Workplace Innovation

Concepts and indicators

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Part of the European Innovation Scoreboard (EIS) 2013-2014 project for Directorate-General Enterprise and Industry, Unit B3 Innovation Policy for Growth.

August – 2014

Growth

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EUROPEAN COMMISSION

Directorate-General for Enterprise and Industry
Directorate B — Sustainable Growth and EU 2020
Unit B.3 — Innovation Policy for Growth

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EXECUTIVE SUMMARY

The exploratory report on workplace innovation (WI) has three objectives:

Objective 1: *Elaborating a consistent concept and definition of WI;*

Objective 2: *Compiling and reviewing empirical evidence on outcomes of WI*;

Objective 3: *Recommending meaningful, sound and practicable indicators for WI.*

Workplace innovation (WI) is a broad concept that overlaps with other forms of innovation, in particular organisational and process innovation. It comprises a wide range of different practices assigned to areas such as human resource management or organisational development. Elaborating a consistent concept and definition of WI is therefore challenging.

The updated report was developed in four steps: 1) compiling and comparing definitions of WI for elaborating a working definition and a comprehensive WI; concept; 2) compiling information on European surveys that measure WI dimensions 3) compiling applied indicators and assigning them to different layers defined in the proposed WI concept; and 4) assessing the usefulness of existing indicators for measuring WI and pointing to existing measurement gaps regarding WI and options to improve measurement. These four steps were implemented in a reflexive workflow, reconsidering conceptual considerations in view of existing theories and survey/indicators.

We identified the main aspects of workplace innovation which lead into the direction of a clear-cut and consistent concept. We propose an understanding of WI which encompasses many aspects mentioned in existing definitions but which links them in a new way. We introduce an input-process-output-outcome scheme to better differentiate different layers of WI. The concept is structured according to the following layers and guiding questions:

1. ***ENABLERS Individual level:*** *Do employees and managers*[1] *have the capability and willingness to engage in workplace innovation?*
2. ***ENABLERS Individual task level:*** *Does the structure of the individual work task (work task, work time, work environment) allow employees and managers to engage in workplace innovation?*
3. ***ENABLERS Organisational level:*** *Which cultural and structural aspects does the organisation provide to help employees and managers to engage in workplace innovation?*
4. ***ENABLERS Societal level:*** *How does workplace innovation reflect, and respond to external economic, social or environmental challenges?*
5. ***PROCESS:*** *How do employees and managers engage in fundamental and continuous processes enabling workplace innovation?*
6. ***RESULTS:*** *What are the results/outputs of workplace innovation?*
7. ***OUTCOMES and IMPACTS****: What are the targeted outcomes and impacts of workplace innovation?*

[1] *Why do we use the formulation "employees and managers"? Firstly, WI is emphasising the employee-management relationship in terms of involvement, dialogue and voice. Secondly, we want to emphasise that employees and managers both face restrictions and need opportunities and support to engage in workplace innovation. The manager also works in a specific context determined by organisational structures.*

For each layer we identified aspects which describe it best. We think that this approach is fair regarding the broadness of the term "workplace innovation" as defined in many existing definitions, but it therefore also confronts us with the necessity to reduce or prioritise the dimensions of workplace innovation to make the concept measurable within the framework of (innovation) surveys. The differentiation of layers however provides the option to choose only specific layers for measurement and exclude others respectively to combine them in different ways. The concept represents a compilation and systematisation rather than a new proposal for a specific definition of workplace innovation.

We used this concept to screen and assess existing surveys on innovation and organisational change. We carefully selected them for their thematic coverage of at least some aspects of workplace innovation. We found that none of the surveys comprehensively covered the phenomenon of workplace innovation. The various aspects of workplace innovation are indeed surveyed in a very fragmented way across the different surveys examined.

We screened and compared six specific surveys on their coverage of layers of workplace innovation as defined in the concept on the level of indicators. The resulting recommendations address the need to understand WI in a more comprehensive way. A reduction of WI to fragmented practices or general questions on organisational change is likely to lead to neglecting the specific characteristics and potential of WI.

1. INTRODUCTION

Against the background of the economic crisis and an increased urgency for continuous innovation and sustainable growth to maintain global competitiveness of the European Union, workplace innovation (WI) recently gained importance at the EU policy level. Workplace innovation is considered contributing to European competitiveness: It encompasses practices that enhance employers' workability, resulting in higher productivity and improved employees' job-satisfaction and well-being. Workplace innovation, hence, is a cross-cutting policy issue, concerning all types of organisations, be they large firms, SMEs or even public administrations.

A sustainable recovery requires structural change driven by innovation, argues the Innovation Union Competitiveness Report 2013 (European Commission 2013). By applying new and combined interventions in work organisation, human resource management and supportive systems, workplace innovation is regarded as a driver for industrial transformation in Europe.[2] Studies partly confirm a positive relationship between workplace innovation on the one hand, and quantitative and qualitative organisational performance and commitment of employees, on the other (Oeij, Dhondt, Kraan, et al. 2012). There is also "*evidence that it* [remark: workplace innovation] *may help to improve the quality of working life and productivity, especially in projects that involve employee participation*", informs the report on the review of workplace innovation and its relation with occupational safety and health (European Agency for Safety and Health at Work 2012, p.5.). Despite the evidence of organisational benefits, research results, however, confirm that the spread of these evidence-based practices is limited (Totterdill et al. 2012). The latest European Working Conditions Survey[3] (EWCS) conducted in 2010 reveals that job autonomy has not risen over the past decade and that only 47% of European workers are involved in improving work organisation or work processes in their department or organisation (Eurofound 2012; see also Totterdill et al. 2012).

Whilst the innovation divide between Member States is widening, the Innovation Union Scoreboard (IUS) 2013 (European Commission 2013a) shows that the innovation performance in the EU has improved year on year in spite of the continuing economic crisis. Innovation Union is the European Union strategy to create an innovation-friendly environment that makes it easier for great ideas to be turned into products and services that will bring to our economy growth and jobs[4]. The EU 2020 Strategy (European Commission, 2012a) puts forward three mutually reinforcing priorities: smart growth, sustainable growth and inclusive growth. Investments in innovation represent an overarching priority also for the cohesion policy throughout the Union. In the European Union's smart specialisation strategy, particular attention is drawn on providing the means to "*exploit and diffuse R&I results, stemming from Horizon 2020 and preceding programmes, into the market with particular emphasis on creating an innovation-friendly environment for business and industry, including SMEs and in line with the priorities identified for the territories"* (European Parliament and the Council of the European Union 2013, p.96).

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[2] *http://ec.europa.eu/enterprise/policies/innovation/files/newsletter-workplace-innovation-workshop_en.pdf*

[3] *http://www.eurofound.europa.eu/ewco/surveys/*

[4] *http://ec.europa.eu/research/innovation-union/index_en.cfm?pg=home*

The analysis of a decade of Innovation Policy also confirms increasing support for non-technological innovation such as organisational innovation, marketing or design (European Commission 2013c). This may be grounded on the fact that the European Commission has put emphasis on strengthening these other forms of innovation. The European Commission, for instance, made workplace innovation a priority in the reinforced EU Industrial Policy Communication (European Commission 2012b). The European Workplace Innovation Network (EUWIN) was established as part of the process. To provide another example: The Healthy Workplace Campaigns[5], running since 2000, are tools for raising awareness about occupational safety and health, and promoting the idea that good health and safety is good for business. In the 2012–13 campaign the focus was on both leadership and worker participation, in recognition of the role both employers and employees have to play in prevention.

By strengthening workplace innovation at the EU level, the European Commission calls upon enterprises in all EU to respond to upcoming demands and new societal challenges at the workplace. Instruments used by the European Commission such as the Community Innovation Survey (CIS) and the Innobarometer, have aimed so far at gaining insights into innovation activities of enterprises by gathering data from employers only. In order to capture workplace innovation in all its facets, both employers and employees, however, must be surveyed as practiced by Eurofound within its two periodical surveys, the European Working Condition Survey (EWCS) and the European Company Survey (ECS). With the report in hand, particular emphasis is thus put on an employee-centred approach, which is practiced in some parts of Northern Europe such as Sweden.

[5] *https://osha.europa.eu/en/campaigns*

2. OBJECTIVES AND TASKS

This exploratory report on workplace innovation (WI) has three objectives:

Objective 1: *Elaborating a consistent concept and definition of WI;*

Objective 2: *Compiling and reviewing empirical evidence on outcomes of WI;*

Objective 3: *Recommending meaningful, sound and practicable indicators for WI.*

Objective 1: Based on existing research literature, we identified the main "layers" of workplace innovation, layers which lead into the direction of a more consistent concept. A "layer" comprises a set of organisational structures and capacities or individual capabilities which are differentiated according to their function with regard to workplace innovation. We propose here an understanding of WI which encompasses many aspects mentioned in existing definitions but which links them in a new way. We introduced an input-process-output-outcome scheme to better differentiate the different layers of WI. The concept is structured according to the following layers and guiding questions:

1. ***ENABLERS Individual level:*** *Do employees and managers*[6] *have the capability and willingness to engage in workplace innovation?*
2. ***ENABLERS Individual task level:*** *Does the structure of the individual work task (work task, work time, work environment) allow employees and managers to engage in workplace innovation?*
3. ***ENABLERS Organisational level:*** Which cultural and structural aspects does the organisation provide to help employees and managers to engage in workplace innovation?
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For each layer we identified aspects which describe it best. We think that this approach is fair regarding the broadness of the term "workplace innovation", but it also confronts us with the necessity to reduce or prioritise the dimensions of workplace innovation to make the concept measurable within the framework of (innovation) surveys. The differentiation of layers however provides the option to choose only specific layers for measurement and exclude others respectively to combine them in different ways. The concept represents a compilation and systematisation rather than a new proposal for a specific definition of workplace innovation.

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[6] *Why do we use the formulation "employees and managers"? Firstly, WI is emphasising the employee-management relationship in terms of involvement, dialogue and voice. Secondly, we want to emphasise that employees and managers both face restrictions and need opportunities and support to engage in workplace innovation. The manager also works in a specific context determined by organisational structures.*

Objective 2: We included a discussion on empirical evidence of outcomes of WI. We focused on meta-studies covering a large number of single studies.

Objective 3: In order to recommend meaningful, sound and practicable indicators for WI (objective 3), our team reviewed high-standard innovation surveys which comprise elements of WI (or similar concepts) such as national surveys from European and non-European countries, in particular from the US and Canada, as well as European surveys such as the European Working Condition Survey (EWCS). Following the composition of a systematic overview table on surveys (structural information on data collection methods, schedules, target groups, etc.), concepts and indicators, we traced the surveys and indicators to our concept of WI. Respective results were summarized in tables, presenting the identified issues in combination with the WI layer addressed.

We chose six specific surveys for deeper analysis: European Company Survey (ECS), European Working Conditions Survey (EWCS), the Community Innovation Survey (CIS), MEADOW Employer survey, MEADOW Employee survey. The last two surveys have been developed in the MEADOW project on the measurement of organisational change which was recommended to us by several stakeholders. The MEADOW surveys have been proposed to the European Commission for implementation, but have not been implemented yet.

We screened and compared these reports on their coverage of layers of workplace innovation as defined in the concept at the level of indicators. The resulting recommendations address the need to understand WI in a more comprehensive way. A reduction of WI to fragmented practices or general questions on organisational change is likely to lead to neglecting the specific characteristics and potential of WI.

3. METHODOLOGY APPLIED

This exploratory report was developed in the different steps described in the previous chapter. The methodology is based on iterative screening, assessment, compilation and structuring. The approach was to start with existing definitions, studies and surveys which focus on (elements of) WI. An interim feedback from different stakeholders and experts (including Steven Dhondt (TNO, Catholic University of Leuven (chair: Social Innovation)), Peter Totterdill (*Workplace Innovation, UK Work Organisation Network* (UKWON)), Frank Pot (Nijmegen School of Management, Radboud University, TNO) and Anthony Arundel (Australian Innovation Research Centre, MERIT, CIS task force)) was the basis for revising the initial draft. In the final report we stayed closer to the European discourse on WI with regard to the comprehensiveness of the concept and specific aspects such as management-staff dialogue. We would like to thank our partners and stakeholders for taking their time to comment on the initial draft.

ZSI organised a workshop with the objective of discussing, and further developing, the report, together with internationally renowned experts on WI from different European countries.[7] The workshop was held in Vienna on 25 June 2014. Since WI is studied and implemented in different ways throughout Europe, the workshop enabled to link these different understandings in order to explore whether they can be aligned and, if so, to which degree. The results of the workshop have been incorporated in the final version of the exploratory report as a part of the conclusions.

[7] *See chapter 9, recommendations on the measurement of workplace innovation*

4. THE CONCEPT OF WORKPLACE INNOVATION

The definition of WI can be approached from different perspectives:

- Sociologists' perspective: What is WI as a practice? Objective: Observation, analysis, exploration and comprehensive understanding
- Economists' perspective: How is WI linked to organisational performance? How is WI linked to competitiveness at meso-level (companies) and macro-level (countries)? Objective: Understanding how workplace innovation helps companies adapt to their economic environment
- Statisticians' perspective: How can we measure WI? Objective: Clear and simple definitions and indicators, relevance for innovation research
- Policy makers' perspective: How can we promote WI as a concept supporting main European policy goals such as increasing organisational performance, innovativeness and quality of working life? Objective: Concept appealing to different stakeholder groups, promotion of actions to organisations, evidence on politically desired outcomes (e.g. positive correlation between WI and product innovation, firm performance, etc.)
- Practitioners' perspective: How can we implement WI in our organisations? Objective: Hands-on implementation guidelines, good practice examples, professional support.

Is it possible to outline a concept which takes these different perspectives into account? With regard to workplace innovation, the political perspective seems to be dominant as the concept is promoted by major policy programmes of the European Union (see introduction). In this perspective, the concept's foremost purpose is to promote change to private companies and public administrations. Thus, workplace innovation has not been primarily designed to complement existing forms of innovation. It is a "unifying concept" (Dortmund Brussels position paper on workplace innovation 2012, p.3) which crosses boundaries to other forms of innovation, in particular to organisational and process innovation. Furthermore, the political perspective attaches a twofold normative orientation to workplace innovation: It is driven by the mainstream business logic concerned with gains in performance/competitiveness, profits and innovativeness as well as with the political logic regarding societal challenges. Workplace innovation thus emerges as a political concept "weighed down" by high outcome expectations.

In organisational innovation, the question economists may have is whether there is room for guidance. Most neo-classical economists argue that companies adapt to competition or their environment. What happens in a company is a black box and not something that policy makers should influence. Bloom & Van Reenen developed "organizational economics" (2010). Their thesis is that companies do not adapt automatically to their environment. Badly managed companies can live on for a long time. There is room for 'managerial direction'. This position raises the following question: which direction? In this reasoning, it is important to see how different forms of management and strategies in organisational development can play a role. One of the main drivers for organisational development and innovation is the possibility for employees to have a voice. It is the dialogue between management and first line workers that is important. This helps to counter bad decisions, but also to improve the contact with the exterior world. Employees have a better perception of the market that management may have. Harnessing this power is workplace innovation.

Sociologists attempt to develop an understanding of WI on the basis of the observation and analysis of existing practices. Questions arise such as: How do employees experience their workplace? How do they adapt their workplace? How do employees learn and share their learning? How do employees develop contextual thinking which enables them to "think big" and participate in innovation processes? How can informal knowledge be turned into formal knowledge? Which positive and negative impacts does workplace innovation have on employees? Workplace innovation emerges here as a complex practice of communication and cooperation within firms. Sociologists thus try to develop their understanding from the practice itself. Sociologists usually emphasise that terms have to be defined in a non-normative way as they are tools for observation and not judgement.

Statisticians are challenged by both perspectives. The political perspective anticipates and promotes correlations between WI and desired outcomes, correlations which statisticians intend to measure. For measuring valid outcomes (say a correlation between WI and product innovation) they need distinct concepts which do not overlap with each other and can be measured with indicators as simple as possible in order to avoid misinterpretations by respondents. We have to be aware of the simplicity of the items currently used in innovation surveys (in particular the Community Innovation Survey) which are designed differently to sociological surveys attempting to measure complex theoretical constructs with large indicator sets. Sociological observation provides a comprehensive understanding, from which a clear definition and measurable indicators still have to be developed.

The practitioners' perspective does not immediately profit from the sociologists' or statisticians' perspective. Hands-on guidelines do usually not emerge from observation/analysis or correlations. The empirical studies that we screened calculate correlations between singular items (Does group work exist?) and outcomes such as firm performance or product innovation. Although small correlations seem to exist, these studies usually do not provide evidence for a causal interference (Does group work cause the increase in product innovation or the other way round?). Furthermore, they are based on items/indicators and not practices. Even if practitioners were convinced of the measured correlation and the positive impact of "group work", neither sociologists nor statisticians could tell them which group work they have to implement and how. The most provocative question which arises from the statisticians' perspective is whether we actually need another type of measurement.

It is important to recognise the "gaps" between these perspectives before starting to explore workplace innovation. Being aware of the political context of our work, our own sociological interests and the need for recommending indicators, we clearly felt the difficulty of aligning these perspectives.

4.1. Compilation of existing definitions of workplace innovation

A Eurofound study on work organisation and innovation concludes that *"the variety of terminology and practices encompassed can make this a difficult territory to map and understand for non-experts so a concerted effort should be made to provide a simple and compelling definition with potential for widespread recognition and acceptance"* (Eurofound 2012, p.74). The large variety of terminology and practices becomes evident when compiling and comparing the more recent definitions of workplace innovation and related concepts (see **Table 1**).

