

Development of an EU framework to assess the overall impacts of occupational health and safety (OSH) prevention on the performance of construction enterprises

Study background

Client: EASME

Rotterdam, 8 February 2019



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1 Introduction

The construction sector is the biggest industrial employer in Europe. Even though the sector is home to several major multinational companies, it is mainly characterised by a supply chain of small and medium sized enterprises (SMEs) as well as micro and small enterprises (MSEs). The sector is a prime driver of growth and employment. After a period of decline, employment is on the rise again, and expected to increase more over the course of 2015-2025. Furthermore, there is an increase in demand for skills levels, which is expected to even double, following the developments in construction of 'green' and energy efficient buildings¹.

Parallel to this growth, the sector faces a number of challenges, of which most are especially threatening to SMEs. The Strategy for the sustainable competitiveness of the construction sector and its enterprises ("Construction 2020") identifies (amongst others) the following structural problems²:

1. The shortfall of skilled workers;
2. Low attractiveness to young people due to the working conditions.

Due to low birth rates and rising life expectancy, the proportion of older people in the EU will increase fast. It is expected that in 50 years after 2010 the percentage of people older than 65 will grow from 17.4% to 29.5% while at the same time the EU working age population is expected to decline by 14.2%. These developments put pension and health systems under pressure and make it necessary to keep the elderly as long and healthy as possible at work. As some functional capacities decline with age OSH management is needed in order to keep people working. Next to these demographic changes, the attractiveness of the sector remains low, because the sector is still the most risky sector when it comes to fatalities^{3,4}. Providing a healthy and safe workplace may increase attractiveness of the sector and attract and retain young workers to the sector.

Several policy programmes and activities are in place to address these issues by improving health and safety standards at work. One of these is the Communication Safer and Healthier Work for All - Modernisation of the EU Occupational Safety and Health Legislation and Policy, specifically aiming at 1) helping business comply with occupational safety and health rules (in particular microenterprises and SMEs) as well as 2) updating and removing outdated rules, refocussing efforts on facilitating compliance, a broader coverage of people and better enforcement and monitoring⁵. Also, EU-OSHA has been active to directly support employers with health and safety issues, for example:

1. The promotion of health and prevention of accidents and diseases throughout the working life enables the workforce to prolong their career. It is stated in the Communication on the EU Strategic Framework on Health and Safety at Work 2014-2020 that risks affecting specific categories of workers such as the elderly should receive particular attention and targeted action⁶. This has been done for example by EU-OSHA with the project "Safer and healthier work at any age – occupational safety and health (OSH) in the context of an ageing workforce"

¹ European sectoral trends. CEDEFOP. <http://www.cedefop.europa.eu/en/publications-and-resources/publications/8093>
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0433:FIN:EN:PDF>

³ http://ec.europa.eu/eurostat/statistics-explained/index.php/Accidents_at_work_statistics

⁴ <https://www.inspectieszw.nl/actueel/nieuws/2018/04/17/werknemers-werken-vaak-ongezond-ejn-onveilig>

⁵ European Commission (2017). Communication from the commission to the European Parliament, the Council, the European economic and social committee and the committee of the regions Safer and Healthier Work for All – Modernisation of the EU Occupational Safety and Health Legislation and Policy. 10.1.2017 COM(2017) 12 final.

⁶ European Commission (2014). Communication from the Commission to the European parliament, the Council, the European economic and social committee and the committee of the regions on an EU Strategic Framework on Health and Safety at Work 2014-2020.

that was initiated and financed by the European Parliament and carried out by EU-OSHA, as well as the subsequent Healthy Workplaces Campaign 2016-2017 “Healthy workplaces for all ages”.

2. In 2017, a practical guidance document for employers was published, seeking to assist companies in getting most out of obligatory risk assessments, preventive measures and training. The document is written in a non-legal language that aims to speak directly to the end users⁷.

However, even though these actions contribute to improved health and safety standards (across sectors), the efforts mostly regard legislative compliance and improving OSH conditions. Emphasizing profitability and productivity gains and introducing a business case of competitiveness and sustainable development is much more rare when it comes to reasons for enterprises to invest in OSH measures. Providing a cost-benefit analysis to illustrate the possible benefits of investing in OSH measures is therefore an important step in awareness-raising of the competitiveness and sustainability advantages to OSH prevention. This especially accounts for SMEs, who are generally less well informed about risks and thus more vulnerable to incurring high costs as a consequence of these risks.

This was also acknowledged by stakeholders in the meetings regarding Construction 2020, as indicated by the work that has been carried out by Ecorys to support the Strategy for the sustainable competitiveness of the construction sector. Prevention should be increasingly viewed as an enabler of performance, in which innovation should be used for the benefit of SMEs.

With one of the most risky working environments as well as an ageing workforce that needs replacement, OSH investments can be used as a way to signal attractiveness of construction work to potential employees as well as avoiding early retirement through offering improved working conditions.

The aim of this study is to provide a solid basis for the development of the EU framework to assess impacts of OSH prevention on the performance of construction enterprises, by offering a practical tool, namely the handbook with financial and risk assessment framework. Through our effective and thorough methodology, we aim to:

1. gain a clear picture of existing initiatives in OSH prevention across all EU Member States;
2. contribute to the assessment of the economic viability of measures related to OSH prevention at company level.

A practical tool such as the handbook with the framework, is expected to be a good way to reach the target group of construction companies, from micro to global enterprises.

We focus on the micro-economic benefits of implementation, not societal or sectorial benefits. With this information, the implementation of health and safety standards in the construction sector should be improved, such that the sector adheres to working conditions comparable to other sectors of the economy. In the end, we hope to contribute to improving the sector image, such that new cohorts of young people enter and remain working in the construction sector.

⁷ <http://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=7960>

2 Background and understanding

2.1 Construction sector

The construction sector is the biggest industrial employer in Europe: It represents 9.9% of the GDP and 51.4% of the Gross fixed Capital Formation; with 14.9 million operatives, it represents 7.1% of Europe's total employment and nearly 30% of industrial employment⁸. When considering major contractors in isolation, several large multinationals dominate the European market. This is particularly evident in large infrastructure projects, led by major multinational contractors such as, Vinci (France), ACS Construction Group (Spain), Bouygues (France), Skanska (Sweden) and Eiffage (France)⁹. However in practice, operation and composition of the sector is characterised by a complex supply chain structure, in which micro and small businesses dominate (the average company has 4 workers)¹⁰.

