are complying with the OSH *acquis* to an increasing or decreasing extent, and whether micro and small establishments are in a process of closing the compliance gap compared to larger establishments, etc.

5.1.2 Health and safety impacts

Safety at work – trends in accidents at work

Data from Eurostat EWAS statistics show a fairly clear overall picture, namely that the incidence of occupational accidents in both the EU-15 and the larger EU-27 has fallen for both fatal and non-fatal accidents. This is supported by the Scoreboard exercise, as reported in the 2013 Evaluation of the European Strategy on Health and Safety at Work, which shows that 21 MSs considered the trend in the rate of occupational accidents to be decreasing and in only one MS (Estonia), the trend was reported to be upward. In the case of non-fatal accidents, the downward trend is apparent in all sectors, with the exception of 'agriculture, forestry and fishing', where the results are harder to interpret but there would, if anything, appear to be an upward trend.

Whether or not this development can be ascribed to the directives is difficult to determine. Referring to the previous section on workplace impacts, it is considered that the directives might have played a role but, based on the existing data, it is not possible to quantify this.

Health at work

One survey, covering 26,571 EU-28 residents (i.e. not necessarily workers) above the age of 14 asked respondents to assess their own working conditions and to provide their opinion on whether working conditions in their MS had improved, stayed the same or deteriorated over the last five years (European Commission, 2014). The survey shows that just over half of the respondents (53 %) report that working conditions in their country are currently good (2014). Not surprisingly, results vary between MSs, ranging from 16 % in Greece to 87 % in Denmark. However, the survey also shows that, despite considering them 'good', a majority of Europeans (57 %) consider working conditions in their country to have deteriorated in the last 5 years (i.e. 2009 – 2014), and 27 % say they have stayed the same, while only 12 % think they have improved.

Similarly, data form EWCS from 1995-2010 show an overall decline across the years in the proportion of the workforce who report that their health is affected by their work, while approximately 30 % of surveyed workers consider their health or safety to be at risk because of their work, a value that is relatively stable from 1991 to 2010. This does not allow for an unequivocal assessment of the development of working conditions and hazard exposure at workplaces.

Thus, with respect to data on health outcomes, the evaluation has been challenged by the situation, that there is very limited EU-level data on incidence of occupational diseases. Another

factor complicating the assessment was that the individual directives often cover more than one disease, especially those directives that are of general nature or target specific types of workers (and all diseases are in principle covered by the Framework Directive) or the risks of a disease are covered by more than one directive. Therefore, disentangling the effect of one directive from another is even more challenging, as the directives sometimes overlap or supplement each other, and because legislation in other fields can also play a role.

At the cross-directive level, data from the EWCS indicates a relatively stable – slightly decreasing - trend during the period 2000-2010 with regard to the proportion of workers who consider their health and safety to be risk because of their work.

Subjective opinions of key stakeholders at the EU and Member State levels provide some insight into the extent to which the provisions of Directives have been implemented and their effect on the safety and health of workers. Generally, these present the impression that the directives appear collectively to have been reasonably successful in achieving their intended aims and benefitting the health and safety of workers as a result. Naturally, opinions vary between different stakeholders and between different stakeholder groups – although at times, they were remarkably consistent.

With respect to MSDs, despite there being three directives with a principle focus on MSDs, there is no reliable indication of a marked reduction in those problems which remain a major cause of injury and health problems at work. According to Eurostat, LFS 2007/2013 data, ten MSs experienced an increase in the proportion of respondents reporting exposure to difficult work postures and movements from 2007 to 2013.

Considering psychosocial health problems, apart from the Framework Directive and a reference to mental stress in the DSE Directive, there are no EU OSH directives which can be regarded as having a potential impact on such hazards. With the possible exception of some of the provisions regarding software, none of the measures adopted through the DSE Directive would be expected to impact on the established psychosocial risk factors. With evidence that psychosocial problems are, if anything, increasing across the EU workforce the absence of any significant legislative measures must be seen as a gap in the EU OSH *acquis*.

Regarding skin problems and respiratory difficulties, data from EWCS shows an increase in the proportion of workers experiencing such problems in the period from 1995-2005 among those exposed to chemical and infectious agents at work. Thus, based on the available data, there is little substantive evidence to indicate that the CAD or the Biological Agents Directive have had a marked positive health impact.

On the subject of cancers, the most relevant work-related cancers are mesothelioma, sinonasal, lung and bladder cancer, non-melanoma skin cancer in men and mesothelioma, sinonasal, lung, breast and nasopharyngeal cancers in women. Because of the long latency period for developing most cancer, there is no quantitative data on the impact of the directives. However, exposure data on the ten most dangerous agents in 1990-1993, 1999 and 2010 indicates a slight decrease, suggesting little or no change. Specifically in relation to asbestos-related deaths (for example from pleural cancer), the Asbestos Directive, combined with other prohibitions, will have contributed to the significant reduction in asbestos usage across the EU-27. However, asbestos-related deaths are predicted to continue to increase in a number of MSs for some years to come before any downturn can be expected. It is thus not possible at this stage to draw any clear inferences regarding the impact of the Asbestos Directive on the health of workers

In relation to physical agents, exposure at work to vibration from hand tools, machinery etc. has been decreasing since 2001. This is considered to be due to a combination of the development of machines emitting less vibration (and being lighter and better ergonomically designed), but at the same time a move towards more use of machinery. Hence, there is considered to be an increase in the total number of workers exposed to 'light' vibration, while the total extent of exposure has declined. In relation to noise, the data from EWCS on self-reported sickness absence and hearing problems does not indicate a decrease in hearing problems among workers exposed to noise, as could be expected from the implementation of the directive.

Vulnerable groups of workers have become a particular focus of OSH concerns over recent years, and the safety and health risks for several such groups are addressed by OSH directives, specifically those relating to Pregnant Workers, Young People, and Temporary Workers. Others include migrant workers and especially older workers who are increasingly recognised as an OSH concern due to the age demographics of the EU workforce.

The Pregnant Worker Directive differs from most others because it concerns both the health and safety of the worker and their offspring. The directive targets adverse pregnancy outcomes rather than any potential risk factors associated with fertility. These outcomes are followed in several EU-databases that include a wide range of Member States. The data shows that from 2004-2008, the rate of foetal, neonatal and infant mortality decreased; the percentage of low birth weight babies remained stable; and preterm deliveries rose. From 1999 to 2010, the rate of congenital anomalies have, overall, remained the same. Finally, childhood cancers have been increasing from 1970 to 1999, and more recent data suggests that trends have continued to increase after 1999. Thus, the data does not provide evidence that adverse pregnancy outcomes have declined in general. The analysis does not provide substantial evidence that the directive have had a considerable effect on the health and safety of pregnant/breastfeeding women and their children in terms of pregnancy outcomes. However, the directive might have improved well-being and reduced sickness absence among the mothers.

The Young People Directive targets young workers because they are considered to be particularly vulnerable. Data on temporal changes in workplace hazards and injuries show a general decline. Although young people appear to be more protected from some hazards, as demonstrated by a lower rate of fatal accidents among young people, they seem to be more at risk for non-fatal accidents. It is, however, not possible to ascertain if this is due to a greater susceptibility or because of the nature of their work.

The objective of the Temporary Worker Directive is to ensure that temporary workers are afforded the same level of health and safety protection as other workers. The Directive does not specify any particularly diseases but implies that temporary workers are more likely to be involved in accidents, because of inadequate training and information. There is no EU-level accident data among temporary workers, but the scientific literature shows that temporary workers are more often involved in accidents. However, this increased risk is especially related to lower job experience. Because temporary workers are overrepresented in the construction sector, the increased risk of accidents could also be related to the specific characteristics. Data from EWCS from 2010 shows that temporary workers are more likely to report higher job insecurity, but less likely to report negative consequences of their work on their health and have less sickness absence. A lower level of sickness absence could be a consequence of higher job insecurity. Thus, there is no clear evidence that temporary workers are more likely to be involved in accidents related to their employment contract (or more negative consequences of their work). This could be an indication of

a positive result of the Directive, but the available data does not allow us to make such inferences. Thus, no firm conclusion can be drawn regarding accidents or ill-health in this group.

SMEs and micro-establishments

One key issue addressed by the various data sources is that of the attention paid to OSH in smaller businesses. The evaluation finds that compliance with CPMs and Directive requirements is generally lower in SMEs and micro-establishments as compared to larger establishments. This leads to a concern as to whether SMEs and micro-establishments experience more severe health and safety outcomes as a result of this lack of compliance. However, that the global data relating to health and safety, both objective records of safety (accidents) and objective health reports do not support this view. Direct comparisons cannot be made of accidents in companies of different sizes because incidence figures are not available. However, over 90 % of establishments are classified as SMEs, with approximately 66 % of the workforce. As an approximate guide, for the most recent data, SMEs (<250) accounted for approximately 65 % of the accidents which, with 66 % of the workforce, would appear to be in proportion. Certainly, it is not suggestive of a major imbalance. The absolute numbers suggest that trends in SMEs mirror the trends in larger enterprises and do not suggest significant differences in safety due to company size.

Similar considerations apply to the data from the EWCS, which shows that the proportion of workers who consider that their health is at risk due to their work does not vary significantly between different sizes of establishments. The same can be said about the proportion of workers who consider that their work affects their health.

The limited data on accidents and risk exposure indicates that workers in SMEs, despite their perceived lower levels of compliance with OSH requirements, are not experiencing adverse OSH effects compared to workers in large establishments. However, it should be noted that several sources of data indicate that underreporting of accidents is a known issue for SMEs. Also, there are published studies which demonstrate that SMEs in some specific sectors (e.g. construction) are experiencing higher incidences of occupational accidents, suggesting that care should be taken in making sweeping generalisations.

5.1.3 Summary

It is clear from the data presented in the preceding section that there has been a clear pattern of a reduction in virtually all indices relating to workplace exposures to hazards; fatal and non-fatal accidents; perceived influences of (mainly) adverse effects of work on health; and perceptions that workers health and safety is being placed at risk by their work. Although there are some occasional variations, these changes appear to be relatively robust, with the changes remaining also within analyses by sector (both different industries and public/private), size of enterprise, and, in terms of perceptions, age and gender. Although there is some occasional uncertainty or lack of clarity, there are no clear indications at any point of a negative trend in any index.

Yet, assessing the effectiveness of each of the directives has been challenging. The serious absence of any collated data on safety or health outcomes means that any material used has often been fragmented, sometimes only from a small number of MSs. Even the data that is available presents further challenges in terms of attribution. Many other changes have occurred over the life of the directives in general and over the evaluation period in particular, and it has seldom been possible to identify specific changes in objective outcome measures which can then be reliably attributed to the effects of the provisions of any one directive (much less the effect of individual provisions).

The evaluation can, with considerable certainty, point to a fall in the number of workplace accidents, some of which may be the result of unrelated structural changes, such as the shift of jobs from high-risk economic sectors to lower-risk tertiary sectors. Nonetheless, we may with some fairness assume, based on the analysis of the level of compliance in Chapter 3 and the continued relevance established in Chapter 4, that a proportion of these improved safety standards stem from the implementation of the OSH *acquis* and consequent improved OSH awareness, especially in larger enterprises.

With details reported in various directive reports, our analysis on the subject of occupational diseases shows less positive trends. New and emerging concerns such as the increasing cases of sick leave due to psychosocial risks (which are not currently covered by the OSH *acquis*) or MSDs (where OSH coverage is incomplete); concerns about the risks of nanomaterials; and increasing knowledge showcasing risks associated with an increasing number of chemical and biological agents; all of these risks indicate that current major health and safety concerns are likely to remain.

An almost identical conclusion was reached in the European Commission (2013b) impact assessment of the 2007-2012 OSH Strategy. The evaluation has reservations over this conclusion due to the limited amount of data on occupational diseases. While we agree that additional EU indicators are needed for a structured monitoring of occupational diseases, it is our assessment that the conclusion (that considerably less positive results have been achieved on bringing down work-related illnesses in comparison to reducing the number of occupational accidents) is valid, as similar opinions have been continuously expressed during national and EU stakeholder interviews.

5.2 Effect of derogations and transitional periods (EQE2)

EQE2: What are the effects on the protection of workers' safety and health of the various derogations and transitional periods foreseen in several of the Directives concerned?

Qualitative evidence shows that the use of derogations has not had any degree of measurable impact on the safety and health of workers. Rather, derogations are generally regarded as necessary exemptions that permit establishments to maintain compliance with the nationally transposed directives. The most widely used derogations concern the prohibition of certain chemical agents (ref. Chemical Agents Directive), the prohibition of employment of young people where such derogations are indispensable for their vocational training, the prohibition of night work for young people in specific areas of activity (ref. Young People Directive), and the requirement to provide properly fitting individual hearing protectors in exceptional situations (ref. Noise Directive).

As regards transitional periods, Member States were often granted one, because they were assessed to be unable to implement a given directive within the standardized timeframe. Our analysis (based on interviews with national stakeholders) indicates that this was often indeed the case. The general opinion expressed in the national stakeholder interviews is that the use of transitional periods did not cause any major problems. In fact, interviews with stakeholders and relevant authorities have highlighted that the application of transitional periods were necessary in order to achieve a full, correct and effective implementation of the legislation. When viewing the OSH *acquis* as a whole, transitional periods are unlikely to have had a substantial impact on its effectiveness across all Member States and over the span of the entire since the adoption of the Framework Directive in 1989.

5.3 Effect of Common Processes and Mechanisms (EQE3)

EQE3: How and to what extent do the different Common Processes and Mechanisms that were mapped contribute to the effectiveness of the Directives?

On the overall level, an analysis of the interlinkage of the CPMs across directives, and thus their suitability to work in tandem and collectively increase the safety and health of workers, reveals that the collected OSH legislation is unnecessarily complex. This is in part due to a seemingly unstructured and unsystematic inclusion (or lack thereof) of CPMs in the individual directives. As the OSH *acquis* structure is often mirrored in the national provisions, with one framework law complemented with by-laws that transpose each individual directive and contain cross-references to the OSH framework act, these cross-references are also not always systematic at the national level and not sufficient to ensure a coherent and cohesive approach across legislation (cf. Section 3.1 (MQ1)). This, in turn, has caused some confusion at the enterprise level, and particularly amongst SMEs, leading to misinterpretations of the provisions of legislation or directives (ref. national stakeholder interviews and e.g. NIR-HU).

Furthermore, scientific literature as well as analysis of the dissemination of compliance levels across sectors indicate that non-recognition of non-compliance, particularly in SMEs, negatively impacts the effectiveness of the CPMs. This is supported by ESENER data that shows that establishments increasingly seem to believe that no major problems exist at the workplace. Such recognition may primarily be achieved by means of external intervention from inspectors and consequential iterative dialogue as discussed in Section 5.4 (EQE4) below.

Turning to the specific CPMs, the relatively high levels of compliance with the requirement to perform **risk assessments**, which were reported in Section 3.3 above, imply that the CPM may potentially have been effective at ensuring OSH at workplaces. This notion was largely supported during national and EU stakeholder interviews. Risk assessments are, generally, viewed as the foundation for forming and applying a risk prevention strategy rather than as a reactive approach to occupational safety and health. In support of this view, the ESENER-2 survey shows that 90 % of surveyed establishments in the EU-28 that carry out regular risk assessments regard them as a useful way of managing health and safety (EU-OSHA, 2015). This was a consistent finding across activity sectors and establishment sizes. Also on the positive side, establishments surveyed during the 2013 ESENER-2 survey to a lesser extent than in 2009 refrain from conducting risk assessments because the procedure is regarded as too burdensome or because they lack the necessary expertise (ibid).

Nevertheless, the provision on risk assessment would benefit from being more inextricably linked to risk management and the proactive prevention of identified risks on part of employers, as stakeholders point to a tendency that risk assessment performance occasionally diverts attention away from managing identified risks, particularly in SMEs. This showcases the impact of non-recognition as SMEs tend to believe that, having followed legislative requirements and conducted a risk assessment, they are in compliance. Contrarily, risk assessments in SMEs are often of insufficient quality to ensure adequate risk management as they sometimes lack the resources (human and financial) to identify and manage hazards adequately (ref. NIRs – e.g. NIR-PL and SI – Validation Seminar, national stakeholder interviews).

Furthermore, a review of the risk assessment procedures is needed for some specific directives, as general procedures do not adequately address directive-specific hazards, risks, challenges and/or

circumstances. This is, inter alia, the case for the AOR Directive, the Biological Agents Directive, the Fishing Vessels Directive, the Mining and Quarrying Directive and the Vibration Directive.

It was concluded, in Section 3.3 (MQ3), that risk assessments performed by external service providers reduce the need to maintain in-house expertise and more often result in a lack of subsequent anchoring in the establishment and consequent risk reduction in comparison to risk assessments performed by internal staff (EU-OSHA, 2013c). As SMEs are more inclined to use external service providers, risk assessments in SMEs may not have the same quality as in larger establishments, nor to the same extent result in an OSH management approach that is integral to the particular business and the priorities of the SME.

Apart from risk assessments, national stakeholders highlight information, training and consultation of workers, while EU stakeholders highlight preventive and protective services as the CPMs that have contributed the most to safety and health impacts across all Directives.

On the subject of **protection and preventive services**, this CPM is subject to varying assessments regarding its contribution to the safety and health impacts of the OSH *acquis* by national and EU stakeholders, respectively. While national stakeholders do not place significant emphasis on the CPM (relative to risk assessments and information, training and consultation of workers), EU-stakeholders find it to be the second most contributing CPM. This may be explained by the fact that many external protection and preventive services seem to design and target their products to larger companies, which means that their aid is of less use to SMEs, who make the most use of them. This imbalance seems to have reduced the effectiveness of the CPM to some extent.

Evidence suggests that **training and information** is a pivotal element in the process of improving the safety and health of workers. However, a clear indication of a potential improvement of the effectiveness of the training of workers is that training on prevention and measures related to psychosocial risks and risks associated with exposure to chemical and biological agents, radiation or dust hazards has been provided to less than half of the surveyed employee representatives. Of these, a total of 57 % report that they have received a sufficient amount of training. There is, in other words, a continued need for training on these matters, and on emerging risks in particular. As these proportions refer to the training of safety and health representatives, it is reasonable to assume that the training of workers is more limited. Interestingly, evidence suggests that Employee representatives working in SMEs tend to be more satisfied with the training they receive than those working in larger establishments

Finally, although health surveillance is regarded as a relatively valuable tool by national stakeholders, it should be recognised that it is mainly useful in relation to types of risks and health outcomes where there are clear early warning signs and where the gathered information will provide valuable input to the risk assessment and design of preventive and protective actions. This is to some extent reflected in the *acquis*, as specific Directives include specific requirements for health surveillance. However, the general requirement for health surveillance as stated in the Framework Directive does not incorporate such considerations.

5.4 Effect of enforcement (EQE4)

EQE4: To what extent do sanctions and other related enforcement activities contribute to the effectiveness of the Directives?

All evidence points to the fact that enforcement, and particularly the combined role of inspectors enforcing legislation and providing guidance on implementation, generally, has a significant influence on compliance with the OSH *acquis*. This is particularly true in SMEs, where non-compliance is prevalent. Two major concerns have been identified in this regard, which form the basis for our main conclusions on the effectiveness of enforcement:

Firstly, in light of the importance of enforcement for ensuring compliance, it is clearly problematic that the level of enforcement across Member States varies to an alarming extent. In fact, the total number of workers per inspector varies from 5,677 in Denmark to 73,505 in Italy in 2012. Number of inspections per 100,000 workers varies from 51 in Lithuania to 2,482 in Bulgaria (2012), while the number of inspections performed by each labour inspector varies from 3 in Lithuania (next is Finland with 62 per inspector) to 286 in Spain.

Secondly, the number of inspections carried out per number of workers is generally insufficient. In Sweden, for example, which is not the Member State with most workers per inspector, nor the one with fewest inspections per 100,000 workers, employers are, on average, inspected once every 17.7 years.

This is further exacerbated by challenges stemming from a drop in resources allocated to labour inspectorates in many Member States. Some Member States have experienced a considerable decrease in the number of inspections per worker, while in other Member States the situation is the opposite. One important observation is that the respective increases or decreases of inspections per worker across Member States is not linked to previous levels of enforcement (e.g. number of inspections per 100,000 workers), and thus does not constitute a process of levelling out inspection frequencies across Member States. According to SLIC, inspectorates subject to budget cuts have, thus, not affected the number of inspectors/inspections carried out in all Member States, but they can have implications on salary levels and educational/training budgets. Notably, a majority of those Member States, which have managed to increase the number of inspections per worker from 2007 to 2012, have done so largely by increasing the number of inspections made by each inspector, i.e. by improving the effectiveness of national inspectorates.