Table 1: Compilation of WI definitions

Source	Definition of workplace innovation and related concepts
European Commission (2014) *http://ec.europa.eu/enterprise/policies/innovation/policy/workplace-innovation/*	"*Those innovations aim at improving staff motivation and working conditions, thereby enhancing labour productivity, organisational performance, innovation capability, reactivity to market changes and consequently business competitiveness. Workplace innovation can be found in all types of organisation, be they large corporates, SMEs or even public administrations. In practice they are often combined with technological, process or marketing innovations as they allow companies to tap further into staff creativity, to boost their innovation capacities and to find new solutions swiftly. From a longer term perspective, the transformation of workplaces is needed to accommodate an ageing workforce by retaining their skills in the labour market while maintaining and increasing their productivity levels. On the other hand, advanced workplaces are indispensable for European industries to attract, engage and retain young talents.* *Workplace innovation:* • *improves performance and working lives through positive organisational change involving inclusive dialogue and by releasing the creativity of employees;* • *coalesces the strategic knowledge of the leadership with the hands-on, practical but often unrecognised knowledge of frontline employees;* • *seeks to engage all stakeholders in the process of change, leading to "win-win" outcomes in which a creative convergence (rather than a trade-off) is forged between enhanced organisational performance and enhanced quality of working life."*
Dortmund Brussels position paper on WI (2012)	"*Workplace Innovation is defined as a social process which shapes work organisation and working life, combining their human, organisational and technological dimensions. Examples include participative job design, self-organised teams, continuous improvement, high involvement innovation and employee involvement in corporate decision making. Such interventions are highly participatory, integrating the knowledge, experience and creativity of management and employees at all levels of the organisation in a process of co-creation and co-design. This simultaneously results in improved organisational performance and enhanced quality of working life. It is important to see Workplace Innovation not as an end state but as a dynamic, reflexive process in which all stakeholders are continually engaged in reflecting on, learning about and transforming work processes and employment practices in response to both internal and external drivers*." (p.2)
Eurofound (2013)	"*High performance work practices or innovations in work organisation are defined as deliberate changes that can affect how employees undertake their job and/or their broader experience of work and refer to any element of people management*" (p.11)

Source	Definition of workplace innovation and related concepts
	High performance work practices such as profit-sharing, autonomous team working and the take-up of flexible working opportunities by at least one-fifth of the workforce are associated with lower employee absence levels and fewer problems with staff motivation" (p. 51)
European Agency for Safety and Health at Work (2012)	"*A renewal in work organisation and labour relations leading to improved performance by the organisation by which we mean enhanced productivity, economic growth, the capacity to innovate and better use and develop human talents through improvements in the quality of working life, safe and healthy working conditions, enhanced job satisfaction, worker participation, social dialogue and sustainable employment" (Netherland Centre for Social Innovation, 2009, p. 1).* *"Workplace innovation includes aspects of management and leadership, flexible organisation, working smarter, continuous development of skills and competencies, networking between organisations and the modernisation of labour relations and human resource management."* (p.4)
Høyrup et al. (2012)	Define "employee-driven innovation" as "*generation and implementation of new ideas, products and processes originating from interaction of employees not assigned to this task*" (p.8).
Ramstad (2009)	"*Renewals in the structures, processes or boundaries of a work organisation that achieve savings in the use of labour or capital resources, or an improved ability to respond to customer needs […] examples of reforms can be self-managing teams, flatter hierarchies, outsourcing, diversified personnel skills and management systems*" (p.2)
Pot (2011)	"*Innovation is defined as the implementation of new and combined interventions in the fields of work organisation, human resource management and supportive technologies. Workplace innovation is considered to be complementary to technological innovation. Some people use the broader concept of non-technological innovation, in which also dynamic management, new marketing practices and external collaboration are included.*" (p. 404 – 415)
Pot, Dhondt, and Oeij (2012)	"*Workplace innovations are strategically induced and participatory adopted changes in an organisation's practice of managing, organising and deploying human and non-human resources that lead to simultaneously improved organisational performance and improved quality of working life.*" (p. 262).

4.2. Working definition of workplace innovation

For a working definition, we decided to use the definition provided by the Dortmund Brussels Position Paper on Workplace Innovation. The Position Paper represents a synthesis, which was supported by many organisations including most European thematic leaders (2012). The formulation clearly shows that the proposed definition drew from existing ones and attempted to take all relevant elements into account:

"*Workplace Innovation is defined as a social process which shapes work organisation and working life, combining their human, organisational and technological dimensions. Examples include participative job design, self-organised teams, continuous improvement, high involvement innovation and employee involvement in corporate decision making. Such interventions are highly participatory, integrating the knowledge, experience and creativity of management and employees at all levels of the organisation in a process of co-creation and co-design. This simultaneously results in improved organisational performance and enhanced quality of working life. It is important to see Workplace Innovation not as an end state but as a dynamic, reflexive process in which all stakeholders are continually engaged in reflecting on, learning about and transforming work processes and employment practices in response to both internal and external drivers*." (p.2)

We will take a closer look at this multi-dimensional and complex definition.

WI is a social process:

It consists of relationships between human actors and non-human actors (technology, infrastructure, materials). This is not specific for WI as any innovation consists in a social process –however WI is particularly concerned with innovation as a process and not as a result.

WI is encompassing human, organisational and technological dimensions:

The definition emphasises human, organisational and technological dimensions. It is important to note that WI explicitly includes a technological dimension. We appreciate this as newer sociological approaches, such as the Actor-Network-Theory (ANT), which refuse to draw a distinction between "the social" and "technology". The ANT considers Human-to-Human interaction, Human-to-non-human interaction and non-human to non-human interaction as "social processes". In complex organisations, this view helps us to better understand the dynamics and effects of interactions. Technology is today comprised in almost any work practice (Kesselring and Degelsegger 2012a).

WI has a very broad "application area":

In a next step, the definition refers to two broad application areas: work organisation and working life. Pot, Dhondt, and Oeij (2012) use an even broader formulation: "changes in an organisation's practice of managing, organising and deploying human and non-human resources". The whole organisation is addressed instead of just the immediate work environment (the office, the assembly line, etc.). The term "workplace" is thus – in contrast to several literal translations into European languages (for instance the German translation "Arbeitsplatz") – not only referring to the immediate work environment where a worker pursues his/her main work task. Workplace innovation addresses the organisation as a whole and even goes beyond the perimeter of the organisation. Indeed workplace innovation appears relevant for both inter-firm cooperation and the firm responses to societal challenges.

WI overlaps with organisational and process innovation:

In our view, the results of WI could generally be seen as organisational and process innovations (for instance in the general and open way the Community Innovation Survey (CIS) asks on these innovations). WI is however additionally defined by specific (although not always well explained) process criteria and outcome criteria.

WI is defined by process criteria:

Workplace innovation is seen to be "highly participatory, integrating the knowledge, experience and creativity of management and employees at all levels of the organisation in a process of co-creation and co-design." This is an important statement which relates to process criteria or "quality criteria" of workplace innovation. One process criterion is the ongoing stakeholder dialogue supporting and enabling WI. Other definitions specify this dialogue as "labour relations" bringing

internal and external representatives bodies into the focus (worker's committees, social partnership institutions, etc.).

A statement by Peter Totterdill (2012) illustrates this strong emphasis on cooperation and dialogue:

"*Workplace innovation is fuelled by open dialogue, knowledge sharing, experimentation and learning in which diverse stakeholders including employees, trade unions, managers and customers are given a voice in the creation of new models of collaboration and new social relationships. Workplace innovation seeks to build bridges between the strategic knowledge of the leadership and the tacit knowledge of frontline employees. It seeks to engage all stakeholders in dialogue in which the force of the better argument prevails."*

WI is defined by outcome criteria:

WI is often related to outcomes in terms of firm performance and quality of working life. Empirical studies deliver some evidence for this connection. The problem is however that empirical studies are usually focused on specific, single practices, or bundles of practices, which are differently compiled from study to study. There is thus fragmented evidence that some practices perceived as "workplace innovation" are correlated with these outcomes (which does not necessarily mean that they cause them). The definitions quoted above however seem to go a step further – they actually seem to define WI by these outcomes. We need to decide whether we take this literally or rather as a "promotional strategy". With the focus on measurement we do not to take this "definition by outcomes" into account. The challenge is rather to define WI in a way which lets us test the relationship between workplace innovation activities and different types outcomes.

WI is defined by examples:

Similar to most other definitions, the Position Paper's definition gives examples of workplace innovation. The broadness of the general application area however leads to a quite random selection of distinct examples. This "definition by examples" however found its way into empirical studies, which often simply bundle specific practices and label them as "workplace innovation" without much concern about the other criteria. As a consequence, this also leads to a situation where "workplace innovation" is all too easily replaced by other concepts such as "High Performance Work Practices".

WI is defined as a continuous, reflexive process:

The last dimension mentioned in the Position Paper's definition is that WI is a "*a* dynamic, reflexive process in which all stakeholders are continually engaged in reflecting on, learning about and transforming work processes and employment practices in response to both internal and external drivers". Our conclusion from this is that continuity is very relevant for workplace innovation. In contrast, we learned to perceive product innovation as a rather discontinuous process – a concisely describable technology for instance, a "unit" and a "product", which is introduced to the market.

Workplace innovation implies more fluid processes, which are therefore also more difficult to measure. However, WI does not introduce new difficulties – it rather points to the simplification of innovation processes, simplification which may happen when we measure the market introduction of products. There is usually no concern for the innovation processes or other outcomes despite market success. Product innovation are unequivocally perceived as "positive" without further consideration about what is introduced to the market, how it has been developed and which outcomes it actually has.

WI has a normative orientation, which is implied in process and outcome criteria:

The normative dimension of WI is not often discussed. WI is primarily promoted by making reference to outcomes such as firm performance and quality of working life. This rationalistic-instrumental strategy of promoting WI usually fails to discuss the normative orientation of WI. WI relies on a post-fordist/post-taylorist vision of work and organisational development. There is a historic line of this argumentation (Vallas 1999). The question may arise if WI actually constitutes a specific organisational model instead of a "neutral" type of innovation. Process criteria as well as outcome/success criteria are based on this normative orientation. The question of how working life – which comprises a large part of the life of many people – should be organised has always been a political question which cannot be answered by rationalistic-instrumental arguments about the performance impact of WI alone.

4.3. Workplace innovation and employee-driven innovation

"Employee-driven innovation" or EDI has been defined as: "generation and implementation of new ideas, products and processes originating from interaction of employees not assigned to this task" (Høyrup 2012, p.8).

While workplace innovation is more concerned with targeted organisational changes, EDI emphasises "emergent, spontaneous, informal und unplanned" (p. 16) innovation processes which originate in the "remaking of everyday work practice" (p. 16). The "ordinary employee" with his "in-depth, context-dependent knowledge that managers often do not possess" (Kesting/Ulhoi 2010: 71) is promoted by EDI as a key source of innovation. The statement that EDI focuses on "employees not assigned to this task (= innovation)" underlines the emphasis on informal innovation processes.

Furthermore, EDI is mainly conceptualised as a bottom-up exchange, whereas workplace innovation clearly opts for dialogue and cooperation which "mediate" top-down and bottom-up exchanges throughout the innovation process.

In the EDI's emphasis on informal processes lies a confinement of the innovation process to the work task and work environment – or put it differently: the work aspects which are closest the experience of the employee and which can be directly adapted. In contrast, workplace innovation is confined to the work task or work environment – this would be otherwise a misunderstanding of the term "workplace". While in some European languages (in particular German) the literal translation of "workplace" refers to the immediate work environment (the office, the assembly line, etc.), the concept addresses the whole organisation. Workplace innovation nevertheless incorporates elements of EDI – in particular regarding the basic process of workplace innovation (see chapter 5).

4.4. Operationalization and measurement challenges related to workplace innovation

Table 2 compiles the main aspects of workplace innovation as provided by our working definition. The compilation as well as the exploration of the working definition revealed key characteristics of workplace innovation. This provides us with some guidance, but also points to difficulties in operationalizing specific elements of the working definition. The table below summarises the main operationalization and measurement challenges we see in relation to workplace innovation as defined the literature. These challenges helped us in our own attempt to capture workplace innovation more systematically.

Table 2: Operationalization and measurement challenges

Dimension of workplace innovation	Operationalization and measurement challenge
WI has a very broad "application area"	WI overlaps with organisational innovation and process innovation or may even be seen as a specific form of organisational and process innovation. What makes WI specific is that the process of innovation rather than the result. The application areas of WI are not listed comprehensively in different definitions, only different "snapshots" are provided. Consequently, we cannot simply understand WI as a "new type of innovation" as it is entangled with other existing types of innovation.
WI is defined by process criteria such as participation/involvement, employee-manager-cooperation, multi-stakeholder dialogue in labour relations.	Innovation surveys as for instance the Community Innovation Survey (CIS) are primarily designed to measure innovation as a result and not innovation as a process. They are not assessing the process of innovation and its quality. If the distinctiveness of WI relies on process criteria this has to be included in measurement. Survey questions would need to address characteristics of the process (for instance employee participation) and not only results.
WI is defined by examples and usually operationalised by a bundle of practices.	The bundled practices differ between surveys and studies and are often bundled without much argumentation. The peculiar shift from innovation (!) to defined practices (!) is hardly noted or discussed. It is a difference whether the CIS is asking for the introduction of innovations in a completely open way (resp. Based only on a general definition) or whether we "check boxes" for specified practices which are (often implicitly) seen as "innovations".
WI is sometimes used synonymous with concepts such as High Performance Work Practices (HPWP)	We think that this replacement is not valid and ignores the specific process (and outcome) criteria of WI. "High Performance Work Practices" do not primarily relate to innovation. In studies, HPWP are simply a bundle of practices thought to improve the performance of the organisation partly based on empirical evidence on the outcomes of these practices from former studies.
Definitions sometimes blur the boundaries between workplace innovation as a process and workplace innovation as a result	Emphasis in definitions shifts between the process, the results and the outcomes. Our impression is that the process and its enablers have greater relevance for workplace innovation than the "results". The "results" of innovation are "units of innovation" – a new product for instance – while WI emphasises a continuous process of learning and reflexion and the continuous re-shaping and improvement of practices.

Dimension of workplace innovation	Operationalization and measurement challenge
WI is defined by desired outcomes such as improved firm performance and quality of working life	If we would take this statement literally, it would mean that only practices producing these outcomes could be identified as "workplace innovation". This reverses the logic of studies and surveys, which usually try to test correlations between specific types of innovation or practices and outcomes.
WI has a normative orientation which is implied in process criteria and targeted outcomes	This is a new challenge for the measurement of innovation, which so far had the luxury of treating product- and process innovations as being always good for society without knowing what they are, how they have been developed and which outcomes they have. New concepts such as workplace innovation or social innovation therefore contest the established and somewhat naive approach to commercial product innovation. The latter does usually assess neither the quality of the innovation process, nor the outcomes of innovation. It is a primarily results-based approach with the subsequent political assumption and interpretation that these measurement results are "good" ("the more new products on the market the better")

5. Workplace Innovation: Enablers (Inputs), Processes, Results, Outcomes and Impacts

The experts' comments on the draft version of this report emphasised the need to better differentiate between workplace innovation as a process and workplace innovation as a result. A quote from an article of one of the commenters illustrates this issue:

„Most importantly, workplace innovation is an inherently social process. It is not about the application of codified knowledge by experts to the organisation of work. Rather it is about building skills and competence through creative collaboration. Thus in defining workplace innovation it is important to recognise both process and outcomes. The term describes the participatory process of innovation which leads to outcomes in the form of participatory workplace practices. Such participatory practices grounded in continuing reflection, learning and improvement sustain the process of innovation in management, work organisation and the deployment of technologies.“ (Totterdill et al. 2012, p.2)

We took up this approach and modelled our workplace innovation concept according to the input-process-output-outcome-impact scheme used in evaluation studies. We specified and adapted some of the layers to use them with workplace innovation. According to this concept, the term “outcome” in the quote above would actually have to be replaced by “result” as shown below.

Layer	Explanation and specification
Enablers (Inputs)	**= the resources provided to implement the main activities.** For workplace innovation we will speak of "enablers" instead of inputs. The "enablers" are located on individual level, individual task level, organisational level and societal level.
Process	**= the main activities carried out.** We think that workplace innovation relies on a set of fundamental processes which need to exist within an organisation to "make it happen". While the structure of enablers may be more fragmented, the fundamental processes need to be in place and connected.
Results (Outputs)	**= the immediate result of the main activities.** For workplace innovation, these are organisational innovations and process innovations.
Outcomes	**= the intended and direct impact of the main activities** For workplace innovation this may be increase in internal organisational flexibility and/or in productivity ("functional firm performance")
Impacts	**= the intended or unintended and long-term and large-scale impact of the main activities** For workplace innovation, this may be organisational resilience or improved financial performance ("financial firm performance")

We want to emphasise that this concept does not imply a completely linear development of workplace innovation. A "linear development" would mean that a clear succession of "steps" or "phases" can be identified where each step is clearly differentiated from the former.

„Successful workplace innovation depends not on following a linear process of change towards a defined end but on the ability to create innovative and self-sustaining processes of development by learning from diverse sources, by creating hybrid models and by experimentation." (Totterdill 2010)

Instead of "steps" or "phases" we are therefore speaking of layers of workplace innovation. A "layer" comprises a set of organisational structures and capacities or individual capabilities which are differentiated according to their function with regard to workplace innovation. We see that enablers, processes, results and outcomes strongly interact in workplace innovation. This approach brings more clarity to the different layers of workplace innovation and allows us to identify the main focus applied in studies and surveys. The concept also points out specific challenges in studying and measuring workplace innovation as it is defined in the literature (see chapter 4.4). To explain the overview table (see **Table 3**) we formulated seven guiding questions (some layers have several aspects).

1. ***ENABLERS Individual level:*** Do employees and managers[8] have the capability and willingness to engage in workplace innovation?
2. ***ENABLERS Individual task level:*** Does the structure of the individual work task (work task, work time, work environment) allow employees and managers to engage in workplace innovation?
3. ***ENABLERS Organisational level:*** Which cultural and structural aspects does the organisation provide to support employees and managers to engage in workplace innovation?
4. ***ENABLERS Societal level:*** How does workplace innovation reflect, and respond to, external economic, social or environmental challenges?
5. ***PROCESS:*** How do employees and managers engage in fundamental and continuous processes enabling workplace innovation?
   a. How are employees and managers learning at the workplace?
   b. How do employees and managers adapt workplace practices?
   c. How do employees and managers make decisions?
   d. How do employees and managers implement decisions?
   e. How do employees and managers cooperate with each other (team work)?
   f. How do employees and managers share information?
   g. How do employees and managers engage in activities focused on innovation?
6. ***RESULTS:*** What are the results/outputs of workplace innovation?
7. ***OUTCOMES and IMPACTS:*** What are the targeted outcomes and impacts of workplace innovation?