Therefore, in order to understand how the sector works, it is helpful to consider a 'tier' analysis of the supply chain¹¹, where main contractors with a direct commercial relationship with a client are termed Tier 1. Sub-contractors and suppliers with a direct contract with the Tier 1 main contractor are termed Tier 2. Sub-contractors and suppliers working for sub-contractors are termed Tier 3. Tier 3 sub-contractors also employ suppliers and sub-contractors, so in many cases there will be a fourth or even fifth tier involved in construction delivery. Tiers 2 and beyond comprise an extensive number of smaller providers. Up to 95% of construction, architecture, and civil engineering firms are micro-enterprises or small and medium-sized enterprise (SMES)¹².

Table 1. Description of 'tiers' in the constructions sector supply chain

Tier	Description	Example
Tier 1	Designers and constructors that have a direct contract with the ultimate client	-
Tier 2	Designers, constructors and suppliers with a sub-contract with the Tier one contractor	Novated design consultants Sub-contractors Manufacturers and material distributors Suppliers of major plant and equipment such as tower cranes
Tier 3	Designers, constructors and suppliers with a sub-contract with a Tier two subcontractor	Designers providing working details Specialist sub-contractors Manufacturers and material distributors Plant and equipment supply and hire firms

Source: UK Department of Business and Innovation, 2013

⁸ http://ectp.ectp.org/cws/params/ectp/download_files/27D2049v1_ECTP_ImpactDocument.pdf

⁹ <https://www.statista.com/statistics/264430/the-largest-construction-companies-in-europe/>.

¹⁰ <http://www.ebc-construction.eu/index.php?id=3>

¹¹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/252026/bis-13-1168-supply-chain-analysis-into-the-construction-industry-report-for-the-construction-industrial-strategy.pdf

¹² https://ec.europa.eu/growth/sectors/construction_en

An important feature of construction is that management of activities is on a temporary site rather than in a factory. This has implications for working practices since tasks are likely to be organised and managed on a site-level basis. New technological developments such as Building Information Modelling (BIM), 3d printing and robotics might allow companies to improve on pre-planning and pre-building whole construction projects, however adoption of these technologies has been slow¹³. The collaborative approach to many construction projects presents opportunities for shared learning and learning across supply tiers (although the fragmentation of the industry has also been seen as a key block to change)¹⁴. Additionally, construction clients can play a major role in the way the construction market operates and through purchasing power and procurement rules can be a facilitator of innovation¹⁵.

2.2 OSH in the construction sector

Occupational safety and health in the construction area is driven by safety considerations (preventing accidents and diseases), and competitiveness reasons i.e., financial profitability through investing in safety. With one of the most risky working environments as well as an ageing workforce that will need replacement, OSH investments can be used as a way to signal attractiveness of construction work to potential employees as well as avoiding early retirement through offering improved working conditions.

OSH in the construction sector is related to development, promotion, and maintenance of the workplace environment, policies and programs to ensure mental, physical and emotional well-being of employees. At the same time, the workplace should be free from actual or potential hazards that could injure employees.

There are various physical hazards in the construction industry (e.g., vibration, noise, working at height, handling of heavy loads, exposure to chemicals and airborne substances). Consequently, numerous risk management interventions are necessary to control risks to safety and health. There are often several potential approaches to manage the same risks and there are a number of levers that regulators can utilise to encourage or enforce safer behaviour. Recently, psycho-social risks have received an increased amount of attention in this sector^{16,17} as a result of the recognition that the young, male demographic, which is typical to the construction workforce, can be psychologically vulnerable¹⁸. The European social partners, EFBWW and FIEC, have also recognised this and recently held a workshop on this issue as part of the Social Dialogue project (co-financed by DG EMPL)¹⁹.

According to the European OSH Strategic Framework²⁰, micro and small enterprises have particular difficulties in complying with OSH legislation. There is some evidence that costs deter implementation of safer working methods in small companies. An IES study (Wilson et al, 2011)²¹, for which interviews with tools traders were carried out, found that cost was the main barrier to the

¹³ Roland Berger (2017) Turning point for the construction industry. The disruptive impact of Building Information Modelling (BIM), available at https://www.rolandberger.com/en/Publications/pub_disruptive_impact_of_building_information_modelling.html

¹⁴ Wolstenhome, A. (2009) Never Waste a Good Crisis A Review of Progress since Rethinking Construction and Thoughts for Our Future, Constructing Excellence

¹⁵ Innovation, Strategy and Risk in Construction: Turning Serendipity into Capability by Martin Loosemore, 2014. Routledge, London.

¹⁶ <http://sustainability.bam.co.uk/health-and-wellbeing/>

¹⁷ <https://www.skanska.co.uk/about-skanska/sustainability/health-and-safety/performance/>

¹⁸ <https://www.theguardian.com/society/2017/mar/17/male-construction-workers-greatest-risk-suicide-england-study-finds>

¹⁹ <http://www.fiec.eu/en/event/mental-health-in-construction-work---fi-ec-efbww-workshop.aspx?MenID=272>

²⁰ <http://www.cesi.org/wp-content/uploads/2016/06/PODNIETEC-Zinta-European-Commission-EN.pdf>

²¹ <http://www.hse.gov.uk/research/rrpdf/rr843.pdf>

universal take-up of safer handheld tools. Old-style ground breakers were still reported as being in use, for example, even though they had been superseded by models with much lower vibration levels. Suppliers felt that smaller companies were unlikely to be able to cover the costs of replacing old tools, even when they were exposing workers to unnecessarily high vibration levels when, in all other ways, the tools were fully operational.

Smaller businesses are likely to have more difficulties in resourcing and implementing safety and health policies than larger companies²². This seems to have been recognised by SME industry representatives with last year’s annual EBC conference focus on “How to help Construction SMEs comply with Occupation Health and Safety legislation?”²³.

Having a clear business case is an important motivator as noted by EASME/COSME in their tender document. A recent systematic review²⁴ has highlighted the need for high-quality economic evidence to evaluate the cost-effectiveness of OSH interventions, especially at the organisational level and in all areas of worker health.

2.3 Examples of relevant initiatives

In considering the proposed research, the schemes discussed below are relevant to consider as they exemplify a range of OSH initiatives, using a mix of levers to achieve change, including supply chain pressure, competitive pressures (benchmarking) and client specification (Olympic Delivery Authority). Apart from the last set of initiatives (for which EU-OSHA commissioned a return on investment study), information on these schemes suggests that economic returns are usually neither explicitly acknowledged nor measured when judging the success of OSH interventions in the sector, highlighting some of the challenges ahead for the proposed project.