Much evidence also points to the benefits associated with stressing the preventive and advisory role of inspectors. This is particularly true for SMEs because face-to-face interventions, discussions and negotiation allow them to internalise the rules of the OSH *acquis* and recognizes a need for action. However, to exploit this potential to its fullest entails training labour inspectors and providing them with sufficient information and knowledge to cope with emerging risks and new realities (EPSU, 2012).

5.5 Objective achievement (EQE7)

EQE7: To what extent are the Directives achieving their aims and what factors have particularly contributed to the achievement of the objectives?

The seventh effectiveness question posed in this evaluation reflects the essence of the effectiveness evaluation: The extent to which objectives have been reached. Therefore, the question calls for an assessment drawing on the findings presented in the previous sections on evaluation questions 1-6 and forming overall conclusions with regard to the effectiveness of the 24 Directives. In this section, we therefore seek to summarise the findings made so far and to further contextualise these and develop key conclusions on effectiveness.

5.5.1 Understanding of objectives

The first step in assessing the extent to which objectives have been achieved is to establish the nature of the objectives and what defines the desired end-situation that should be achieved. The evaluation approached this through establishing intervention logics for each of the 24 directives (as well as a generic intervention logic for the *acquis* as a whole). These intervention logics are described in the individual directive reports. This exercise showed that objectives in terms of the desired health and safety impacts are typically not very clearly stated in the directives – if at all.

It is obvious that, in general terms, the directives aim to improve the health and safety situation for workers across the EU. However, the more specific intended impacts, such as – for example – the kinds of occupational diseases to be prevented or reduced are often not identified. This means that, for many directives, there is no clear measuring stick against which to measure the progress towards achievement of objectives.

It must be recognised that this is also a reflection of the complex interrelations between exposures to various risks at the workplace and specific health and safety impacts – and between different OSH measures targeting various groups of workers, types of risk or sectors and their effects on levels of exposure. It is no easy task to define precisely what a directive aims to do. Nevertheless, it is still striking that the legal texts of the directives rarely offer much insight into the rationales behind the directives and their intended safety and health impacts.

The understanding of objectives is furthermore challenged by the situation that the OSH *acquis* contains a mixture of directives representing a goal and process-oriented approach and directives representing a prescriptive approach.

The evaluation has analysed objective achievement, looking at objectives at different key levels following the intervention logic structure:

- Objectives concerning specific requirements to be followed by employers – focusing in particular on the 'common processes and mechanisms', i.e. process-management actions to be taken (risk assessment, information, training, health surveillance, consultation).

- Objectives concerning impacts at the workplace occurring as a result of implementing the specific requirements.

- Objectives concerning the health and safety impacts occurring as a result of changes/impacts at the work place (i.e. reduced number of accidents or occupational disease).

5.5.2 Effectiveness – compliance and workplace impacts

Transposition

It is clear that a precondition for achieving objectives regarding compliance with specific requirements, as well as workplace impacts, is that the directives have been transposed into Member State legislation. The evaluation shows that, generally, the Directives have been correctly transposed – and there are only a few issues in this regard which have not been resolved and which still influence the level of implementation within the period covered by the evaluation (2007-2012). Derogations and transitional periods are not considered to have had a major impact on the implementation and effectiveness of the directives.

Compliance – implementation on the ground

The next step in the assessment of the impact of the directives is to consider whether establishments actually implement the requirements 'on the ground', and whether this leads to changes at the workplaces, which can help to reduce the exposure of workers to various OSH risks. In this regard, the evaluation has looked in particular at the common processes and mechanisms (CPMs) and the extent to which they are implemented.

Overall, the evaluation suggests that compliance with the CPMs is moderate to good across all MSs and all establishment sizes. However, there are differences between the CPMs and between Member States. Mapping quantitative compliance with each CPM individually across MSs and establishment sizes based on available data reveals that compliance with training of workers and health surveillance is moderate, while compliance with information for workers and preventive and protective services is good. Quantitative compliance with risk assessments is moderate to good and compliance with consultation of workers ranges from poor to moderate or good compliance, depending on the chosen method applied to analyse available data.

Information from various sources indicates that the presence of legal requirements is an important factor (but certainly not the only one) influencing the compliance behaviour of establishments. This suggests that, by requiring the introduction of such requirements in all MSs, the directives will have had an impact on compliance behaviour.

One important observation in relation to implementation of the CPMs is that some Member States already had similar legislation in place, prior to adoption of the Framework Directive. In particular, the goal-oriented approach was thus already enshrined in the legislative framework of some Member States, whereas others had to make considerable changes. This also means that the high level of objective achievement as regards compliance with CPMs cannot be ascribed to the directives alone.

A study from EU-OSHA (2013c) concluded that the extent to which goal-setting regulatory approaches, as opposed to prescriptive ones, are embedded in the MS's legislative system (i.e. its existing institutions, systems and structures) significantly influences both implementation and operational outcomes of OSH management (EU-OSHA, 2013c). The study suggests that '*regulatory systems with a longer tradition of process-based participatory OSH management which were, therefore, least challenged by the implementation of the Framework Directive are associated with greater levels of OSH management practice implementation.*' (EU-OSHA, 2013c).

The challenges faced by MSs with a primarily prescriptive regulatory system and non-participatory traditions depend in part on the MS's existing labour relations systems and in part on its level of

maturity. According to the European Risk Observatory, a challenge often faced by newer MSs, or MSs with recently reformed OSH systems, is that the role of workplace representation tends to be poorly developed or supported in relation to OSH management. In other words, highly developed MSs, incorporating the EU OSH *acquis* have been challenged by their basis around institutions, structures and processes in which the conceptualisation of OSH is substantially different. Also, factors such as the role of regulatory inspection, the resourcing of appropriate training and information provision for worker representatives and the presence of strong trade unions with an active engagement in health and safety issues is highlighted in the study (EU-OSHA, 2013c).

EU-level data on compliance is limited mainly to the ESENER survey, which was conducted in 2009 and data from the most recent survey conducted in 2013 has only been available to the evaluation to a limited extent. This means that it is not possible to assess changes in compliance over time in the evaluation period and hence, it is impossible to assess whether or not a particular effect has occurred during the evaluation period. We can say with reasonable certainty that the directives have had a positive impact on compliance with the CPMs, but whether this impact has been achieved during the implementation period or before is very uncertain. Precisely what happened after 2009 is also not clear from the existing data, although the available data from ESENER 2014 tends to confirm that levels of compliance have remained stable.

The evaluation shows that there are no clear differences between public and private establishments in relation to implementation of CPMs. However, when considering the size of establishment, SMEs and micro-establishments generally display lower levels of compliance with the CPMs, compared to large establishments. Thus, achieving the goal of implementing the CPMs has been achieved to a much greater extent in larger establishments than in SMEs.

The evaluation has pointed to some factors which are considered to have affected the level of goal achievement in relation to CPM implementation. These include, in particular:

- The Framework Directive in itself sets out the goal-oriented approach and the CPMs thus provide a clear structure and approach to be applied. This has been common practise in some MSs for many years, whereas others have had (and continue to have) a more traditional management system with prescriptive legislative approaches embedded in their regulatory regimes. Evidence from a variety of sources suggests that those MSs with regulatory systems with a longer tradition of goal-oriented and participatory OSH management tend to be associated with greater levels of OSH management practice implementation.

- An analysis of the interlinkage of the CPMs across directives, and thus their suitability to work in tandem and collectively increase the safety and health of workers, reveals that the collected OSH legislation is unnecessarily complex, in part due to a seemingly unstructured and unsystematic inclusion (or lack thereof) of CPMs into the individual directives. These problems are often transported into national legal frameworks, preventing a fully coherent and cohesive approach. This, in turn, has caused some confusion at the enterprise level, and particularly amongst SMEs, leading to misinterpretations of the provisions of legislation or directives.

- The OSH *acquis* in itself represents a mix of the goal-oriented approach and the prescriptive approach, as mirrored in particular in some of the individual Directives. While not incoherent from a legal point of view, these two approaches are conceptually inconsistent and can work against each other in practise. On the one hand, the goal-oriented approach seeks to encourage employers to identify the most suitable means to arrive at a certain end, whereas

the prescriptive approach specifies the means to be applied with the intention of achieving the same outcome.

- Enforcement, and particularly the combined role of inspectors enforcing the legislation and providing guidance on implementation, is generally considered to have a significant influence on compliance with the OSH *acquis*. This is particularly true in SMEs, within which a lack of recognition of non-compliance is prevalent. Seen in this light, it is clearly problematic that the level of enforcement across MSs varies to a very high extent.

- Strong evidence suggests that employee representation has noticeable influence on the proportion of establishments performing risk assessments, and an even more pronounced impact on other key requirements. Data suggests that risk assessments performed by external service providers reduce the need to maintain in-house expertise and more often result in a lack of subsequent anchoring of OSH principles in the establishment in comparison to risk assessments performed by internal staff. This is likely to impact on the position of health and safety generally within an organisation's business and priorities.

Improvements in working conditions

The next question in the impact chain is to consider whether compliance with directive requirements has led to improvements in working conditions, as could be expected. There is very limited information on this particular issue and the data is not consistent. Therefore, a way to approach this subject is to go one step ahead in the chain and consider whether exposure to various risk factors has decreased during the period. A decrease in exposure would be a good indicator that working conditions have improved as a result of compliance with the requirements. This is considered in the section below.

5.5.3 Effectiveness – health and safety impacts

Further in the impact chain, the question is whether the high level of compliance with the CPM requirements is translated into less exposure to risk factors and hence, fewer accidents at work and less work-related disease.

The data on work-related accidents and diseases shows in general that the incidence of accidents has decreased during the evaluation period, whereas the exposure to risks related to various occupational diseases has remained constant or increased, except for a few specific cases.

It is likely that the decrease in incidence of accidents at work can to some extent be ascribed to the implementation of the directives, as this can be linked to the level of compliance with the CPMs. Increasing safety and reducing accidents is a key element in any risk assessment.

Subjective impressions from surveys of the workforce seem to suggest that, in general, there has been a reduction in the proportion of workers who consider that their health and safety is at risk from their work and who feel that work has affected their health.

Quantitative material is less readily obtained and that which is available is patchy, incomplete, and not readily related to the OSH directive *acquis*. However, it is a key concern that exposure to risks related to various occupational diseases have typically either remained stable or increased during the implementation period. The two most prominent work-related diseases – stress and MSDs – have both seen substantial increases in exposure to related risk factors (although with stress, it is

perhaps understandable given that there are no specific OSH provisions which address psychosocial risks). MSDs, however, do have two specific directives which address two major hazards contributing to MSDs.

A major problem in assessing the impact of the directives on the health of workers is the inadequacy of the data systems available for making any such assessment. Even with the example of MSDs given above, it is not possible to establish the extent to which recorded MSDs were caused by risk factors encompassed by the directives (and therefore the extent to which adequate implementation of their provisions should have prevented them). Against this background, the limited data sources available generally suggest that the directives are not effective at targeting occupational diseases.

We have concluded that compliance with CPMs is generally good. This clearly leads to a key question of why we only see a limited effect in terms of combatting occupational illness. Based on the existing data, it is not possible to provide exhaustive answers to this question, but some key factors emerge from the findings in this evaluation:

- The compliance data might be misleading. There are some published studies which have suggested that the quality of compliance is often poor, so that even amongst those organisations who report compliance, the extent of effective compliance is likely to be less.

- As part of this, risk assessment performance occasionally diverts attention away from managing identified risks, particularly in SMEs. This showcases the impact of non-recognition, since SMEs tend to believe that, having followed legislative requirements and conducted a risk assessment, they are in compliance. Contrarily, risk assessments in SMEs are often of insufficient quality to ensure adequate risk management and, even in larger organisations, the risk management measures adopted may not be the most appropriate. Evidence from OSH practitioners, supported by material examined during this study (such as NIRs), suggests that the quickest, easiest, cheapest solution might be that adopted. As a specific example, a number of NIRs report that, in response to identified manual handling risks, organisations frequently resort to manual handling training regardless of whether it is the most appropriate.

- There seems to be a general view that the Framework Directive, with its orientation towards a goal-oriented approach to OSH (rather than prescriptive) successfully lays out a suitable template for managing workplace risks – but not in itself enough to ensure that all risks are dealt with sufficiently. One criticism of the goal-setting approach is that the absence of prescriptive intermediate goals makes compliance harder to verify and, in the absence of that verification procedure, harder to enforce (especially in OSH cultures with a history of the prescriptive approach).

- Even with a high level of good quality compliance with OSH requirements, such a regime will be ineffective if the wrong provisions are adopted, either through initial misconceptions in formulating the provisions of a Directive or because the provisions originally formulated are no longer relevant to the hazards present in the workplace. It would be wrong to make sweeping generalisations here, as the situation varies between Directives and the individual directive reports should be seen for more details on any particular subject. Thus, some directives do appear to still address the relevant risks correctly and do contain provisions which, if correctly and competently implemented, should result in suitable risk management. Directives such as those relating to noise and vibration fall into this category. Although those relating to MSDs appear to fall into the second category, the reality is more complicated. The hazards

addressed by the Manual Handling Directive, for example, still remain relevant – it is hazards not addressed by this directive, which create further risks of MSDs that are omitted. Similarly, the hazards arising from working for prolonged periods with DSE still remain, it is just that the nature of the DSE encompassed by the prescriptive element which have lost relevance.

- A further area where the inadequacies of the current OSH *acquis* can be identified relates to the somewhat piecemeal manner in which vulnerable groups are covered. Some such groups: pregnant/breastfeeding workers, young people, temporary workers, have specific directives. However, each of these can be paralleled by another group who do not have specific protection: the susceptibilities of the fertility of male workers, older workers, and migrant workers have all been recognised but are, in effect, only addressed by the general provisions of the Framework Directive. Older workers perhaps warrant particular mention, because concerns about the implications of an aging workforce pervaded many of the discussions and interviews carried out as part of the evaluation, as well as featuring in the research literature.

- For some possibly vulnerable groups, the protection is even less since they are excluded from the provisions of the OSH *acquis*, either entirely or partly. Groups excluded in some way include the self-employed and home workers. The latter present particular challenges because, for example, developments in DSE and related technologies mean that DSE Users might perform their work at home, or at other remote locations. Then there are those whose work is within the home setting, such as domestic workers. In such cases, protection could almost be regarded as a 'Member State lottery' in that the extent to which you are offered protection, if at all, depends on which MS you work in, as some MSs have already exercised their right to make more detailed provisions and extend OSH protection to such groups.

All of these factors present challenges in terms of evaluating the effectiveness of the existing provisions and of ensuring the ongoing relevance of the OSH *acquis* to the hazards and consequent risks faced by the EU workforce in the future.

5.5.4 Effectiveness of current data and systems enabling monitoring of the implementation of the Directives

As also described in the Commission's better regulation guidelines, part of effective regulation is monitoring to generate evidence on activities and impacts over time in a continuous and systematic way. The guidelines, among other things, state that the monitoring system should provide time series data, which is more reliable in explaining behaviour than one-off data collection exercises.

It is observed that the directives, apart from most of them referring to the five-yearly reporting requirement, make little or no reference as to how they will be monitored. As shown in the analysis of EQE1-6, there are some important sources of data at the EU level, which do enable some monitoring of how the directives have been implemented. ESENER, ESAW and EWCS do provide valuable input, but in terms of time-series based data suitable for monitoring of each individual directive, these data sources certainly also have serious flaws. To mention the most important of these, the data from ESENER and EWCS are not annual (and hence not proper time-series data) and all three data sources do not enable data drilling to the necessary detail required to monitor individual directives.

Most of the directives are encompassed by the general requirement to report to the Commission every five years about their implementation ([12]). This evaluation report should be seen in conjunction with this procedure, as it builds on the National Implementation Reports (NIRs) submitted by the Member States by December 2013. Having a report every five years from the Member States on the implementation of all these Directives hence also marks a unique opportunity for collecting data and filling gaps where sources such as those mentioned above do not give sufficient insight. Our experience from working with the data in the NIRs is that they do provide some valuable information, but the quality unfortunately varies between Directives and between Member States. This is partly because the respondents in the Member States have taken different interests in answering the questions posed in the questionnaire devised by the Commission ([13]). However, it is our assessment that it also has a lot to do with the fact that the questions are often phrased in an open and ambiguous manner, and can be (and have been) understood in many different ways. For this reason, the responses from the Member States are often not comparable and reflect different interpretations of the question posed. This reduces the value of the NIRs as a data source to an important extent.

On this basis, it is assessed that, in order to make the directives 'fit for purpose', there is a need to better define and execute the monitoring plan for the directives. This includes considering the three key questions also posed in the better regulation guidelines: 1) What evidence needs to be collected? 2) When and how should evidence be collected? 3) Who will collect the evidence and from whom?

([12]) Ref. Framework Directive (89/391/EEC), Article 17a

([13]) Ref. Commission Decision C(2011) 9200 final of 20.12.2011

6 Assessment of costs, benefits and broader effects

EQE5: What benefits (e.g. reduction in working days lost due to work-related accidents or health problems; reduction in the number or severity of work-related accidents or health problems) and costs arise for society and employers (including compliance costs and administrative burdens) as a result of fulfilling the requirements of the Directives, such as carrying out risk assessment, risk management measures, providing training and information, consultation of workers, protective and preventive services and health surveillance?

EQE6: To what extent do the Directives generate broader impacts (including side effects) in society and the economy?

This chapter contributes with an assessment of how the health and safety effects translate into economic benefits for the enterprises, workers and society and broader effects beyond health and safety effects, such as increased awareness, quality of products and innovation. This implies that the evaluation methodology differs from that applied for the other effectiveness questions, because we have chosen to present the broader effects, ascertained from EQE6, in relation to the findings on benefits resulting from EQE5, as these questions are closely related.

Efforts to improve and ensure safe working conditions, however, come at a cost. The analysis therefore also contributes with a better understanding of how and to what extent the implementation of the 24 Directives generates compliance costs and administrative burdens for enterprises and governments.

6.1 Compliance costs

The aim of the analysis is to identify what costs arise as a result of implementing the Directives. Firstly, we identify and categorise obligations that are likely to generate compliance costs based on a review of the Directives in accordance with the Standard Cost Model (SCM). In SCM terminology, administrative costs stem from information obligations (IOs), whereas substantive compliance costs stem from other costs, such as investment costs (e.g. in new equipment and other health and safety efforts). Next, we present the findings from the analysis of the magnitude of compliance cost based on data from interviews with national and EU stakeholders and the literature review, and incorporate results from the evaluation of implementation and coherence.

Overall, the review of the Directives shows that all Directives contains IOs generating administrative costs and other obligations generating substantive compliance. The vast majority of costs fall on enterprises. Moreover, we categorised the majority of CPMs a IOs, as shown in Table 6-1. The table shows that all obligations are recurrent, but that the exact frequency is not specified in the Directives. In many cases, the frequency will depend on the practices in the enterprises. For instance, the Framework Directive states that training of workers must be conducted on recruitment, in the event of a transfer or a change of job, in the event of the introduction of new work equipment or a change in equipment, and in the event of the introduction of any new technology. Moreover, as shown in the table, it is not specified how enterprises should carry out the activities. Thus, findings clearly show that compliance costs, to a large extent, will be determined by the enterprises' operations, working environment and mode of implementation.

While it is not possible to assess if any of the CPMs are more costly than the other, it is likely that the General Directives, especially the Framework Directive, and the CPMs generate higher costs (from a societal perspective), because these obligations target all enterprises. However, this might not be the case from the enterprise perspective. Some obligations might be rather costly for the individual enterprise, but because the obligation only applies to a small sector or industry, the total cost from the societal perspective can be quite small and vice versa.

Table 6-1 Detailed information on the obligations stemming from the CPMs (as stated in the Framework Directive)

CPMs	Type of obligation	Actions required (Art.no)	Frequency	Main cost parameters
Risk assessment	IO	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 (6). Be in possession of an assessment of the risks to safety and health at work, including those facing groups of workers exposed to particular risks (9)	Recurrent (frequency not specified)	Labour cost
Consultation of workers	IO	Employers shall consult workers and/ or their representatives and allow them to take part in discussions on all questions relating to safety and health at work (11, 6).	Recurrent (frequency not specified)	Labour cost
Information for workers	IO	The employer shall take appropriate measures so that workers and/or their representatives all the necessary information concerning the safety and health risks and protective and preventive measures and activities in respect of both the undertaking and/ or establishment in general and each type of workstation and/ or job (10)	Recurrent (frequency not specified)	Labour cost
Training of workers	IO	The employer shall ensure that each worker receives adequate safety and health training, in particular in the form of information and instructions specific to his workstation or job (14).	Recurrent (frequency not specified)	Labour cost
Health surveillance	IO	To ensure that workers receive health surveillance appropriate to the health and safety risks they incur at work, measures shall be introduced in accordance with	Recurrent (frequency not specified)	Labour cost

		national law and/ or practices (14).		
Internal/ external preventive and protective services	Substantive	The employer shall designate one or more workers to carry out activities related to the protection and prevention of occupational risks for the undertaking and/ or establishment (Art.7). Designated workers shall be allowed adequate time to enable them to fulfil their obligations arising from this Directive.	Recurrent (frequency not specified)	Labour cost or outsourcing cost (the employer may enlist competent external services or persons).