[8] *Why do we use the formulation "employees and managers"? Firstly, WI is emphasising the employee-management relationship in terms of involvement, dialogue and voice. Secondly, we want to emphasise that employees and managers both face restrictions and need opportunities and support to engage in workplace innovation. The manager also works in a specific context determined by organisational structures.*

Table 3: Workplace Innovation Concept: Enablers, Processes, Results, Outcomes and Impacts

Layer	Level	Specification of main aspects
Enablers	**Individual level**	**Health** **Job satisfaction** **Job engagement** **Basic work skills (for routine work tasks)** **Special work skills (for non-routine or complex work tasks)** **Social skills**
Enablers	**Individual task level**	**Work task:** • Job control (decision latitude): • Skill discretion ("learn new things" "repetitive work" "requires creative" "high skill level" "variety", "develop own abilities") • Decision authority ("allows own decisions", "little decision freedom", "lot of say") • Job demands • Psychological Job Demands ("work fast", "work hard", "no excessive work", "enough time", "conflicting demands") • Physical Job Demands ("much physical effort", "lift heavy loads", "rapid physical activity", "awkward body position", "awkward arm positions") **Work time:** • Flexible work time arrangements („flexitime") • Discretionary time (for pursuing informal communication and cooperation or pursuing an innovation activities) **Work environment:** • Adaptability of product/service/process technology • Adaptability of physical environment (e.g. offices, production halls/assembly lines, service facilities, etc.) • Availability of supportive technologies (ICT, technologies for flexible adaptation) • Availability of homework/telework • Availability of different functional work environments within the organisation

Layer	Level	Specification of main aspects
Enablers	**Organisational level**	**Management system and style:** • "Experimental" resp. "positive error culture" (How management supports and appreciates trial and error learning and deals with errors) • Equity and fairness culture • Informative management • Consultative management • Enabling of informal communication and cooperation • Rewards and appraisal system (individual or group related) **Incentives for involvement of employees in innovation activities:** • Suggestion scheme • Reward system for innovative ideas • Internal competitions and awards • Intrapreneurship training and support • Appointed innovation teams **Dialogue and voice:** • Compliance to legal standards (labour rights, etc.) • Compliance with standards promoted by international organisations (e.g. ILO) • Union-based collective bargaining • Employee representation through works committee or similar representative groups • Employee involvement and participation in decision-making at different organisational level (firm strategies, implementation of new management systems, organisational structures and practices, etc.) • Grievance procedures • Employee surveys **Organisational learning (Structures and resources):** • Basic work skill training • Special work skill training • Training on demand (for non-routine or complex work tasks) • Knowledge management system **Labour contract and job description:** • Job Security/Insecurity • Adaptability of labour contract and job description (Special temporary roles, Special temporary work time, special temporary rewards) • Innovation activities recognized as a "formal" task in job descriptions

Layer	Level	Specification of main aspects
	Organisational level	**Organisational structure:** • Permeable functional and hierarchical boundaries within firm • Permeable boundaries to firm environment
Enablers	**Societal level**	• Relating management strategies, organisational development, workplace design and human resources management to economic, societal, environmental challenges • Implementing practices which respond to challenges • Relating innovation activities to challenges • Commitment to global initiatives such as "global compact" • Reporting on firm response to challenges (sustainability report)
Process		**Learning:** • Double-loop learning • Reflexive problem solving • Improvising, experimenting, developing **Decision making** **Team work:** • Team work based on self-formation and self-organisation of teams (fixed teams or flexible teams) **Internal cooperation:** • Cross-functional and cross-hierarchical cooperation (also in teams) • Cross-functional and cross-hierarchical information sharing **External cooperation:** • Participation in "communities of practice" • Following-up state-of-the-art developments (Processes, products, services) • Cooperation with external partners **Involvement (see Wood):** • Involvement in strategy development (which level?) • Involvement in decision making (which level?) • Involvement in continuous improvement (which level?) • Involvement in implementation of new organisation or processes (testing, evaluation) • Involvement in innovation processes (with the objective to generate innovations)

Layer	Level	Specification of main aspects
Result		**New standardised, diffused and institutionalised workplace practices and structures (new routines, new tasks, new roles, new processes, new practices, new organisational structures)** Results of workplace innovation should actually be covered by "process innovation" and "organisational innovation"
Outcomes	**Targeted Outcomes**	**Improved functional performance** **Improved individual, individual task and organisational enablers for workplace innovation** **Improved quality of working life** **Improved employee well-being** **Improved or new products and services (Product innovations, service innovations)**
Impacts	**Targeted Impacts**	**Improved financial performance (Gross value added, profit margin, market share, increased turnover)** **Improved flexibility and resilience (with regard to economic, societal and environmental challenges)**

5.1. Enablers

5.1.1. Enablers: Individual level

Guiding question: "Do employees and managers have the capability and willingness to engage in workplace innovation?"

The first level of enablers is the capability and willingness of individuals to engage in WI.

- **Health, job-satisfaction and job-engagement:**

  Health is a basic enabler of WI. It can be assumed that health has strong impacts on the *process* of workplace innovation: the experience of work and learning, the assumption of responsibility in decision making, or the level of involvement. Work tasks usually strain the health of employees in one way or another (hard physical work, monotonous work, inadequate equipment, inadequate work environment, etc.). Therefore, promoting and supporting physiological and psychological health becomes a necessity for workplace innovation. Health also affects other individual level enablers such as employees' satisfaction and engagement. The more demanding workplace innovation becomes, the more engagement has to be generated. Employees' engagement means that employees are willing to embrace organisational strategies and values, to make them concrete in their own actions and to generally improve the organisation.

- **Basic and special work skills:**

  We included basic work skills (for routine tasks) here, because they can be seen as a prerequisite for more advanced skills (Høyrup 2012). A worker who is not well trained and does not master his routine task, will be restricted in contributing to the improvement of work organisation. The basic training also needs to provide a basic understanding of the work task and its embeddedness in the work process of the whole organisation.

  Special work skills (for non-routine or complex work tasks) play a role in workplace innovation. In our survey screening we assigned "task-rotation" to this category as it expands the knowledge and skills of the employee beyond his/her work task. This category however would also comprise a flexible skill profile or a skill profile which includes meta-skills such as project management (relevant for involvement in innovation activities).

- **Social competence:**

  The literature on WI emphasises team work, internal cooperation (cross-functional and cross-hierarchical) and dialogue/voice but is relatively quiet on "social skills" which would allow employees to successfully engage in this kind of interactions: responsiveness to new ideas and challenges, appreciating the views of others, presenting ideas to others, working together with other, expressing their interests and needs, negotiating with other, etc.

5.1.2. Enablers: Individual task level

Guiding question: Does the structure of the individual work task (work task, work time, work environment) allow employees and managers to engage in workplace innovation?

This level has three main aspects: work task, work time and work environment. The work task comprises the main activities an employee has to carry out. The work time comprises the time frame of work and the timing of work. The work environment comprises the features of the setting where the work task is carried out: the location, the equipment, the technology.

- **Work task:**

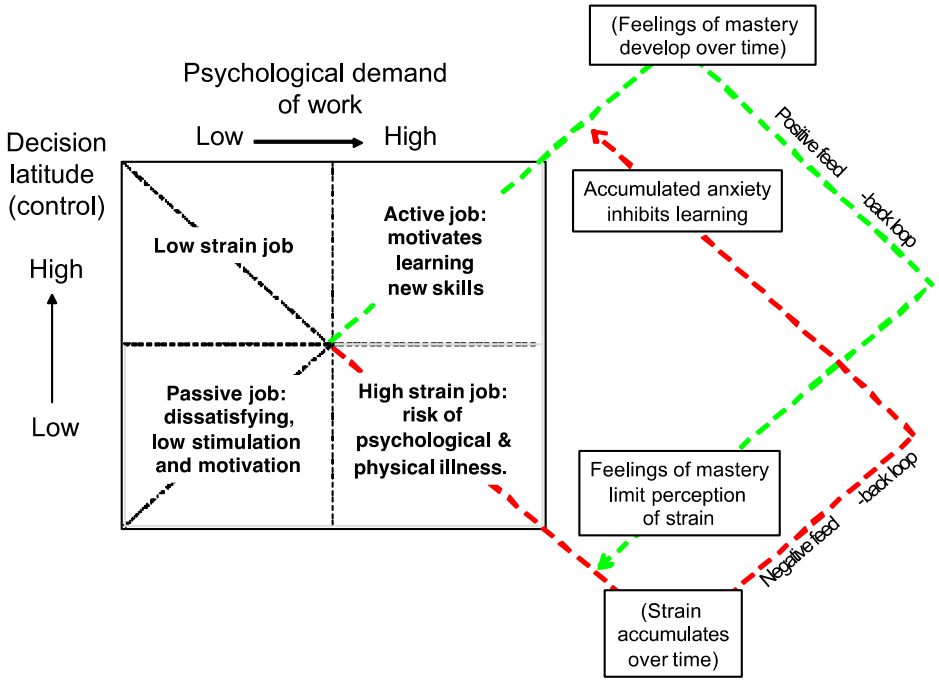
  Concerning the work task, the Demand/Control/Support model (or DCS model) from Karasek is an often mentioned reference (Karasek and Theorell 1996). The model is usually operationalised with different dimensions and a larger number of single items in the "job content questionnaire"[9]. There are however simpler ways of assessing similar aspects as for instance used in the MEADOW surveys (see chapter 8).

  The main issue in the original Demand/Control model is the level of perceived control an employee has over the work situation. The model emphasises the importance of being able to make decisions at work and of corresponding health outcomes. Karasek proposed that job strain results from a combination of high psychological demands (such as having to work hard and fast) with little freedom to make decisions affecting work (e.g. fixed schedules; subordinate rank; piece-work pay schedule). By contrast, if high job demands are combined with a high level of decision latitude, the stress can be positive, stimulating innovation and personal development. Karasek termed this an "active" job situation, which is typical of many managerial positions (Karasek and Theorell 1996). The model was subsequently extended to consider support at work: the DCS model. Work characterized by high demands, low decision latitude, and low support decreases health and well-being.

  WI is not primarily concerned with health outcomes although health constitutes an individual level enabler, but with the question of how the structure of the work task enables workplace innovation. Workplace innovation clearly depends on an "active" job situation with bi-directional positive feedback loops as shown in Figure 1 below.

9 http://www.jcqcenter.org/

Figure 1: DCS Model[10]



- **Work time:**

  Work time is also taken into account in the DCS model. It goes beyond the speed of work or the decision of the timing of work tasks. It also includes the general work time arrangement (for instance „flexitime") and discretionary time for pursuing informal communication and cooperation or pursuing innovation activities.

  Different forms of flexitime may affect the opportunities of employees and managers for getting involved in innovation activities, work within internal "projects" or non-routine work tasks in general. Flexitime would allow employees to better adapt work time to these non-routine tasks.

  We assume discretionary time to be a key enabler of workplace innovation. It means that the employee has control of additional time resources, which are not linked to routine work tasks, to engage in non-routine work tasks.

- **Work environment:**

  The work environment is a relevant enabler but is not widely used in the literature. The work environment comprises the features of the setting where the work task is carried out: the location, the equipment, the technology. The work environment refers to the concrete settings where the work takes place. A first aspect would be, whether work takes place at one or more settings and whether settings can be changed. This is not only about "homework" or "telework" which is a rather extreme setting change, but also about setting change within the company facilities: can an employee move to different settings to pursue different work tasks or to communicate with different people or is the employee bound to one specific setting (e.g. the assembly line)?

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[10] *From online source: http://www.med.uottawa.ca/courses/epi6181/Course_Outline/Karasek_fn.pdf . Adapted from original source: Theorell T, Karasek RA. Current issues relating to psychosocial job strain and cardiovascular disease research. J Occupational Health Psychology 1996; 1:9-26.*

Another, actually quite central aspect is the degree of adaptability of the physical environment. We can imagine either rigid or adaptive environments: they can make a significant difference for workplace innovation.

The work environment also captures the aspect of supportive technologies (we mainly think of ICT) to which an employee has access. The "future workplace" discussion is located here.

5.1.3. Enablers: Organisational level

Guiding question: Which cultural and structural facilities does the organisation provide to help employees and managers to engage in workplace innovation?

Organisational level enablers are central to workplace innovation. Workplace innovation is sometimes set apart from "employee-driven innovation" (Høyrup 2012) in the sense that it addresses the whole organisation, including employees *and* management. Workplace innovation is also seen as being located at the interface of management innovation (usually top-down) and employee-driven innovation (usually bottom-up) (Dhondt 2013). "Dialogue" and "participation" make the link between the two.

Furthermore, while employee-driven innovation is concerned with the everyday remaking of workplace practices and incremental changes (Høyrup 2012), workplace innovation is being more related to standardised, diffused and institutionalised organisational change as a result. This means that the organisational level enablers are crucial to transforming individual learning and adaptation into organisational learning and change as well as to actively favouring the involvement of employees and managers in innovation activities.

We identified six main organisational level enablers:

- **Management system and style:**

  As managers play a crucial role, the management system and style should be considered as key enablers for workplace innovation. First, there are two cultural aspects: A "positive error culture" means that it is allowed to make mistakes, when employees are at the same time ready to learn from their mistakes. This is also connected to developmental or experimental learning as a key process aspect of workplace innovation. "Equity and fairness culture" has been emphasised by our commentators as it is connected to the process aspect internal cooperation (cross-functional and cross-hierarchical) or for instance the organisational level enabler "dialogue and voice".

- **Incentives for involvement of employees in innovation activities:**

  We know many of these incentives from the innovation management literature, for instance literature on Intrapreneurship (Pinchot 1999). The organisation can provide concrete opportunities and resources for involvement which go beyond skill training. These opportunities may for instance consist in setting up new projects or teams specifically dedicated to an innovation task.

- **Dialogue and voice:**

  Dialogue and voice are promoted as a central aspect of workplace innovation. Without it workplace innovation would lose its defining feature of linking employees and management through supportive and constructive cooperation. Dialogue and voice also enable what Argyris and Schön (1978) called "double loop learning" – a mode of learning which goes beyond the instrumental optimisation of means to reach a given end ("single loop learning"). In double loop learning the

ends themselves are questioned and modified based on learning results. Dialogue and voice are part of a culture which encourages employees and managers to articulate themselves, to point to existing problems and to discuss possible solutions. Dialogue and voice range from the basic implementation of existing institutional and legal structures giving voice to employees through to non-institutional structures and practices.

- **Organisational learning:**

  Structures for organisational learning are a key enabler for workplace innovation as they go beyond small, individual adaptations of the work. The standardisation, diffusion and institutionalisation of new practices are the actual objective of workplace innovation. Organisational learning enables exactly this process of transforming individual into organisational knowledge.

- **Labour contract and job description:**

  Labour contract and job description define the main elements of work task, work time and work environment and thus partly determine enablers at individual task level. It is however of specific relevance that the adaptability of labour contract and of job description clearly plays a role for workplace innovation with regard to the options for employees to take on temporary roles or work tasks for instance. Another question is whether workplace innovation is actually recognized as an "additional task" as part of the job description.

- **Organisational structure:**

  Regarding organisational structure, there are two issues which repeatedly come up in the literature: permeable functional and hierarchical boundaries within firms and permeable boundaries to the external firms' environment. Workplace innovation depends on an organisational structure which enables communication and cooperation and allows employees and managers to look beyond their own work environment into the work environment of others.

5.1.4. Enablers: Societal level

Guiding question: How does workplace innovation reflect, and respond to, external economic, social or environmental challenges?

To bring in societal challenges may be seen as adding unnecessary complexity to the discussion of workplace innovation. What speaks for it is the emphasis we currently see on the perception by the company of being embedded in society. Sometimes this paradigm is linked to the "social responsibility" of private business and sometimes to the economic need to respond to external economic, social and environmental challenges. The following table shows how organisational practices may respond to societal challenges.

Challenge	Organisational response
Migration	Diversity management
Climate Change	Practices to improve environmental sustainability
Ageing societies	Practices to support and train elderly employees
Health problems	Health programmes, health circles
New aspirations, new values	Work-Life balance practices

5.2. Process

Guiding question: How do employees and managers engage in fundamental and continuous processes enabling workplace innovation?

a) How are employees and managers learning at the workplace?

b) How do employees and managers adapt and change workplace practices?

c) How do employees and managers make decisions?

d) How do employees and managers implement decisions?

e) How do employees and managers cooperate with each other (team work)?

f) How do employees and managers share information?

g) How do employees and managers engage in activities focused on innovation?

h) How do employees and managers voice complaints and suggestions?

In the draft version of this report we identified "workplace experience" as the main source of workplace innovation. The term "workplace experience" referred to the experiences which employees make during their everyday work practice and to the corresponding processes of learning and adaptation. With this approach we were closer to the concept of "employee-driven innovation" (EDI) (Høyrup 2012). In chapter **4.3** we describe some specific differences between the two concepts. The "workplace experience" and EDI are however instructive for understanding the fundamental and continuous processes underlying workplace innovation. "Continuity" and "quality" are the most relevant terms for describing workplace innovation.

Main aspects of the process of workplace innovation
Learning
Decision making
Team work
Internal cooperation
External cooperation
Involvement in innovation activities
Voice

- **Learning:**

The underlying pillars of EDI are "experience", "practice" and "learning". Learning actually seems to encroach on the other pillars when it is defined as "*a systematic change in behaviour or knowledge informed by experience*" (p. 15). Høyrup describes different learning theories which he considers as potential theoretical frameworks for EDI. The main difference made amongst the several learning theories is the one between a routine learning mode and a non-routine learning mode leading to innovation. We add the influential theory on single loop and double loop learning from Argyris and Schön (1978).

Table 4: Learning types

Learning concept and learning types	Learning mode related to workplace innovation
Adaptive (continuity/learning the routines) and developmental learning (discontinuity/changing the routines) (Ellström 2010)	**Developmental learning** means that there is a strong emphasis on the subjects' capacity for self-management and their preparedness to questioning, reflecting upon and, if necessary, transforming established practices in the organization into new solutions or ways of working (Ellström 2010, p.22)
Single loop and double loop learning (Argyris and Schön 1978)	In single-loop learning, individuals, groups, or organizations modify their actions according to the difference between expected and obtained outcomes. In **double-loop learning**, the entities (individuals, groups or organization) question the values, assumptions and policies that have led to the actions in the first place; if they are able to modify those, then second-order or double-loop learning has taken place. Double loop learning is the learning about single-loop learning.
Open and closed problem solving situations (Herbst 1971)	**Divergence** (open situation, exploring, finding out, asking questions), **convergence** (closed situation, prescribed and precise goals, making decisions, controlling results) - Innovation processes consist of different phases of opening up and closing down (Høyrup 2012, p.25)

"Learning" is strongly connected to problem-solving and innovation. We would therefore like to introduce three modes of problem solving reflecting the summarised learning theories. We illustrate the difference between these modes with an example:

Take the example of an employee who experiences a routine work task on a daily basis. Through his or her experience she or he becomes familiar with all the specific features of the work task. He or she develops an individual way of handling the work task. He or she is also confronted with interruptions of routine or discrepancies between his or her expectation and the actual result. In other words: he or she is confronted with problems. The employee will try to solve these problems in a mode we call **"pragmatic problem solving".** Pragmatic problem solving regularly happens in our everyday life and implies 1) to reduce discrepancy; 2) to re-establish continuity; and 3) all this with minimal effort. The employee thus incrementally adapts his or her work task in order to solve the perceived problem in a pragmatic way.

The problem for the organisation is that although the employee has solved the problem – the lessons cannot be systematically drawn by the organisation. The employee's problem solving usually follows a combination of individual and organisational inclinations. The employee may be individually inclined to adapt the work task and work process to his/her speed of work, interests, competences, health condition and will be simultaneously pushed by his or her organisation to increase the speed of work, the quality of products, etc. However, the organisational outcome of such practices is uncertain.

In contrast, **"instrumental problem solving"** is the typical problem solving mode implemented in conventional innovation management. It is characterised by high problem awareness, clear objectives and the explicit comparison, evaluation,

justification, selection and optimisation of means oriented at maximising efficiency and effectiveness. This mode is typically management-driven and top-down. Good examples of this type of innovation management can be found in studies of the Minnesota innovation research programme (Van de Ven et al. 2008). Instrumental problem solving is related to the "Single loop learning" as described above. This type of problem solving is however not well fitted with workplace innovation.