Supply chain scheme

During the early 2000s, the UK Health and Safety Executive’s (HSE) Construction Division conducted a programme of work that sought to bring about improvements in OSH within the construction sector by developing solutions in partnership with all relevant organisations in the industry supply chain²⁵. Early work with industry stakeholders was instrumental in implementing the outcomes shown in Table 2. The table demonstrates that improved product specification, product substitution, process change and better information provision can all be instrumental in bringing about risk reduction.

Table 2. Examples of approaches to risk management in the construction sector

Risk area	Approach to risk reduction/management	Intervention
MSDs (musculoskeletal disorders)/manual handling	Specification of materials	<ul style="list-style-type: none"> □ Elimination of 50kg bags from construction sites □ Reduction in specification and use of heavy blocks.
	Product substitution	<ul style="list-style-type: none"> □ Substitution of concrete kerbs with kerbs made from lighter materials, produced in smaller units.

²² https://osha.europa.eu/sites/default/files/seminars/documents/15%20EU-OSHA%20D%20Eisler_The%20business%20case%20for%20OSH_EN_0.pdf.

²³ <http://www.ebc-construction.eu/index.php?id=135>

²⁴ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5794237/>

²⁵ <http://www.hse.gov.uk/research/rrpdf/rr843.pdf>

Risk area	Approach to risk reduction/management	Intervention
	Process	<ul style="list-style-type: none"> □ Increased use of lifting equipment on road building, road repair and hard landscaping sites □ Moving from a situation where the majority of (heavy) paving materials are laid by hand to one where mechanical laying is the industry norm
Hand-arm vibration (HAV)	Provision of risk management information	<ul style="list-style-type: none"> □ Establishing a HAV database □ Creation of a HAV management system for industry-wide use.
Reducing respirable crystalline silica (RCS) exposure	Provision of risk management information	<ul style="list-style-type: none"> □ Establish good practice by agreeing a control hierarchy including providing clear guidelines specifying when water suppression and respiratory protective equipment must be used.

Source HSE, 2011

One particular strength of the programme was its work with multiple stakeholders throughout the industry supply chain. It required the development of close partnerships with suppliers, public and private sector clients, designers, contractors and the construction workforce to agree reasonably practicable solutions.

HSE also worked in partnership with local government and other UK government departments in their roles as enforcers and as clients of construction assignments. The consultation was found to develop effective methods of risk control in the construction sector.

An evaluation of the project as a whole showed that the relationship between increased availability of safer equipment and its actual use within the industry was not clear as expected. Wilson *et al* (*ibid*) observed a trend of construction firms delaying investment in new lifting equipment, evidenced by an increased demand for spare and component parts to prolong the life of existing equipment.

Benchmarking schemes

IES conducted a detailed review of benchmarking schemes in an EU-wide context²⁶, with several of these reviews including construction sector participation. The reviewed benchmarking schemes included 'Zero Accident schemes' (Netherlands and Finland) and other schemes that were sector or risk specific. An example of the latter was a benchmarking scheme on forklift truck safety led by Toyota as part of their Corporate Social Responsibility agenda.

The overarching analysis of the benefits of the schemes from the perspective of industry stakeholders showed that the top three initiatives were 'learning about good practice', 'comparing incident rates', and 'informing policy documents'. A third of respondents identified reducing accident costs as a benefit; while only a minority identifies and highlights the poor understanding of productivity benefits of OSH.

High-profile project schemes

Major infrastructure projects have provided a setting which facilitates the introduction of initiatives on a large scale. For example in the case of London 2012, the Olympic Delivery Authority was

²⁶ <https://osha.europa.eu/en/tools-and-publications/publications/report-eu-osha-review-successful-occupational-safety-and-health/view>

committed to the development and maintenance of a positive OSH culture throughout the supply chain and across the site by means of effective leadership and engagement²⁷. Construction suppliers were responsible for ensuring during their procurement process that only those capable of meeting OSH standards were appointed. Suppliers were expected to research and develop new best practice approaches to enhance OSH performance in the work of the ODA and to share findings with other ODA suppliers.

Schemes for small companies

An EU-OSHA report examined the economic aspects of occupational safety and health (OSH) interventions in small and medium-sized businesses (SMEs)²⁸. Case studies in the existing literature were identified and examined, and thirteen new case studies on OSH initiatives in European SMEs were conducted, with a business case for each intervention prepared according to a common model. Analysis showed the OSH interventions studied were generally profitable, and these new case studies therefore provide a useful tool to allow owners and managers of SMEs an insight into the potential benefits of improving OSH and the key factors involved in carrying out a cost-benefit analysis. Table 3 shows examples from the construction sector.

Table 3. Examples of OSH initiatives in SMES in the construction sector

Sector	Short description of the intervention	Results	Payback period (years)
Construction (floor coverings)	Training in correct lifting, exercises, lifting equipment, reminders about safe lifting, incentives (from health insurance)	Reduction in back pain and sick leave due to back pain.	2.16
Construction (houses)	Individual visits from a physiotherapist, a rest break tool, training (in empowerment)	Reduction in musculoskeletal disorders and related absenteeism	<1.00
Construction (window panes)	Renting equipment for handling window panes during deliveries (charged to customers)	Elimination of absenteeism due to occupational accidents and ill health, improved productivity.	2.62
Construction (agriculture)	Implementation of equipment to reduce physical strain in load handling	Reduction of related incidents, improvement in quality of work	<1.00
Construction	Automatisation through provision of equipment	Reduction in accident risks and physical strain, improvement in productivity	3.20
Construction (pipes, houses)	Use of a material lift, continuous training, OSH awareness raising initiatives.	Productivity raised by up to 30 %, improvement in quality of work and working conditions (noise, dust), reduction in sick leave	1.31

Source: EU-OSHA, 2014

²⁷ <http://webarchive.nationalarchives.gov.uk/20120403121557/http://www.london2012.com/publications/oda-health-safety-and-environment-standard.php>

²⁸ <https://osha.europa.eu/en/publications/reports/the-business-case-for-safety-and-health-cost-benefit-analyses-of-interventions-in-small-and-medium-sized-enterprises/view>

However, the study concluded that investment in OSH is not always financially beneficial and “like any other type of investment, it might be economically profitable or not, depending on some key factors, as well as on how the financial effects of the intervention are measured”.