We further divided the substantive compliance obligations into three main groups:

- Obligations that require enterprises to change/alter the way their work is organised (work organisation)
- Obligations that require enterprises to invest in safety equipment (safety equipment)
- Obligations that require enterprises to change physical working aspects, like equipment or workstations (physical aspects of work).

These categories represent different mechanisms that might impose substantive compliance costs for enterprises. Based on the analysis of the different types of obligations, it is not possible to estimate the actual monetary costs or estimate the time used. Typically, such an assessment requires that the data is collected at the enterprise level. In this evaluation, we did not interview enterprises, thus we had to rely on data from interviews with EU and national stakeholders. These stakeholders, however, were not able to provide a quantitative assessment, and most of the stakeholders did not distinguish between administrative or substantive compliance costs. Likewise, we also encountered challenges regarding the literature review, which showed that our current knowledge is limited and fragmented. Below we present the main findings from these sources and input from the analyses of the implementation in Member States and coherence.

Administrative burdens

Results from the OECD (2014) study from Greece show that a high proportion (70-90 %) of the administrative cost are business as usual, and that these costs would exist without legislation. This suggests that the actual administrative burden is rather low. However, these findings are only related to one Member States, and CEPS (2013) have criticised the methodology, because it is unclear to what extent enterprises differentiate between what is business-as-usual and what is not.

Compliance

The SCMs have received a fair amount of criticism, especially from stakeholders representing worker organisations, and that researchers point to several methodological weaknesses. Costing models, such as the SCM, typically measure the average costs in the 'normal efficient business' and usually assumes that all enterprises are in compliance with the legislation (CEPS, 2013; Vogel, 2014). However, our analysis shows that such assumptions are likely to be very problematic in relation to OSH activities. The findings from this evaluation strongly suggest that compliance and compliance costs are likely to vary considerably between enterprises, because the Directives seldom stipulate how or how often obligations should be fulfilled. Moreover, the evaluation reveals that substantial differences exist in the way the OSH Directives have been implemented in the MSs in terms of level of detail and stringency.

Overlaps and inconsistencies

The assessment of coherence shows the legal articulation between OSH Directives through in-built mechanisms (e.g. specific scope, without prejudice clauses, exemptions, lex specialis principle) has, in most cases, contributed towards reducing overlaps and contradictions between provisions. Furthermore, among those overlaps identified, the majority do not, legally, result in double regulation (e.g. double reporting requirements). However, the analysis of the interlinkage of the CPMs across Directives reveals that the collected OSH legislation is unnecessarily complex. This, in turn, has caused some confusion at enterprise level, and particularly amongst SMEs, leading to misinterpretations of the provisions of legislation or Directives and, according to some OSH experts, some unnecessary duplication of effort. Thus, whilst the overlaps might not legally result in double regulation, practical implications might results in higher compliance costs.

SMEs

Whilst SMEs are less likely to be compliant, data form the HSE (2003) in the UK shows that SMEs are also likely to experience higher compliance costs compared to other enterprises. There might be many factors that explain why SMEs experience both higher costs and lower compliance at the same time. Firstly, the SMEs often lack often lack specific criteria that can provide them with reassurance of their compliance that might lead to over or under compliance. Secondly, SMEs may not know where to look for guidance, including free support from local and national authorities. Thirdly, SMEs more often rely on external experts for help and often find it difficult to assess the quality of this help (e.g. external consultants might generate more costs, because SMEs are not aware of what is actually required by the law and what is not). In the UK, the third sector is one of the fastest growing sectors and its relevance in the future is therefore likely to increase (HSE, 2003).

6.2 Benefits, broader effects and side effects

Disentangling the effect of one Directive from another is challenging, as the Directives sometimes overlap or supplement each other, and because legislation in other fields might also play a role. Thus, it is very difficult, if not impossible, to quantify the effect of one single Directive. We have therefore addressed the question regarding benefits and broader effects from the level of the *acquis*. This means that we do not seek to attribute benefits to specific Directives or specific CPMs.

The analysis draws on findings from the assessment of effectiveness supplement with findings from a literature review. While we primarily searched for benefit studies conducted at the EU level, most studies were conducted at the national level. Moreover, it is important to note that the studies do not present estimates of avoided costs (rather the total costs of work related accidents and ill health).

These data shows that work related accidents and ill health generates substantial costs to society. Data from seven Member States found that the costs range between 1-3 % of GDP, which underlines the magnitude of costs at societal level ([14]). Moreover, data from the HSE ([15]) in the UK, quality of life losses account for 57 % of total costs of workplace injury and ill health. Productivity losses (indirect costs) accounts for 31 % of total costs followed by health and rehabilitation costs (6 %), administrative costs (1 %) and compensation (insurance costs) (4 %). Moreover, these cost

([14]) https://osha.europa.eu/en/seminars/costs-of-poor-osh-towards-an-eu-28-estimate
([15]) http://www.hse.gov.uk/statistics/pdf/cost-to-britain.pdf

primarily fall on the workers (57 % of the total costs), whilst 23 % fall on government and 20 % on the enterprises. Quality of life losses account for almost all costs borne by the worker, whilst the majority of costs for employers arise from productivity losses. Lost income, in terms of state benefits paid and lost tax receipts, accounts for around three-quarters of government costs, with the majority of the remainder attributed to health and rehabilitation costs.

The data from the literature and interviews shows that SMEs might particularly benefit from health and safety effects, because a serious incident can lead to closure of a business due to the direct costs of dealing with the incident or the loss of contracts/costumers. Thus, it is usually more difficult for SMEs to recover from a serious accident, because key workers cannot easily be replaced and because short-term interruptions to business can lead to dissatisfied clients/breaches of contract (Haslam, 2010; European Parliament, 2010).

Work-related accidents

The effectiveness evaluation shows that the incidence of accidents has decreased during the evaluation period. Although there are many variables involved, it appears likely that this decrease, at least to some extent, can be ascribed to the implementation of the Directives. At the same time, estimates from the HSE in UK have shown that the societal costs of work-related accidents and ill health have fallen by 14 % from 2006/07 to 2012/13. Thus, it is likely that the reductions in work-related accidents also have translated into economic benefits for workers, enterprises and society. Considering that HSE in the UK estimate that the cost of one fatal accident to be 2,181,200 Euros and that fatal accidents in EU decreased from 3,616 to 2,770 in the period 2007-2012 (reduction of 838 accidents), the economic benefits might have been considerable.

Work-related diseases and ill health

Conclusions on the effectiveness of occupational diseases and ill-health is less readily drawn due to a lack of reliable data. However, the effectiveness evaluation shows that apparent exposures to risks related to various occupational diseases have typically either remained stable or increased during the implementation period. The two most prominent work-related diseases, stress and MSDs, have both seen substantial increases in exposure to related risk factors. Today, the costs of disability following work-related ill health stems primarily from MSDs and mental health problems. For instance, in the Netherlands, Koningsveld (2003) estimated (in 2001) that these diagnoses are responsible for 83 % of the cost of work-related ill health: MSDs (43 %) and psychosocial disease (40 %). Thus, it is unlikely that the *acquis* has achieved its potential for generating economic benefits.

Profitability from the enterprise perspective

While there is a paucity of cost benefit studies focusing on OSH legislation, we identified several studies that assess the profitability of OSH interventions at the enterprise level. Although it is too simplistic to conclude that OSH always will be profitable, we did identify a number of case studies showing that OSH can indeed be profitable for enterprises (including SMEs). The review shows that ergonomic interventions were the most common type of intervention in the literature, and the available reviews found that there is strongest evidence for the profitability of ergonomic interventions and disability management programmes. Possible explanations of the profitability of ergonomic interventions might be related to the low costs of the interventions (training, simple equipment etc.), and the high relevance of ergonomics, because MSDs are a major cause of absenteeism and reduced productivity. Moreover, wide-ranging interventions appear to be more profitable than interventions targeting a particular issue related to a specific sector or type of enterprise. Finally, interventions that mainly concern training and organisational change appear to

be more profitable compared to interventions based on technical changes, such as the installation of dust ventilation systems. Moreover, participatory interventions, which include workers, appear to be most profitable (Tompa, 2009; EU-OSHA, 2014f).

Broader effects and side effects

The analysis also points to several broader societal benefits. While there are few empirical studies on the subject, data from the interviews shows that stakeholders primarily highlight increased OSH awareness. Moreover, the analysis of the national transposition of the OSH *acquis* clearly shows that the Directives have influenced national agendas and the awareness of OSH in enterprises. The evidence for innovation, quality of products and competitiveness is much weaker, but the available literature also points to a link between competitiveness and accidents. No conclusions, however, can be drawn in this regard. Finally, the evaluation also points to negative side effects. Most notably, stakeholders expressed concern that inappropriate emphasis on risk assessments might serve as an obstacle for risk management and preventive measures.

7 Assessment of coherence

This chapter presents the evaluation of coherence, looking at the two evaluation questions on coherence, where the first questions deals with internal coherence between the OSH directives and the second one deals with external coherence.

7.1 Coherence and complementarity between the OSH directives (EQC1)

EQC1: What, if any, inconsistencies, overlaps, or synergies can be identified across and between the Directives (for example, any positive interactions improving health and safety outcomes, or negative impact on the burdens of regulation)?

This section provides an overview of findings related to the 'internal' coherence of the OSH *acquis*, its internal logic and legal structure. It focuses first on inconsistencies, overlaps or synergies per Common Processes and Mechanisms on a pan-directive level and considers other key requirements for which some issues of internal coherence have been identified, namely limit values, protection of workers with particular sensitive risks and inspection and enforcement measures.

Our preliminary findings were supplemented by additional analysis of the legal articulation between OSH directives through in-built mechanisms (e.g. specific scope, without prejudice clause, exemptions, *lex specialis* principle, definitions). While mapping potential interfaces, overlaps and inconsistencies, we thus complemented our findings with information from the interviews of EU and national stakeholders and from the NIRs.

This section is divided per CPM. For each CPM, the evaluation is presented per directive or group of directives, as follows:

- The Framework Directive
- Workplace, Work Equipment, OSH signs, Use of PPE and ATEX Directives
- Physical agents (Vibrations, Noise, EMF and AOR Directives)
- Chemical agents (Asbestos, Chemical Agents and Carcinogens or Mutagens Directives)
- Biological Agents Directive
- Sector specific (Construction, Drilling, Fishing vessels, Medical treatment on board vessels, Mines and Quarries Directives)
- Workload and ergonomic aspects (DSE Directive and Manual Handling Directive)

› Vulnerable workers (Pregnant/breastfeeding workers, Temporary Workers, Young People Directives).

The grouping of the directives facilitates the identification of potential overlaps and inconsistencies between directives regulating similar sources of risks. Please note, however, that we shall only highlight key findings, wherefore not all groups of Directives will be highlighted under each CPM.

7.1.1 CPM 1: Conducting a risk assessment

The obligation to carry out a risk assessment is reflected in different ways across the directives: only a few directives do not set risk assessment procedures. Out of those which include an obligation to carry out a risk assessment, the majority (15) establishes detailed risk assessment procedures. Eight directives provide for an obligation to be in possession of an assessment. Out of the 24 directives which provide for some form of risk assessment procedures, all except one refers to risk management measures, undefined or detailed.

Framework Directive

The requirement to conduct a risk assessment is set as a general, '*a minima*' principle in the Framework Directive, while most directives regulating specific risks and requesting employers to carry out a risk assessment define in detail the elements/risks that must be covered by this assessment. However, in some cases, these detailed provisions are not directly linked to the specific scope and could apply to all workers regardless of the risks or the sector. Therefore, these requirements could bring an added value to the general principles set in the Framework Directive. The following risk assessment and derived risk management measures could be streamlined under the Framework Directive:

› To update or periodically repeat the risk assessment;
› To record the risk assessment on a suitable medium and to preserve in a suitable form the risk assessment to permit consultation at a later stage;
› To take particular attention, when carrying out the risk assessment, to appropriate information obtained from health surveillance, including published information, as far as possible;
› To preserve, in a suitable, traceable form, the protection and prevention measures derived from the risk assessment;
› To review the risk assessment based on the outcome of health surveillance.

Workplaces, equipment, OSH signs, PPE, ATEX

Pursuant to the Work Equipment Directive, in selecting work equipment, the employer must pay attention to the specific working conditions and characteristics and to the hazards present in the undertaking or establishment, in particular at the workplace, for the safety and health of the workers, and any additional hazards posed by the use of the work equipment in question. Several other directives include references to work equipment in their risk assessments.

Physical agents

The Vibration Directive, the Noise Directive and the AOR Directive require that employers must take into account information that is provided by the manufacturers of work equipment in their risk assessment, in accordance with the relevant EU directives. Such requirements could, however, apply to all work equipment and not just to those that are sources of noise, vibration and AOR.

The risk assessment procedures are very similar across the physical agents directives, with some differences linked to the specificities of each directive. However, certain risk assessment provisions set under some of these directives could apply to all physical agents:

- The risk assessment must give particular attention to the extension of exposure beyond normal working hours under the employer's responsibility.
- The risk assessment must be followed by measures related to the limitation of the duration and intensity of the exposure.
- As a follow-up measure in case of exceedance of limit values, appropriate work schedules with adequate rest periods must be set up.

Chemical agents

The Carcinogens or Mutagens Directive contain one provision, which requires employers to supply responsible authorities, at their request, with the information used for making the risk assessment. This provision is not tailored to the specific hazards and risks derived from carcinogens or mutagens, and could apply to all chemical agents.

The provisions of the Carcinogens or Mutagens Directive on risk assessment state that the assessment shall be renewed regularly and in any event when any change occurs in the conditions which may affect workers' exposure to carcinogens or mutagens. They also require that the employer shall supply the authorities responsible with the information used for making the assessment upon request. They finally require employers to give particular attention to any effects concerning the health or safety of workers at particular risk. These provisions should also apply in case of workers exposed to asbestos.

The three directives relating to chemicals follow different approaches with regard to the derived risk-management measures. Even so, the following risk management measures set under the Carcinogens or Mutagens Directive and/or Asbestos Directive could apply to all chemical agents:

- The obligation to supply the authorities responsible with the information used for making the assessment at their request.
- Measures related to the demarcation of risk areas and use of adequate warning and safety signs for relevant hazardous chemical agents. This would involve the development of selection criteria as to which hazardous chemical agents should be covered by this management measure.
- Substitution requirements.

Biological agents

Although chemical agents and biological agents entail very different hazards and risks, certain risk assessment requirements under the Chemical Agents Directive could also apply to the risk assessment of biological agents:

- The effect of preventive measures taken or to be taken must be included in the risk assessment procedure,
- The employer shall obtain additional information which is needed for the risk assessment from the supplier or from other readily available sources, considering that certain biological agents, such as bacteria, can be sold to laboratories for research purposes,
- The risk assessment must take into account conclusions to be drawn from any health surveillance already undertaken,

- Certain activities within the undertaking or establishment, such as maintenance, in respect of which it is foreseeable that there is a potential for significant exposure, or which may result in deleterious effects to safety and health for other reasons, even after all technical measures have been taken, shall be included in the risk assessment,
- The risk assessment may include a justification by the employer that the nature and extent of the risks make a further detailed risk assessment unnecessary.

7.1.2 CPM2: Preventive and protective services

The analysis has not revealed any coherence issues, nor have stakeholders raised concerns in relation to this CPM. Only one instance of possible streamlining has been identified in relation to the Framework Directive and the Temporary Workers Directive.

According to the Temporary Workers Directive, Member States must ensure that workers, services or persons designated to carry out preventive and protective activities are informed of the assignment of temporary workers to the extent necessary to adequately carry out their protection and prevention activities for all the workers. This requirement could apply to all new workers and workers who need specific attention (e.g. young workers and pregnant/breastfeeding workers) due to the risks they encounter.

7.1.3 CPM3: Information to workers

Framework Directive

The following provisions on information to workers under individual directives could be streamlined under the Framework Directive:

- To inform all workers concerned in a comprehensible manner,
- To inform all workers on the outcome/results of the risk assessment, including an explanation of their significance and potential risks, on the circumstances in which workers are entitled to health surveillance, on safe working practices, in cases of abnormal situations, and before they take up an activity,
- To inform workers about any significant findings from the health surveillance, taking into account any medical confidentiality,
- To inform workers before they take up activity.

Workplaces, Work Equipment, OSH signs, Use of PPE, ATEX

The ATEX Directive is the only individual directive that does not include a specific requirement in relation to information for workers. However, both directives related to the mineral-extracting industries require that information is provided to workers, inter alia, on the measures related to explosive atmospheres.

Physical agents

In some instances, requirements that could be applicable to all physical agents are not included in all physical-agents directives, as follows:

- Only the Noise Directive includes a requirement to provide information relating to ‘the nature of the risks’.
- Only the Noise and the AOR Directives include a requirement on information to workers on the proper/correct use of PPE.

› Finally, only the EMF Directive sets a specific information requirement concerning workers at particular risk.

Chemical agents

Some provisions on information in the Carcinogens or Mutagens Directive and the Asbestos Directive could also apply to all chemical agents under the Chemical Agents Directive since they are not tailored to the specific hazards and risks derived from carcinogens, mutagens and asbestos:

› Access for workers and/or any workers' representatives to anonymous collective information,
› Employer obligation to keep an up-to-date list of the workers engaged in the activities posing an occupational risk and to ensure access rights to the list (for the doctor and/or competent authority/persons and the exposed workers themselves),
› Details concerning information relevant to the use of PPE.

Biological agents

Several physical agent directives contain an employer obligation to inform on how to detect health effects of exposure and how to report them. Since there are adverse health effects of exposure to biological agents, such information obligation could also apply for biological agents.

7.1.4 CPM4: Training of workers

Framework Directive

The following provision on training of workers under individual directives could be streamlined under the Framework Directive:

› A requirement for the employer to organise demonstrations;
› Training instructions must be understandable/comprehensible to the workers concerned;
› Training on safe working practices;
› Specific training to workers at particular risk;
› Training on special circumstances and what to do in that case.

Workplaces, Work Equipment, OSH signs, Use of PPE, ATEX

The Use of PPE Directive sets a requirement to use instructions and, if appropriate, specific demonstrations, in the wearing of PPE, while several other individual directives include specific training of workers related to the correct use of PPE. Such duplication could be seen as overlaps, since training of workers under the PPE Directive should be sufficient to cover all kinds of PPE used in different activities and linked with a variety of risks. We therefore suggest replacing the training provisions on PPE in different individual directives with one separate, distinct provision under the Use of PPE Directive.

The Work Equipment Directive sets training requirements, but other directives also include requirements on training of workers linked to work equipment. The mineral-extracting industries Directives define written instructions specifying rules to ensure the safety and health of workers and the safe use of equipment (including emergency equipment) as a minimum safety and health requirement for every workplace within their scope. Multiple references to training in these four directives relating to work equipment could be seen as overlaps.

Chemical agents

Some provisions on training from the Carcinogens or Mutagens Directive and the Asbestos Directive could also apply to all chemical agents under the Chemical Agents Directive as they are not tailored to the specific hazards and risks derived from carcinogens, mutagens or asbestos. Examples include:

- Hygiene requirements are a part of the required training in the Carcinogens or Mutagens Directive only,
- Finally, while health surveillance is of equal importance in relation to all chemical agents, only the Asbestos Directive includes the requirement to provide training on medical surveillance requirements.

7.1.5 CPM 5: Health surveillance

Framework Directive

Some individual directives set general health surveillance provisions that could potentially bring an added value to the general principle of health surveillance under the Framework Directive:

- To ensure that medical examinations or surveillance must be made available during hours chosen by the worker;
- To ensure that the doctor, the occupational health professional or the medical authority responsible for the health surveillance, has access to the results of the risk assessment where such results may be relevant to the health surveillance;
- To ensure that the doctor or the authority responsible for the health surveillance must be familiar with the exposure conditions or circumstances of each worker;
- To take into account advice from the people/authority responsible for health surveillance in implementing risk management risks including assigning alternative work;
- To ensure that result of health surveillance are kept under health records.

Physical agents

All physical agent directives set requirements on health surveillance that are almost similar. Yet, the following exceptions could apply to all physical agents:

- Health surveillance must take into account the application of risk management measures;
- Workers must be informed on the result of health surveillance which relate to them personally;
- Employers must be informed of any significant findings from the health surveillance, taking into account any medical confidentiality;
- Obligation to review the risk assessment based on the findings from health surveillance;
- Employer's obligation to take account of advice from health surveillance bodies.