A mode of problem solving more adequate for workplace innovation can be characterised as **"reflexive problem solving".** This relates to statements which describe WI as a reflexive process (without explaining the term): *"It is important to see Workplace Innovation not as an end state but as a dynamic, reflexive process in which all stakeholders are continually engaged in reflecting on, learning about and transforming work processes and employment practices in response to both internal and external drivers."* (Dortmund Brussels position paper on workplace innovation, p.2) or *"Workplace innovation is a reflexive process, grounded in continuing reflection, learning and improvements, and involving employees and managers at all levels"* (EC 2014). Reflexive problem solving is thus related to double loop learning.

But how is reflexive problem solving related to workplace innovation? To answer this question, we will first look at the main characteristics of reflexive problem solving in the frame below.

Reflexive problem solving implies for us to be more aware of:

- the wider context of the perceived problem;
- the differences in perceptions of the problem by individuals, groups and organisations concerned;
- the ways in which a problem and a proposed solution concern certain individuals, groups and organisations;
- the participation (inclusion) or non-participation (exclusion) of these individuals, groups and organisations in designing and implementing the solution;
- the features which enable or disable individuals to participate;
- the way the process is managed
- the intended and unintended impacts of problem solving and the solution itself;
- the available options to experiment with the solution on a small scale and to evaluate this experimentation before scaling it up with a view to minimising unintended negative side-effects.

The examination of all the proposed learning and problem-solving models points in one direction: a shift from a learning and problem solving mode which is focused on routines, optimisation of means and determined objectives to a learning and problem solving mode, which is focused on non-routine situations, cooperation, participation and critical reflexion upon workplace innovation objectives.

- **Decision making**

Learning and problem solving imply forms of decision making which are "close to the problem". Decisions are made by the people who have the closest experience of the problem or by the groups concerned. Decisions require first defining the problem, appointing people to solve the problem, experimenting with potential solutions, assessing the outcome of such experimentation and finally deciding whether the solution should be implemented on a larger scale in the organisation.

- **Team work**

Team work is sometimes considered as a workplace innovation practice or a high performance work practice. Team work is fundamental and falls into the "process" category. It is hard to imagine the introduction of complex changes in the context of workplace innovation without employees and managers working together in cross-functional and cross-hierarchical teams. In employee-driven innovation individual employees are seen as the origin of the "every-day remaking of work practices" but this rather concerns smaller adaptations of work tasks. But with the shift from individual adaptation and coping to organisational change comes the necessity of team work: complex and extensive processes (crossing functional and hierarchical boundaries), legitimacy of decisions, more effort and resources needed, more internal stakeholders which are concerned by the change, etc.

- **Internal cooperation**

Internal cooperation is complementary to team work and covers informal and formal cooperation and information sharing.

- **External cooperation**

External cooperation means that employees and managers are establishing social relations to external communities of practice and other organisations. They have the freedom to draw on these external resources and also share internal knowledge and practices with external partners.

- **Involvement in innovation activities**

Employees and managers are actively involved in innovation activities.

- **Voice**

Employees and managers need to enjoy the opportunity to voice their problems and perceptions to other employees or superiors. This dialogue is needed to continuously update and refine the perception of the problem by the organisation. Voice means here the active use of this opportunity.

5.3. Results

At first glance, we may perceive workplace innovation as another "type of innovation", complementing product, service, process, marketing and organisational innovation. Workplace innovation is however distinctive in light of the process and its quality. Workplace innovation results in organisational change: New (at least for the organisation) standardised, diffused and institutionalised organisational practices and structures (new routines, new tasks, new roles, new processes, new practices, new organisational structures). Organisational and process innovation (for instance in the general definition of the community innovation survey) therefore *include* the results of workplace innovation. They probably include other forms of organisational change which do not meet the process criteria of WI. The WI literature is not putting much emphasis on setting WI apart from "*non-WI forms of organisational change*". The implicit opposing model seems to be a Taylorist approach to work organisation.

Beblavý, Maselli and Martellucci (2012) describe workplace innovation, which they equate with High Performance Work Practices (HPWP), as "*a change from a Tayloristic work organisation, characterized by task specialization, a pyramidal hierarchical structure, and a centralization of responsibilities, to a holistic organisation featuring flat hierarchical structures, job rotation, self-responsible teams, multi-tasking, a greater involvement of lower-level employees in decision-making, and the replacement of vertical by horizontal communication channels*." (p. 17)

The only option to differentiate WI would therefore be either to specify practices in advance (the pragmatic approach) or to measure the process criteria for organisational innovation and the character of the resulting innovation.

5.4. Outcomes and Impact (reference to empirical studies)

The table below provides an overview of the outcomes from workplace innovation. The qualitative case study based Eurofound study "work organisation and innovation" is comprehensive in this regard, in particular regarding the differentiation between different elements of functional and financial performance (2012). We would like to emphasise the second outcome category, which shows that WI is likely to affect its own enablers. WI thus may provide new and improved practices for further WI.

Targeted Outcomes and Impacts:

- Improved functional performance (e.g. productivity, efficiency);
- Improved individual, individual task and organisational enablers for further workplace innovation;
- Improved quality of working life;
- Improved employee well-being;
- Improved or new products and services (Product innovations, service innovations);
- Improved financial performance (Gross value added, profit margin, market share, increased turnover);
- Improved resilience (better and faster adaptation to economic, societal and environmental challenges).

Definitions of WI connect the concept to specific outcomes, in particular firm performance and quality of working life. We already discussed that this is problematic if taken literally: are only practices with these outcomes "retrospectively" defined as workplace innovation? This is actually not the intention of the authors as the definitions we compiled are not used for operationalising the concept, but for explaining it and probably promoting it to a research and policy audience. The actual challenge is to test this relationship empirically. Introductory and theoretical articles on WI usually stress that these relationships exist and that there is indeed evidence of this in various smaller and larger studies. However a consensual definition of WI does not exist. "High Performance Work Practices" are also defined in different ways although there seems to be a consensual core of practices. However studies only measure the impact of specific practices or a bundle of practices arranged in different ways and measured with different indicators. This results in very fragmented evidence and makes it difficult to measure the effects of "workplace innovation". Meta-studies which re-analyse a number of former studies are therefore very valuable as they provide a "bigger picture". The meta-studies from Combs et al (2006) and from Wood and Wall (2005) additionally raise questions on the methodological approach of studies. The main issue here is that cross-sectional studies (one point in time) cannot measure causal effects but only correlation. Correlation does not prove causation.

We can provide arguments to support the opinion that workplace innovation leads to higher employment or vice versa but the statistical correlation cannot prove the causality. As Wood points out, much more complex and demanding longitudinal or experimental studies would be necessary to measure causality (see Wood 2005, p. 454f.). However, the available resources restrict many researchers to cross-sectional studies. Meta-analysis is therefore a "second-best" approach. We compiled the results from three meta-studies which cover studies on practices which are at least partly associated to WI. The meta-studies also illustrate how blurry the boundaries between WI, HPWP and human resources practices actually are. Single empirical studies put

much more emphasis on measuring effects than defining the concept. We included two single studies. Beblavý, Maselli and Martelucci (CEPS Special report 2012) were included because they work with data from the EWCS, one of our focal surveys. The research project by Wood and Menezes is particularly valuable because of its transparent and detailed operationalisation of the HPWP concept and its focus on well-being, which is a rather neglected outcome category, as HPWP studies usually focus on performance. The meta-studies show a positive relationship between specific WI related practices and specific outcome dimensions such as firm performance and well-being. The meta-analysis from Combs brings the best evidence to support this assumption. The studies from Wood deliver only fragmented evidence of impact and stress the need for better research designs. The additional single studies we screened (see **Table 5**) will not be discussed in detail here as they deliver only fragmented evidence on single practices or different bundles of practices.

Table 5: Compilation of impact studies

Study	Operationalization of workplace innovation	Conclusions
Combs, Hall, Ketchen (2006), How much do high-performance work practices matter? A meta-analysis of their effects on organisational performance **Source and analysis: 92 studies. Statistical meta-analysis**	Focus was on 13 practices: incentive compensation (31 effects), training (29), compensation level (18), participation (18), selectivity (15), internal promotion (12), HR planning (10), flexible work (8), performance appraisal (8), grievance procedures (8), teams (8), information sharing (7), and employment security (6).	"*SHRM researchers have long argued that human resources should be managed strategically (MacMillan & Schuler, 1985) and that certain practices are essential to improving organizational performance (Russell et al., 1985). However, the wide variety of sample characteristics, research designs, practices examined, and organizational performance measures used has frustrated efforts to estimate the size of the link between HPWPs and organizational performance. By using meta-analysis to reduce the effects of sampling and measurement error, our results lay to rest any doubt about the existence of a relationship, and more importantly, offers researchers a baseline estimate of its size. We estimate that organizations can increase their performance by .20 of a standardized unit for each unit increase in HPWP use. We have also taken a step toward explaining the wide variance in effect sizes among studies. Not only does a focus on HPWP systems improve effect sizes, but context also matters. The challenge for future research is to reach beyond the service versus manufacturing designation found here to identify other important contextual variables and to programmatically match HPWP systems to both context and strategy.*" (p. 524)
Wood and Wall (2005), **The romance of human resources management and business performance, and the case for big science** **Source and analysis: 25 studies.** **Qualitative assessment based on following criteria:** **the sample and response rate;** **the reliability and validity of the HRM measure and source of data for it;** **the adequacy of the research design; the extent to which other factors have been controlled; the strength of the findings on the HRM–performance link;**	Studies typically cover a substantial range of the following practices: sophisticated selection, appraisal, training, teamwork, communication, job design, empowerment, participation, performance-related pay/promotion, harmonization, and employment security	"*The conclusion from our analysis is that it is premature to assume that HRM initiatives will inevitably result in performance gains, either in all situations or even where deemed appropriate by contingency arguments. Consultants who promote the HRM model are reflecting a wider academic and business school perspective in which this approach is central to definitions of modernity in management. Governments, employers' associations, professional associations such as those representing personnel managers, and even trade unions, throughout the world, have also promoted high-commitment HRM as the approach most suited to the assumed increasingly turbulent international economy.* *Our assessment is that, although consultants are acting in good faith, and their views are seemingly reinforced by the presumption on the part of academics that HRM systems actually do promote organizational performance, the empirical evidence is as yet not strong enough to justify that conclusion. The cross-sectional evidence could be over-estimating such a relationship due to contamination between measures of the HRM and performance. Conversely, studies could be underestimating the strength and consistency of the relationship through inadequate measurement of HRM practices.*

Study	Operationalization of workplace innovation	Conclusions
whether there has been a test for fit; and finally if the effects of individual **HRM practices have been considered alongside those of the composite HRM measure.**		*We lean to the latter view, because while there is little evidence of common method bias leading to spurious conclusions (Wall et al., 2004) there are strong indications of poor measurement of HRM practices (Gerhart et al., 2000) that would produce attenuated effects. Moreover, regardless of the quality of data, the paucity of longitudinal studies also makes causal inference dubious. So the evidence is at once encouraging but ambiguous.* *Because there also remain strong theoretical grounds for believing an HRM system centred on enhancing employee involvement should be beneficial for organizational performance*." (p.454)
Hülsheger, Salgado, Anderson (2009), Team-Level Predictors of Innovation at Work: A Comprehensive Meta-Analysis Spanning Three Decades of Research **Data source and : 104 studies, statistical meta-analysis**	This article presents a meta-analysis of team-level antecedents of creativity and innovation in the workplace. Using a general input–process–output model, the authors examined 15 team-level variables researched in primary studies published over the last 30 years and their relation to creativity and innovation. An exhaustive search of the international innovation literature resulted in a final sample (*k*) of 104 independent studies.	Results revealed that team process variables of support for innovation, vision, task orientation, and external communication displayed the strongest relationships with creativity and innovation (R between 0.4 and 0.5). Input variables (i.e., team composition and structure) showed weaker effect sizes. Moderator analyses confirmed that relationships differ substantially depending on measurement method (self-ratings vs. independent ratings of innovation) and measurement level (individual vs. team innovation). Team variables displayed considerably stronger relationships with self-report measures of innovation compared with independent ratings and objective criteria. Team process variables were more strongly related to creativity and innovation measured at the team than the individual level. Implications for future research and pragmatic ramifications for organizational practice are discussed in conclusion.
Beblavý, Maselli, Martelucci (CEPS Special report 2012), Workplace innovation and technological change **Data source and analysis: EWCS, primary statistical analysis**	Practices considered as WPI: o Flexitime o Teleworking o Alternative payment schemes o Flat hierarchies o Employee empowerment and autonomy o Task rotation and multi-skilling o Team work and team autonomy	"*More workplace innovation therefore goes hand in hand with higher recorded innovation, employment rates, productivity and work-life balance. Some features of innovative workplaces have a stronger impact: telecommuting, flexi-time and team autonomy. Whereas employee autonomy, employee empowerment and flat hierarchies have the lowest impact. To sum up, the strongest linear relationship is represented by patent applications and flexi- time (0.81), while for telework the most positive links are with employment (0.75) and broadband penetration (0.78).*" (p. 25) "*All in all, we can conclude that the extent of individual workplace innovation at the country level is correlated or strongly correlated with labour productivity, internet and broadband penetration,*

Study	Operationalization of workplace innovation	Conclusions
		R&D expenditure and outputs as well as work-life balance. In other words, there is a strong correlation between a country-level presence of various aspects of workplace innovation and technological and economic progress. Of course, and this is a very important caveat, correlation does not prove causation. Nonetheless, it seems safe to conclude, and we come back to this point later, that workplace innovation and several other phenomena tend to evolve together as a package at the country level." (p. 26)
Wood, Menezes (research project financed by the UK.'s Economic and Social Research **Council (Grant number 000-23-1482).** **HIGH INVOLVEMENT MANAGEMENT, HIGH PERFORMANCE WORK SYSTEMS AND WELL-BEING** **Data source: Workplace** **UK Employment Relations Survey of 2004 (WERS2004)** **Primary statistical analysis**	Test for the following predictors of well-being: (a) enriched jobs, (b) high involvement management, (c) consultative management, (d) trade union representation, (e) informative management, (f) job security guarantees, (g) internal labour markets, (h) group- or organization-level payment systems. We also test for interactions across the types of involvement (e.g. between high involvement management and enriched jobs). Measures for well-being: Job satisfaction Contentment scale	"*Our UK-based study has shown, in line with our theory, that enriched jobs and informative management are positively associated with both measures of well-being. High involvement management is, however, negatively associated with contentment, the opposite of that hypothesized, and is independent of job satisfaction. Consultative management is related to job satisfaction but not anxiety–contentment.* *There is some indication that enriched jobs may have more impact on job satisfaction than on anxiety. When we divide the estimated coefficients by their standard errors in the tables, we observe that in the whole data and in the private sector subsample, the coefficient for enriched jobs in the anxiety–contentment models has significantly lower t-values than that in the job satisfaction model.* *There is no evidence that economic involvement or motivational supports practices are related to well-being, or that they strengthen the relationships between other types of involvement and well-being. Nor is trade unionism seemingly significant as a moderator."* (p. 25) "*Overall, there is no support for the idea that all the involvement elements of the high performance work system have positive effects on the well-being of employees, either independently or jointly. Enriched jobs appear to be key to well-being, consistent with the longstanding job design tradition and the importance that autonomy is given in Warr's and others' theories of happiness."* (p. 26) "*Differences in our findings between enriched jobs, high involvement management, employee voice, and economic involvement reinforce the need to treat them as distinct elements of employee management. In the case of economic involvement or incentives, it is the refutation of the hypotheses involving them means that there is no evidence for theories involving payment systems or share ownership (e.g. shared capitalism theory as in Kruse et al., 2009)*

Study	Operationalization of workplace innovation	Conclusions
		The lack of moderation effects between collective forms of payment and high involvement management does not suggest that these are uniquely appropriate for high involvement management, though research on performance may yet offer some support for this." (p. 28) "*Our finding that supportive management is significant for well-being echoes the human relations emphasis on the value of management support, at both local and top levels. It is consistent with the prediction and results of Rafferty and Griffin's (2006) theory that supportive supervision will be related to job satisfaction, making it an alternative to the emphasis (or additional) on employee involvement that characterizes high involvement management, or the importance of going beyond mere communication towards consultation and negotiation associated with employee voice*."(p. 29)

6. TOWARDS MEASURING WORKPLACE INNOVATION

Developing indicators requires knowledge about who wants to measure what and by which means. A coherent and relevant set of indicators therefore requires first both technical and theoretical considerations. Technical considerations comprise, for instance, the motivation of the contractor, the statistical scope of the survey, the availability and motivation of surveyed subjects and the time frame. Theoretical considerations include reflections like 'does the concept allow for defining concrete and comparable aspects or enablers?', 'which are the relevant questions?', 'what is the influence of external factors?', and 'has the impact of survey implementation on the surveyed object been considered?'. These considerations have different relevance in the various perspectives mentioned in the previous chapter. Additionally, they have to be taken into account at each step of the indicator development process:- establishing the purpose of indicators, - designing the conceptual framework, - selecting and designing the indicators, - interpreting and reporting the indicators and eventually - maintaining and reviewing the indicators (Brown 2009). In other words, while developing an indicator, all of these steps have to be reflected and considered simultaneously, as for example the full implementation process as well as the reasoning of its author, must be taken into account when considering validity and usefulness of this indicator.

While the previous chapters establish the conceptual framework, the current chapter provides some food for thought with regard to indicator design. Being embedded in the overall concept development, methodological approaches for indicator design can include literature review, survey review and data screening and may include expert consultation, panel discussions and peer review processes as well as pre-testing phases and software development or adaptation. Albeit the IUS methodological report of 2010 provides an overview over (newly) applied indicators, their dimensions and types[11], it does not describe how to design and select indicators. It is therefore not yet clear how far the indicators design for the IUS included expert consultation or other participatory procedures. As one criterion for indicators of WI is its utility for decision-making, policy-makers should be involved in the determination of indicators at some point.

In any case, the methodological approach of this study on WI foresees a participation of experts, at least in an expert workshop.[12] The following paragraphs offer background information on surveys related to WI which shall facilitate an agreement on the concrete scope and purpose of WI's measurement within the EU.

6.1. Overview of examined surveys

To understand the concepts behind the measurement of workplace innovation a review was conducted on a number of selected surveys within European countries, across Europe as well as beyond Europe including America, Australia and New Zealand in particular. In a further step seven surveys were selected. The surveys were chosen due to their high quality of conceptualisation of WI, due to their EU country coverage as well as due to their possible applicability for the Innovation Union Scoreboard 2013[13] (IUS).