For clarity on the issue, further analysis into the costs and benefits of OSH measures is needed. This analysis serves to generate a solid basis for the development of a framework to assess the impact of investment in OSH prevention on the performance of construction companies. In the following chapters we lay out our methodological approach and how we plan to conduct this analysis.

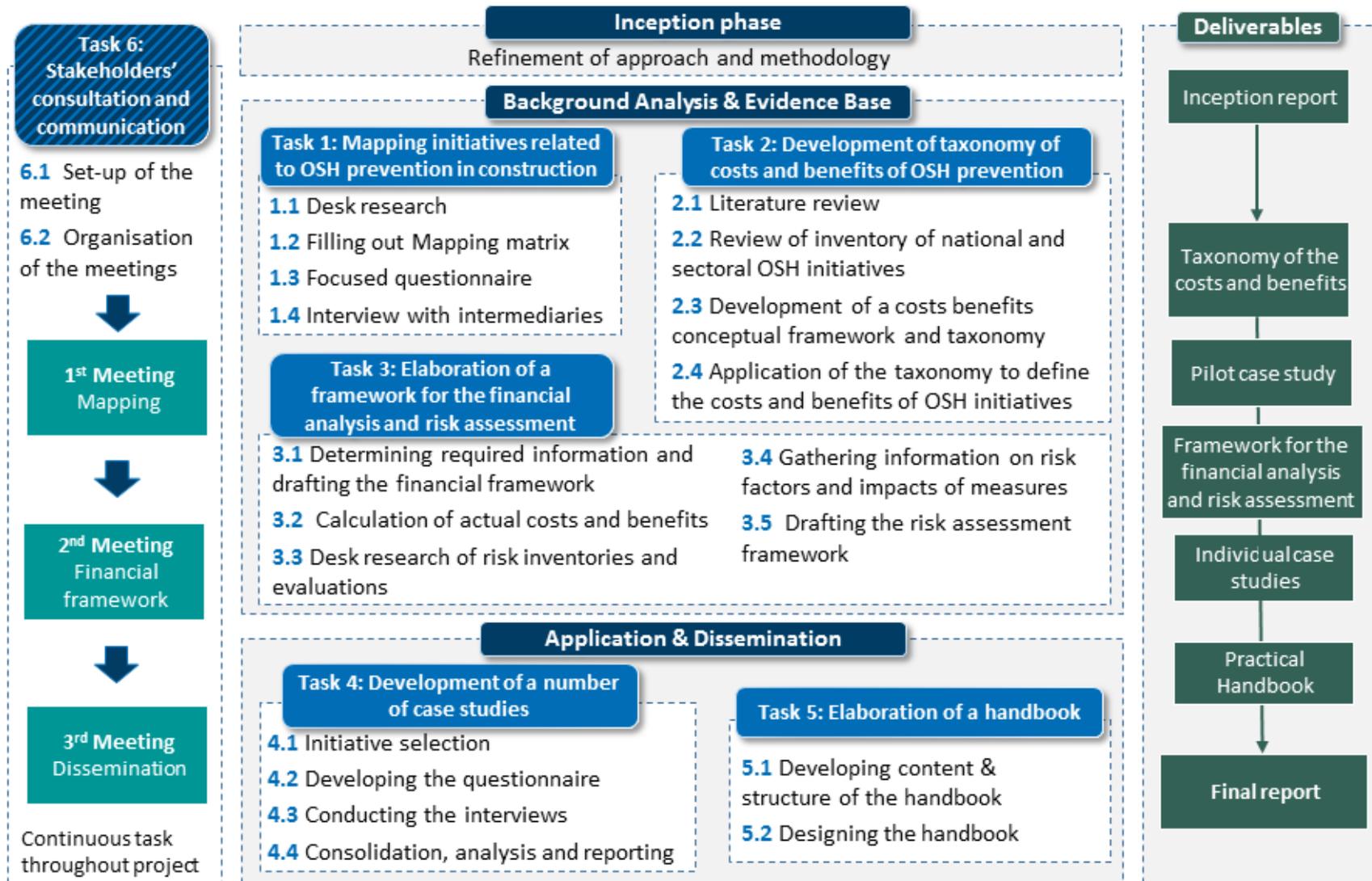
3 Methodology

3.1 Roadmap Methodology

The effective implementation of this assignment requires the careful prioritisation and scheduling of a range of tasks and activities. Therefore we have developed a Roadmap which is based on the tasks from the Terms of References as presented in Figure 1 below.

Our approach for additional tasks such as project management, reporting and quality management will be described in Chapter 4.

Figure 1. Task flowchart



3.2 Task 1: Mapping of national and sectorial initiatives related to OSH prevention in construction

Aim

The aim of Task 1 is to identify and map relevant initiatives at national, as well as sectoral level, addressing the economic aspects of OSH prevention in construction. Furthermore, we aim at generating a good foundation for the taxonomy exercise, i.e. Task 2.

Approach

A flexible and strategic approach is needed which allows desk research to be supplemented by other methods to fill any remaining gaps in knowledge, for example, additional targeted email communication and interviews.

In order to gather the required information, we propose the following activities:

1. Desk research (to gather information on existing OSH initiatives)
2. Fill out mapping matrix (to structure information on the initiatives, such as stakeholders involved, OSH risks the initiative addresses, and available information regarding resources invested)
3. Interviews (to follow-up on a number of specific initiatives)
4. Targeted survey (to fill information gaps)

The way that the construction industry operates is likely to impact directly onto the mapping exercise. Firstly, determining which initiatives have been implemented within micro and small firms – and how many – may not be possible unless there are online records of this. Therefore even a systematic mapping process may be biased towards the activities of larger contractors.

Secondly, many multinational construction companies will introduce changes in a company-wide basis (i.e. not country-wide): so a simplistic one-on-one mapping between country and initiative will not be realistic: the mapping between EU-28 and initiatives will need to represent these circumstances accurately. It is therefore crucial to be alert on the same initiative implemented in multiple countries, and see whether they differ in the way they are implemented across countries.

Thirdly, some construction companies may have implemented new ways of working on a particular job/project through being contracted by another 'higher tier' company (i.e. complying with on-site practices as a result of the supply chain). An example is a recent Skanska initiative that addressed psychosocial risk: the company has been raising mental health awareness throughout the business and with their contractors. There may also be examples of 'responsible clients' who have made particular OSH standards a condition of contract awarding, particularly in the case of local and national government contractors. A mapping system will need to represent this type of situation as accurately as possible.

Activity 1.1: Desk research

This research phase will involve searching for OSH construction initiatives, checking for relevance to the project scope and documenting their characteristics.