Chemical agents

All three directives related to chemical agents set health surveillance requirements. However, the following heath requirement could apply to all chemical agents:

- Measure requiring that the doctor or the authority responsible for the health surveillance must be familiar with the exposure conditions or circumstances of each worker and the possibility to review the results of the health surveillance, upon request of the worker concerned or the employer.

The health surveillance requirements under the Asbestos Directive are more stringent than the ones under the Carcinogens or Mutagens Directive. Such difference is not justified by the specific hazards of asbestos which is classified as a carcinogen and the following provisions of the Asbestos Directive could apply to all workers exposed to carcinogens or mutagens:

- Mandatory health surveillance prior to exposure;
- A new assessment must be available at least once every three years for as long as exposure continues;
- The person responsible for medical surveillance may indicate that medical surveillance must continue after the end of exposure for as long as they consider it necessary to safeguard the health of the person concerned.

7.1.6 CPM6: Consultation of workers

The provisions on consultation of workers across directives do not give rise to any coherence issues.

7.1.7 Other key requirements

Limit values

None of the physical agent directives contain the same requirements concerning the procedure for adoption of limit values. A harmonisation of the procedures for adoption of limit values under the physical agent directives should be considered.

Workers at particular sensitive risks

The Workplace Directive, the Construction Directive, the two Directives on mineral extracting industries and the EMF Directive contain some measures on pregnant/breastfeeding workers. In order to ensure better clarity and to avoid that provisions on pregnant/breastfeeding workers are spread across different directives, the streamlining of these provisions under the Pregnant/-breastfeeding workers Directive could be considered (or alternatively under the Framework Directive, if the vulnerable workers directives were incorporated into the Framework Directive).

Inspection and enforcement measures

Unlike the Framework Directive, several individual directives contain inspection and enforcement requirements. Examples include:

- Member States shall provide for adequate penalties in the event of infringement of transposing legislation;
- Member States must introduce in their national legal systems such measures as are necessary to enable all workers, who themselves are wronged by failure to comply with the obligations arising from this directive, to pursue their claims by judicial process (and/or, in accordance with national laws and/or practices) by recourse to other competent authorities.

Such provisions should be streamlined under the Framework Directive.

Both the Work Equipment Directive and the Construction Directive set inspection requirements for work equipment. In the absence of a ‘without prejudice’ clause, this leads to an overlap as far as the work equipment covered by the Work Equipment Directive is concerned.

7.2 Coherence between the OSH directives and other EU measures and/or policies and international instruments (EQC2)

EQC2: How is the interrelation of the Directives with other measures and/or policies at European level also covering aspects related to health and safety at work, such as EU legislation in other policy areas (e.g. legislation: REACH, Cosmetics Directive, Machinery Directive, policy: Road Transport Safety, Public Health, Environment Protection), European Social Partners Agreements or ILO Conventions?

This section presents the findings related to the 'external' coherence of the OSH *acquis*; i.e. the interrelation of OSH directives with other measures and/or policy measures also covering aspects related to health and safety at work, both at European and international levels.

The methodology followed for EQC2 is similar to the methodology followed under EQC1. However, in addition to mapping overlaps and inconsistencies, we have also mapped interfaces and gaps.

Following the same approach as EQC1 while mapping potential interfaces, overlaps and inconsistencies, we complemented our findings with information from the interviews of EU and national stakeholders. Results of the interviews, on the one hand, complemented the identification of non-OSH EU legal acts and, on the other hand, provided additional information on the evaluation of coherence between OSH and non-OSH EU legislation. As for sub-question 1, any available information relevant to the evaluation of coherence has also been extracted from the NIRs.

7.2.1 Coherence between OSH directives and relevant, non-OSH EU legislation

Several interfaces have been identified between the OSH directives and other EU measures and/or policies and international instruments. Among these interfaces very few coherence issues arose.

Machinery Directive and OSH directives interfaces

Interfaces with the Work Equipment Directive

Under the Machinery Directive, manufacturers must provide several types of instructions to ensure that machinery is used safely. These instructions constitute an essential tool to enable employers to apply the provisions under the Work Equipment Directive. Therefore, this constitutes a case of positive synergy between the two Directives.

Interface between the Machinery Directive and the physical agent Directives

Employers can rely on information on machinery and equipment physical effects as generated under Directive 2006/42/EC (machinery) when carrying out a risk assessment on relevant individual risks. Such synergies are sometimes reflected in individual OSH directives, such as the Noise Directive, which requires employers to give particular attention to information on noise emission provided by manufacturers of work equipment, in accordance with the relevant EU directives

Interface between the Machinery Directive and the PPE Directive

The Machinery Directive provides that machinery must be designed and constructed to take account of the constraints to which the operator is subject as a result of the necessary or foreseeable use of PPE. It also requires that instructions for the protective measures must include, where appropriate, the PPE to be provided. Such requirements are seen as positive synergies, leading to a better application of the Use of PPE Directive.

Interface between the Machinery Directive and the ATEX Directive

Concerning explosions, the Machinery Directive requires that machinery must be designed and constructed in such a way as to avoid any risk of explosion. It adds that machinery must comply, as far as the risk of explosion due to its use in a potentially explosive atmosphere is concerned, with the provisions of the specific Community Directives. The application of Directive 2006/42/EC (machinery) prevents or limits workers exposure to explosions at the workplace.

Directive 97/70/EC (safety regime for fishing vessels of 24 meters) and the Fishing vessels Directive

Directive 97/70/EC lists safety standards for sea-going vessels the size of 24 metres or more. Some of the requirements of the annexes of the Fishing vessels Directive are also covered under Directive 97/70/EC (e.g. seaworthiness and stability, mechanical and electrical installations, radio installation, fire detection and firefighting). However, the requirements set by Directive 97/70/EC to avoid accidents at sea are more focused on the design and structure of the vessels, while the Fishing vessels Directive primarily concerns the safety of workers while the vessel is at sea. Therefore, there are no overlaps between the two Directives that are instead complementary.

Directive 2013/30/EU (safety of offshore oil and gas operations) and the Drilling Directive - reporting interface

Operators/employers of an off-shore oil and gas operation will have to prepare a health and safety document under the Drilling Directive and reports on major hazards, internal emergency response plan and design notification under Directive 2013/30/EU (safety of offshore oil and gas operations), which may contain similar requirements.

Despite the fact that Directive 2013/30/EU mentions that it applies without prejudice to the requirements laid down in the Drilling Directive, we recommend the adoption of guidelines to further clarify the interfaces between the reporting requirements under the two Directives.

Employment rights related acts

Both the Pregnant/breastfeeding workers Directive and the Young People Directive contain employment rights (e.g. night work requirements, rest periods, prohibition of dismissal of pregnant workers). These employment rights are not always linked to occupational health and safety issues.

We recommend the streamlining of provisions by setting specific employment conditions and rights for pregnant/breastfeeding and young workers under the current EU labour legislation (e.g. Working Time Directive) for better clarity. This streamlining should at least apply to the provisions setting employment rights that are not directly linked to the health and safety at work of young people and pregnant/breastfeeding workers (e.g. working time provisions allowing young people to combine work with school attendance, or time off for ante-natal examinations and prohibition of dismissal of pregnant workers).

Public procurement directives

Under the public procurement directives, the relevant provision concerning the award criteria mentions 'social characteristics' as a possible criterion, without further details or specific reference to occupational health and safety obligations on behalf of the tenderers. We recommend reintroducing the link between the award criteria or contract performance conditions and the fulfilment of OSH requirements by the (potential) contractor in the provisions of the Public procurement Directives.

REACH Regulation and the directives related to chemical agents

Annex II Section 8 of REACH requires that the SDS must specify currently applicable specific control parameters including the national occupational exposure limit values and biological limit values that correspond to EU occupational exposure limit values and biological values in accordance with the Chemical Agents and the Carcinogens or Mutagens Directives. It also mentions that, where a Chemical Safety Report is required, DNELs must be given for the relevant exposure scenarios. This scenario creates confusion, in particular for the downstream users which may receive two different values on the same substance reported in the Safety data sheets (SDSs).

In order to avoid overlaps between occupational exposure limits (OELs) and Derived No Effect Levels, we recommend adopting in-built provisions, either under REACH and/or the Chemical Agents Directive, to coordinate the adoption of OELs and DNELs and/or to clarify which value must prevail.

Other options would be:

- To enhance the cooperation between SCOEL and ECHA (RAC) when establishing limit values, as required under Article 95(1) REACH and Article 5(5) COM Decision 2014/113/EU;
- To re-evaluate the methods to define OELs and derive DNELs in order to obtain comparable results;
- To ensure that REACH registrants take OELs recommended by SCOEL into account when deriving DNELs;
- To reconsider the flexibility provided to Member State when transposing IOELs and BOELs to ensure that like DNELs, OELs are similar across the EU.

SDSs under REACH provide information important to employers to perform their risk assessment at the workplace and to adopt the adequate risk management measures. However, some employers expressed their concern on the difficulties they encounter when using information from the SDSs, and stress the complexity and administrative burden involved. The risk management measures under the SDSs can also potentially contradict the OSH measures.

To enhance the synergy between REACH and the Chemical Agents and Carcinogens or Mutagens Directives on the use of SDS, we recommend the preparation of awareness-raising campaigns (e.g. through the REACH helpdesks) to inform employers on how to use the SDSs for their risk assessment in order to ensure they are able to extract relevant information from the SDSs to fulfil their obligations under the Chemical Agents and Carcinogens or Mutagens Directives.

CLP Regulation

The Chemical Agents, Carcinogens or Mutagens, Young People and the Pregnant/breastfeeding workers Directives were recently amended by Directive 2014/27/EU in order to align the previous classification and labelling system with the new system laid down in the CLP Regulation. Finally, Directive 2014/27/EU amended the OSH signs Directive, which now refers to the CLP Regulation

on several occasions. Such references reflect and implement the complementarity between the CLP Regulation and the OSH signs Directive. No coherence issues were identified. Yet, please note that some stakeholders have raised comments on the consistency between the CLP Regulation and the Chemical Agents Directive concerning the use of man-made mineral fibres.

Directive 94/9/EC (ATEX Equipment) and the ATEX Directive

The main interaction between the two directives concerns the selection of equipment and protective systems as defined under Directive 94/9/EC (ATEX Equipment) to be used in the different zones as defined under ATEX Directive. In order to improve the interface between these two Directives we recommend:

- The review of the definition of zones to ensure similar interpretations in Member States to avoid barriers to the free movement of ATEX equipment. However, this would imply setting up prescriptive conditions without allowing Member States to set more stringent definitions of zones, which is contrary to the a minima approach of the EU OSH *acquis*;

- The development of guidelines for the application the ATEX Directive to equipment and protective systems placed on the market before the entry into force of Directive 94/9/EC (ATEX equipment) and equipment not falling under the scope of this directive.

Directive 2010/32/EC (sharp injuries) and Directive 2000/54/EC (biological agents)

The scope of Directive 2010/32/EU does not cover all the categories of workers that might be exposed to infection through sharp injuries (e.g. workers dealing with special or contaminated waste management treatments, or researchers in laboratories). The broadening of its scope to all workers exposed to sharp injuries could have a positive impact on limiting worker exposure to biological agents.

Directive 2009/13/EC (Social partners Agreement on the Maritime Labour Convention) and Directive 2008/106/EC (minimum level of training of seafarers)

Directive 2009/13/EC and Directive 2008/106/EC contain some medical treatment requirements equivalent to the ones set under the Medical treatment on board vessels Directive. Commercial seagoing ships falling under Directive 2009/13/EC will also have to comply with medical treatment requirements under the Medical treatment on board vessels Directive.

While this does not lead to double-regulation, for the sake of legal clarity and to avoid confusion, the removal of requirements on medical treatment under Directive 2009/13/EC and Directive 2008/106/EC which are already covered by the Medical treatment on board vessels Directive could be envisaged. (See also conclusion under the section on ILO conventions).

Directive 2009/13/EC (MLC), Directive 2008/106/EC (minimum level of training of seafarers) and the Medical treatment on board vessels Directive

The description of the medical requirements under these three directives shows that the Medical treatment on board vessels Directive and Directive 2009/13/EC set equivalent medical requirements for commercial seagoing ships. This potential overlap does not lead to double regulation in practice, but may be confusing since similar requirements are set by different texts.

7.2.2 Coherence between OSH directives and other EU policies

Neither our analysis nor interviews with stakeholders have revealed any specific coherence issues in relation to various EU policies.

7.2.3 Coherence between OSH directives and other international instruments

ILO International Conventions

In some cases, the ILO Conventions set additional or more stringent requirements than the corresponding OSH directives.

When the ILO Conventions set more detailed or more stringent requirements in comparison to the EU *acquis*, we recommend considering the incorporation of the additional requirements of the ILO Conventions in the relevant EU legislation. As underlined by the stakeholder group 'employers': *'For Member States which have ratified the ILO Convention, any more stringent provisions compared to the EU OSH acquis leads to additional compliance obligations and at the same time constitute a competitive disadvantage towards Member States that have not ratified the same Convention and do not have to meet the international requirements'.* The incorporation of the more stringent provisions in the EU *acquis* would ensure a level-playing field across the different Member States. As an alternative (or a first step), we recommend the adoption of a Council Decision authorising the ratification of the relevant convention by Member States and to further promote ratification (when this has not already been done).

IMO Conventions

IMO International Convention on Standards of Training, Certification and Watch-keeping for Fishing Vessel Personnel (the STCW-F Convention) and the Fishing vessels Directive

Although there are a lot of similarities in the training requirements between the Fishing vessels Directive and the STCW-F Convention, the latter generally goes well beyond the prior in terms of provisional content, as it requires different training depending on different professions and includes more detailed requirements on emergency procedures and rescue. However coverage of the STCW-F Convention is more limited than the training requirements of the Fishing vessels Directive.

At the time of writing the report, four EU Member States have ratified the STCW-F Convention, while the rest have not. This entails that potential discrepancies in safety requirements among EU Member States currently exist. The fact that some Member States have decided to ratify the STCW-F Convention and other Member States are in the process of doing so (ref. NIRs), clearly shows that Member States generally consider the provisions of the STCW-F to be important. In order to avoid a competitive disadvantage for Member States who show an effort to improve OSH aboard fishing vessels, we recommend rapid transposition of the STCW-F Convention into EU law.

This could be done by including a requirement to take account of the programmes of instruction detailed in relevant recent international documents or incorporate these into the Fishing vessels Directive. Such a solution would address the potential confusion linked to overlaps between the STCW-F Convention and the Fishing vessels Directive (even though they do not lead to double regulation in practice) and will align training requirements of the Fishing vessels Directive with the training requirement of the STCW-F Convention for fishing vessels above 24 meters.

8 Conclusions and recommendations

This chapter presents the conclusions and recommendations of the evaluation. The chapter first provides an overall conclusion, then gives the conclusions for each of the four main themes of the evaluation (implementation in the Member States, relevance, effectiveness, and coherence). The recommendations following from the conclusions are presented under each of the three evaluation themes. The recommendations presented in this chapter are supplemented by Directive-specific recommendations, which can be found in the respective Directive evaluation reports.

8.1 Overall conclusion

The recommendations provided by the evaluation are based on evidence and, to every extent possible, we seek to emphasise transparency of this evidence. However, it is necessary to clarify that for some recommendations, evidence is solid, easily presented and made available to the reader. For others, the evidence is more scattered and recommendations are based on MSs' experience and aggregated conclusions extracted from pieces of relevant data sets. Such evidence is more challenging to present in a transparent manner, and while recommendations may hold equal merit as those with transparent evidence, as a consequence, such recommendations will be provided with due caution.

This issue is linked to the fact that, from the outset, we acknowledge that some of the study findings are based on incomplete information and on a combination of input from different sources. A key challenge is that causality between possible improvements to the safety and health of workers and implementation of the Directives is very difficult to establish and isolate from other factors. Hence, it is important to put the message forward that some decisions on possible improvements to the regulatory framework are bound to be made without solid evidence, and thus with some level of uncertainty. We encourage stakeholders to embrace this premise and accept the available evidence that is presented without placing too much emphasis on inevitable details of potential inconsistency that do not influence overall findings.

The OSH *acquis*, comprising the Framework Directive and the 23 individual directives under evaluation, represents a comprehensive package of legislation aimed at securing the same minimum level of protection from work related health and safety risks for the workers of all EU Member States.

The Framework Directive was adopted in 1989, with most of the individual Directives being adopted in the subsequent five years, although some existed in previous versions before the Framework Directive – and others only were added to the *acquis* at a later stage. The legislation has thus been in place for a considerable amount of time – and this leads to an expectation that it should be possible to observe a discernible impact. However, not all Member States have been in place for the same time – just one of the many additional variables in that the maturity of national legislation with a basis in the EU OSH directives varies widely between Member States. In the psychology domain, what has become known as 'Wilder's Law of Initial Values' ([16]) explains clearly that the nature and magnitude of changes in response to an attempted intervention will depend upon the pre-existing levels of the parameters of interest.

([16]) Wilder, J. (1962)

The evaluation shows very clearly that the EU OSH *acquis* is the reference frame for national OSH regulatory regimes. While the Member States have chosen various models for their legal implementation of the Directives' requirements, there is no doubt that the Directives' requirements form the core of the national systems in one way or the other. The significance of the Directives in setting the scene for OSH regulation in the EU is therefore very high.

The Directives represent a mix of a goal-oriented approach – strongly expressed in the Framework Directive, but also mirrored in the individual Directives – and a prescriptive approach – which is, for instance, seen in the very detailed and specific requirements included in the annexes of some Directives. Some Member States have put more weight on the goal-oriented approach in their implementation, whereas others have preferred a stronger reliance on the prescriptive approach. These differences largely appear to reflect pre-existing differences in OSH approaches between Member States. The evaluation indicates that the EU legislation – through the Framework Directive – has contributed to a development towards application of the goal-oriented approach and a stronger focus on the risk-management cycle.

Within the assumed context of the use of directives, there is some evidence relating to the most appropriate form that directives should take. Specifically, this evidence relates to whether directives should prescribe a particular course of action ('prescriptive approach') or whether the approach should be to set aims of goals to be achieved ('goal-setting or goal-oriented approach'). Section 5.5.2 (Effectiveness – health and safety impacts) sets the scene for this debate. In commenting on the impact of different national regulatory approaches on OSH compliance it cites an EU-OSHA study (EU-OSHA 2013c) which comments on the fact that some Member States have national goal-setting (i.e. process-orientated) regulatory approaches to OSH management, whilst others have a more 'traditional' management system with prescriptive legislative approaches embedded in the regulatory regime. The EU-OSHA study suggests that the more goal-setting regimes are associated with higher levels of OSH management practice implementation. Support for this view can be derived from statistics such as those cited earlier (Figure 4-11) which seem to suggest a positive relation between the OSH management level, the extent to which risk assessments are conducted internally and the goal-oriented legislative regime of several MSs.

Section 4.3.2 goes on to suggest that some of the other challenges to compliance, such as reported confusion over apparent multiple risk assessment requirements, stem in part from apparent confusion at the EU level, where some Directives are relatively prescriptive (e.g. the OSH Signs Directive) whilst others adopt a goal-setting approach (such as the Framework Directive itself). This leads section 4.3.4 to conclude that this lack of clarity within the OSH *acquis* may constitute a challenge for MSs when transposing that *acquis* into national provisions.

This debate creates an ongoing thread which pervades many of the directive-specific discussions in one form or another. Thus, in respect of the Work Equipment Directive (Section 5.1.3), it is suggested by OSH experts that suggestions for change to accommodate emerging risks perhaps reflect national differences in OSH management, where those MSs who adopt a more goal-setting approach are more likely to be content with the existing provisions, whilst those MSs who tend to adopt relatively prescriptive legislation might need to make further prescriptions. The idea that more prescriptive approaches make a directive less 'future proof' and more likely to become out of date and require updating is reflected in some of the other individual directives (e.g. DSE, CAD and CMD). For example, as this regards the DSE Directive, not only are current provisions outdated, but there are also suggestions that, in prescribing a certain scenario, they could be regarded as stifling innovation and novel ways of working.

This view was discussed at the seminar held with stakeholders to discuss some of the main findings emerging from the study ('validation seminar'), where some participants stated that if the Directives are too prescriptive, they may become out-date quickly. However, opinions amongst those present differed markedly over the issue of whether or not a more goal- oriented approach would be more feasible and hence more relevant. One point noted, for example, was that SMEs tended to prefer a more prescriptive regime to a goal-oriented one, although the evidence-base for this was not explored.