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[11] *That is Nominator, Denominator, Rationale, Data source and a comparison with precedent EIS 2009 http://ec.europa.eu/enterprise/policies/innovation/files/ius-methodology-report_en.pdf*

[12] *See chapter three "methodology applied".*

[13] *Available on http://ec.europa.eu/enterprise/policies/innovation/facts-figures-analysis/innovation-scoreboard/*

The surveys were analysed in relation to WI concerning the survey objectives, the implementing body, the target group and source of data, the countries covered, the number of indicators used, relevant indicators to measure workplace innovation, the survey period, the date of implementation and the timeframe under observation. To enable the incorporation of various regional conceptualisations, four national surveys were selected. Two have been conducted within EU Member States and two outside Europe. The selected surveys encompass:

- Community Innovation Survey 2010[14](CIS);
- European Working Condition Survey 2010[15] (EWCS);
- European Company Survey 2013[16] (ECS);
- MEADOW project survey for employers;
- MEADOW project survey for employees;
- Finnish Quality of Working Life Survey 2008[17];
- UK Workplace Employment Relation Study 2012[18];
- Canadian Workplace and Employee Survey 2006[19] (WES); and
- USA Workplace survey 2013.[20]

Table 6: Overview over surveys related to WI

Survey name	Survey objective	Initiator/ Implementing Body	Target group/ Source	Countries covered	Nr of indicators	Perio-dical survey?	Interval
Community Innovation Survey (CIS)	survey of innovation activity in enterprises	EUROSTAT	enterprises	2010: 22 countries BG-CY-CZ-DE-EE-ES-FI-FR-HR-HU-IE-IT-LT-LU-LV-NL-PT-RO-SE-SI-SK-NO	17	yes	within two years
Innobarometer	an opinion poll of businesses or general public on attitudes and activities related to innovation policy.	EC	approx. 8,500 businesses employing one or more people	EU27	set of 8 overall questions	yes	Annually

[14] *http://epp.eurostat.ec.europa.eu/portal/page/portal/microdata/cis*

[15] *http://www.eurofound.europa.eu/surveys/ewcs/2010/questionnaire.htm*

[16] *http://www.eurofound.europa.eu/surveys/ecs/index.htm*

[17] *http://www.stat.fi/tup/julkaisut/tiedostot/isbn_978-952-244-101-0.html*

[18] *https://www.gov.uk/government/publications/the-2011-workplace-employment-relations-study-wers*

[19] *http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=2615&db=IMDB&lang=en&dis=2&adm=8*

[20] *http://www.gensler.com/track-u/2013_US_Workplace_Survey_07_15_2013.pdf*

Survey name	Survey objective	Initiator/ Implementing Body	Target group/ Source	Countries covered	Nr of indicators	Perio-dical survey?	Interval
European Working Condition Survey (EWCS)	provide an overview of working conditions in Europe	Eurofound	44,000 (2010) employees and the self employed	2010: EU27, Norway, Croatia, the former Yugoslav Republic of Macedonia, Turkey, Albania, Montenegro and Kosovo	20	yes	every 5 years (starting in 1990)
European Company Survey (ECS)	The survey will map a number of practices used in European workplaces, as well as how they are discussed and negotiated at workplace level as well as some of their outcomes.	Eurofound/ Gallup Europe	Survey of 27,000 managers and where possible official employee representati-ves	32 countries (27 EU Member States and Croatia, Former Yugoslav Republic of Macedonia, Iceland, Montenegro and Turkey)	2 question-naires (manage-ment and employee representati ves)	yes	every four years (2004, 2009, 2013)
Finnish Quality of Working Life Survey	to provide information about the state of work life for political decision-making involving labour policies and improvement of work communities	Statistics Finland	3,000 and 6,000 people in Finland	FIN	set of 7 groups of questions (each 16-24 questions)	Yes/no	six times in between 1977 to 2008: 1977, 1984, 1990, 1997, 2003, and 2008
Workplace Employment Relation Study (UK)	National survey of people at work in Britain	Gov UK (Department for Business, Innovation & Skills)	data from employers, employee representative s and employees in a representative sample of workplaces (2011: 7,143 work places as issued cases)	UK		Yes/no	six times: 1980, 1984, 1990, 1998, 2004 and 2011
Workplace and Employee Survey (WES) CAN	examine the way in which employers and their employees respond to the changing competitive and technological environment	Statistics Canada	employer and employee samples (2005: 6,693 employers and 24,197 employees	CAN	50 questions	yes	annually from 1999-2006

Survey name	Survey objective	Initiator/ Implementing Body	Target group/ Source	Countries covered	Nr of indicators	Perio-dical survey?	Interval
Workplace survey USA	online survey on employee effectiveness, business performance, and opportunities to create a culture of innovation	Gensler	2,035 knowledge workers	USA		Yes/no	2005, 2006, 2008, 2013

The majority of surveys (7 surveys) are commissioned by public bodies (statistical offices, international organisations) whilst only one survey is commissioned by a private company. Out of the seven surveys under scrutiny, three (CIS, IB 2013, ECS) collect data from enterprises only. The EWCS and the regional surveys in UK and Canada observe both employers' and employees' opinions. The objectives of the surveys range from exploring the innovation activity in enterprises (CIS) and comparative assessment of the research and innovation performance of the then EU27 Member States (IUS) to providing an overview of working conditions in Europe (EWCS) and map a number of practices used in European workplaces (ECS). The group size varies from 2,035 persons (USA) to 44,000 persons (EWCS). All surveys are periodically repeated.

Other European surveys reviewed, i.e. surveys that are commissioned by international bodies and covering all EU Member States[21], comprise the Annual Growth survey[22], the Eurobarometer[23] and the Labour Force Survey[24]. None of them collects data from enterprises (the LFS – by definition - collects data on individual level) that are directly related to workplace innovation.[25] However the Innobarometer published in 2010 refers to work organisation by collecting data from the public sector (European Commission 2011a, p.19 as well as p.21)[26]. Also the Innobarometer 2007 examines work organisation as "forms of activities". The indicator used there is to "introduce new or significantly improved organisational methods, change in management structure, work organisation, or new methods of interacting with other" (European Commission 2008, p.10, 66, 67, 108). In addition, the Aggregated Qualitative Report published in September 2011 enlightens well-being. The report records job-satisfaction, the workplace environment as well as self-realisation at work (European Commission 2011b, p.32 and p.33).

Beside European surveys, national studies are carried out in some countries. The Nordic countries, Germany and the Benelux are the most active Member States regarding WI programmes (Alasoini 2013; Eeckelaert et al. 2012). Whilst workplace innovation frequently is part of the National Innovation Strategies in the majority of countries (workplace development is established in the context of the new innovation

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[21] *The IUS is not mentioned here as it is collecting data from existing surveys, providing an analytical overview.*

[22] *http://ec.europa.eu/europe2020/making-it-happen/annual-growth-surveys/index_en.htm*

[23] *http://ec.europa.eu/public_opinion/index_en.htm*

[24] *http://epp.eurostat.ec.europa.eu/portal/page/portal/microdata/lfs ; the labour force survey collects data relevant for workplace innovation such as working hours, occupation and form of contracts (e.g. limited duration contracts).*

[25] *Neither the Eurobarometer - the standard, flash and the special Eurobarometers - nor the Innobarometer and the Innovation Union Scoreboard in particular.*

[26] *The respective questions in the Innobarometer were taken from the MEADOW project (http://www.meadow-project.eu/) which developed indicators for organisational change.*

policies of EU Member States), some countries, such as Finland and Ireland, have set up specific "WI programmes". According to Alasoini 2013, the arguments used in the promotion of WI programmes are the same as those for Innovation programmes (deficiencies of the market, system failures of existing institutions as well as the various positive externalities of interventions and innovations).

In Finland, a first TYKE programme had been implemented over 1996-2003, followed by a second TYKES programme over 2004-2010 and the so-called Liideri programmes since 2012. The latter focusses on management 2.0, employee-driven innovation and new ways of working. Over 1996-2010, a total of 1,800 projects have been realised by the programmes allocating €106 million of public funding to workplace innovation and involving 350,000 people in the programme. The main target group were SMEs. The principles of the "Finish model for workplace development" are the system-level approach (rather than individual practices the programmes target at the work system), the linkage between productivity and quality of working life (QWL) that is supported by the programmes, the local learning process, labour-management cooperation, research-supported development, expanded triple helix and inclusiveness. Immediate improvements in the productivity and effectiveness of work and various factors of QWL at participating workplaces are recorded as impact (Alasoini 2013 referring to evaluation studies).

In Ireland, a policy oriented National Workplace Strategy and an action oriented Workplace Innovation Fund[27] with a budget of €6 million over 2007-2010 have been implemented. The funding scheme focuses on developing participation and partnership-type practices. Applications are assessed by considering the expected impact of proposed WI on the company's competitive position internationally, the impact on new employment or maintaining existing employment and evidence of management and employee collaboration.

Whilst in Finland workplace development is the anchor (covering also occupational health and work environment as well as questions of management and supervisory work), the focus of programmes in the rest of EU lies on work organisation including issues like team-based organisational structures, flexible working methods, business practices on trust and employee participation (Alasoini 2013). Activities in other countries include the "New ways of work" initiative in the Netherlands, the "Sustainable value creation Initiative" in Sweden and Norway, the programme "Innovative Arbeitsgestaltung – Zukunft der Arbeit" in Germany and "UKWON - UK work organisation network" in the United Kingdom.

Similar to the programme in Finland, the Workforce Innovation Fund[28] in the USA supports innovation at the systems and service delivery levels based on the belief that "*innovation at the systems level – where policies, organisational structures, planning processes, performance measurement, procurement, investment priorities, and information management systems reside – is necessary to support service delivery strategies that result in better outcomes and lower costs*" (see http://www.doleta.gov/workforce_innovation/). In support of this goal, the administration is seeking new ways to remove administrative, statutory and regulatory barriers and enable a closer alignment and integration of agencies and programmes with overlapping missions and clients. These funds support innovative approaches to the design and delivery of employment and training services that generate long-term improvements in the performance of the public workforce system, both in terms of outcomes for job seeker and employer customers and cost-effectiveness. Particularly the fund seeks: to re-tool service delivery strategies and/or policy and administrative

[27] http://www.ibec.ie/IBEC/ES.nsf/vPages/HR_best_practice~Strategic_HR~workplace-innovation-fund-01-02-2007?OpenDocument

[28] http://www.doleta.gov/workforce_innovation/solicitation.cfm

systems and processes; to improve outcomes for workforce system customers; and to evaluate the effectiveness of such activities.

Further surveys, tools and models reviewed include the EFQM[29], the Active Ageing Index[30], the Work Ability Index[31], the Work-related Quality of Life[32] and the Work-Related Quality of Life scale[33], amongst others. Next to regional public bodies implementing surveys related to workplace innovation and tools available to assess individual work related conditions or business excellence, large enterprises, such as Microsoft (Workplace Advantage Program), Philips (WI Programme) and VW (activities implemented in Poznan), have established WI programmes and actions.

In order to enlighten priorities and gaps of the surveys addressing WI, four surveys were selected for items that are relevant to WI and used in our conceptual framework. Selection criteria comprised EU27 coverage, the conceptual closeness to the IUS and the relevance for WI. The four chosen survey are CIS, IB 2010, EWCS and ECS. For the analysis results of this specific analysis please see the following chapter.

6.2. Relating the workplace innovation concept to surveys and indicators

As already mentioned above, the very first question when developing indicators is about their purpose, based on knowledge of the very nature of the observed objective. As WI is not a given phenomenon but a socio-economic concept facilitated by public policy, its scope and relevance depend on a commonly agreed definition. The challenge for those tasked with delivering evidence for such a common definition is the integration of scientific soundness and practical relevance into a coherent concept.

Exploring practicality of the input/process/output/outcome/impact scheme we used for conceptualising WI, we screened indicators of the examined surveys for their informative value with regard to WI. In that sense, as WI is closely interlinked and partly overlapping with other types of innovation, this screening illustrates to which extent WI has been already assessed.

When screening the indicators, the survey questions were analysed only with regard to their narrative content, independently of the targeted entity and methodological particularities of implementation. This proceeding takes stock of the exploratory mission of this report: there is no practical guidance provided on how WI can be easily assessed by collecting results from existing surveys.[34]

The indicators of the selected surveys are documented in the ANNEX due to the large size of tables. The next chapter presents the synthesis of surveys.

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29 *http://www.efqm.org/*

30 *http://www.euro.centre.org/detail.php?xml_id=2004 as well as http://ec.europa.eu/social/main.jsp?langId=de&catId=89&newsId=1837&furtherNews=yes*

31 *http://www.ttl.fi/en/health/wai/pages/default.aspx as well as http://www.arbeitsfaehigkeit.uni-wuppertal.de/*

32 *http://www.qowl.co.uk/*

33 *http://www.qowl.co.uk/researchers/WRQoL%20ebook%20User%20manual%20v34%2013%20Nov12.pdf; It uses six core factors to explain most of the variation in an individual's quality of working life: Job and Career Satisfaction; Working Conditions; General Well-Being; Home-Work Interface; Stress at Work and Control at Work.*

34 *The collection of indicators implemented in different surveys would lack methodological soundness anyhow, as each of the questionnaires surveys different people and entities and most of them are repeated in different time periods.*

7. General approaches for measuring workplace innovation

The following table shows us with which focus and in which combinations workplace innovation could be measured. Focuses may also be combined. This is an initial overview before we examine in detail how the screened surveys cover the layers of workplace innovation.

Table 7: Measurement options for WI

Focus	Interest	Survey focus
Specific practices	We are measuring whether specific practices exist	
Specific practices + Introduction	We are measuring when specific practices have been introduced	ECS, EWCS
Specific practices **+ Introduction** **+ Process**	We are measuring when and how specific practices have been introduced (implementation process)	
Specific practices **+ Introduction** **+ Process** **+ Outcome**	We are measuring when and how specific practices have been introduced (implementation process) and whether this led to significant changes as perceived by employees or managers	
Innovation results **+ Introduction**	We are measuring when innovation results have been introduced	ECS, MEADOW Employer CIS (with adaptations)
Innovation results **+ Introduction** **+ Process**	We are measuring when and how innovation results have been introduced (innovation process)	
Innovation results **+ Introduction** **+ Process** **+ Outcome**	We are measuring when and how innovation results have been introduced (innovation process) and whether this led to significant changes as perceived by employees or managers	
Enablers	We are measuring the structural elements of the organisation (individual level, individual task level, organisational level) which are supporting (or not supporting) workplace innovation	ECS, EWCS, MEADOW Employer, MEADOW Employee Not comprehensively
Process	We are measuring the continuous process of workplace innovation	ECS, EWCS, MEADOW Employer, MEADOW Employee Not comprehensively CIS (with adaptations)

8. Synthesis table: Comparison of surveys, recommendations and proposed indicators

Table 8: Synthesis table

Layer	Comparison of surveys	Recommendations	Proposed indicators
Enablers individual level	The ECS captures aspects of health, job satisfaction and job engagement by questioning conflict management and issues related to employee well-being (High levels of sick leave, Difficulties in retaining employees and low motivation of employees). It provides reasonable indicators for assessing basic work skills and captures extended skills with a question on task-rotation. Further social skills are not covered explicitly. The EWCS provides a simple, positively formulated item on job engagement: "The organisation I work for motivates me to give my best job performance." A simple question on basic work skills: "Do the tasks require different skills?" And one question on job-rotation similar to the ECS. Social skills are not covered explicitly. The CIS does not include indicators related to this layer	Health can be captured rather easily with reference to sick leave. Job satisfaction is not always asked for explicitly, but is either measured directly when asking for the level of satisfaction or indirectly by asking about the recurrence of different psychological states. We would recommend the combination of both. Job engagement/identification is not explicitly investigated. We would highly recommend including at least one indicator capturing the motivation of employees to contribute to the success of the company and more specific to the improvement of work organisation. To investigate in WI enablers, Job engagement could also be combined with a question on whether employees feel that they have the skills to engage in more complex task. Special work skills (which are – when assessing WI - more relevant than basic work skills) are measured by asking about task-rotation. The latter is indeed a highly relevant enabler of WI, as it broadens the skill profile, facilitates communication and an understanding of the whole production process.	MEADOW Employee/Health: Over the past year [< or if < 12 months start question with "Since you started working for …], how many days were you absent from work because of poor health? MEADOW Employee/Job satisfaction: All in all, how satisfied are you with this job? 1. Very satisfied 2. Satisfied 3. Not very satisfied 4. Not at all satisfied MEADOW Employee/Job satisfaction: Now, specifically thinking about your job with [<enter name of employer>], in the past week how much of the time has this job made you feel each of the following: a. Tense? b. Uneasy? c. Worried? d. Depressed? e. Gloomy? f. Miserable? 1. Never 2. Less than 1 day 3. 1-2 days 4. 3-4 days 5. 5-7 days ECS Special work skills: Do any of the employees at this establishment rotate tasks with other employees? MEADOW Employee/Special work skills: Have you been trained by your current employer to undertake more than one job that requires different skills? MEADOW Employee/Special work skills: Do you feel that you have the skills to cope with more demanding duties than those you are required to perform in your current job?

Layer	Comparison of surveys	Recommendations	Proposed indicators
	The MEADOW Employer survey Provides a health measure based on percentage of lost days due to employee sickness. Job satisfaction and engagement are not covered. Basic and special work skills are captured by questions on training and task-rotation. Social skills are not covered explicitly. The MEADOW employee survey measures health and "well-being". Job engagement is not covered. Basic and special work skills are measured with several questions Social skills are not covered	Social skills are completely missing in the surveys although they are of high relevance for WI with its emphasis on communication, dialogue/voice and involvement. Skills such as presenting ideas, project management and negotiation with superiors should be included.	
Enablers individual task level	The ECS is relatively weak on this level and only provides one general question on decision making. The work environment is not covered. The EWCS includes indicators related to Karasek's Demand/Control/Support model. This covers different dimensions of control on work task and work time. The work environment is not covered. The CIS does not feature this layer. The MEADOW Employee survey features probably the most complete measurement on work task and work time control with detailed answer categories.	Questions on decision making need to be more specific and focused to the processes of relevance for WI (such as product portfolio/organisation of work processes). The work task level is very well captured by the MEADOW Employee survey: it implements a simplified item battery which nevertheless captures the most important aspects of the DCS model. Work time is only assessed by asking for total working hours and flexitime arrangements. The availability of discretionary time for non-routine work tasks is neglected. Discretionary time is however highly relevant for WI.	ECS / work task: Who normally decides on the planning and execution of the daily work tasks of the employees at this establishment? - The employee undertaking the tasks - Managers or supervisors - Both employees and managers or supervisors ECS / work time: Approximately what percentage of employees has the possibility to adapt – within certain limits - the time when they begin or finish their daily work according to their personal needs or wishes? Percentage of employees Number of employees EWCS / Work time: They are set by the company / organisation with no possibility for changes You can choose between several fixed working schedules You can adapt your working hours within certain limits (e.g. flexitime)

Layer	Comparison of surveys	Recommendations	Proposed indicators
	The work environment is only captured by questions on homework/telework (resp. Working at another place than the organisation's premises, specified by the intensity of telework). In contrast, the MEADOW Employer survey is weaker on this level as it investigates only in work time arrangements.	The work environment is a rather neglected category. Only homework/ telework are captured. The adaptability of technology/equipment and facilities are completely out of focus. The change between different work locations within the firm premises, which we would perceive as a good indicator for flexible work organisation, is not mentioned. The change of internal work locations could be connected with questions on the functionality of different locations (group work areas, creative areas, communication areas, etc.) and their relevance for (cross-functional and cross-hierarchical) cooperation.	Your working hours are entirely determined by yourself. EWCS / work task: Are you able to choose or change. Your order of tasks? Your methods of work? Your speed or rate of work? MEADOW Employee / work task: In your job, what proportion of the time can you choose or change -) the content of your work tasks? -) the speed at which you work? -) the order in which you undertake tasks? -) how you undertake tasks? 1. Less than 25% of the time 2. 25% up to 50% of the time 3. 50% up to 75% of the time 4. 75% or more of the time MEADOW Employee / work environment: Does your job ever involve working in places other than [<enter name of employer>]'s premises MEADOW Employee / work environment: How much time do you spend working at places other than [<enter name of employer>]'s premises? 1. Less than 25% of the time 2. 25% up to 50% of the time 3. 50% up to 75% of the time 4. 75% or more of the time
Enablers organisa-tional Level	The ECS management questionnaire includes a relevant question on management culture and the evaluation of employee involvement. Dialogue and voice are only covered in the ECS employee representative (!) questionnaire. ECS investigates few but among them one quite relevant aspects of	In general the organisational level enablers are rather weakly developed. Management system and style is captured for the aspect of consultative management, but not information management, positive error culture, equity and fairness culture, and enabling of informal communication. The cultural aspects of management or thus not captured.	ECS / Management system and style: You agree or disagree: Involving employee's leads to unnecessary delays in the implementation of changes? Employees stay longer in the company when they feel they can get involved? Involving employees gives a competitive advantage? ECS / Organisational learning: Do employees in this establishment document and keep records of their good work practices or lessons learned, with the purpose to share these with other employees?