We envisage that the desk research will primarily utilise online search, using various Boolean combinations of terms in each of the respective official languages of the European Union. An example of a search strategy (to be refined after scoping exercise), can be found in Table 4.

Table 4. Example search strategy

Primary terms		Secondary terms		Tertiary terms (1)		Tertiary terms (2)
Construction	AND	OSH	AND	Cost	AND*	Initiative
		Health		Benefit		Interven\$
		Safety		Investment		Innovat\$
		Wellbeing		Rol		Improv\$
		Risk		Saving		Substitut\$
		Accident		Profit		Scheme
		Injury		Loss		Measure
		Disease		Value		Process
		Illness		Productiv\$		Pilot
				Financ\$		Project
				Econom\$		
				Incentiv\$		

* This extra column could be used to constrain the search if the first three do not yield a sufficiently focused set of 'hits'
(\$= freetext)

We suggest initially searching the following **topic-specific resources**:

Table 5. Preliminary overview of resources

Sources
<p>EU-OSHA to include documents such as:</p> <ul style="list-style-type: none"> The business case for safety and health at work: Cost-benefit analyses of initiatives in small and medium-sized enterprises²⁹ The economics of occupational safety and health – the value of OSH to society³⁰ (data visualisation tool) Online Interactive Risk Assessment (Oira)³¹
Sites hosted by EU-OSHA's focal points in the EU-28 ³²
European Construction Sector Observatory ³³ , (ECSO) including its 20 Country Fact Sheets and 28 Policy Measures Fact Sheets
European Construction Sector Federation (FIEC) ³⁴
Top 20 largest multinational construction companies operating in the EU28
Sites associated with large EU building and infrastructure projects, e.g. the Fehmarnbelt Tunnel ³⁵ (Denmark/Germany), Cross Rail (UK)
Insurers and other private companies with a stake in OSH construction such as B-A-D-Group ³⁶
Academic sources, e.g. Medline (OVID), EMBASE.com, Cochrane Library (Wiley), and PubMed to ensure peer-review published material is covered. This is to ensure we pick up key sources such as Economic Evaluation of Occupational Safety and Health Interventions From the Employer Perspective ³⁷ (published only two months ago) and papers with a similar focus.

These examples are intended to be a starting point and we will draw upon in-house expertise across the consortium to expand this list.

²⁹ <https://osha.europa.eu/en/tools-and-publications/publications/reports/the-business-case-for-safety-and-health-cost-benefit-analyses-of-interventions-in-small-and-medium-sized-enterprises>

³⁰ <https://osha.europa.eu/en/economics-occupational-safety-and-health-value-osh-society>

³¹ <https://oiraproject.eu/en>

³² <https://osha.europa.eu/en/about-eu-osha/national-focal-points/focal-points-index>

³³ https://ec.europa.eu/growth/sectors/construction/observatory_en

³⁴ <http://www.fiec.eu/>

³⁵ <https://femern.com/en/Construction-work/Working-conditions/Safety-at-the-construction-site>

³⁶ <https://www.bad-gmbh.de/>

³⁷ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5794237/>

IES plan to use Google Translate and the app 'onlinedoctranslator' to interpret online documents, ie to assess which documents will inform our mapping process and select those that are eligible and draw out relevant details. In a small number of cases there will be ambiguities about the relevance of a scheme to the project because of IES's unfamiliarity with the national context or difficulties understanding translation. In those cases the country experts could provide valuable insight and a small number of brief email enquiries may be necessary.

IES have consulted with partners on matrix design and the on the type of information that would be beneficial to record to facilitate subsequent tasks. A draft of the matrix with an extensive list of headings has been prepared and is submitted with this inception report. In particular it can be seen that there is now an enhanced emphasis upon:

- Documenting causal chains and being precise about the nature and severity of accidents schemes are intended to prevent (where details are available/where task resources allow)
- Direct and indirect costs and benefits (where details are available/where task resources allow).

Activity 1.2: Filling out mapping matrix

After identifying relevant initiatives, the process of mapping takes place. We suggest a matrix format as being ideal for this, as this allows us to list initiatives in the rows of a spreadsheet, and record separate items of information in each cell.

We will have an enhanced focus on flagging where information is missing as early as possible, e.g. missing details of schemes and unrepresented countries from the EU28. This will help prioritise the activities within this task. For example:

- Where the precise objectives of (apparently) highly relevant schemes cannot be found online we would wish to prioritise interviews with individuals leading them
- Where countries or groups of countries seem unrepresented it is particularly important for us to receive survey responses from their respective EU-OSHA focal points.

Activity 1.3: Focussed questionnaire to selected contacts (~30 participants)

In order to take a rigorous approach to understanding and documenting relevant initiatives being mapped in the EU 28 Member States, we propose contacting all EU-28 focal points via EU-OSHA (approximately one per MS). There will be three main aims related to this:

- To request suggestions for online sources of information the research team have not identified;
- To obtain the names of initiatives the research team have not identified originating in (or being implemented in) their own MS;
- To request specific points of information about initiatives we have identified – we will supply a grid with empty cells for them to complete (or alternatively they can refer the team to another source).

We will also consider sending the questionnaire to any other contacts helpful and relevant to the study, such as personnel from EASME/COSME, EU-OSHA and ECSO.

The questionnaire runs in parallel to the interviews with intermediaries. In a previous project, it worked well to send out the survey immediately after the online search. In addition to providing information that the research team has not identified, the survey provides a comprehensive check that we have selected every initiative that is important and also ensures completion of the missing cells in our matrix (for example, listing all the partners involved in an initiative) - so it improves the quality of our output.

We suggested a potential role for country experts as follows:

- Where IES do not receive a reply from a stakeholder such as a scheme leader (we suggest allowing a 2 week window for responses) we will request country experts contact the relevant person by phone/email to obtain questionnaire responses in their native language.
- Subsequently we will request that each country expert passes on those responses to IES in English.

Activity 1.4: Interviews with intermediaries (i.e. initiative developers and commissioners)

For some initiatives, we may find there is still a lack of information after the online search. Additional to the identified initiatives, we would select a number of initiatives per country and carry out up to two interviews with stakeholders who were involved with these initiatives. The aim would be to populate empty cells in the matrix. We would consider a range of factors in selecting these, such as:

- Number of empty cells and importance of missing information;
- The influence/scale of the initiative;
- The apparent productivity/sustainability implications of the initiative for SMEs.