Not all of these views are necessarily reflected in the Synthesis Report, with some detailed comments presented in the individual Directive reports. Thus, comments from national bodies, stakeholders, NIRs, etc. suggest: a need for a more flexible (i.e. less-prescriptive) approach in the Biological Agents Directive; a less 'activity-based' approach to the Manual Handling Directive; that a goal-oriented OSH Signs Directive without prescriptive annexes may contribute to a higher degree of continued, future relevance; and that there was a desire for the Drilling Directive to move towards a goal-oriented approach.

The complexity of some new and emerging risks, not already explicitly covered by individual directives, adds further to the argument. Thus, it has been suggested earlier, in this report and in the Manual Handling and Framework Directive reports, that serious OSH issues such as MSDs (not already covered) and psychosocial risks do not readily present themselves as being amenable to a prescriptive approach (yet there is a clear view from some stakeholders at least, endorsed by the ESENER-2 findings referred to in Chapter 5, that non-legislative measures are insufficient).

Despite this evidence there is (perhaps inevitably) a counter-argument. This appears to principally stem, at least in part, from those MSs in which a more prescriptive approach is regarded as the 'norm'. For example, regarding psychosocial risks, one stakeholder from such a MS commented that 'our employers don't like guidance, they like being told what to do'.

There is no doubt that being 'told what to do' has one particular merit in that, generally speaking, such an approach is more readily conducive to confirming compliance (although there are concerns expressed by some stakeholders that this becomes little more than a 'box-ticking' exercise with little effective OSH management). Additionally, a goal-setting approach requires enterprises to have a greater degree of OSH understanding and knowledge, which might be particularly challenging for SMEs.

This point was made in a SLIC submission ([17]), in which it was indicated that a consequence of the goal or objective-setting nature of the Framework Directive was 'a decrease in the presumption of conformity'. This resulted in 'a burden on SME's and businesses with less expertise' (and additionally on inspection authorities to prove violations). Nevertheless, despite this possible shortcoming, the submission concludes:

> *'There is no need for a legal framework prescribing detailed means measures. We must stick to the principles of goal oriented legislation with goal oriented regulations and specific norms and limit values, leaving room for practical implementation by employers and employees.'*

([17]) Submission from WG: Enforcement to the EU-Review of the Health and Safety '*Acquis*', in particular on their effective and consistent application in Member States. Doc 2014_EN, november 2013.

A degree of prescription is unavoidable, for example in setting exposure limits for physical (and perhaps chemical) agents. The latter case is slightly different, however, in that the limits are predominantly indicative rather than mandatory. However, where there is less clarity is in the extent to which MSs need to be 'told' how to achieve those limits. Of course, given a more prescriptive goal-setting directive, it remains open to any individual MSs to incorporate those goals into prescriptive national legislation.

The deeper challenge, however, is the fact that the two approaches are embedded in national practices, and that changing from one to the other will not be easy. Although the EU-OSHA Risk Observatory report, cited above, suggests that a goal-setting approach is more effective in achieving better OSH management, it might be more accurate to say that a certain group of MSs appear to have better OSH management and one feature they share is a more goal-setting approach to such management. Certainly, on the basis of the evidence reviewed as part of the present study, it is not possible to endorse one approach over the other. It can be stated that the mixture of approaches in the current OSH *acquis* appears to be unhelpful and that a more consistent approach would probably therefore be beneficial. It can also be stated that some of the more complex hazards and risk factors are less readily presented in a prescriptive fashion than they would be in a goal-setting vehicle. On the basis of these, it appears that some form of dialogue over the future 'style' or approach for directives would be of value in ensuring the overall ongoing future relevance of the OSH *acquis*.

The adoption of a more goal-based approach to the OSH *acquis* is consistent with current thinking within the wider EU. Thus, in his opening statement as President-Elect of the European Commission, Mr Jean-Claude Juncker stated: 'We must not stifle innovation and competitiveness with too prescriptive and too detailed regulations,..' ([18]). Whilst the Commission Better Regulation Guidelines stop short of endorsing such an approach, referring simply to the need to consider 'less or more prescriptive measures' ([19]), the Toolbox can be seen to be addressing this in asking (as it regards Proportionality) 'Does the Union action leave as much scope for national decision as possible while achieving satisfactorily the objectives set?' ([20]). It can be argued that adopting a less prescriptive approach is fulfilling that aim.

The Directives are also a result of a comprehensive tripartite policy dialogue, which means they were subject to considerable discussion and debate when they were written. The Directives are thus based on knowledge available at the time of their conception and possible political compromises, but not always backed by clear data and scientific research. Stakeholders are generally reluctant to reopen the debate about Directives for fear of losing out in the process of revising a Directive. On the basis of the evaluation, it is assessed that the elaborate (at times lengthy) process of tripartite dialogue contributes to the relevance and effectiveness of the Directives, because the Directives represent the viable compromise between three parties and their combined knowledge. At the same time, there is a level of conservatism and inertia in the system, because it is sometimes very difficult to reach agreement and because the parties are reluctant to reopen agreements already reached.

([18]) http://www.eesc.europa.eu/resources/docs/jean-claude-juncker---political-guidelines.pdf
([19]) SWD(2015) 111 final http://ec.europa.eu/smart-regulation/guidelines/docs/swd_br_guidelines_en.pdf
([20]) http://ec.europa.eu/smart-regulation/guidelines/docs/br_toolbox_en.pdf

8.2 Conclusions on implementation in the Member States

Looking at the implementation of key requirements of the Directives, the evaluation has focused in particular on 'Common Processes and Mechanisms' (CPMs), which are required according to the Framework Directive, but are also further developed in many of the 24 Directives. These include: Risk assessment; Preventive and protective services; Information for workers; Training of workers; and Consultation of workers.

8.2.1 Implementation of the legal framework

Most Member States have transposed the OSH Framework Directive by means of a national OSH framework act. This national OSH Act was not necessarily newly adopted after the entry into force of the Framework Directive; it is often the case that existing OSH legislation has been brought together into one main OSH Act or that an existing OSH Act has been amended to comply with the Framework Directive. There are, however, a few exceptions whereby the OSH Framework Directive is transposed through Labour framework legislation, a mix of OSH and Labour framework legislation, or even several acts depending on the workplace location (air, sea, land).

The individual OSH directives are, as a rule, transposed one-to-one through secondary legislation. Some exceptions have been identified which are seemingly Directive-bound. The three OSH directives targeting vulnerable workers are often transposed through a specific act and secondary legislation, or directly through the main OSH act or the Labour Code. Member States also often transpose the two OSH directives on the mineral extracting industries through several pieces of secondary legislation or through, e.g., a national Mining Act and secondary legislation. The transposition of the two OSH directives on vessels follows the same trend, although to a lesser degree.

With regard to transposition into national legislation of the CPMs, 16 MSs have transposed one or more CPMs through distinct secondary legislation, principally in relation to preventive and protective services, and health surveillance. Only four Member States (AT, FR, LU and PT) have implemented separate OSH legislation for the public and the private sector.

Although a large number of infringement proceedings have been initiated regarding the national transposition of the Framework Directive and, to a lesser degree, of Directive 1999/92/EC (ATEX), Directive 2002/44/EC (vibration), Directive 2003/10/EC (noise), Directive 2006/25/EC (artificial optical radiation) and Directive 98/24/EC (chemical agents), most of them regarded late transposition (non-communication of national measures) and were subsequently closed. Apart from these, very few discrepancies have been observed in the transposition of the OSH *acquis*. Furthermore, for most of the OSH directives, Member States have implemented more detailed or stringent requirements than those specified by the directive concerned.

From this perspective, it can be concluded that the structure and general principles of the OSH *acquis* are well suited as a European framework to be transposed and implemented at the national level. National approaches to transposition, in particular in relation to interactions between CPMs, vary across Member States. While the majority have followed an approach comparable to the Directives; whereby the CPMs are laid down in the Framework Directive (the framework OSH legislation) and more stringent and/or specific CPM provisions are set up in the individual Directives (secondary legislation); a number of Member States have regulated some aspects separately, principally those that relate directly to the broader institutional and organisational context, namely preventive and protective services and health surveillance, and to a lesser extent

the consultation of workers. Those aspects are regulated in a horizontal manner, through a specific legal act.

8.2.2 Derogations and transitional periods

About half of the Member States have applied transitional periods in the implementation of most of the Directives for which such provisions were made. In the vast majority of cases, Member States who opted for the application of transitional periods have also respected them.

The Country Summary Reports show a mixed picture as to the use of derogations by Member States across directives. The derogations most frequently used are those laid down in Directive 98/24/EC (chemical agents) relating to the prohibition of the use of certain chemical agents and two of the derogations provided by Directive 94/33/EC (young people): the derogation from the prohibition of employment of young people in the case of adolescents, where such derogations are indispensable for their vocational training; and the derogation from the prohibition of night work for young people in the case of adolescents and in specific areas of activity.

While it seems that transitional periods (which are meant to help authorities to adapt the implementation of Directives to the actual capacities and characteristics of companies in the Member States or sectors that may need a period of time to adopt or implement the provisions of a particular Directive) have fulfilled their role, the situation is more nuanced with regard to derogations which are not equally used. All derogations have been used, albeit in some instances by a very limited number of Member States.

8.2.3 Compliance

The mapping of compliance with the OSH *acquis* reveals that available data allows for a mapping of the quantitative aspect of compliance, i.e. the extent to which establishments perform specific, measurable OSH-related actions, such as performing risk assessments or formulating an OSH management policy plan. However, an OSH management plan may be incomplete, it may lack essential elements, may not take all risks into account, may not be well executed etc., all of which undermines compliance, as the directives contain requirements which are essentially quality- and content-oriented, rather than activity-oriented. The mapping exercise reveals that this qualitative aspect of compliance cannot be systematically assessed due to a lack of data availability.

The assessment of compliance at the EU-level is therefore particularly concerned with the quantitative aspect and mostly based on ESENER and ESENER-2 data. This is unfortunate, because while ESENER is a valuable source of data, the ESENER surveys have not been designed to measure compliance (from a legal perspective) but rather to get an insight into the manner in which OSH is managed at workplaces.

In this context, one relevant conclusion is that the attempt to map the findings of the National Implementation Reports has yielded no result. The reporting requirements of the National Implementation Reports have proven to be formulated too broadly to facilitate quantifications of the replies across MSs or to allow for comparability.

However, the collected data shows that overall compliance with the OSH *acquis* across the EU and across establishment sizes is moderate to good. There is no indication that compliance is

measurably higher in the public sector compared to the private sector. Yet, in reality, compliance varies significantly from directive to directive, from MS to MS and across establishment sizes.

Despite the variances between directives and Member States, it is an overall observation in the evaluation that both EU and national stakeholders assess compliance with directive requirements as higher in large establishments compared to SMEs and micro-establishments. This is supported by the Flash Eurobarometer, ESENER data, by the NIRs and corroborated during the directive-specific evaluations. An aggregated interpretation of the collected findings on quantitative compliance shows that overall compliance increases with the size of the establishment. Generally, compliance may be categorised as follows (please see Section 3.3 for relevant Evidence Tables):

- Micro establishments: Cannot be assessed (limited evidence points to poor overall quantitative compliance)
- 10 to 19 employees: **Poor overall quantitative compliance**
- 20 to 49 employees: **Moderate overall quantitative compliance**
- 50 to 249 employees: **Good overall quantitative compliance**
- 250 to 499 employees: **Good overall quantitative compliance**
- 500+ employees: **Very good overall quantitative compliance**

Segregating quantitative data by establishment size into establishments with and without a safety and health representative shows that the lower level of compliance in smaller establishments to a large extent is coupled with the lack of a safety and health representative. Safety and health representation is considerably less frequent in small establishments compared to larger establishments (e.g. only 51 % of establishments with 10 to 19 employees in 2009 had an internal OSH representative). Yet, even small establishments with employee representatives have a good or very good overall quantitative compliance, while the corresponding group of establishments without safety and health representation have poor to moderate quantitative compliance. Thus, although it is positive that 58 % of surveyed establishments do have a H&S representative, this gap of 42 % constitutes significant room and potential for improvement of overall OSH compliance, particularly in SMEs.

Mapping quantitative compliance with each CPM individually across MSs and establishment sizes based on available data reveals that compliance with training of workers and health surveillance is moderate, while compliance with information for workers and preventive and protective services is good. Quantitative compliance with risk assessments is moderate to good and compliance with consultation of workers ranges from poor to moderate or good compliance, depending on the chosen method applied to analyse available data. These findings are summarised in Table 8-1 and briefly described for each CPM below.

Table 8-1 Conclusion of quantitative compliance with CPMs

Conclusion by CPM	Interpretation	Compliance category
Risk assessments	Moderate to good quantitative compliance	C - B
Preventive and protective services	Good quantitative compliance	B
Information for workers	Good quantitative compliance	B
Training of workers	Moderate quantitative compliance	C
Health surveillance	Moderate quantitative compliance	C
Consultation of workers	Poor to moderate/good quantitative compliance	D – C or B

Source: COWI evaluation team

8.2.4 Accompanying actions

The number of accompanying actions varies greatly from directive to directive, both at the Member State and at the EU level. Stakeholders do not seem to be concerned about those directives where there are only a limited number of accompanying actions at the EU-level, mainly because other institutional or global actors have already provided the necessary guidance and information documents. It appears that EU-level guidance is often primarily used as a basis for national-level guidance and rarely reaches individual workers. At the Member State level, there are some directives for which the number of accompanying actions is limited and there is a general demand for more targeted actions, especially those directed to SMEs. Practical tools, forms and check-lists that enable employers to comply with OSH obligations are considered by stakeholders (at the national level) as the most useful accompanying actions. A practical approach that aims at providing sectoral templates for risk assessment (e.g. OIRA) is welcomed by all stakeholders who recognise the potential for simplification and time gained when using such tools.

There appear to have been very few formal evaluations of the utilisation or impact of any such material, although some isolated studies of individual measures have been reported (e.g. Melrose et al, 2007).

8.2.5 Enforcement

Our evidence points to the existence of general enforcement authorities responsible for occupational safety and health matters, although other authorities may be involved or fully responsible for areas covered by certain individual directives, in particular the two mineral extracting industry directives, the vessels-related directives and directives targeting vulnerable workers. While the actual number of inspectors in the EU has remained constant in the evaluation period (2007-2012), there are many Member States where the number has decreased (16). Many stakeholders emphasised that there is room for improving enforcement in general, such as the use of more risk-based inspections, as already done in several Member States. Thus, focussing inspections on where the main risks are expected to be encountered is thought to be a more efficient use of dwindling resources than a truly random selection would be. However, although it may intuitively appear to be a sound concept, no evidence has been found to support the view that this would be a more effective approach, especially given the wide differences in enforcement philosophies between MSs.

All Member States have criminal and/or administrative sanctions in place, providing not only for imprisonment and/or fines but also for other types of sanctions such as various emergency measures to stop non-compliance, which can also prove very efficient. Strategic priorities for inspection are generally set per sector or sub-sector, group of workers, type of risk or company size.

8.2.6 Initiatives targeting potentially vulnerable workers

Initiatives targeting potentially vulnerable workers principally address their specific requirements through various forms of guidance, tools and initiatives at a number of levels (government, industry or other stakeholders), rather than through legislation, which typically does not go beyond EU requirements as far as vulnerable workers are concerned. As a consequence, women, pregnant and breastfeeding workers, young people, temporary workers and disabled workers are the most frequently covered groups as they are regulated under EU legislation. Other groups also covered

include, in particular, older workers, migrants, part-time workers, and parents. Approaches within establishments with regard to potentially vulnerable groups of workers are poorly documented.

8.2.7 Specific measures targeting SMEs and micro-enterprises

Most Member States (with the exception of AT and UK) have established (a combination of) specific measures to support SMEs and micro-enterprises in the implementation of their legislation transposing the Framework Directive. These specific measures include exemptions, a lighter regime and/or financial incentives. Only few of the individual directives have been transposed using additional incentives for SMEs to comply with their requirements. However, many Member States have developed numerous accompanying actions targeted at SMEs, which are typically of a more general nature, not linked to a specific individual directive.

However, the quality of guidance and support tools is crucial. Thus, simply looking at the number of guidance documents does not in itself provide evidence of adequate guidance for SMEs. A report from the Depart of Businesses, Enterprises and Regulatory Reform (2009) in the UK concludes that:

> *'The way that government guidance is currently produced and disseminated leaves SMEs with a great deal of uncertainty, deterring them from using it and creating additional costs for their businesses. Many businesses are unclear about whether following guidance means they have complied with the law. They do not always know where to get the right help. Firms are put off by the amount of information included in guidance and receive conflicting messages from different parts of the Government'.*

It has not been possible to formally assess the quality of the extensive body of guidance listed and described in this study (see, for example, the CSRs). Nevertheless, despite the quantity of material available, it appears there are still indications that more and better guidance is needed to support implementation in SMEs.

8.3 Conclusions on current and future relevance

Relevance in relation to labour market

Almost all of the 24 Directives are relevant in all 27 MSs to the extent that all MSs have workers employed in relevant industrial sectors who are consequently exposed to relevant risks, or who are members of vulnerable groups that are the subject of specific rules (pregnant/breastfeeding workers, young people, and temporary workers).

The primary exceptions to this are the two Directives relating to marine sectors (including fishing), as a minority of MSs do not have any workers employed within one or both of the marine and fishing sectors (or at least those parts of these sectors addressed by the two Directives). In such cases, some MSs appear to have taken the administrative action to transpose the provisions, whilst others have not done so. Where the former is the case, the absence of any relevant industry means that no additional burden is placed on employers.

A further exception relates to the Directive on the extraction of minerals through drilling (Drilling Directive) where, although the provisions of this Directive have been transposed into national legislation in all MSs, approximately 20 % of MSs apparently have no drilling industry at present.

The proportion of workers potentially covered by each of the Directives has been assessed from EU-level statistics relating to relevant employment. Across the EU, the proportion of workers potentially covered by each of the Directives varies. For some Directives, including the Framework and Work Equipment Directives, 100 % of workers are affected. In contrast, a number of Directives, including the two maritime Directives, those relating to Mines and Quarries and Drilling, and the Young People Directive, are of relevance to less than 1 % of the EU workforce. In some cases, such as those Directives relating to physical or chemical agents, the assessment is of potential relevance in that statistics do not permit the determination of the extent to which individual workers in a particular sector are actually exposed to the agent in question.

Relevance in view of existing provisions

Quantitative data illustrating any ongoing need for each Directive is not always readily available.

However, based on the data that is available, it appears that most of the provisions for most of the Directives remain relevant. However, there are exceptions, as detailed in Chapter 5 and in greater detail in the individual Directive reports. For example:

Extension of the provisions of the **Framework Directive** to cover the risks faced by the self-employed would, it seems, increase the reach and effectiveness of the Directive.

There is a reasonably clear impression that the concept of 'specific risk', as embodied in Article 6 of the **Work Equipment Directive**, needs to be more clearly defined and explained.

Removing the exclusion of the emergency services would increase the future relevance of the **Use of PPE Directive** amongst this subset of workers.

One Directive which attracted a lot of comment was the **DSE Directive**. This Directive includes (Article 9) provisions aimed at the 'Protection of workers' eyes and eyesight' even though there is widespread consensus in the scientific literature (and also referred to in some NIRs) that work with computers does not cause any damage to the eyes or eyesight (although use of computers can give rise to visual discomfort and other symptoms). In addition, epidemiological surveys suggest that the prevalence of eyesight problems amongst DSE users is no different from that amongst the general population.

The same **DSE Directive** (Article 3) includes reference to 'problems of mental stress' even though epidemiological surveys suggest that the prevalence of such problems amongst DSE users is no different from that amongst the general population and the extensive literature on risk factors relevant to mental stress does not suggest a particular focus on users of DSE (or that most of the provisions of the DSE Directive would address these risk factors).

The minimum requirements for DSE workstations, which all such workstations must meet (Articles 4 & 5), presented as an annex to the **DSE Directive,** are widely recognised to be outdated and to not adequately reflect modern computing technologies or ways of working.

The current version of the **EMF Directive** has yet to be fully transposed or implemented in most MSs. As summarised in Chapter 5, authoritative reviews by WHO and EU-OSHA have published doubts over the nature and extent of the risks it addresses. As a result of these reports, the extent to which the risks addressed by this Directive are a significant problem in workplaces warranting legislative control in the form of an EU Directive is unclear. Possibly reflecting this, there have been

suggestions from within NIRs that the Directive places requirements on employers that are disproportionate to the risks (and therefore benefits) associated with this Directive.

Although widely regarded as a 'vulnerable group' the limited quantitative evidence available on accidents and diseases calls into question the need for the Directive, suggesting that **Temporary workers** are no more likely to sustain injury or develop work-related ill-health (and possibly less) than those in permanent employment.