Layer	Comparison of surveys	Recommendations	Proposed indicators
	WI (see proposed indicators). It asks extensively about different payment schemes and their relation to performance. Furthermore, it captures organisational structures by asking for the number of hierarchic levels. It also provides a question on respective changes, which is valuable for measuring increasing or decreasing hierarchy. The EWCS provides questions on management culture. Other aspects are not covered. The CIS includes a specific module on practices to stimulate innovation activities which would cover well our "incentives for involvement" aspect. It also entails a standard question on "training for innovative activities". Apart from that, the "organisational level" is not well covered. The MEADOW Employee survey comprises questions on consultative management. Furthermore the survey features an interesting item battery on dialogue and voice. Organisational learning and organisational structure are not covered. The MEADOW Employer survey captures consultative management, organisational learning and organisational structure (hierarchical levels + functional differentiation)	Incentives for involvement of employees in innovation activities are only partly covered. The ECS for instance includes a question which categories are assigned to different aspects in our concept. It includes "suggestion schemes" as an incentive, but mixes it together with internal cooperation and consultative and information management. The special module of the CIS provides a more specific and comprehensive measurement. Organisational learning is weakly developed and could be much more enhanced! What an organisation does to transform tacit knowledge into explicit knowledge or to relate tacit knowledge of employees with management knowledge is not covered. Organisational structure is captured by hierarchic levels, but the effect of the structure is not taken into account. Information management is not captured	ECS / Management system and style / Incentives for involvement: In this establishment, which of the following practices are used to involve employees in how work is organised? -Regular meetings between employees and immediate manager -Regular staff meetings open to all employees at the establishment -Meetings of a temporary group or committee or ad-hoc group -Dissemination of information through newsletters, website, notice boards, email etc. -Discussions with employees through social media or in online discussion boards -Suggestion schemes (the collection of ideas and (the collection of ideas and suggestions from the employees, voluntary and at any time, traditionally by means of a 'suggestion box') -Employee surveys among employees ECS / Labour contract: -Variable extra pay linked to the performance of the team, working group or department -Payment by results, for example piece rates, provisions, brokerages or commissions -Variable extra pay in form of share ownership scheme offered by the company -Variable extra pay linked to the results of the company or establishment (profit sharing scheme) ECS / Organisational structure: How many hierarchical levels do you have in this establishment […]? -Number of levels ECS / Organisational structure: Since the beginning of 2010, the number of hierarchical levels has ... -Increased or -Stayed the same or -Decreased?

Layer	Comparison of surveys	Recommendations	Proposed indicators
			EWCS / Management system and style: In general, your immediate manager / supervisor …. A - Provides you with feedback on your work E - Encourages you to participate in important decisions EWCS / Management system and style You are consulted before targets for your work are set (NEW) CIS / Incentives for involvement: During the three years 2008 to 2010, did your enterprise use any of the following methods to stimulate new ideas or creativity among your staff? If yes, was the method successful in producing new ideas or increasing creativity? -Brainstorming sessions -Financial incentives for employees to develop new ideas -Non-financial incentives for employees to develop new ideas, such as free time, public recognition, more interesting work, etc. -Training employees on how to develop new ideas or creativity? CIS / Incentives for involvement: During the three years 2008 to 2010, did your enterprise engage in the following innovation activities: -In-house R&D: Creative work undertaken within your enterprise to increase the stock of knowledge for developing new and improved products and processes (include software development in-house that meets this requirement)? -Training for innovative activities: Internal or external training for your personnel specifically for the development and/or introduction of new or significantly improved products and processes? MEADOW Employee / Consultative management: Sometimes people want to get assistance with a work overload or difficult situation. Do you ever feel the need for assistance?

Layer	Comparison of surveys	Recommendations	Proposed indicators
			MEADOW Employee / Consultative management: In these situations, how often do you receive assistance from your supervisor or manager? 1. Always 2. Sometimes 3. Never 4. Not applicable MEADOW Employee / dialogue and voice: At your workplace, does management hold meetings in which you can express your views about what is happening in the organisation? MEADOW Employee / dialogue and voice: At these meetings, can you express your views about the following work issues: a. Planned changes in working methods? b. Planned changes in products or services? c. Health and safety issues? d. Training plans? e. The investment plans of your firm [organisation]? f. The financial position of your firm [organisation]? g. The environmental impacts of your firm [organisation]? MEADOW Employee / dialogue and voice: Does expressing your views in such meetings ever have any effect on what is done? MEADOW Employee / dialogue and voice: Compared to [<enter month two years ago/ or, if < 2 years, enter "you started working for <name of employer>>], has the amount of time you spend in meetings: 1. Increased? 2. Decreased? 3. Stayed the same? MEADOW Employee / dialogue and voice: Was a trade union or works council involved in negotiating the change(s)?

Layer	Comparison of surveys	Recommendations	Proposed indicators
			MEADOW Employer / Management system and style / consultative management: Do you have meetings between line managers or supervisors and all the workers for whom they are responsible? 1. Yes 2. No (Interviewer note: if asked, these are sometimes known as 'briefing groups' or 'team briefings') MEADOW Employer / Management system and style / consultative management: How often do these meetings take place? 1. Every day 2. At least once a week 3. At least once a month 4. At least once a year MEADOW Employer / Organisational learning: Do employees in this establishment regularly up-date databases that document good work practices or lessons learned? MEADOW Employer / Organisational structure: How many organisational levels are there in your establishment, including the highest level (for example, senior management) and the lowest level (for example, production staff)? Number: .... MEADOW Employer / Organisational structure: many organisational levels were there 2 years ago? Number: .... MEADOW Employer / Organisational structure: Does this establishment have each of the following types of divisions or departments? [Provide separate 'yes or no' response options to each of questions a to c] a. Separate divisions or departments by function: sales, production, administration, research, etc. b. Separate divisions or departments by type of product or service c. Separate divisions or departments by geographical area: sales regions, etc.

Layer	Comparison of surveys	Recommendations	Proposed indicators
Enablers societal level	Not covered	Interestingly, the firm response to societal challenges and its relevance/effect on internal organisational change is completely neglected. It is clear that this enabler introduces an untypical extension of scope, beyond the single company. However, the argued political relevance of WI is in our view strongly connected to this enabler. Indicators would have to connect internal organisational change to external societal challenges asking about their relevance. The MEADOW Employer survey comprises questions which could be easily adapted to cover societal challenges (see column on the right). In our view, this link between the responsiveness/awareness of organisations to/of societal challenges (on employee as well as employer level) gained increased political relevance recently (Corporate Social Responsibility, Social Innovation, etc.) and is connected to the concept of resilience of companies.	MEADOW Employer survey / Related to societal enablers: In the last two years, did your establishment make significant new investments, changes in job tasks, or other major changes to your operations in response to each of the following factors? [Provide separate 'yes' and 'no' response options to each of questions a to h] a. Changes in health and safety regulations b. Changes in environmental regulations c. Increased labour costs d. Increased raw material or other input costs e. Increased competition f. Changes in demand g. Introduction of new technology (including ICT) h. Budgetary constraints 1. Yes2. No

Layer	Comparison of surveys	Recommendations	Proposed indicators
Process	The ECS is covering decision making with a general question on team work and multiple team work. Learning is not covered. Internal cooperation and involvement is weakly covered by a question related to different practices (see organisational level enablers / incentives for involvement) but remains unspecific. External cooperation is covered without reference to the role of employees. The EWCS features questions on decision making and team work (team autonomy). And one general question related to learning and one to involvement. The CIS provides only little indication in the "process" layer. It comprises questions referring to the introduction of team work and "new methods of organizing work responsibilities and decision making" but with a focus on results The MEADOW employee survey asks about changes on the involvement of employees The MEADOW employer survey comes with a relatively strong focus on team work. Apart from the latter, internal cooperation is barely assessed. External cooperation is well covered but without reference to employees.	Learning is completely neglected. It is clear that the different modes of learning are difficult to assess. However, learning is crucial for WI. We recommend operationalizing learning theories which differentiate instrumental (single loop) from reflexive (double loop) learning processes. Decision making is primarily assessed related to routine tasks or team work, but not with regard to learning or involvement in innovation activities. Questions on team work are included in all surveys. We think that the ECS question on work in multiple teams is relevant as it assesses flexibility in team work. Non-routine innovation tasks will usually involve ad-hoc teams and not the "standard" team which has been appointed to carry out routine tasks. The MEADOW survey specifies different types of teams, in particular the specification of "groups who meet regularly to think about improvements that could be made within this workplace" is relevant. In general we recommend differentiating between "standard" work teams and ad-hoc teams for innovation or improvement activities. The MEADOW surveys also capture the continuity of team work. There are no indicators on cross-hierarchical or cross-functional cooperation or information sharing. WI stresses the exchange between management and employees. It would be necessary to include this aspect.	DECISION MAKING ECS / teamwork: Do you have any teams fitting this definition ["A team is a group of people working together with a shared responsibility for the execution of allocated tasks, within or across units of the establishment"] in your establishment? ECS / team work: With regard to the employees doing teamwork, do most of them work in a single team or do most of them work in more than one team at the same time? - Most of them work in a single team - Most of them work in more than one team ECS / External cooperation: Does this establishment monitor external ideas or technological developments for new or changed products, processes or services? – Yes, using staff assigned specifically to this task / yes, as part of the responsibilities of the general staff / No EWCS / Learning: You are able to apply your own ideas in your work (TREND 2005) EWCS / Decision making: You can influence decisions that are important for your work (NEW) EWCS / team work: Do you work in a group or team that has common tasks and can plan its work? EWCS / team work: For the team in which you work mostly, do the members decide by themselves… A - … on the division of tasks B - … who will be head of the team EWCS / Involvement: You are involved in improving the work organisation or work processes of your department or organisation

Layer	Comparison of surveys	Recommendations	Proposed indicators
		External cooperation is captured but without reference to employees. When we think of external cooperation, we mean opportunities for the employee to flexibly engage in professional contacts beyond his/her firm. Involvement in innovation activities is not really covered. The surveys generally focus more on the term improvement instead of innovation.	MEADOW Employee / decision making: Did you personally take part in deciding the change(s)? How satisfied were you with your level of involvement in decisions about the changes? MEADOW Employee / team work: In performing your tasks, do you ever work together in a permanent or temporary team? (Interviewer note: People could be from your firm [organisation] or from another firm MEADOW Employee / team work / decision making: Excluding the team leader, can the others in this team influence what tasks you do yourself? MEADOW Employee / team work / decision making: Excluding the team leader, can the others in this team influence how you do your own tasks? MEADOW Employee / team work: How much of your time at work is spent working with a team? (Interviewer: if they state '25%' or '50%', code to 2 and 3 respectively, etc.) 1. Less than 25% of your time 2. 25% up to 50% of your time 3. 50% up to 75% of your time 4. 75% or more of your time MEADOW Employee / team work: Since [enter month two years ago/ or, if < 2 years, enter "you started working for <name of employer>], has the amount of time you spend working in teams increased, decreased, or stayed the same? MEADOW Employer / Decision making: Who normally decides on the planning and execution of the daily work tasks of your non-managerial employees? 1. The employee undertaking the tasks 2. Managers or work supervisors 3. Both employees and managers or supervisors

Layer	Comparison of surveys	Recommendations	Proposed indicators
			MEADOW Employer / team work: Are any of the employees at this establishment currently working in a team, where the members jointly decide how work is done? 1. Yes 2. No (interviewer note : if asked, a work team is sometimes called an autonomous team or a self-directed team) MEADOW Employer / team work / Involvement: Are any of the employees at this establishment currently involved in groups who meet regularly to think about improvements that could be made within this workplace? MEADOW Employer / team work: What percentage of the employees at this establishment currently works in such teams? 1. Up to 24% 2. 25% to 49% 3. 50% to 74% 4. 75% or more MEADOW Employer / team work: Did any of your employees work in such a team two years ago? 1. Yes 2. No [only ask if B1TEAM 2007= 1] MEADOW Employer / team work: Compared with two years ago, has the percentage of employees currently working in such teams: 1. Increased? 2. Decreased? 3. Remained approximately the same?
Result	The ECS asks generally about different organisational changes, including "new methods of organizing work responsibilities and decision making" or "Changes in ways to coordinate and allocate the work to employees". The ECS however includes more detailed question on a "major change" (identified in the interview) which provides some specification on how employees were involved in the change.	General questions on result (organisational change, change of work organisation) fail to capture the specific quality of WI. The dilemma of result measurement is the general way in which organisational innovation (or change) and process innovation (or change) is being measured. The direct involvement of employees in these innovation activities is not assessed. The innovation itself generally remains a black-box regarding its development, its specific character or its outcomes.	ECS / result: Since 2010, has there been any organisational change? ["organisational change" could be any of the following: New business practices for organizing procedures, new methods of organizing work responsibilities and decision making; New methods of organizing external relations with other firms or public institutions] ECS / result: Please tell me, whether any of the following changes have been made since the beginning of 2010: Changes in the remuneration system Changes in the use of Technology

Layer	Comparison of surveys	Recommendations	Proposed indicators
	The EWCS does not include indicators on results. The CIS is focused on results and introduces the broad category of organisational innovation. CIS and ECS use similar items. The CIS also includes process innovation, but again the category is generally defined without specification of the process which led to this result. The MEADOW Employee survey captures different forms of organisational and workplace change but does not connect these to employee involvement, except a question in the area of "skill utilisation" The MEADOW Employer survey asks for organisational change and process change without specification of the process.	We recommend asking about how these changes developed and how employees and management were involved in the process. In our view the introduction of WI would challenge existing surveys exactly in this regard: To take the process of innovation and its quality into account. Additionally, there is the option to ask for a subjective assessment (from employees) on the outcomes of the innovation or change. This could be done with reference to changes in enablers (for instance job engagement) or processes (for instance learning).	Changes in ways to coordinate and allocate the work to employees Changes in recruitment Policies Changes in the working time arrangements ECS / result: Could you please let me know for this major change whether or not the official employee representation has been... -Informed by management? -Asked to give their views ahead of the decision? -Involved in joint decision making with the management? ECS / result: Could you please let me know for this major change whether or not employees have been directly... -Informed by management? -Asked to give their views ahead of the decision? -Involved in joint decision making with the management? ECS / result: Could you please let me know for this major change whether... -The involvement of the official employee representation in the discussion on this issue reflects common practice in this establishment. -The direct involvement of employees in the discussion on this issue reflects common practice in this establishment. CIS / result: During the three years 2008 to 2010, did your enterprise introduce: -New methods of organizing work responsibilities and decision making (i.e. first use of a new system of employee responsibilities, team work, decentralisation, integration or de-integration of departments, education/training systems, etc.) -New business practices for organizing procedures (i.e. supply chain management, business re-engineering, knowledge management, lean production, quality management, etc.)

Layer	Comparison of surveys	Recommendations	Proposed indicators
			CIS / Result: During the three years 2008 to 2010, did your enterprise introduce: -New or significantly improved methods of manufacturing or producing goods or services -New or significantly improved logistics, delivery or distribution methods for your inputs, goods or services -New or significantly improved supporting activities for your processes, such as maintenance systems or operations for purchasing, accounting, or computing MEADOW Employee / result: Since [<enter month two years ago/ or, if < 2 years, enter "you started working for <name of employer>>], have any of the following changes taken place in your workplace? a. Implementation of new or significantly changed machines, techniques or ICT systems b. Relocation of any employees c. Implementation of a new or significant change in the method of work d. Introduction of a new or significantly changed product or service MEADOW Employee / result: Did any of these changes have a significant impact on your tasks and duties? MEADOW Employee / result: Have you: a. Figured out solutions for improving areas of your own work? b. Thought up new or improved products or services for <enter name of employer>? c. Tried to persuade your supervisor or manager to support new ideas? 1. Yes 2. No 3. Not applicable MEADOW Employer / result: During the last two years, has your establishment introduced any new or significantly improved processes, either for producing goods or supplying services?

Layer	Comparison of surveys	Recommendations	Proposed indicators
			MEADOW Employer / result: During the last two years, has your establishment made significant organisational changes to your establishment? This can include new or changed business practices, methods of organising work responsibilities and decision making, or methods of organising relations with other firms.
Outcome and impact	The surveys cover a broad range of outcomes potentially relevant to WI. As many of these outcomes represent general performance outcomes, we will not discuss them in detail. They are however listed in the ANNEX for screened surveys.		

9. Conclusions and recommendations

On 25 June 2014, ZSI organised in Vienna an international expert workshop with the objective of measuring workplace innovation. The primary objective of the workshop was to explore new ways of measuring workplace innovation that could serve as a basis for policy recommendations to the European Commission. International experts provided inputs in three sessions and three discussion rounds. The initial version of this "exploratory report on workplace innovation" served as a reference point for the inputs and discussions. The conclusions and recommendations of this report will directly draw from the workshop results.

"Session 1: The organisational and societal relevance of workplace innovation" aimed at elaborating a consistent concept and definition of WI and compiling main aspects of WI relevant for measurement. Experts shared their own concepts and understandings of WI highlighting the distinctiveness and relevance of WI as a form of innovation.