We approach commissioners/leaders of these initiatives or appropriate national representatives for telephone interview. We develop a topic guide to ensure consistency of approach across participants. Collectively the team has the capacity to conduct the interviews in the interviewee's native language.

Our suggested role for country experts is as follows:

- Assistance with short telephone interviews with a scheme leaders (in their native language) to determine further details of schemes.
- Subsequently we would request that each country expert passes on those responses to IES in English.

Deliverables

The output of Task 1 is a matrix listing identified initiatives within the agreed scope, with relevant characteristics systematically recorded. In case information is missing this will be indicated clearly, with notes/footnotes. The output of Task 1 is drafted in such a way that it can easily be progressed to developing a taxonomy in Task 2.

3.3 Task 2: Development of a taxonomy of the costs and benefits of OSH prevention

Aim

The aim of Task 2 is to establish a taxonomy establishing the costs and benefits of OSH prevention from a company perspective. The taxonomy will also define for each type of OSH initiative the quantitative and qualitative costs and benefits, identifying the causal linkages between the costs and benefits identified where possible.

Approach

Task 2 is divided into a series of sequential activities that lead to the final development of a taxonomy of the costs and benefits of OSH prevention from a company perspective, as follows:

1. Literature review of already established taxonomies for the costs and benefits of health and safety initiatives from the firm-level perspective in the construction sector and related sectors;

2. Review of the inventory of national and sectoral initiatives established under Task 1;
3. Establishment of a draft costs benefits conceptual framework and taxonomy of the costs and benefits of OSH prevention, including identification of causal linkages between the costs and benefits (reduction of risk factors);
4. Application of the taxonomy to define the costs and benefits of the individual OSH initiatives identified under Task 1, identifying the causal linkages between the costs and benefits identified.

Prior to explaining the sub-tasks below, it is critical to underscore our understanding of the company perspective costs and benefits that Task 2 should identify. Evidently, we should identify the costs and benefits that accrue to companies only i.e. those that impact the company' 'bottom-line', and not those from a societal or public authority perspective, for example:

- If an OSH initiative is managed by a public body, the costs of running the initiative should not be considered in the analysis, and where relevant the provision of 'free' OSH advisory services provided by a public body in the context of an initiative should be considered as a 'benefit' to the company;
- OSH initiatives are likely to reduce work place accidents and therefore should be considered as benefits, resulting in reduced insurance costs for companies etc.;
- Other benefits are likely to materialise from a reduced number of accidents to the public sector and society broadly defined, however, these should not be considered as these benefits are too far removed from measures of company' financial performance.

As elaborated in Task 3, we calculate the costs per worker to be able to compare between countries and/or policies by means of a comparable unit cost.

3.4 Task 3: Elaboration of a framework for the financial analysis and risk assessment

Aim

The aim of the framework for the financial analysis and risk assessment is to develop a viable tool to assess the profitability of risk prevention measures, taking into account differences between countries and companies that affect the effectiveness and profitability of those measures. It provides a unified approach that is differentiated by the relevant factors and is viable with regard to the data requirements.

Since the framework is to be developed from a company perspective, the relevance of policies is the limited extent to which they reduce costs for the company. The framework should be applied only to measures that actually reduce health and safety risks. Other measures to mitigate the financial impact of those risks (such as insurance and contractual arrangements) may be included as an alternative from company perspective, but with the implication that a beneficial measure from society perspective may be suboptimal from the company perspective. Also, certain long-term risks such as cancer are not necessarily relevant from a cost perspective of the employer.

Approach

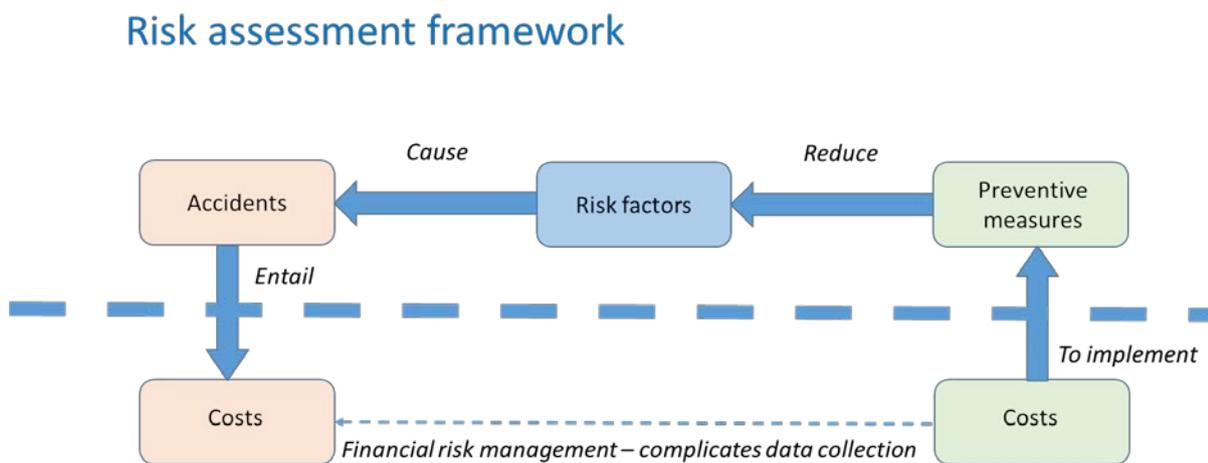
The approach is to separately build a risk assessment framework and the financial analysis framework of which the risk assessment is a part. The financial framework will be developed backwards, starting from the type of information and tables that are ultimately needed, and then to develop the types of tables that are needed for the final tables. With the risk assessment the impact of risks on the financial outcome can be assessed. We would like to stress that clear links will be made between Task 2 and Task 3. This is done to ensure an appropriate level of continuity around

the relevant aspects around OSH initiative risk reduction and the relevant costs and benefits to be financially assessed, while keeping data requirements feasible for Task 4. The risk assessment consists of identifying health and safety risks (“accidents” for short) and factors that contribute to those risks (“risk factors” for short), in broad classes that cover all types of risks (again to keep data requirements feasible, but also because preventive measures may cover a large range of risks).

The financial analysis tags costs to measures to prevent accidents (the cost side of measures) and to the risk of accidents (the benefit side of measures that reduce the risk), as well as costs of company policies to support those measures. From a society perspective, the benefits of preventive measures run entirely through their impact on removing or reducing risk factors. We would like to discuss the implications of the company perspective with the Client before fully developing the financial analysis part of the framework.