The evidence available relating to the need for the **Young People Directive** is inconsistent, suggesting that young people (under 18 years of age) are less likely to develop work-related ill-health than their older colleagues, though they are more likely to sustain a non-fatal injury at work.

One area of ongoing concern is the incidence of occupational cancers and the relevance of the **Carcinogens or Mutagens Directive** in addressing these. It should be noted that not all agents which cause or contribute to work-related cancers are covered by the provisions of this Directive (e.g. shift work). However, for those which are, the long latency between exposure to carcinogens or mutagens in the workplace and the emergence of disease makes it virtually impossible to establish the effectiveness of the provisions of the Carcinogens or Mutagens Directive and consequently their ongoing relevance. Specifically, it is not possible to determine whether there are deficiencies in the provisions of the Directive (warranting amendment) or insufficiencies or inadequacies in their implementation within MSs (warranting better compliance).

8.3.1 Future developments for risks not currently addressed

Looking forward, although some changes in the relative importance of different work sectors can be anticipated it seems that, in general, no meaningful changes in risk exposure and therefore no changes to the need for any specific Directives are expected.

However, there are some new or emerging risks (or concerns regarding ongoing risks) where there are concerns over the adequacy of existing provisions to meet both current and future needs. As noted in Chapter 5, changes to any Directive that would impact upon its future relevance will also usually be of significance for the current situation.

Work related MSDs

Work-related MSDs remain at a high level within the EU workforce. Control of the hazards giving rise to the risks of such injuries is a complex field, and it is recognised that there are many MSD-related hazards which are not addressed by the existing Manual Handling and DSE Directives. Any examination of the research literature on other MSD risk factors, especially those associated with combinations of force, posture and repetition, demonstrates that, though the basic principles are well-understood, it is a complex and complicated area in which to legislate. In particular, the often complex interactions between these three factors would not lend itself to the prescriptive approach endorsed by some MSs, running the risk that some work activities would be unnecessarily curtailed whilst others would (erroneously) not be identified as risky. It is understood that the available options have been extensively described and explored within the Commission and elsewhere previously.

Evidence from comments and responses relating to the Manual Handling and DSE Regulations, as well as the experience of experts working in the field, suggests that employers appear often to adopt an overly simplistic approach to manual handling hazards. This suggests that adopting a

similarly prescriptive approach for other MSD hazards, in the form of a third (or combined) directive, would not be very effective in controlling hazards and reducing any risk of injury. However, as this appears to be the favoured approach in some MSs, it is suggested that consideration be given to commissioning an ergonomics assessment of the feasibility of generating prescriptive material (suitable for legislation) relating to MSDs not related to manual handling or DSE work, to indicate whether or not such an approach could be viable. ([21])

Many MSs have prepared relevant guidance material (including risk assessment aids) and it is suggested that that the wider preparation and distribution of such material, combined with some form of enabling legislation (possibly in the form of an amendment to the Framework Directive) offers a potentially effective and efficient solution. Comments and responses collated during the course of this study, again supplemented by comments from OSH experts, suggest that there is less motivation for ameliorative action on the part of employers in the absence of legislation, implying that guidance alone is less likely to be effective.

Nanoparticles and nanomaterials

The possible health effects of nanoparticles and nanomaterials are of some concern amongst MSs. However, there is no current consensus over whether these concerns are best addressed through the existing Chemical Agents and Carcinogens or Mutagens Directives (possibly with amendment) or whether a new Directive is required. Despite this lack, it is clear that action is required to address this area, at least to clarify the situation. There appears to be a balance in suggesting that existing legislation is sufficient, although actions will clearly be necessary to convince all stakeholders of this and to provide guidance on this matter.

Psychosocial risks

Ill-health associated with work-related psychosocial risks are a further concern and a major current cause of sickness absence amongst the EU workforce. Given the considerable negative impact on health of psychosocial risks it is clear (and appears to be generally if not universally accepted) that some form of action is required. There is, however, no consensus over the best approach to their control within the evidence available to this review (NIRs, interviews and the validation seminar). Although there are nuances of opinion within groups, employer stakeholders in particular appear to be reluctant to accept further legislative provisions, whilst worker stakeholders seem to consider such provisions essential, with little support for guidance alone.

Apart from no action at all (which it seems to be agreed is not an option), three possible approaches can be outlined (though there are undoubtedly others). These are: a non-legislative approach, based around the use of (agreed) guidance; goal-setting legislation; and prescriptive legislation. At the seminar held with stakeholders to discuss some of the issues emerging from the study ('validation seminar'), the option of amending the Framework Directive to explicitly mention psychosocial risks (to make their inclusion as risks explicit), and then addressing the issue by information and guidance, was not universally well-received, although some participants did endorse a fully non-legislative approach. Others, however, expressed a preference for a more detailed legislative solution.

([21]) It is understood that such a feasibility study might already have been undertaken. However, no such report or its findings have been made available to the authors.

The extensive research literature on psychosocial risks, including the interaction between occupational and non-occupational factors, makes this a complex field to legislate in. However, as noted above in regards to MSD risks, comments and responses collated during the course of this study, again supplemented by comments from OSH experts, suggest that there is less motivation amongst employers for ameliorative action in the absence of legislation, implying that guidance alone is less likely to be effective.

The complexities and interactions of different risk factors suggest that a prescriptive approach would not provide an effective tool for controlling psychosocial risks. However, the OSH culture in some MSs does not readily lend itself to a more goal-setting legislative path. As the prescriptive approach appears to be that favoured in some MSs (possibly the majority), it is suggested that consideration be given to commissioning a scientific assessment of the feasibility of generating prescriptive material (suitable for legislation) related to psychosocial risks, to indicate whether or not such an approach could be viable. ([22]) This could be used to inform a decision on the form and content of legislative developments in this important area of worker health.

Current ongoing major health concerns such as occupational cancers, MSDs and stress, as well as accidents and injuries at work, are likely to remain significant issues for the foreseeable future. MSDs and stress are, and are likely to remain, the most common causes of sickness absence.

The OSH *acquis*

In respect of the future relevance of the OSH *acquis*, cross-cutting issues have been identified in respect of the use of goal-setting or prescriptive approaches to directives. This issue has been discussed in some detail in Section 9.1. Whilst there is only limited evidence to support the selection of one over the other (which suggests that a goal-setting approach is more effective), there is evidence from a number of sources to suggest that the current mixed situation is unhelpful and confusing. There is also evidence from several directive reports to suggest that prescriptive approaches are more likely to become outdated and less amenable to change. Furthermore, as noted above, there are clear indications that some of the more pressing risk factors; such as those MSD risks not already addressed, and psychosocial risks; are not readily amenable to a prescriptive approach with its implicit requirement for compliance testing. It would seem, therefore, that there is a need for some form of dialogue over the future 'style' or approach of directives, to ensure the overall ongoing future relevance of the OSH *acquis*.

Aging worker population

Finally, an aging worker population is likely to present new or increased challenges and risks in the future, although care should be taken not to imply that the changes associated with an aging workforce are necessarily negative. Changes in abilities and susceptibilities within such a workforce require careful consideration, with thought given to any need to amend or adjust OSH legislative provisions to reflect these.

The contribution of age-related degenerative change will cause problems related to MSDs to continue. Disorders such as back problems related to excessive manual handling at work and those attributable to age-related degenerative change are equally debilitating and provide a clear direction towards a need for the increased integration of occupational health with wider health promotion and management programmes. Thus employers will need not only to manage the risks

([22]) As with MSDs it is not known whether or not any such feasibility study has already been conducted.

of causing MSDs amongst their workforce, but will increasingly need to adopt measures to enable those with age-related MSDs to continue at work.

8.4 Conclusions on effectiveness

In this section, we present the conclusion of the assessment of the effectiveness of the OSH *acquis*. The conclusions are presented in two main subsections. First, we present the conclusions on the directives' contribution to ensuring health and safety of workers and reaching their objectives, i.e. EQE1-4 and EQE7, which was assessed in Chapter 5**Error! Reference source not found.**. Secondly, we present the conclusions from the assessment of the benefits, costs and broader effects of the OSH *acquis*, i.e. EQE6-7, which was assessed in Chapter 6.

8.4.1 Directives' contribution to ensuring health and safety of workers and reaching their objectives

Understanding of objectives

The first step in assessing the extent to which objectives have been achieved is to establish the nature of the objectives and what defines the desired end-situation, which should be achieved. The evaluation approached this through establishing intervention logics for each of the 24 Directives (as well as a generic intervention logic for the *acquis* as a whole). These intervention logics are described in the individual Directive reports. This exercise showed that typically, beyond a general aim to improve the health and safety of workers, objectives in terms of the desired health and safety impacts are not very clearly stated in the Directives – if at all.

It is obvious that in general terms the Directives aim to improve the health and safety situation for workers across the EU. However, the more specific intended impacts, such as – for example – the kinds of occupational diseases to be prevented or reduced are often not identified. This means that, for many Directives, there are no clear parameters against which to measure the progress towards achievement of objectives.

It must be recognised that this is also a reflection of the complex interrelations between exposures to various risks at the workplace and specific health and safety impacts – and between different OSH measures targeting various groups of workers, types of risk or sectors and their effects on levels of exposure. It is no easy task to define precisely what a Directive aims to do. Nevertheless, it is striking that the legal texts of the Directives rarely offer much insight into the rationales behind the Directives and their intended safety and health impacts.

The understanding of objectives is furthermore challenged by the situation that the OSH *acquis* contains a mixture of Directives representing a goal and process-oriented approach and Directives representing a prescriptive approach. In general, those with specific actions prescribed are more open to confirming compliance (although this is sometimes referred to as the ‘tick-box approach’), while those Directives which are more goal-setting need suitable outcome measures to confirm that their goal has been achieved.

The evaluation has analysed objective achievement, looking at objectives at different key levels following the intervention logic structure:

- Objectives concerning specific requirements to be followed by employers – focusing in particular on the 'common processes and mechanisms', i.e. process-management actions to be taken (risk assessment, information, training, health surveillance, consultation).

- Objectives concerning impacts at the workplace occurring as a result of implementing the specific requirements.

- Objectives concerning the health and safety impacts occurring as a result of changes/impacts at the work place (i.e. reduced number of accidents or occupational disease).

Effectiveness – compliance and workplace impacts

Transposition

It is clear that a precondition for achieving objectives regarding compliance with specific requirements as well as workplace impacts is that the Directives have been transposed into Member State legislation. As noted above (Section 8.2.3) the evaluation has shown that, generally, the Directives have been correctly transposed, and that there are only few issues in this regard which have not been resolved and which still influence the level of implementation within the period covered by the evaluation (2007-2012). Derogations and transitional periods are not considered to have had a major impact on the implementation and effectiveness of the Directives.

Compliance – implementation on the ground

The next step in the assessment of the impact of the Directives is to consider whether establishments actually implement the requirements 'on the ground' and whether this leads to changes at the workplaces, which can help to reduce the exposure of workers to various OSH risks. In this regard, the evaluation has looked in particular at the common processes and mechanisms (CPMs) and the extent to which they are implemented.

Overall, the evaluation finds that quantitative compliance with the CPMs is moderate to good overall across the EU and across establishment sizes. However, there are differences between the CPMs and between Member States. It should be noted that these findings are largely based on survey data and that there appears to have been very little systematic independent evaluation of compliance within MSs (or of the quality of any such assessments). Thus, requests for information as part of NIRs, or searches for information by national experts, have resulted in little supplementary material.

Information from various sources indicates that the presence of legal requirements are an important factor (but certainly not the only one) influencing the compliance behaviour of establishments. This suggests that, by requiring the introduction of such requirements in all MSs, the Directives will have had an impact on compliance behaviour.

One important observation in relation to implementation of the CPMs is that some Member States already had similar legislation in place, prior to adoption of the Framework Directive. The goal-oriented approach was thus already enshrined in the legislative framework of some Member States, whereas others had to make considerable changes. This also means that the high level of objective achievement as regards compliance with CPMs cannot be ascribed to the Directives alone.

EU-level data on compliance is limited mainly to the ESENER survey, which was conducted in 2009. Data from the most recent survey, conducted in 2013, has only been available to the evaluation to a limited extent. This means that it has not been possible to assess changes in compliance across the evaluation period. Hence, it is impossible to assess whether or not a particular effect has occurred during this period. We can say with reasonable certainty that the Directives have had a positive impact on compliance with the CPMs but whether this impact has been achieved during the implementation period or before is very uncertain. Precisely what has happened since 2009 is also not clear from the existing data, although the available data from ESENER 2013 tends to confirm that levels of compliance have remained stable.

The evaluation shows that there are no clear differences between public and private establishments in relation to implementation of CPMs. However, when considering size of establishment, SMEs and micro-establishments generally display lower levels of compliance with the CPMs, compared to large establishments. Thus, achieving the goal of implementing the CPMs has been achieved to a much greater extent in larger establishments than in SMEs.

The evaluation has pointed to some factors which are considered to have affected the level of goal achievement in relation to CPM implementation. These include, in particular:

- The Framework Directive in itself sets out the goal-oriented approach and the CPMs thus provide a clear structure and approach to be applied. This has been common practise in some MSs for many years whereas others have had (and continue to have) a more traditional management system with prescriptive legislative approaches embedded in their regulatory regimes. Evidence from a variety of sources suggests that those MSs with regulatory systems with a longer tradition of goal-oriented and participatory OSH management tend to be associated with greater levels of OSH management practice implementation.

- An analysis of the interlinkage of the CPMs across Directives, and thus their suitability to work in tandem and collectively increase the safety and health of workers, reveals that the collected OSH legislation is unnecessarily complex, in part, due to a seemingly unstructured and unsystematic inclusion (or lack thereof) of CPMs in the individual Directives. While in legal terms this has been handled by use of e.g. 'without prejudice' clauses, the findings of the evaluation indicate that, in terms of practical understanding and implementation, the interlinkages between the CPMs are not fully consistent across the Directive. These problems are often transferred into the national legal frameworks, thus preventing a fully coherent and cohesive approach. This has, in turn, caused some confusion at enterprise level, and particularly amongst SMEs, leading to misinterpretations of the provisions of legislation or Directives and, according to some OSH experts, some unnecessary duplication of effort.

- The OSH *acquis* in itself represents a mix of the goal-oriented approach and the prescriptive approach as mirrored in particular in some of the individual Directives. While not incoherent from a legal point of view, these two approaches are conceptually inconsistent and can work against each other in practice. On the one hand, the goal-oriented approach asks to identify the most suitable means to arrive at a certain end, whereas the prescriptive approach specifies the means to be applied with a view to reaching the same end.

- Enforcement, and particularly the combined role of inspectors enforcing the legislation and providing guidance on implementation, is generally considered to have a significant influence on compliance with the OSH *acquis*. This is particularly true in SMEs, within which a lack of

recognition of non-compliance is prevalent. Seen in this light, it is a cause for concern that the level of enforcement across MSs varies to a very high extent.

› Strong evidence suggests that employee representation has noticeable influence on the proportion of establishments performing risk assessments and an even more pronounced impact on other key requirements. Data suggests that risk assessments performed by external service providers reduce the need to maintain in-house expertise and more often result in a lack of subsequent anchoring of OSH principles in the establishment in comparison to risk assessments performed by internal staff. This is likely to have impacts on the position of health and safety generally within an organisation's business and priorities.

Improvements in working conditions

The next question in the impact chain is to consider whether compliance with Directive requirements has led to improvements in working conditions as could be expected. The assessment of establishment behaviour is essentially an analysis of how the level of compliance has changed over time, particularly from 2007 to 2012. The assessment is pivotal because it establishes a foundation from which to assess the safety and health developments and link potential improvements in the health and safety of workers to the implementation of the OSH *acquis*. Any improvement to the safety and health of workers which occur in line with the implementation of the OSH *acquis* (taking account of potential delays of effects) underpins the deduction that improvements occur as a direct result of the Directives' implementation. This analysis builds on the mapping of compliance presented above, and therefore relies on the same data sources which are the NIRs, ESENER variables and individual variables from other data sources (Eurobarometer 398 and European Working Conditions Surveys). However, none of this data allows for an analysis of compliance over time. We are therefore compelled to proceed to assessing the trends in exposure to health-related risks without a fundamental knowledge of whether establishments are complying with the OSH *acquis* to an increasing extent, whether micro and small establishments are in a process of closing the compliance gap compared to larger establishments, etc.

Effectiveness – health and safety impacts

Further in the impact chain, the question is whether the moderate to high level of compliance with the CPM requirements is translated into less exposure to risk factors and hence, fewer accidents at work and less work-related disease.

The data on work-related accidents and diseases shows in general that the incidence of accidents has decreased during the evaluation period. Data on exposure to risks provides a conflicting picture. At the general level, indications are that workers generally appear to consider their health and safety to be less at risk (2013) than they did previously (2007) and that they are less likely to report that their work (adversely) affects their health across the same time period. However, indications from more specific analyses, conducted as part of the individual Directive reports suggest that indices related to various occupational diseases have remained constant or increased, except for a few specific cases.

Although there are many variables involved, it appears likely that the decrease in incidence of accidents at work can, at least to some extent, be ascribed to the implementation of the Directives, as this can be linked to the level of compliance with the CPMs. Increasing safety and reducing accidents is a key element in any risk assessment.

As noted above, quantitative material relating to occupational diseases and ill-health is less readily obtained and that which is available is patchy, incomplete, and not readily related to the OSH directive *acquis*. However, it is a key concern that apparent exposures to risks related to various occupational diseases have typically either remained stable or increased during the implementation period. The two most prominent work-related diseases, stress and MSDs, have both seen substantial increases in exposure to related risk factors (although with stress it is perhaps understandable given that there are no specific OSH provisions which address psychosocial risks). MSDs do have two specific Directives which address two major hazards contributing to MSDs (although, as noted earlier, these do not address all of the recognised risk factors).

A major problem in assessing the impact of the Directives on the health of workers is the inadequacy of the data systems available for making any such assessment. Even with the example of MSDs given above, it is not possible to establish the extent to which recorded MSDs were caused by those risk factors encompassed by the Directives, and therefore the extent to which adequate implementation of their provisions should have prevented them. Against this background, the limited data sources available generally suggest, however, that the Directives are not effective at targeting occupational diseases.

One challenging aspect of MSDs is their multi-causal nature. Thus, apart from non-work exposure to risks in a non-work environment (e.g. prolonged sitting during leisure activities) some MSDs have a strong genetic component (such as the spinal degeneration referred to in Chapter 4, although genetic predisposition impacts on individual susceptibility rather than direct causation). However, this does not remove the need for action in the workplace (in the same way as leisure exposures to noise (for example) do not exempt employers from a need to reduce noise).

These two conclusions appear to be mutually contradictory. If compliance with CPMs is generally quite high, then why are we only seeing a limited effect in terms of combatting occupational illness? Why is a generally high reported level of compliance not leading to better results? Based on the existing data, it is not possible to provide exhaustive answers to these questions, but some key factors emerge from the findings in this evaluation:

- The compliance data might be misleading. There are some published studies which have suggested that the quality of compliance is often poor, so that even amongst those organisations who report compliance, the extent of effective compliance is likely to be less.

- As part of this, risk assessment performance occasionally diverts attention away from managing identified risks, particularly in SMEs. This showcases the impact of non-recognition as SMEs tend to believe that, having followed legislative requirements and conducted a risk assessment, they are in compliance. Contrarily, risk assessments in SMEs are often of insufficient quality to ensure adequate risk management and, even in larger organisations, the risk-management measures adopted may not be the most appropriate. Evidence from OSH practitioners, supported by material examined during this study (such as NIRs), suggests that the quickest, easiest, cheapest solution might be that adopted. As a specific example, a number of NIRs report that, in response to identified manual handling risks, organisations frequently resort to manual handling training, regardless of whether or not it is the most appropriate.

- There seems to be a general view that the Framework Directive, with its orientation towards a goal-oriented approach to OSH (rather than prescriptive) successfully lays out a suitable template for managing workplace risks – but not in itself enough to ensure that all risks are

dealt with sufficiently. One criticism of the goal-setting approach is that the absence of prescriptive intermediate goals makes compliance harder to verify and, in the absence of that verification procedure, harder to enforce (especially in OSH cultures with a history of the prescriptive approach).

- Even with a high level of good-quality compliance with OSH requirements, such a regime will be ineffective if the wrong provisions are adopted, either through initial misconceptions in formulating the provisions of a Directive or because the provisions originally formulated are no longer relevant to the hazards present in the workplace. It would be wrong to make sweeping generalisations here, as the situation varies between Directives and the individual directive reports should be seen for more details on any particular subject. Thus, some directives do appear to still address the relevant risks correctly and do contain provisions which, if correctly and competently implemented, should result in suitable risk management. Directives such as those relating to noise and vibration fall into this category. Although those relating to MSDs appear to fall into the second category the reality is more complicated. The hazards addressed by the Manual Handling Directive for example still remain relevant – it is hazards not addressed by this Directive, which create further risks of MSDs which are omitted. Similarly, the hazards arising from working for prolonged periods with DSE still remain, it is just that the DSE encompassed by the prescriptive element has lost relevance.