"Session 2: Evidence-based impacts of workplace innovation on firm performance and quality of working life" aimed at establishing a link between WI and outcomes on employee and firm level. Experts presented and discussed findings from key European and international surveys.

"Session 3: Measuring workplace innovation on European level" aimed at exploring options on how to embed existing and new indicators in European innovation surveys. Experts discussed the implementation of WI indicators from the viewpoint of specific innovation surveys, considering their themes, structure, target groups, data collection procedures and options to include/adapt indicators.

Following experts contributed to the workshop:

Session 1:
Steven Dhondt (TNO)
Ursula Holtgrewe (FORBA)
Frank Pot (Nijmegen School of Management, Radboud University, TNO)

Session 2:
Edward Lorenz (Sofia Antipolis)
Stephen Wood (University of Leicester)
Robert Karasek (Copenhagen University)

Session 3:
Nathalie Greenan (CEE - Centre d'études de l'emploi)
Gijs van Houten (Eurofound)
Christian Rammer (ZEW, CIS task force)
Hugo Hollanders (MERIT, EIS project coordinator)
Tomasz Jerzyniak (European Commission, Policy officer)

ZSI team:
Alexander Kesselring
Cosima Blasy
Anette Scoppetta

9.1. Recommendations on the measurement of workplace innovation

9.1.1. Measuring Workplace Innovation with the Community Innovation Survey

The Community Innovation Survey (CIS) provides different options for measuring workplace innovation. Adapting the CIS would be a first step before considering an integration of workplace innovation at the IUS level. Christian Rammer, member of the German CIS task force, presented three general approaches for adapting the CIS:

(1) Adapting the CIS modestly to include different layers of workplace innovation;

(2) Including a module on workplace innovation in one of the forthcoming CIS editions;

(3) Update of Oslo manual and paradigm shift in the measurement of innovation.

In this chapter we will provide concrete recommendations in particular for approach 1 which clearly appeared to be the most promising approach after the workshop discussion. We built on specific recommendations by Christian Rammer, but also included our own recommendations for adaptation.

1. Adapting the CIS modestly to include different layers of workplace innovation

Using the CIS to measure workplace innovation as a sub-category of organisational innovation

The CIS has to develop its indicators based on the Oslo manual. Any adaptation of the questionnaire thus has to be in line with the basic definitions provided by the manual. In the case of workplace innovation this is particularly relevant for the definition of "organisational innovation". We think that the Oslo manual definition currently covers key aspects of workplace innovation and provides room for adaptation.

Paragraph 177 of the Oslo manual defines organisational innovation: "*An organisational innovation is the implementation of a new organisational method in the firm's business practices, workplace organisation or external relations.*"

The terms *business practices* and *workplace organisation* capture possible results of workplace innovation. Paragraph 180 states that "*business practices involve the implementation of new methods for organising routines and procedures for the conduct of work. These include, for example, the implementation of new practices to improve learning and knowledge sharing. […] Another example is the first implementation of practices for employee development and improving worker retention, such as education and training systems.*"

Paragraph 181 states that: "*Innovations in workplace organisation involve the implementation of new methods for distributing responsibilities and decision making among employees for the division of work within and between firm activities (and organisational units)*"

The aspect of decision making is further elaborated by an example:

"*An example of an organisational innovation in workplace organisation is the first implementation of an organisational model that gives the firm's employees greater autonomy in decision making and encourages them to contribute their ideas. This may be achieved through the decentralisation of group activity and management control or the establishment of formal or informal work teams in which individual workers have more flexible job responsibilities.*"

Furthermore, the Oslo manual presents a variety of possible outcomes of organisational innovation. In addition to firm performance and cost reduction, paragraph 178 specifies "*improving workplace satisfaction*" as a possible outcome of organisational innovations as well as "*gaining access to non-tradable assets (such as non-codified external knowledge)*". Gaining access to non-tradable assets could also address non-codified *internal* knowledge, meaning the informal knowledge of employees which utilisation is a key aspect of workplace innovation. The Oslo manual therefore provides different options of considering aspects of workplace innovation in the CIS. Unfortunately, a question regarding the objectives for organisational innovation which was used in the CIS 2010 has been deleted in the CIS 2012 and CIS 2014.

The following table includes recommendations for sub-categories of organisational innovation in the CIS to specific workplace innovation:

CIS 2012 8.1 Organisational innovation: During the three years 2010 to 2012, did your enterprise introduce:	New business practices for organising procedures (i.e. supply chain management, business re-engineering, knowledge management, lean production, quality management, etc.) **New methods of organising work responsibilities and decision making (i.e. first use of a new system of employee responsibilities, team work, decentralisation, integration or de-integration of departments, education/training systems, etc.)** New methods of organising external relations with other firms or public institutions (i.e. first use of alliances, partnerships, outsourcing or sub-contracting, etc.)	*Comment: The definition of organizational innovation in the Oslo manual covers results of workplace innovation, in particular through the term "work organisation" (answer category 2). Although aspects of workplace innovation are already covered by "new methods of organizing work" the concept could be described more specifically as an additional sub-category of organizational innovation.* **Recommended Options:** -) New practices for involving employees in continuous improvement of work organisation and innovation activities -) New practices for fostering collective learning and creative thinking of employees and managers -) New practices for combining employee and management knowledge to foster innovation *The recommended options refer to one OSLO manual specification of business practices as "new practices to improve learning and knowledge sharing". This specification would thus be emphasized in becoming a discrete answer category for workplace innovation.*

Using the CIS to measure workplace innovation as a form of organisational innovation with specific objectives

The way organisational innovation is currently defined in the Oslo manual includes many aspects of workplace innovation. CIS 2010 (and older versions) additionally included a question on the objectives for implementing organisational innovations. Re-introducing this question would allow to specify objectives related to workplace innovation. The resulting measurement would emphasise the normative dimension of workplace innovation which is reflected in the objectives for implementing innovations. Workplace innovation would be primarily understood as the implementation of forms of organisational innovation improving participation and utilisation of employees' knowledge.

Resulting measurement: Firms implementing organisational innovations to…
-) Generate employee involvement in continuous improvement and innovation activities;
-) Improve employee involvement in innovation activities;
-) Improve the utilisation of employee experience and knowledge for innovation activities;
-) Improve the ability of employees to develop new products or processes;
-) Improve the cooperation of employees and management in generating innovations.

The following table describes the recommended adaptations:

CIS 2010 (not featured in CIS 2012 and CIS 2014) 9.2 How important were each of the following objectives for your enterprise's organisational innovations introduced during the three years 2012 to 2014 inclusive?	Reduce time to respond to customer or supplier needs Improve ability to develop new products or processes Improve quality of your goods or services Reduce costs per unit output **Improve communication or information sharing within your enterprise or with other enterprises or institutions**	*Comment: Workplace innovation is defined through specific objectives and process characteristics which are not covered by the current CIS question on organizational innovation. The CIS 2010 featured a question on the objectives for organizational innovation (see below) which could be re-introduced to capture objectives of organisational innovations which are specific for workplace innovation* Recommendation: Re-introduce this question in the CIS 2016 to capture objectives of organisational innovations which are specific for workplace innovation! **Recommended options for additional answer categories:** -) Generate employee involvement in continuous improvement and innovation activities -) Improve employee involvement in innovation activities -) Improve the utilisation of employee experience and knowledge for innovation activities -) Improve the ability of employees to develop new products or processes -) Improve the cooperation of employees and management in generating innovations -) Improve employee voice and employee-employer dialogue -) Improve health, safety or employee job satisfaction of your employees
CIS 2010 (Not included in CIS 2012) 7.1 How important were each of the following objectives for your activities to develop product or process innovations during the three years 2008 to 2010?	Increase range of goods or services Replace outdated products or processes Enter new markets or increase market share Improve quality of goods or services Improve flexibility for producing goods or services Increase capacity for	*Comment: This question is similar to question 9.2 but has not been used in the CIS 2012. The relevance for workplace innovation is probably less high as the question asks for objectives for product and process innovations.* *The objectives for product innovation will be oriented at external markets.*

	producing goods or services Reduce labour costs per unit output Reduce material and energy costs per unit output Reduce environmental impacts **Improve health or safety of your employees**	*The objectives for process innovations however could include answer categories for specific objectives associated with workplace innovation. The question for instance included the answer category "Improve health or safety of employees".*

Using the CIS to measure workplace innovation as a participative process of developing in-house innovations (product, process, organisational, marketing)

This option would mean to define workplace innovation primarily as the participation of employees in the development of in-house innovations. Minor changes would be sufficient to implement this measurement in the CIS. An option would be to include new answer categories for the question "Who developed this product/process innovations", specifying employee participation. The same question could be used for organisational and marketing innovation.

Resulting measurement: Firms developing product, process, organisational, or marketing innovations through employee participation

Another option would be to use the CIS question of where the information for the development of innovations comes from. There is no reason why the CIS should primarily focus on external sources as it currently does. It would be possible to measure internal sources in a more differentiated way providing 2-3 new answer categories.

Resulting measurement: Firms receiving their information for the development of innovations through employee participation

Workplace innovation is based on a participatory process which means that employees actively engage in innovation processes. The CIS 2012 includes a question separated for product and process innovation (2.2/3.2) on the origin of the innovations ("Who developed these innovations"). With these questions the CIS presents a simple option for assessing whether the development of product and process innovations relied on a participatory process. A similar option is provided by the question on the importance of specific information sources for innovation activities (6.1) which is more general.

The following table describes the recommended adaptations for including the PROCESS layer:

CIS 2012 2.2 Who developed these product innovations? 3.2 Who developed these process innovations?	Your enterprise by itself Your enterprise together with other enterprises or institutions Your enterprise by adapting or modifying goods or services originally developed by other enterprises or institutions Other enterprises or institutions	**Recommendation: Specify the answer category "Your enterprise by itself" by referring to different types of development methods resp. different types of employees.** **Recommendation for additional answer categories:** -) Your enterprise by R&D activities -) Your enterprise by participative activities of non-R&D employees -) Your enterprise by a combination of both *Comment: This minor change would affect the measurement of product and process innovations in the CIS enabling us to identify the role of employee participation in innovation development. The IUS could then for instance include indicators such as "organizational innovations developed by non-R&D employee participation" as a direct indicator for workplace innovation.* *Concern: The existence of dedicated R&D activities which allows this differentiation is more likely for larger companies.* *Comment: The answer categories could be defined in a different way without using the R&D / non-R&D differentiation.*
CIS 2012 6.1 During the three years 2010 to 2012, how important to your enterprise's innovation activities were each of the following information sources? Include information sources that provided information for new innovation projects or contributed to the completion of existing projects.	**Internal: Within your enterprise or enterprise group** Market sources: Suppliers of equipment, materials, components, or software Clients or customers from the private sector Clients or customers from the public sector Competitors or other enterprises in your industry Consultants and commercial labs Education & research institutes: Universities or other higher education institutions Government, public or private research institutes Other sources: Conferences, trade fairs, exhibitions Scientific journals and trade/technical publications Professional and industry associations	**Recommendation: Include employee participation as an internal source of information.** The general source "internal" currently features only one unspecific answer category while "market sources", "education & research institutes" and even "other sources" feature more differentiated answer categories. With a minor change/extension more "internal" sources could be differentiated to identify from which employees (employee categories) the information came from or even whether specific methods were used to gain internal information (employee survey, innovation groups, suggestion scheme, etc.) **Recommendation for additional answer categories:** Internal: -) Non-R&D employee participation in innovation activities -) Utilisation of informal knowledge of employees -) Methods to receive information from employees (questionnaires, suggestion schemes, etc.)

		Comment: These answer categories partly overlap with those recommended for questions 2.2 and 3.2. *Question 6.1 however has a general focus on all innovation activities and not specifically on product and process innovation. Both question types provide the option to specify the internal participation of employees as a source of innovation.*

2. Including a module on workplace innovation in one of the forthcoming CIS editions

The CIS features special "modules" which only appear for one data collection period. The disadvantage of using a module is that it does not allow for a continuous monitoring of workplace innovation. CIS 2010 already featured a special module which is connected to workplace innovation, as it asked on "methods to stimulate creativity among your staff". The answer categories were addressing specific practices.

CIS 2010 MODULE: 11.2 During the three years 2008 to 2010, did your enterprise use any of the following methods to stimulate new ideas or creativity among your staff? If yes, was the method successful in producing new ideas or increasing creativity?	Brainstorming sessions Multidisciplinary or cross-functional work teams Job rotation of staff to different departments or other parts of your enterprise group Financial incentives for employees to develop new ideas Non-financial incentives for employees to develop new ideas, such as free time, public recognition, more interesting work, etc Training employees on how to develop new ideas or creativity	**Recommendation: We would generally NOT recommend to use a module for workplace innovation as the CIS seems to provide the option for a continuous monitoring based on the adaptations described for the "modest approach" above. It could however be considered to use some of the answer categories from the 2010 module for regular questions in the CIS such as the CIS 2012 question 5.2 on "innovation activities".**

3. Update of Oslo Manual and paradigm shift in the measurement of innovation

As part of the OECD Oslo Manual revision, new approaches of measuring innovation in enterprises may be developed which may incorporate WI explicitly. Christian Rammer indicated following potential changes relevant to workplace innovation:

(A) Distinguishing between innovations on the market place and in-house innovation;

(B) Focusing on ways to alter a firm's market performance (= back to Schumpeter), i.e. quality and price of a product;

(C) Further extending the list of innovation types (e.g. social innovation, WI, business model innovation, user innovation, public innovation etc.).

Depending on the approach, workplace innovation could be supported or hampered. Workplace innovation as an additional type of innovation seems to be the best outcome, although we are not conclusive whether it is justified to differentiate between organisational, process and workplace innovation in a strict way. Workplace innovation is clearly overlapping with other types and seems to define a specific process rather than a specific result.

In general, it would seem meaningful to emphasize the internal processes of innovation development and its connection with organisational change, human resources development and outcomes for employees (well-being, health, commitment).

Summary on measuring Workplace Innovation within the Community Innovation Survey

Advantages of the CIS for measuring workplace innovation:

- Oslo manual definition of organisational innovation covers workplace innovation results;
- Adapting the CIS modestly to include different layers of workplace innovation seems to be the most promising approach;
- The CIS provides options for minor adaptations to improve the measurement of workplace innovation;
- The CIS is regularly updated every two years and provides option for continuous monitoring of WI;
- The CIS would allow to include workplace innovation as a new sub-category of organizational innovation;
- The CIS could potentially relate workplace innovation results ("organizational innovation"), processes ("participation of non-R&D employees in innovation activities") and even objectives;
- A combination of CIS indicators/questions could be used to integrate workplace innovation on IUS level which generally seems to be feasible as the IUS already uses several CIS indicators.

Disadvantages of the CIS for measuring workplace innovation:

- The CIS is only based on the employers' perspective;
- Long time-frame for adaptations (adaptations would be possible no sooner than CIS 2016);
- Questions from former CIS editions (CIS 2010) potentially relevant for measuring aspects of workplace innovation have been deleted in newer editions.

General CIS recommendation: Put more emphasis on internal sources of innovations. The CIS generally tends to emphasise external factors for the development and implementation of innovations. This has to be generally questioned in a situation where the relevance of internal factors for innovativeness, competitiveness and resilience of companies is scientifically confirmed and politically emphasised. Any measurement of workplace innovation or similar concepts would benefit from a more detailed measurement of internal factors. The CIS already provides questions which could be used to include internal factors through more differentiated answer categories.

9.1.2. Measuring Workplace Innovation with the ECS and the EWCS

Using the EWCS to measure workplace innovation as "innovative work organisation"

Valeyre et al. identified four models of work organisation based on statistical cluster analysis in their study of work organisation in Europe (based on EWCS 2006 data):

- Discretionary learning ("Learning organization")
- Lean production
- Taylorist
- Traditional

The discretionary learning model is characterised by "*autonomy in work, learning and problem solving, task complexity, self-assessment of quality of work and, to a lesser extent, autonomous team work*." (12). This model of work organisation is usually found in "learning organisations" which "*are characterised by strong individual and collective learning dynamics in the workplace, notably with regard to problem-solving activities related to unforeseen events such as dysfunctions in production and with regard to innovation processes. These organisations need high levels of autonomy, initiative and communication at work on the part of employees and attach great importance to autonomous teams and project teams*." (8)

Edward Lorenz identified the discretionary learning model with the process dimension of workplace innovation.

Based on the discretionary learning model, Valeyre et al. developed the "Innovative Work Organization Index". The index is based on the main indicators measuring discretionary learning and therefore comprises a generalisation of the discretionary learning model. The authors justify this generalisation based on the statistical finding that "*the adoption of discretionary learning forms of work organisation, when compared with the lean production and Taylorist forms, leads to better working conditions in the sense of lower intensity of work, less exposure to physical risks, fewer non-standard working hours, a better work–life balance and lower levels of work-related health problems*." (49).

In our view, the index represents a solid and pragmatic solution for measuring workplace innovation understood as "innovative work organisation" based on the EWCS.

The normative claim of measuring "innovative" work organisation and not simply a specific model of work organisation is still a problem. "Innovative work organisation" is a normative concept which however relates to a specific model of work organisation which is more widespread in Northern European countries compared to Central or Southern European countries. It is therefore not surprising that the index reproduces a ranking of countries has a geographical bias.

The indicators which are combined for the index and the respective questions in the EWCS are described in the table below.

"Innovative Work Organization Index" (Valeyre et al. 2009)		Based on EWCS analysis of forms of work organisation, 4 proposed indicators for purposes of monitoring workplace innovation:
EWCS 2010 Q49 Generally, does your main paid job involve ?	A – meeting precise quality standards B – assessing yourself the quality of your own work **C – solving unforeseen problems on your own** D – monotonous tasks E – complex tasks **F – learning new things**	Indicator 1: The percentage of employees learning new things on the job Indicator 2: The percentage of employees involved in problem-solving on the job *Comment: In our workplace innovation concept this is an indicator for the process layer (learning)*
EWCS 2010 Q50 Are you able to choose or change ... ?	**A – your order of tasks** **B – your methods of work** **C – your speed or rate of work**	Indicator 3: A composite measure of autonomy in work, based on the average of the percentages of employees exercising control over their methods of work, work pace and the order of tasks *Comment: In our workplace innovation concept this is an indicator for individual task level enablers*
EWCS 2010 Q56 Do you work in a group or team that has common tasks and can plan its work? (filter question) Q57 For the team in which you work mostly, do the members decide by themselves…?	Yes, always in the same one Yes, in several I do not work in such a team or group **A - … on the division of tasks** **B - … who will be head of the team** **C - … the timetable of the work**	Indicator 4: The number of employees working in an autonomous team organization, in which the team members decide the division of tasks, as a percentage of the number of employees working in all teams *Comment: In our workplace innovation concept this is an indicator for the process layer (team work)*

Resulting measurement: The Innovative Work Organisation Index, 2010
The composite Innovative Work Organisation Index is the mean of the four standardised indicators defined on the basis of the four proposed indicators. A standardised indicator is obtained by subtracting its mean from itself and dividing the resulting difference by its standard deviation. The values for this composite index, and for the four indicators which are used to construct it, are presented in Valeyre et al (2008).