A framework for risk assessment is an essential but separate building block within a framework for financial analysis (Figure 2). For the purpose of developing an overall framework, we include identification of preventive measures and steps to implement them in the risk assessment framework. However, policies to support those measures are not included in the risk assessment framework but only in the financial analysis framework because such policies typically only reduce the costs of preventive measures. For example, a risk evaluation at the national level would greatly reduce costs for individual companies, however only preventive measures (based on the national risk evaluation) actually reduce the risk of accidents.

Figure 2 Financial analysis and risk assessment framework



Financial analysis framework

Financial analysis framework

The financial analysis framework will be informed by the work conducted in Task 2, ensuring that the relevant costs and benefits from a company perspective defined for the OSH initiatives can be examined financially.

3.5 Task 4: Development of a number of case studies to show how the approach works in practice

Aim

The aim of this task is to test the framework in practice and demonstrate its relevance and practical usefulness. Case studies are a good way to do this, because we can test in different settings (various initiatives, size groups, sub-sectors and countries) whether aspects of the framework can be universally applied.

Approach

We propose to conduct a set of 20 case studies (in-depth consultation by means of interviews) in order to gather sufficient data to test empirically the validity of the framework developed under Task 3. The selection of participants for these interviews will cover the different sub-sectors of the construction industry, as well as presenting a balanced mix of firms by company size and geographical cluster within the EU.

The first case study serves as a pilot case study to test the feasibility of applying the framework at company level, as well as the template for the remaining cases (19 case studies).

3.6 Task 5: Elaboration of a handbook

Aim

The objective of this task is to create a practical handbook for the dissemination of the framework. The framework should facilitate the implementation of OSH measures by construction companies, thereby contributing to a better image of the sector. The handbook will guide users through individual steps in developing their OSH-related business cases. Therefore the case studies under Task 4 will also be included in the handbook.

Besides the preparation of the handbook, the strategy for the dissemination of the handbook forms an important activity in Task 5 in order to create a better understanding of economic performance benefits of OSH measures for enterprises active in the construction sector.

Approach

The approach of task 5 is based on three core activities:

- Preparation of the content,
- Design of the handbook;
- Dissemination.

3.7 Task 6: Stakeholders' consultation and communication

Aim

The aim of this task is to consult stakeholders on the study development and receive their input on the development of the framework. This will be done through three stakeholder meetings. At the meetings, the preliminary results of Tasks 2 and 3, and partially Task 4 will be discussed, as well as the overall outcomes of the study during the last meeting.

Approach

For this Task, we propose a number of activities. First, we prepare the meetings. Second, our events team at Ecorys Brussels organises the meeting. Table 6 summarizes our approach to stakeholder consultation.

Table 6. Stakeholder consultation

Stakeholder consultation	
Description	initiate or strengthen a two-way dialogue with key stakeholders. gather existing initiatives, data and feedback (bottom-up approach) engage actors in initiatives decided at a superior level (top-down approach) providing a series of opportunities to create a common understanding about a project/strategy, aim at nurturing key stakeholder relationships over time. with feedback obtained from key stakeholders, the consultations can serve a valuable basis for future collaboration and partnerships.
Meeting Design	The iterative nature of consultation processes is essential. Hence elements, such as “the floor is yours” and targeted workshops combined with informal networking establish trust among the participants. They encourage stakeholders to openly share their views, concerns and expectations.
Audience	(in terms of number and origin): Heterogeneous and diverse audience with up to 20 key stakeholders.
Output	Validation of findings of the consortium and trusted working relationships with and between key stakeholders. Results are written down in minutes of the meeting.
When to be used?	In the early stage, consultations serve to understand the commitment and views with regards to a policy measure or initiative at national, regional or local level. In the intermediate stage, this type of events is well suited to validate the progress achieved, hence enhancing internal review mechanisms.

4 Detailed timetable of the project

The proposed work will start as soon as the contract is signed for a maximum period of 12 months and is expected to start in November 2018.

The following deliverables are foreseen:

- [Inception report](#), which will be submitted 1 month after the start of the project;
- Monthly [technical reports](#) which will be submitted every last day of the month;
- A [Taxonomy of the costs and benefits of OSH prevention](#), which will be submitted in month 4-5 after the first (stakeholder) meeting with EASME, the Commission and about 20 stakeholders;
- [Framework for the financial analysis and risk assessment](#) and a [pilot case study](#) to be submitted in month 6-8 after the second (stakeholder) meeting with EASME, the Commission and about 20 stakeholder;
- [Practical handbook](#) and [individual case studies](#), which will be developed respectively in months 9-10 and 8-9 and will be submitted as annexes in month 11 with the [Draft Final Report](#).
- [Final Report](#) will be submitted in month 12 together with the practical handbook and the individual case studies as annexes.

The specific dates for the deliverables are indicated in the workplan.

Timing of the work plan

Table 7 (next page) is the Gantt chart, which outlines the timing of all tasks, the deliverables and the meetings. This Gantt chart has been updated, taking into account specific wishes from the client and avoiding data collection in holiday periods to mitigate the risks for compromised quality of the data.

Table 7 Gantt chart

Activities	Months	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Inception phase														
Refinement of approach and methodology														
Tasks														
Task 1 – Mapping of initiatives														
Task 2 – Development of a taxonomy of costs and benefits														
Task 3 – Elaboration of a framework for the financial analysis and risk assessment														
Task 4 – Development of a number of case														
Task 5 – Elaboration of a handbook														
Task 6 – Stakeholders’ consultation and														
Meetings														
Kick-off meeting		12th												
First stakeholder meeting						13th								
Second stakeholder meeting								21st						
Final consultation meeting													tbd	
Reporting														
Drafting the inception report														
Drafting of (draft) final report														
Deliverables														
Inception report (Approval*)		30th	*21st											
Monthly technical reports (end of every month)		30th	21st	31st	28th	29th	30th	31st	28th	31st	30th	30th	31st	
Minutes of the meetings (7 days after the						19th			13th				24th	
Taxonomy: costs and benefits of OSH prevention (Approval*)						08th	*08th							
Framework for financial and risk assessment								20th	*20th					
Pilot case study								20th	*20th					
Individual case studies												30th		
Practical handbook												30th		
(Draft*) Final Report + Annexes (Approval**)												*30th	31st	**30th

5 Work organisation

5.1 Presentation of the consortium

For this project, Ecorys joins forces with the Institute for Employment studies and Oxford Research.