- A further area where the inadequacies of the current OSH *acquis* can be identified relates to the somewhat piecemeal manner in which vulnerable groups are covered. Some such groups: pregnant workers, young people, temporary workers, have specific directives. However, each of these can be paralleled by another group who do not have specific protection: the susceptibilities of the fertility of male workers, older workers, and migrant workers have all been recognised but are, in effect, only addressed by the general provisions of the Framework Directive. Older workers perhaps warrant particular mention, as concerns about the implications of an aging workforce pervaded many of the discussions and interviews carried out as part of the evaluation, as well as featuring in the research literature.

- For some possibly vulnerable groups, the protection is even less, as they are excluded from the provisions of the OSH *acquis*, either entirely or partly. Groups excluded in some way include the self-employed and home workers. The latter present particular challenges because, for example, developments in DSE and related technologies mean that DSE users might perform their work at home, or at other remote locations. Then there are those whose work is within the home setting, such as domestic workers. In such cases, protection could almost be regarded as a 'Member State lottery' in that the extent to which you are offered protection, if at all, depends on which MS you work in, as some MSs have already exercised their right to make more detailed provisions and extend OSH protection to such groups.

All of these factors present challenges in terms of evaluating the effectiveness of the existing provisions and of ensuring the ongoing relevance of the OSH *acquis* to the hazards and consequent risks faced by the EU workforce in the future.

Effectiveness of current data and systems enabling monitoring of the implementation of the Directives

As also described in the Commission's better regulation guidelines, part of effective regulation is monitoring to generate evidence on activities and impacts over time in a continuous and systematic

way. The guidelines, among other things, state that the monitoring system should provide time series data, which is more reliable in explaining behaviour than one-off data collection exercises.

It is observed that the Directives, apart from most of them referring to the five-yearly reporting requirement, make little or no reference as to how they will be monitored. As shown in the analysis of EQE1-6, there are some important sources of data at the EU level, which do enable some monitoring of how the Directives have been implemented. ESENER, ESAW and EWCS do provide valuable input, but in terms of time series-based data suitable for monitoring of each individual Directive, these data sources certainly also have serious flaws. To mention the most important of these, the data from ESENER and EWCS are not annual (and hence not proper time-series data) and all three data sources do not enable data drilling to the necessary detail required to monitor individual directives. Furthermore, there is no uniform data collection related to occupational diseases at the EU level.

Most of the Directives are encompassed by the general requirement to report to the Commission about their implementation every five years ([23]). This evaluation report should be seen in conjunction with this procedure, as it builds on the National Implementation Reports (NIRs) submitted by the Member States by December 2013. Having a report every five years from the Member States on the implementation of all these Directives hence also marks a unique opportunity for collecting data and filling gaps where sources such as those mentioned above, do not give sufficient insight. Our experience from working with the data in the NIRs is that, although they do provide some valuable information, the quality varies between Directives and between Member States. This is partly because the respondents in the Member States have taken different interests in answering the questions posed in the questionnaire devised by the Commission ([24]). However, it is our assessment that it also has a lot to do with the fact that the questions are often phrased in an open and ambiguous manner, and can be (and have been) understood in many different ways. For this reason, responses from the Member States are often not comparable and reflect different interpretations of the question posed. This reduces the value of the NIRs as a data source to an important extent.

Furthermore, fifteen directives contain reporting obligations. These obligations could be seen as a basis for EU wide data collection of data pertaining to the implementation of the Directives, but no initiatives have been taken to streamline reporting in these areas, which, at least by the lawmakers, were considered the most pertinent. This is considered a lost opportunity, as it must be assumed that the Member States have put in place systems to implement these obligations, and therefore, making arrangements to ensure a streamlined approach and comparable data across the Member States would have entailed limited additional effort in most cases.

The lack of data, and the resulting limitations, have not only posed a methodological problem for the evaluation, but also reflect a fundamental problem for policy and regulatory development in relation to OSH. A clear understanding of the relationship between specific risks and their adverse consequences provides an important basis for addressing those risks.

([23]) Ref. Framework Directive (89/391/EEC), Article 17a

([24]) Ref. Commission Decision C(2011) 9200 final of 20.12.2011

8.4.2 Costs and benefits

A key question in any economic evaluation is whether benefits outweigh costs. We did not identify any cost-benefit analyses of OSH at the societal level and we therefore do not have solid evidence that the benefits outweigh the compliance costs at the societal level. However, because our analyses show that the OSH *acquis* is unlikely to bring any substantial costs for the worker, benefits are likely to outweigh costs for workers.

Moreover, the analysis shows that benefits generated by the health and safety effects of the *acquis* are most likely to fall on the individual workers, while most of the compliance costs fall on enterprises. However, the results do not necessarily imply that OSH is not profitable for enterprises. While there is a paucity of cost benefit studies focusing on OSH legislation, we identified several studies that assess the profitability of OSH interventions at the enterprise level. Although it is too simplistic to conclude that OSH always will be profitable, we did identify a number of case studies showing that OSH can indeed be profitable for enterprises (including SMEs).

Benefits and broader effects

To date, it is not possible to estimate how the health and safety impacts from the *acquis* translates into economic benefits, because of the difficulties in establishing a causal relationship between observed health and safety effects and the lack of national- and EU-level data on cost of accidents and ill health. However, based on the available data the following conclusions can be drawn:

- Data from seven Member States shows that the costs range between 1-3 % of GDP, which underlines the magnitude of costs of work relates accidents and ill health at societal level.

- Today, the costs of disability following work related ill health stems primarily from MSDs and mental health problems.

- The effectiveness evaluation shows that the incidence of accidents decreased during the evaluation period. Although there are many variables involved, it appears likely that this decrease, can be ascribed (at least to some extent) to the implementation of the Directives. At the same time, estimates from the HSE in the UK have shown that the societal costs of work-related accidents and ill health have fallen by 14 % from 2006/07 to 2012/13. Thus, it is likely that the reductions in work-related accidents also have translated into economic benefits for workers, enterprises and society.

- The effectiveness evaluation shows that apparent exposures to risks related to various occupational diseases have typically either remained stable or increased during the evaluation period. Most notably, the two most prominent work-related diseases, stress and MSDs, have both seen substantial increases in exposure to related risk factors. Moreover, while MSDs have two specific Directives, which address two major hazards contributing to MSDs, these do not address all of the recognised risk factors. Considering that these are also among the most disabling and costly work-related diseases, it is unlikely that the *acquis* has achieved its potential for generating economic benefits.

- The analysis also points to several broader societal benefits. While there are few empirical studies on the subject, data from the interviews shows that stakeholders primarily highlight increased OSH awareness. Moreover, the analysis of the national transposition of the OSH *acquis* clearly shows that the Directives have influenced national agendas and the awareness of OSH in enterprises. The evidence for innovation, quality of products and competitiveness is

much weaker, but the available literature points to a link between the level of competitiveness and the level of occupational accidents.

Compliance costs

Our assessment shows that all Directives generate both administrative and substantive compliance costs. Moreover, in accordance with the Standard Cost Model (SCM), we categorised the majority of the CPMs as administrative costs, though these are considered key provisions in the OSH *acquis*. Ideally, assessment of compliance costs should be based on cost data from enterprises.

In this evaluation, we did not collect data from enterprises ([25]). Instead, we interviewed EU and national stakeholders and reviewed the literature to identify relevant studies. However, EU and national stakeholders were not able to quantify costs and the vast majority reported that their knowledge on this topic was limited. Moreover, the literature review revealed that few studies have estimated compliance costs (the majority having only looked at administrative costs), and typically these studies only cover one Member State and only partially cover some Directives. Thus, knowledge from these studies is fragmented and weak. However, based on the collected data, we draw the following conclusions:

- The majority of obligations fall on enterprises. Thus, it is most likely that the Directives generate costs for enterprises. Whilst overlaps and inconsistencies have not resulted in double regulation from a legal perspective, practical implications for enterprises might results in higher compliance costs.

- The General Directives (especially the Framework Directive) and the CPMs target all enterprises and are therefore likely to generate the highest costs (from a societal perspective). However, it should be noted that this might not be the case from the enterprise perspective. Some obligations might be rather costly for the individual enterprise, but because the obligation only applies to a small sector or industry, the total cost from the societal perspective can be quite small.

- The literature shows that a substantial part of the administrative costs is likely to be business as usual. Consequently, the actual burden is rather small. Costs, however, are likely to vary considerably from Member State to Member State and from enterprise to enterprise.

- The literature indicates that costs are likely to be higher in SMEs. Moreover, one study from the UK shows that external consultancy might have a strong effect on costs in SMEs. In the evaluation of compliance, we found that the use of external consultants increases according to enterprise size (the smaller the enterprise, the more likely it is to use external consultants). The reason might be that larger enterprise more often have the necessary competency in-house. However, this also means that the third-party sector is likely to play a considerable role in relation to the cost of compliance among SMEs.

([25]) In the Standard Cost Model, and other models used to assess compliance costs, an assessment of costs requires that data from enterprises, and sometimes experts, are gathered and analysed.

8.5 Conclusions on Coherence

8.5.1 Internal coherence

Few overlaps and limited double regulation

The analysis of the 24 OSH directives has not resulted in the identification of major coherence issues. There are no contradictory provisions and very few overlaps between the OSH directives. The legal articulation between OSH directives through in-built mechanisms (e.g. specific scope, without prejudice clause, exemptions, *lex specialis* principle) has in most cases contributed to avoiding overlaps and inconsistencies between provisions ([26]).

Furthermore, most of the few overlaps identified do not result in double regulation in practice (e.g. double reporting requirements) and therefore do not lead to additional costs when applied by employers. In the absence of problems of legal articulation between the OSH directives, it can be concluded that from a 'coherence approach' the overall structure of the OSH *acquis*, based on a Framework Directive and individual Directives covering specific occupational risks, does not need to be changed and, similarly, no major changes in individual Directives (e.g. merging of Directives) are required.

Scope for broadening application of certain provisions

The analysis of CPMs and key requirements across Directives, however, revealed that some provisions which regulate specific risks (e.g. agents, workplaces, targeted workers, equipment) under the current OSH *acquis* could apply to broader categories of workers and risks, and that there is no obvious justification (e.g. hazard-related, additional unnecessary cost) to restrict their application and related health and safety benefits to certain occupational risks, workplaces and workers.

8.5.2 External coherence – EU non-OSH legislation

Several interfaces have been identified between the OSH directives and other EU measures and/or policies. Among these interfaces, very few coherence issues arose. The coherence issues identified are all discussed in greater detail in the appropriate individual Directive report. However, they can be classified under the following categories:

Inconsistency

Despite close links with Directive 2000/54/EC (biological agents), the scope of Directive 2010/32/EU (sharp injuries) does not cover all the categories of workers that might be exposed to infection through sharp injuries (e.g. workers dealing with special/contaminated waste management treatments, or researchers in laboratories).

([26]) According to the mapping section the legal articulation between OSH directives transposing measures is not always done in a systematic fashion and cross-references are not sufficient to ensure a coherent and cohesive approach across national legislation.

Overlaps leading to application of contradictory requirements

Overlaps have been identified between the Derived No Effect Levels (DNELs) in REACH and the Chemical Agents Directive and the occupational exposure limits (OELs) in the Chemical Agents Directive.

Lack of legal clarity in the interface

Directive 2013/30/EU on safety of offshore oil and gas operations refers to the complementarity of the reporting requirements under this Directive and the ones under Directive 92/91/EEC (drilling). However, it does not provide further details on the articulation between the two reporting requirements.

Directive 92/85/EEC (pregnant/breastfeeding workers) and Directive 94/33/EC (young people) set specific employment rights that are not always linked to occupational health and safety issues (e.g. working time provisions allowing young people to combine work with school attendance or time off for ante-natal examinations and prohibition of dismissal of pregnant/breastfeeding workers). It is noted that, in some cases, these reflect a second (not necessarily secondary) function of the Directive, for example in implementing Human Rights provisions.

Directive 2009/13/EC (Agreement on the Maritime Labour Convention) and Directive 2008/106/EC (on the minimum level of training of seafarers) contain some medical treatment requirements equivalent to the ones set under Directive 92/29/EC (Medical treatment on board vessels). Commercial seagoing ships falling under Directive 2009/13/EC will have to comply with medical treatment requirements under these three directives.

Possibility to enhance synergies

The relevant provision concerning the award criteria under the Public Procurement Directives mentions ‘social characteristics’ as a possible criterion to be used by contracting authorities, without further details or specific reference to occupational health and safety obligations on behalf of the tenderers.

The main interaction between the two ATEX Directives concerns the selection of equipment and protective systems as defined under Directive 94/9/EC (ATEX Equipment*)* to be used in the different zones as defined under Directive 1999/92/EC (ATEX). Several Member States expressed some concerns about this interaction leading to potential barriers to the free movement of equipment across the EU.

Safety Data Sheets (SDSs) under REACH provide information important to employers to perform their risk assessment at the workplace and to adopt the adequate risk-management measures. However, some employers expressed their concern on the difficulties they encounter using information from the SDSs.

8.5.3 External coherence – International instruments

In several instances, international conventions (i.e. 15 ILO Conventions and one IMO Convention) ratified by at least some Member States, set additional or more stringent requirements than the EU *acquis* (see section 7.2.3).

8.6 Recommendations

Based on the conclusions presented above, a number of recommendations emerge from the evaluation. These are presented below and represent four main clusters/groups of recommendations:

1 Structure and coherence of the OSH *acquis*

2 Addressing on-going and emerging risks

3 Compliance, enforcement and SMEs

4 Data and monitoring of effects

These recommendations provide a cross-cutting overview. In addition, most of the Directive reports make specific recommendations which are not duplicated here, but should be examined and considered alongside the evidence presented in support of those recommendations.

8.6.1 Recommendation cluster 1: Structure and coherence of the OSH *acquis*

Recommendation 1.1: Maintain structure of *acquis* with a Framework Directive and individual directives

The evaluation shows that, although some individual Directives adopt at least elements of a more prescriptive approach, the goal-orientated approach enshrined in the Framework Directive and in the CPMs is relevant, works effectively, and provides a clear overall structure for implementing OSH management (although other challenges with the structure of the OSH *acquis* compromises this clear structure, cf. recommendations below). Furthermore, the goal-oriented approach is in line with better regulation principles ([27]), which emphasise that regulation should, as far as possible, be general in nature and cover the objectives, periods of validity and essential requirements, while technicalities and details should be left to the Member States to decide. The evaluation also shows that it is relevant to have individual directives to address specific risks and specific sectors. However, although the overall approach and structure provides a relevant framework for OSH management, this should not be construed as endorsing all of the detailed provisions. There are a number of recommendations to bring the individual directives up to date and to ensure coherence and consistency across the *acquis*. These are presented below.

Recommendation 1.2: Develop the *acquis* more in the direction of the goal-oriented approach

As discussed in Section 9.1, the evaluation finds that the *acquis* currently reflects a mix of the goal-orientated approach and the prescriptive approach. While this does not generally give rise to legal incoherence, it is conceptually inconsistent. Furthermore, the prescriptive approach brings with it a requirement to continually update the legislation to bring it up to date. The evaluation finds that the Directives of a prescriptive nature have generally failed to have incorporated such updates (for example, technological advances in DSE over the last 25 years have not been reflected in amendments to the DSE Directive). In areas where prescription is necessary, it can be advantageous to establish co-regulation measures linking up with existing widely recognised

([27]) http://ec.europa.eu/smart-regulation/guidelines/ug_chap1_en.htm

standardisation mechanisms to avoid incoherence and have an efficient updating process. However, such instruments seem not to have been taken advantage of in the current set-up of the *acquis*. On this basis, it is suggested that:

- Directives with a highly prescriptive content be reviewed and Annexes shortened or removed and relevant elements of the annexes be transferred to updated guidance documents (in particular relevant to the Workplace Directive, the Drilling Directive, Fishing vessels Directive, the Manual Handling Directive, OSH signs Directive);

- Directives with a potential for alignment with standardisation mechanisms could be updated in this respect (in particular relevant to consider for the Signs Directive and the Drilling Directive);

- When amending directives, an analysis of the intervention logic of the directives could be performed, and goals against which the performance of the directive should be measured could be clarified (building on intervention logics of this evaluation where relevant).

Recommendation 1.3: Streamline the application of the CPMs

Analysing the interlinkages of the CPMs across Directives, and thus their suitability to work in tandem and collectively increase the safety and health of workers, the evaluation found that, although the overall approach is relevant, the collected OSH legislation is unnecessarily complex, in part, due to a seemingly unstructured and unsystematic inclusion (or lack thereof) of CPMs into the individual Directives. These problems are often transported into the national legal frameworks, preventing a fully coherent and cohesive approach. This, in turn, has caused some confusion at the enterprise level, and particularly amongst SMEs, leading to misinterpretations of the provisions of legislation or Directives. It should be noted that these concerns reflect the manner in which the CPMs have been included, rather than any concerns regarding the integrity of the CPMs themselves. Some concerns have been expressed (for example amongst OSH professionals) that this leads to additional effort (and therefore costs) on the part of employers. On this basis, it is suggested that:

- References in individual Directives to applying the CPM provisions in the Framework Directive (without further elaboration) be removed;

- Review of the Framework Directive to include requirements, which although set under individual Directives only, could apply to all risks, workers and workplaces. Such review would also be justified by the fact that the Framework Directive has not been significantly amended since its adoption in June 1989, whereas the individual Directives have been amended throughout the years and some of them were recently adopted (e.g. Directive 2013/35/EU). In fact, an important number of the provisions that could be streamlined in the Framework Directive come from the Directives recently adopted or amended. The criteria used to identify such provisions include the scope and rationale of the Framework Directive and the level of prescription of the provision considered so that the inclusion would not restrict the Member States and employers' flexibility in implementing these general principles.

Recommendation 1.4: Strengthen the external coherence of the directives

- EU non-OSH policy: In order to enhance synergies between the Strategy for the sustainable competitiveness of the construction sector and its enterprises and Directive 92/57/EEC (construction), health and safety education, training and capacity building programmes should be developed and promoted in the construction sector. As underlined by a study on the future

challenges of the construction sector, these programmes should specifically target health and safety coordinators at construction sites.

- EU non-OSH legislation: Directive 2000/54/EC (biological agents) and Directive 2010/32/EU (sharp injuries). Review of the scope of Directive 2010/32/EU (sharp injuries) to cover all workers exposed to sharp injuries leading to infections by biological agents should be considered, since it would have a positive impact on limiting worker exposure to biological agents.

- Application of OELs and DNELs: Include in-built provisions either under REACH and/or Directive 98/24/EC (chemical agents) to coordinate the adoption of OELs and DNELs and/or to clarify which value must prevail. Other options would be to:

  - To enhance the cooperation between SCOEL and ECHA (RAC) when establishing limit values, as required under Article 95(1) REACH and Article 5(5) COM Decision 2014/113/EU, in order to clarify the potential scientific divergences;

  - To re-evaluate the methodologies used to define OELs and derive DNELs in order to obtain comparable results;

  - To ensure that REACH registrants take into account OELs recommended by SCOEL when deriving DNELs without being challenged in other regulatory processes;

  - To reconsider Member State competence to set higher or stricter OELs in order to allow the applications of harmonised OELs across the EU.

- Reporting requirements under Directive 2013/30/EU on safety of offshore oil and gas operations and under Directive 92/91/EEC (drilling): The articulation of the reporting requirements should be clarified through the adoption of guidelines on the interface between the two directives.

- Employment rights under Directive 92/85/EEC (pregnant/breastfeeding workers) and Directive 94/33/EC (young people): Despite the fact that no coherence issues were identified, the streamlining of provisions setting specific employment conditions and rights for pregnant/ breastfeeding and young people at work under the current EU labour legislation (e.g. Working Time Directive) should be considered for better clarity. This streamlining should at least apply to the provisions setting employment rights that are not directly linked to the health and safety at work of young people and pregnant workers (e.g. working time provisions allowing young people to combine work with school attendance, or time off for ante-natal examinations and prohibition of the dismissal of pregnant workers).

- Medical treatment requirements for commercial seagoing ships: While this does not lead to double-regulation, for the sake of legal clarity and to avoid confusion, the removal of requirements on medical treatment under Directive 2009/13/EC and Directive 2008/106/EC which are already covered by Directive 92/29/EC could be envisaged. This would avoid confusion in the application of medical treatment requirements aboard vessels.

- Public Procurement Directives and OSH award criteria: The reintroduction of a link between the award criteria or contract performance conditions and the fulfilment of OSH requirements

by the (potential) contractor in the provisions of the Public Procurement Directives should be considered to enhance health and safety at work through public procurement incentives.

- Directive 1999/92/EC (ATEX) and Directive 94/9/EC (ATEX equipment): In view of the concerns raised by some Member States, the review of the definition of zones to ensure similar interpretations in Member States to avoid barriers to the free movement of ATEX equipment should be considered. However, this would imply setting up prescriptive conditions without allowing Member States to set more stringent definitions of zones, which is contrary to the *a minima* approach of the EU OSH *acquis*. The development of guidelines for the application of Directive 1999/92/EC (ATEX) to equipment and protective systems placed on the market before the entry into force of Directive 94/9/EC (ATEX equipment), and equipment not falling under the scope of this Directive, could also be considered to enhance the synergy between the two Directives.

- Safety data sheets under REACH and application of Directive 98/24/EC (chemical agents) and Directive 2004/37/EC (carcinogens or mutagens): In order to enhance the synergy between REACH and Directive 98/24/EC (chemical agents) and Directive 2004/37/EC (carcinogens or mutagens) on the use of Safety Data Sheet we recommend the preparation of awareness-raising campaigns (e.g. through the REACH helpdesks and/or EU-OSHA) to inform employers on how to use the SDSs for their risk assessments in order to ensure they are able to extract relevant information from SDSs to fulfil their obligations under Directive 98/24/EC (chemical agents) and Directive 2004/37/EC (carcinogens or mutagens). It would also be important to improve the usability and readability of SDSs for OSH purposes to enhance this synergy.

- International instruments: The incorporation of additional requirements under international instruments in the relevant EU OSH legislation would ensure a level-playing field across the different Member States. As an alternative (or a first step), when it is not yet the case, the adoption of a Council Decision authorising the ratification of the relevant convention by Member States and to further promote ratification should be envisaged.

Recommendation 1.5: Reconsider how to address vulnerable groups

The evaluation shows that vulnerable groups are not addressed in a consistent manner in the current *acquis*. Some groups (young workers, pregnant/breastfeeding workers, temporary workers) are addressed by an individual Directive, whereas others are not (e.g. older workers, migrant workers, new workers). New groups of vulnerable workers may be identified in the future and the current legal structure is not suitable for incorporating these in a flexible manner.

Furthermore, there are cross-references to vulnerable groups of workers between worker-specific Directives and risk-specific Directives. While these references are not incoherent from a legal perspective, they do add to the complexity of the legal framework. In addition, the current vulnerable groups Directives contain provisions on workers' rights as well as OSH-related provisions. While there are clear links between the two, it could still be argued that provisions on workers' rights belong to a separate *acquis*.

The evaluation leads to the recommendation to rationalise the way vulnerable workers are addressed to ensure consistency and coverage of relevant groups. More specifically, it is suggested that:

- The requirements to address the specific needs of vulnerable workers and general prohibitions be more clearly reflected into the Framework Directive coupled with additional guidance on how to implement this in practise targeted at various vulnerable groups;

- The existing Directives on vulnerable groups be cancelled and relevant provisions be transferred to other Directives:

  - Provisions relating to risk-specific prohibitions or other risk-specific provisions be transferred to the relevant risk-specific Directives

  - Provisions on workers' rights to be transferred to Directives pertaining to workers' rights

8.6.2 Recommendation cluster 2: Addressing on-going and emerging risks

Recommendation 2.1: Address risks related to MSDs

Evidence from a number of sources, including the scientific literature, some NIRs, the views of stakeholders interviewed and those participating in the validation seminar, would seem to suggest that there is a need to better address those work factors creating a risk of MSDs not addressed by the two current Directives (display screen equipment and manual handling). However, there is a lack of consensus on what form any action should take.

The options, issues and evidence are debated more extensively in the Manual Handling Directive report. However, it is suggested from this discussion that the complexities of managing the risks of non-manual handling MSDs are unlikely to be compatible with a prescriptive Directive. There is clearly a lot of support for (and against) such an approach in principle. Although, as briefly discussed in the individual directive report, the scientific evidence points towards a more goal-setting approach, the evidence available does not permit a conclusive outcome at this stage. It is suggested therefore that consideration be given to commissioning an ergonomics assessment of the feasibility of generating prescriptive material relating to MSDs not related to manual handling or DSE work ([28]).

At least as an interim measure, consideration should also be given to the option of detailed guidance (for which potential examples are already available nationally) supporting enabling legislation, possibly in the form of an amendment to the Framework Directive, or at least a clear direction that the goal set by the Framework Directive of assessing and managing workplace hazards and risk factors can be met through appropriate application of such guidance.

Recommendation 2.2: Address psychosocial risks

Given the considerable negative impact on health of psychosocial risks, it is clear (and appears to be generally if not universally accepted) that some form of action is required to address the growing issue of ill-health arising from exposure to psychosocial risk factors in the workplace. What is not clear is the nature of such action. Many of the factors giving rise to such problems are well known. However, given their complexities and interactions they clearly do not readily lend themselves to

([28]) It is understood that such a feasibility study might already have been undertaken. However, no such report or its findings have been made available to the authors.

the type of prescriptive directive (possibly incorporating 'exposure limits') favoured by some MSs. Equally, some stakeholders are strongly opposed to what they see as 'just' guidance.

Clearly, some action in this area is desirable, given the high incidence of work-related problems associated with psychosocial risks. Apart from no action at all (on which there seems to be agreement is not an option), three possible approaches can be outlined (although there are undoubtedly more). These are a non-legislative approach based on the use of (agreed) guidance, goal-setting legislation, and prescriptive legislation. Although there are currently two tripartite agreements in place addressing aspects of psychosocial risks (covering 'stress' and 'violence and harassment'), there is a widespread message from MSs that these are not sufficient to address psychosocial risks.

It is also argued by some that Article 5(1) of the Framework Directive ('The employer shall have a duty to ensure the safety and health of workers in every aspect related to the work.') provides a sufficient legal basis. Again, the implicit message from the MSs would seem to suggest otherwise, given the extensive comments (in the NIRs and elsewhere) for a need to address psychosocial risks. At the validation seminar, the option of amending the Framework Directive to explicitly mention psychosocial risks (to make their inclusion as risks explicit), and addressing the issue by information and guidance was not universally well received, although some participants did endorse a fully non-legislative approach. Others, however, expressed a preference for a more detailed legislative solution.

The extensive research literature on psychosocial risks, including the interaction between occupational and non-occupational factors, makes this a complex field in which to enact legislation. However, comments and responses collected during the course of this study, again supplemented by comments from OSH experts, suggest that there is less motivation for ameliorative action in the absence of legislation, implying that guidance alone is less likely to be effective. This is supported by survey results (ESENER-2) which show legislative requirements as the primary driver for OSH action for many employers.

Based on an extensive appraisal of the scientific literature on psychosocial risk factors, their complexities and interactions suggest that a prescriptive approach would not provide an effective tool for controlling psychosocial risks. However, the OSH culture in some MSs does not readily lend itself to a more goal-setting legislative path. As the prescriptive approach appears to be that favoured in the majority of MSs, it is suggested that consideration be given to commissioning a scientific assessment of the feasibility of generating prescriptive material (suitable for legislation) relating to psychosocial risks, to indicate whether or not such an approach could be viable. This could be used to inform a decision on the form and content of legislative developments in this important area of worker health.

Recommendation 2.3: Give attention to updating of relevant Directives

A number of the Directive-specific reports contain direct indications of where their relevance has failed to keep abreast of developments in the workplace. One specific example would be that of the DSE Directive, where advances in new technology and knowledge of relevant workplace hazards and risks appear to warrant considerable change. Attention is drawn to this and other Directive-specific reports to address the recommendations they contain for updating them.

Recommendation 2.4: Streamline provisions dealing with chemical agents across Directives to ensure coherent coverage of risks related to various chemical agents

The analysis of the legal coherence of Directive 2004/3007/EC (carcinogens or mutagens), Directive 2009/148/EC (asbestos) and Directive 98/24/EC (chemical agents) identified a number of different individual areas of legal inconsistency or a lack of coherence between the three Directives. It is widely recognised that the Asbestos Directive reflects a very different scenario and series of highly specific control measures (and there appears to be little support from any source for its merger with the Chemical Agents Directive). However, one solution suggested with regard to the remaining two was that of merging them into a single Directive. There have been numerous comments and suggestions made, from a variety of different sources, both for and against any such suggestion.

This issue is discussed to some extent in the Chemical Agents Directive report. The outcome of this was that, other than the argument for greater legal clarity through rationalisation, there is no evidence-base on which to argue for or against such a move. Given the absence of any coherent evidence-base, it is therefore clear that, other than acknowledging the issue, no clear conclusions or recommendations can be drawn from this work. However, clarification of legal requirements might well serve to address some of the concerns about a lack of clarity and a certain level of confusion regarding the provisions under these two directives, and it is recommended that amendments be considered to the Chemical Agents Directive and Carcinogens or Mutagens Directive to ensure coherent coverage of risks related to various chemical agents

Recommendation 2.5: Streamline provisions dealing with physical agents to ensure coherent coverage

The evaluation has found that it is relevant to maintain the physical agents Directives as there are differences in the risk involved, the approaches to risk management and the setting of different limit values, which justify the existence of distinct directives. However, some provisions in certain physical agent Directives could apply to all physical agents would thus benefit to all workers exposed to such agents. However, more consistency in the way CPMs are drafted across the various physical agent Directives would facilitate their application at the workplace.

8.6.3 Recommendation cluster 3: Compliance, enforcement and SMEs

Recommendation 3.1: Increase compliance of SMEs

The evaluation provides evidence to suggest that SMEs are less compliant with the requirements of the OSH directives than large establishments. Although SMEs display lower incidence rates of accidents at work and also show a decreasing trend in number of accidents at work similar to large establishments, it is still considered that increasing the compliance of SMEs is likely to lead to additional benefits in terms of avoiding work-related accidents and diseases.

The key challenge in this regard is how to reach the SMEs and encourage them to make the necessary changes. The data collected for the evaluation indicates that SMEs are often not consciously incompliant, that they typically do not react well to written guidance (often finding it too complicated) and that they rely on external services to a greater extent than large establishments. SMEs are best targeted through a more personalised approach, combining enforcement and guidance. Clearly, it would be burdensome for inspectorates to target SMEs using conventional approaches to inspection, so the challenge is to find new and innovative ways of reaching the

SMEs in an efficient and effective way. Below, the main suggestions for key initiatives that would promote this are presented.

It is **not** recommended to establish exemptions for SMEs and micros, as this would lead to a lowering of the levels of protection for some workers.

› Continuing the further development and dissemination of already existing effective tools, in particular the OiRA tool. Ensuring that the experience already gathered is used in the most effective way, e.g. that Member States can learn from each other and avoid unnecessary cost in developing custom-made tools and approaches. The role of EU-OSHA is important in this respect.

  As part of this, consideration could be given to exploring the approaches adopted in some MSs to make the essential requirements of the Directives more accessible. One specific example would be to further explore the potential of the 'Control banding' approach to managing chemical hazards such as 'Stoffenmanager' developed in the Netherlands to assist SMEs (see the Chemical Agents Directive report).

› Finding ways to target the SMEs with a personal approach without over-exerting the resources of the inspectorates. This could include moving from the traditional focus on inspections of individual establishments to a broader catalytic approach, considering extended supply chains and targeting upstream actors. Another approach could be tapping into existing business networks and facilitation of mutual learning processes among participants. At the European level, this could potentially be promoted by the Commission and the SLIC.

  Again, the experience of some MSs in some industries could be of value here. For example, there is evidence from the UK of the benefits of the 'cascade approach' to OSH as applied on large-scale construction projects, with construction SMEs learning from their involvement.

› Investigating the promotion of economic incentives, especially in SMEs, such as favourable insurance conditions if certain OSH criteria are met, in order to encourage the development of risk prevention strategies and overall OSH compliance.

› Introducing measures to reduce costs for SMEs could be of value, because compliance costs (measured per worker) tend to be higher for SMEs and because SMEs are less likely to perceive OSH as a financial investment. We do not, however, recommend implementing exceptions or lighter regimes for SMEs, because this could reduce the protection of workers. Rather, increasing financial incentives through financial incentives schemes could be used to motivate SMEs. Likewise, accompanying measures, in terms of better and more targeted guidance, could reduce uncertainty about legal requirements and thereby reduce costs for enterprises. Moreover, SMEs also need better guidance on the availability of free advice and guidance to reduce costs for external consultancy.

Recommendation 3.2: Inspections

The evaluation finds that there is a large degree of variance in the number and frequency of inspections across the Member States. To some extent, this undoubtedly reflects national differences in the approach to inspections and enforcement (e.g. those MSs who adopt a risk-based system for prioritising inspections). It could, however, be interpreted as suggesting that the Directives may not be enforced to the same extent in the Member States, which again leads to a

concern over the extent to which there is a level playing field. The available data does not allow these (or other) explanations to be systematically explored. It has to be noted that as the Directives only set minimum requirements, they do not in themselves aim to achieve a completely level playing field (rather one in which significant 'dips' are levelled out). It is also noted that the requirement to enforce the legislation transposing the Directives is not very clearly articulated in the current provisions in the Directives. At the same time, it is clear that legal requirements and inspection are key determinants in explaining why establishments develop OSH policies and take OSH action, so there is a need for a strong effort in this area to ensure the implementation of the Directives and to aim for a greater harmonisation in the way the legislation is enforced. On this basis, it is suggested to:

- Consider whether a clearer reference to the obligation to enforce the requirements should be included in the Framework Directive

- To strengthen existing coordinating mechanisms for enforcement and inspection, potentially coupled with a stronger emphasis on competence building and guidance to inspectorates. The SLIC would be a key factor in this respect.

Recommendation 3.3: Strengthen focus on risk management

The evaluation carried out as part of this study shows that there is a high level of compliance with the requirement to perform a risk assessment, whereas compliance is lower (but still reportedly fairly high) in relation to the other CPMs. The evaluation also calls attention to evidence from some MSs at least that the issue that a sole focus on risk assessment may divert attention from risk management. However, it should also be noted that in several cases, evaluations of individual Directives resulted in conclusions regarding inadequate or insufficient risk assessment procedures for a given Directive, which did not adequately address Directive-specific hazards, risks, challenges and/or circumstances. There is thus a need for a dual focus on further enhancing the quality of risk assessments while at the same time ensuring that measures identified in the risk assessment are, in fact, implemented and the risks properly managed. In order to work towards these aims, it is suggested that:

- Guidance on implementation of the CPMs / Framework Directive is updated and disseminated focusing not only on risk assessment, but on the entire plan-do-act cycle;

- In light of these conclusions on the apparent differences in effectiveness of risk assessments carried out in-house or by external service providers, combined with the considerable differences across MSs of the dissemination of the two approaches, it is necessary to consider which provisions of support match the different challenges. Clearly, different kinds of advice and guidance are required in relation to these two approaches (EU-OSHA, 2013c), and with evidence pointing to significant differences in risk assessment quality, this variance constitutes room for improvement and increased effectiveness of the CPM;

- We thus cautiously repeat the fundamental question raised in the European Risk Observatory of 'how the use of external services to carry out risk assessments fits within the Framework Directive's principles of prevention and protection through a coherent overall policy' (EU-OSHA, 2013c). We recommend that the answer to this question is coherently incorporated in the legislative framework, possibly by seeking to promote the use of internally conducted risk assessments or establishing minimum requirements on management participation when using

external services, which might ensure co-ownership and competence development in managements;

- In order to improve the contribution of preventive and protective services to the effectiveness of the OSH *acquis*, it could be considered whether the requirements regarding the availability of such services should be further enhanced in the Framework Directive.

- Our analysis shows a possible need to revisit the provisions related to the CPM of health surveillance, as the MSs have very different approaches to transposition of this requirement. Although it is, of course, open to MSs to adopt more stringent measures relating to this as well as any other provisions, there appear to be differences in how the provision is interpreted, which may lead to differing OSH standards for workers.

  As part of this, there have been some questions raised about the purpose (and therefore value) of some such requirements. For example, monitoring of hearing ability provides reassurance of the effective implementation of the provisions of the Noise Directive (as well as possibly identifying the small minority of particularly susceptible individuals not protected by the Exposure Limit). In contrast, it has been suggested (see the Asbestos Directive report) that the symptoms of asbestos-related disease emerge too late for the health surveillance required under this Directive to fulfil a similar role.

- A total of 57 % of employee representatives report that they have received a sufficient amount of training. There is, in other words, a continued need for training on health and safety risks, and on emerging risks in particular. As these proportions refer to the training of safety and health representatives, it is reasonable to assume that the training of workers is more limited. This indicates that, while all evidence suggest that training and information is a pivotal element in the process of improving the safety and health of workers, the effectiveness of the CPM on training may have been moderate.

8.6.4 Recommendation cluster 4: Data and monitoring of effects

Recommendation 4.1: Improve monitoring systems to obtain better information on effects of the Directives

The evaluation shows very clearly that there is very limited data at the EU level to assist in assessing the specific effects of the Directives and the extent to which they are achieving their goals. There is a need for better monitoring systems to be able to follow up on whether the legislation is working as intended in terms of reducing exposure to hazards and consequently reducing the incidence of accidents and work-related disease. It is assessed that in order to make the Directives 'fit for purpose', there is a need to better define and execute the monitoring plan for the Directives. This includes considering the three key questions also posed in the better regulation guidelines: 1) What evidence needs to be collected? 2) When and how should evidence be collected? 3) Who will collect the evidence and from whom?

It is recommended that consideration should be given to developing better, more consistent data recording systems at the national and EU levels that better reflect the relationship between causal factors and consequent injuries and occupational disease; and therefore assist in identifying risks and risk prevention strategies (as well as aiding future evaluations but this should not be the primary purpose for doing so). One way forward could be a focus on a step-by-step approach

whereby, for example, some of the most commonly recognised and commonly occurring occupational diseases were first dealt with.

Whilst many of the Directive reports make only general statements regarding the inadequacies of data sources (and a need for improvement), others include specific recommendations on how to achieve this. These include the Asbestos Directive report and the Chemical Agents Directive, where specific approaches are advocated. For example, existing requirements for employers to collect data on asbestos workers and remit it to the authorities if required could provide the basis of a valuable centralised data collation. Such an initiative could provide an earlier insight into the effectiveness of the Asbestos Directive than waiting for cases of the long-latency asbestos diseases to become known.

It is noted that this would be consistent with the 'preferred option' presented in the 'Report on the current situation in relation to occupational diseases' systems in EU Member States and EFTA/EEA countries, in particular relative to Commission Recommendation 2003/670/EC concerning the European Schedule of Occupational Diseases and gathering of data on relevant related aspects.'

> 'The second option would involve progressively improving the recognition and identification of occupational diseases in all MS through a combination of stimulating and innovative recommendations and selective reporting obligations to the European Commission, Eurostat and EU-OSHA.' (European Commission, j2013c)

Complete implementation of Commission Regulation (EU) No 349/2011 ([29]) (implementing Regulation (EC) No 1338/2008) should go some way towards improving consistency of the data provided by MSs.

As a general principle, it is suggested that existing requirements in some directives for employers to collect data and remit that data to the authorities, if required, provide the basis for data collection systems relating to these specific issues. As they already have an obligation to collect this data, the additional requirement to remit it to the authorities should not generate any significant additional burden on employers. Perhaps initially on a voluntary basis, as proof of concept, these data could be collected and remitted to the EU and could provide the feed data for an EU-wide collation. Non-legislative agreements could provide guidance on the data requirements to facilitate compatibility between data sets. This would provide for a more efficient use of those existing databases and registers which are already in place in the MSs.

Finally, cost benefit analysis provides important information for policy makers, but we need better national data on both costs and benefits. Moreover, to conduct cost benefit analysis at the EU level, we need more in-depth examination of existing country-specific literature and databases, analyses of structural difference between MS and a standardisation of national methodologies. To ensure a sufficient level of accuracy in the analysis, this exercise will require considerable resources and efforts. Moreover, the goal-setting requirements in the Directive means that assessing the actual costs of compliance will be very difficult. Thus, alternatively, cost benefit analyses, based on case studies from the enterprise perspective, might be a more realistic option.

([29]) COMMISSION REGULATION (EU) No 349/2011 of 11 April 2011 implementing Regulation (EC) No 1338/2008 of the European Parliament and of the Council on Community statistics on public health and health and safety at work, as regards statistics on accidents at work.

Most of the available literature either focuses on costs or benefits. We caution against initiating cost-reducing measures without assessing the impacts, because a more costly activity could also bring about larger benefits, making it more profitable than a less costly measure (as shown in the literature on profitability).

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