ECORYS

ECORYS



Ecorys, the lead consortium partner, is a leading international research and consultancy company that addresses society's key challenges. The group employs 500 professional staff working from 12 offices in Western and Central, South-Eastern Europe and Asia. With world-class research-based

consultancy, we help public and private clients make and implement informed decisions leading to positive impact on society. We support our clients with sound analysis and inspiring ideas, practical solutions and delivery of projects for complex market, policy and management issues. In 1929, the Netherlands Economic Institute (NEI) was founded, and in 2000, this much-respected Institute became Ecorys. Ecorys offers a clear set of products and services: preparation and formulation of policies; programme management; communications; capacity building; monitoring and evaluation.

We value our independence, our integrity and our partners. We care about the environment in which we work and live. We have an active Corporate Social Responsibility policy, which aims to create shared value that benefits society and business. We are ISO 14001 certified, supported by all our staff.

Institute for employment studies



The IES mission is to help bring about sustainable improvements in employment policy and human resource management. IES achieves this by increasing the understanding and improving the practice of key decision makers in policy bodies and employing organisations.

IES was established in the financial year 1968-69 to be an independent, national centre of expertise on productivity, manpower planning and labour market change. Since that time it has expanded and diversified to become a leading UK independent centre for research and evidence-based consultancy in employment, labour market and human resource policy and practice. It is not-for-profit, its activities being funded through research and consultancy commissions, and from its corporate membership programme. IES has around 40 multidisciplinary staff plus an extensive network of international associates, and its expertise is available to all organisations through research, consultancy, publications and its website. The Institute's Board of Trustees act in a governance role and provide strategic oversight to the work of the Institute.



Oxford Research is a specialized knowledge company focusing on the areas of industrial and regional development social policy and welfare.

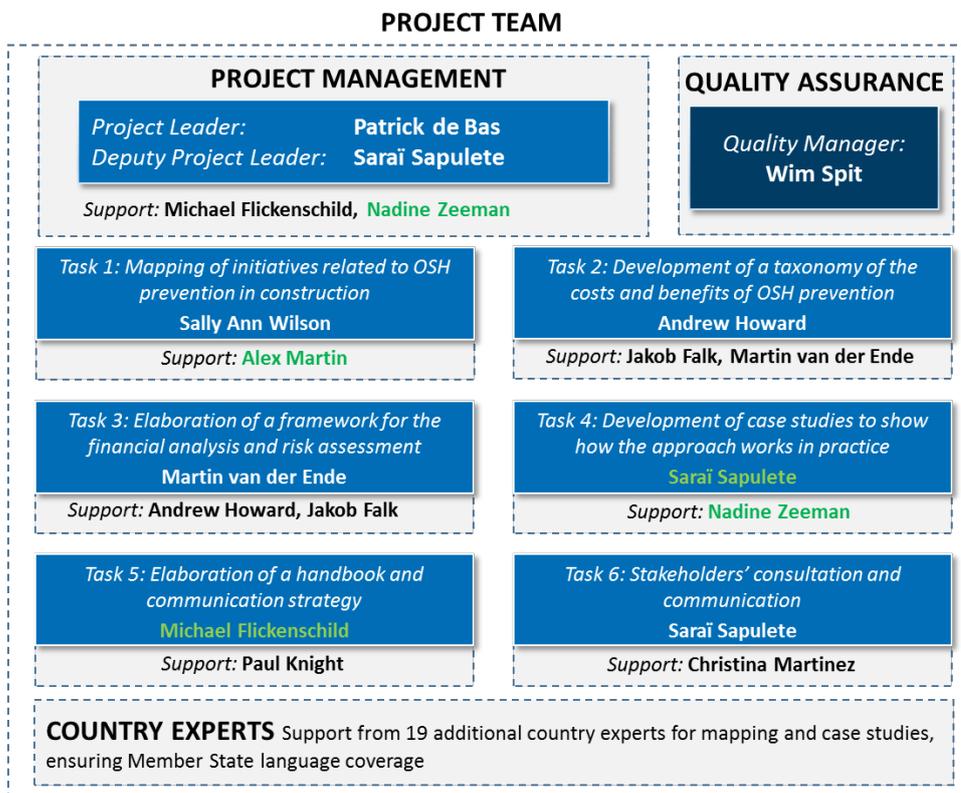
Within these areas we work with knowledge and innovation systems, development of municipalities and regions, and social, educational, and labour market policies

5.2 Team

In this section, we introduce the proposed project team members, including each member's role and responsibilities. These roles and responsibilities are allocated based on the relevant experience and expertise of each of the team members, as described in their pen portraits (see section 4.2.2 below). We also present the division of resources across the different tasks (section 4.4).

The team for this project consists of a project leader, a deputy project leader and task managers and team members for each of the tasks. The project leader oversees project delivery, ensures coherence of all the work delivered by the task managers and the quality of the delivered services and will be responsible for conflict resolution. The deputy project leader will coordinate the day-to-day activities within the project, serving as the primary contact point for both the team members and EASME. In addition, the deputy project manager, will replace the project leader in his absence, thereby ensuring continuous service throughout the project duration. Figure 3 presents the organogram of this study, illustrating the allocation of expertise and resources across the different tasks of this study.

Figure 3 Team organisation



About Ecorys

Ecorys is a leading international research and consultancy company, addressing society's key challenges. With world-class research-based consultancy, we help public and private clients make and implement informed decisions leading to positive impact on society. We support our clients with sound analysis and inspiring ideas, practical solutions and delivery of projects for complex market, policy and management issues.

In 1929, businessmen from what is now Erasmus University Rotterdam founded the Netherlands Economic Institute (NEI). Its goal was to bridge the opposing worlds of economic research and business – in 2000, this much respected Institute became Ecorys.

Throughout the years, Ecorys expanded across the globe, with offices in Europe, Africa, the Middle East and Asia. Our staff originates from many different cultural backgrounds and areas of expertise because we believe in the power that different perspectives bring to our organisation and our clients.

Ecorys excels in seven areas of expertise:

- Economic growth;
- Social policy;
- Natural resources;
- Regions & Cities;
- Transport & Infrastructure;
- Public sector reform;
- Security & Justice.

Ecorys offers a clear set of products and services:

- preparation and formulation of policies;
- programme management;
- communications;
- capacity building;
- monitoring and evaluation.

We value our independence, our integrity and our partners. We care about the environment in which we work and live. We have an active Corporate Social Responsibility policy, which aims to create shared value that benefits society and business. We are ISO 14001 certified, supported by all our staff.



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