Using the EWCS to assess the "readiness for workplace innovation" based on workplace innovation enablers and processes

Apart from the selected indicators for the "innovative work organisation index", the EWCS provides a comprehensive set of questions related to the enablers for workplace innovation as described in the concept.

EWCS clearly allows capturing the (1) individual level and (2) individual task level of workplace innovation. Thus it enables to assess (1) whether employees have the capability and willingness to engage in workplace innovation and (2) whether the structure of the individual work task (work task, work time) allows employees to engage in workplace innovation.

Furthermore the EWCS features indicators on the organisational level enablers such as management system and style (consultative management), dialogue and voice or organisational learning (training offers).

The process layer could be partly covered by questions on learning, team work and involvement (which resemble the questions for the "innovative work organisation") index.

The weakness of the EWCS is clearly the lack of questions on participation in the development of innovations. EWCS 2010 Question 15 is the only question related to the implementation of innovation and organisational change. The question however provides no specific information on the role of employees.

The following table features the EWCS 2010 indicators which could be used for assessing the "readiness for workplace innovation" based on workplace innovation enablers in addition to the indicators presented for the "innovative work organisation index" above. The advantage of assessing readiness instead of "innovative work organisation" is that the concept of readiness is more neutral, while still providing potential impulses for political steering decisions.

Q51 For each of the following statements, please select the response which best describes your work situation.	A –Your colleagues help and support you B - Your manager helps and supports you C – You are consulted before targets for your work are set **D- You are involved in improving the work organisation or work processes of your department or organisation** E - You have a say in the choice of your working partners **I – You are able to apply your own ideas in your work** J – You have the feeling of doing useful work	This question covers different layers of workplace innovation. **Organisational level enablers** *Management style and system:* Consultative management (A, B) *Dialogue and voice:* Employee involvement and participation in decision-making (C) **Process layer** *Learning:* Improvising, experimenting, developing (I) *Team work:* Team work based on self-formation and self-organisation of teams (E) *Involvement:* Involvement in continuous improvement Involvement in implementation of new organisation or processes (testing, evaluation) Involvement in innovation processes (with the objective to generate innovations) (D)
Q58 In general, your immediate manager / supervisor ….	**A - Provides you with feedback on your work** **B - Respects you as a person**	**Organisational level enablers** *Management style and system:* Consultative management (A) Equity and fairness culture (B)

	C –Is good at resolving conflicts D - Is good at planning and organising the work **E - Encourages you to participate in important decisions**	*Dialogue and voice:* Employee involvement and participation in decision-making (E)
Q60 Which of the following alternatives would best describe your skills in your own work?	1 - I need further training to cope well with my duties 2 – My present skills correspond well with my duties **3 - I have the skills to cope with more demanding duties** 8 - DK/no opinion (spontaneous) 9 - Refusal (spontaneous)	**Individual level enabler** Special work skills (3)
Q47 How often do you have to interrupt a task you are doing in order to take on an unforeseen task?	Very often Fairly often Occasionally Never	*Comment: Q47 and Q48 have to be considered together. "Learning" in the form of improvising, experimenting and developing is probably best captured by interruptions/unforeseen tasks with positive consequences.* **Process layer** *Learning:* Improvising, experimenting, developing
Q48 For your work, are these interruptions...	1 – Disruptive 2 – Without consequences 3 – Positive	**Process layer** *Learning:* Improvising, experimenting, developing (3)
Q53 Does your job involve rotating tasks between yourself and colleagues?	Yes/No	**Individual level enabler** Special work skills *Comment: Q53, 54 and 55 have to be considered together to measure special skills. An employee rotating tasks requiring different skills and deciding on clearly has the prerequisites to engage in workplace innovation.*
Q54 Do the tasks require different skills?	Yes/No	**Individual level enabler** Special work skills
Q55 Who decides the division of the tasks?	A – Your boss / manager B - They are decided by people who are rotating tasks	**Individual level enabler** Special work skills
Q63. At your workplace is there an employee acting as an employee representative?	**1 - Yes** 2 – No	**Organisational level enabler** *Dialogue and voice:* Employee representation through works committee or similar representative groups
Q64. At your workplace, does management hold meetings in which you can express your views about what is happening in the organisation?	**1 - Yes** 2 – No	**Organisational level enabler** *Dialogue and voice:* Employee representation through works committee or similar representative groups

Resulting measurement: Developing an index combining enablers on individual level, individual task level and organisational level to assess the "readiness for workplace innovation".

Comment: Although this measurement would involve the use of several indicators, the fact that all three enabler levels (individual, individual task, organisational) are covered, promises a solid measurement of "readiness for workplace innovation" which could in a simplified version even be considered for the IUS. Another advantage is that this measurement would be based on employees' responses instead of employers' responses: this is clearly better for assessing the enabler layer of workplace innovation.

Using the ECS to assess the process layer of workplace innovation

Similar to the EWCS, the ECS features several questions relating to the process layer of workplace innovation. The examined aspects are "learning", "team work" and "employee involvement". A possible approach could be to create an index similar to the EWCS based "innovative work organisation index".

Learning processes can be operationalised by two different questions from the ECS, a first one on internal knowledge management and knowledge sharing, and a second one on the monitoring of external ideas by employees.

ECS 2013 T9.ELELEDOC Do employees in this establishment document and keep records of their good work practices or lessons learned, with the purpose to share these with other employees?	**Yes**/no	Comment: Generally, the question relates knowledge management. The question asks for a specific combination of practices and objectives. It points to learning activities of employees, the relevance of informal/tacit knowledge ("good practice"/"lessons learned") and the application of knowledge management on employee level for the purpose to share knowledge among employees. The question thus relates to different aspects of the process of workplace innovation, in particular "learning" and "internal cooperation".
ECS 2013 T11.EEXTEMON Does this establishment monitor external ideas or technological developments for new or changed products, processes or services?	Yes, using staff assigned specifically to this task **Yes, as part of the responsibilities of general staff** No	This question relates to the aspect of "external cooperation" defined in the concept of workplace innovation. It would mean that employees are actively engaged in monitoring external ideas. Workplace innovation as a process would ideally include all employees. Therefore the answer category "Yes, as part of the responsibilities of general staff"

The ECS's team work questions would allow to identify the existence of a more specific form of team work related to workplace innovation where most employees "work in more than one team" and where team members "decide among themselves" about the tasks they perform. This would resemble the flexible and autonomous form of team work we identified as a key characteristic of the process of workplace innovation.

ECS 2013 A team is a group of people working together with a shared responsibility for the execution of allocated tasks, within or across units of the establishment. T1. FTEAMEX Do you have any team fitting this definition in your establishment?	**Yes**/no	
ECS 2013 FTEASIN With regard to the employees doing teamwork, do most of them work in a single team or do most of them work in more than one team at the same time?	Most of them work in a single team **Most of them work in more than one team**	
ECS 2013 T3. FTAUTON If you think about the tasks to be performed by the teams: Do the team members decide among themselves by whom the tasks are to be performed, or is there usually a superior distributing the tasks within the team?	**Team members decide among themselves** Tasks are distributed by a superior	

Employee involvement could be operationalised based on two questions, a first one on involvement of employees in particular practices, and a second one on employee and employee representative involvement in a "major change" implemented in the company

ECS 2013 E1. In this establishment, which of the following practices are used to involve employees in how work is organised?	Regular meetings between employees and immediate manager Regular staff meetings open to all employees at the establishment Meetings of a temporary group or committee or ad-hoc group Dissemination of information through newsletters, website, notice boards, email etc. Discussions with employees through social media or in online discussion boards Suggestion schemes (the collection of ideas and (the collection of ideas and suggestions from the employees, voluntary and at any time, traditionally by means of a 'suggestion box') Employee surveys among employees	Comment: This multiple response question could be used to construct an indicator for intensity of employee involvement in general work organisation related decisions.

Resulting measurement: Developing an index combining learning, team work and involvement to assess the process of workplace innovation.

The index could either be designed at survey level for the companies or at IUS level for countries. The following indicators could be combined to a country level index:

- *Indicator 1: The percentage of companies where employees are working in more than one team where team members decide among themselves about the tasks they implement*
- *Indicator 2: Percentage of companies where employees document and keep records of their good work practices or lessons learned, with the purpose to share these with other employees.*
- *Indicator 4: Percentage of companies which implement at least 3 of the 7 practices of involving employees in work organisation.*

Summary on measuring Workplace Innovation with the ECS and EWCS

Advantages of EWCS/ECS for measuring workplace innovation:

- EWCS/ECS allow the construction of workplace innovation indexes focusing on the process layer.
- Indexes are more complex than individual indicators, but seem to be more appropriate to measure a multi-dimensional concept such as workplace innovation
- The proposed indexes are relatively simple regarding their construction and interpretation.
- The EWCS allows the construction of a workplace innovation index focusing on the enabler layer of workplace innovation. This is a more neutral/less normative index as it does not need to define what is "innovative". It would provide a good foundation for assessing whether key enablers are in place and whether companies (or countries on IUS level) show the "readiness" for workplace innovation.

Disadvantages of EWCS/ECS for measuring workplace innovation:

- EWCS/ECS are only repeated every four years, which means that they do not allow for a continuous monitoring
- Currently EWCS/ECS indicators are not used in the IUS.

9.1.3. Measuring Workplace Innovation with the Innovation Union Scoreboard

The Innovation Union Scoreboard (IUS) currently provides no direct indicator for workplace innovation. This means that either indicators of the IUS would have to be adapted or new indicators derived from the CIS, EWCS or ECS would have to be introduced. For the second option we have already made proposals in the chapters above.

For the first option, we see four possibilities:

1. Indicator 2.1.2 on non-R&D innovation expenditures could potentially be adapted to measure investment in work organisation or organisational change. The current indicator however comprises very different expenditures and does not refer explicitly to work organisation or organisational change.

2. Indicator 3.1.1 on introducing product or process innovations could be adapted, based on the recommended CIS adaptation "*Workplace innovation as a*

participative process of developing in-house innovations (product, process)" in chapter 9.1.1 which means to introduce a question on employee participation in the development of product/process innovations. This would mean to create an additional, more specific indicator based on 3.1.1.

3. Indicator 3.1.2 on introducing marketing or organisational innovations could be adapted. The first step would be to separate measurements for organisational from marketing innovation (as done in the CIS).
   - Based on recommendation "*Using the CIS to measure workplace innovation as a sub-category of organisational innovation*" an additional indicator could be created (See our proposals on the CIS 2012 8.1 question in chapter 9.1.1).
   - Based on recommendation "*Using the CIS to measure workplace innovation as a form of organisational innovation with specific objectives*" an additional indicator could be created combining the introduction of organizational innovation with specific objectives (improving participation, improving utilization of informal knowledge, etc.) or specific development processes (participation of employees).

4. Indicator 3.1.3 on employment in fast-growing enterprises in innovative sectors (% of total employment) could be adapted to focus on sectors which introduce *organizational* innovation. This adaptation depends on the statistical possibility to differentiate between types of innovations based on EUROSTAT data (not assessed in this report).

The table below provides an overview of selected IUS indicators with a potential link to workplace innovation.

Indicators related to workplace innovation enablers			
1.1.1 New doctorate graduates (ISCED 6) per 1000 population aged 25-34	Number doctorate graduates (ISCED 6) (EUROSTAT)	Population between 25 and 34 years	**Workplace innovation interpretation:** Indicators 1.1.1./1.1.2/1.1.3 could be understood in terms of a very general assessment for the "readiness for workplace innovation". This would reflect the assumption that workplace innovation relies on advanced skills and knowledge of employees (individual level enablers). The formal school education is however an unspecific indicator which does not directly focus on the demands of workplace innovation. **Original IUS interpretation:** The indicator is a measure of the supply of new second-stage tertiary graduates in all fields of training. For most countries ISCED 6 captures PhD graduates only, with the exception of Finland, Portugal and Sweden where also non-PhD degrees leading to an award of an advanced research qualification are included.
1.1.2 Percentage population aged 30-34 having completed tertiary education	Number of persons in age class with some form of postsecondary education (ISCED 5 and 6) (EUROSTAT)	Population between 30 and 34 years	**Original IUS interpretation:** This is a general indicator of the supply of advanced skills. It is not limited to science and technical fields because the adoption of innovations in many areas, in particular in the service sectors, depends on a wide range of skills.

Indicators related to workplace innovation enablers			
			International comparisons of educational levels however are difficult due to large discrepancies in educational systems, access, and the level of attainment that is required to receive a tertiary degree. The indicator focuses on a narrow share of the population aged 30 to 34 and it will more easily and quickly reflect changes in educational policies leading to more tertiary graduates.
1.1.3 Percentage youth aged 20-24 having attained at least upper secondary education	Number of young people aged 20-24 years having attained at least upper secondary education attainment level, i.e. with an education level ISCED 3a, 3b or 3c long minimum (EUROSTAT)	Population between 20 and 24 years	**Original IUS interpretation:** The indicator measures the qualification level of the population aged 20-24 years in terms of formal educational degrees. It provides a measure for the "supply" of human capital of that age group and for the output of education systems in terms of graduates. Completed upper secondary education is generally considered to be the minimum level required for successful participation in a knowledge-based society and is positively linked with economic growth.
2.1.2 Non-R&D innovation expenditures (% of turnover)	Sum of total innovation expenditure for enterprises, in thousand Euros and current prices excluding intramural and extramural R&D expenditures (CIS)	Total turnover for all enterprises	**Workplace innovation interpretation:** The investment in work organisation or organizational changes for improving innovative activities would be interesting here for measuring at least this aspect. The current indicator however comprises very different expenditures and does not refer explicitly to work organisation or organizational change. **Original IUS interpretation:** This indicator measures non-R&D innovation expenditure as percentage of total turnover. Several of the components of innovation expenditure, such as investment in equipment and machinery and the acquisition of patents and licenses, measure the diffusion of new production technology and ideas.

Indicators related to workplace innovation results			
3.1.1 SMEs introducing product or process innovations (% of SMEs)	Number of SMEs who introduced a new product or a new process to one of their markets (CIS)	Total number of SMEs	**Original IUS interpretation:** Technological innovation, as measured by the introduction of new products (goods or services) and processes, is a key ingredient to innovation in manufacturing activities. Higher shares of technological innovators should reflect a higher level of innovation activities.
3.1.2 SMEs introducing marketing or organisational innovations (% of SMEs)	Number of SMEs who introduced a new marketing innovation or organisational innovation to one of their markets (CIS)	Total number of SMEs	**Original IUS interpretation:** The Community Innovation Survey mainly asks firms about their technological innovation. Many firms, in particular in the services sectors, innovate through other non-technological forms of innovation. Examples of these are marketing and organisational innovations. This indicator tries to capture the extent that SMEs innovate through non-technological innovation.
3.1.3 Employment in fast-growing enterprises in innovative sectors (% of total employment)	The sum of sectoral results for the employment in fast-growing enterprises by economic sector multiplied by the innovation coefficients of these sectors. Fast-growing enterprises are defined as firms with average annualised growth in employees of more than 10 % a year, over a three-year period, and with 10 or more employees at the beginning of the observation period. (EUROSTAT)	Total employment in fast- growing enterprises in the business economy (without financial sector)	**Workplace innovation interpretation:** As this indicator combines employment with innovative sectors there is a possible link to workplace innovation. The innovation coefficient included in indicator 3.1.3 summarizes several aspects of innovativeness, one of them being organization innovation. Therefore, an assessment of workplace innovation could be integrated into the IUS by weighting each of the coefficient's single indicators differently, i.e. emphasizing the indicators on organization innovation. **Original IUS interpretation:** The indicator shows the degree of innovativeness of successful entrepreneurial activities. It captures the capacity of a country to transform its economy rapidly to take advantage of emerging demand.

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ANNEX

Table 9: 3rd European Company Survey assignments

3rd European Company Survey 2013 _Questionnaire for Management			
Individual level enablers	**Health**	P1	Does the management encounter any of the following problems at this establishment currently? High level of sickness leave
	Job satisfaction	P1	Does the management encounter any of the following problems at this establishment currently? Difficulties in retaining employees
	Job engagement	P1	Does the management encounter any of the following problems at this establishment currently? Low motivation of employees
	Basic work skills	Q16	Approximately what percentage of employees work in jobs which require at least one year of on the job learning in order for the person to become proficient in his/her task? Percentage of employees Number of employees
		H3	In the past 12 months, what percentage of employees received paid time-off from their normal duties to undertake training, either off or on your premises? Percentage of employees Number of employees
		H5	In the past 12 months, what percentage of employees have received the job training? Percentage of employees Number of employees
		H7	Did the training for your staff have any of the following objectives...? Increase awareness on health and safety issues and hazard prevention measures Improve and extend the skills used in their current jobs Provide the skills needed for employees to take on a different job position To enable employees to rotate tasks with colleagues
	Special work skills	F – T7	Do any of the employees at this establishment rotate tasks with other employees?
	Social skills	None	

3rd European Company Survey 2013 _Questionnaire for Management			
Individual task level enablers	**Work task**	Q27	Who normally decides on the planning and execution of the daily work tasks of the employees at this establishment? - The employee undertaking the tasks - Managers or supervisors -Both employees and managers or supervisors
		F – T7	Do any of the employees at this establishment rotate tasks with other employees?
	Work time	H14	Approximately what percentage of employees have the possibility to adapt – within certain limits - the time when they begin or finish their daily work according to their personal needs or wishes? Percentage of employees Number of employees
	Work environment	None	
Organisational level enablers	**Management system and style**	H11 - C	When recruiting the management usually look first whether there are any suitable internal candidates?
	Incentives for employee involvement in innovation activities	J - E7	Would you agree or disagree: Involving employees leads to unnecessary delays in the implementation of changes? Employees stay longer in the company when they feel they can get involved? Involving employees gives a competitive advantage? Suggestion schemes
	Dialogue and voice	ER1	Which of the following forms of official employee representation currently exist in your establishment? Do you have ... Country specific answer categories
		ER 2	Is there one [employee representation body] or are there several [employee representation bodies] representing different types of employees in your establishment? One body More than one body
		ER 6	Please think about the [employee representation body] that represents the largest proportion of employees in this establishment. Are the members of this [employee representation body] that represents the largest proportion of employees in this establishment ... - Elected by the entire workforce or - Elected by a specific category of staff or - Elected or appointed by a trade union or elected by its members or - Appointed by management?

3rd European Company Survey 2013 _Questionnaire for Management			
Organisational level enablers	**Dialogue and voice**	ER 15	I will now read out a few statements describing views on employee representation at the establishment. Please tell me - based on your experiences with the employee representation at this establishment - whether you agree or disagree with them? The employee representation helps us in a constructive manner to find ways to improve workplace performance The involvement of the employee representation often leads to considerable delays in important management decisions We prefer to consult directly with employees Consulting the employee representation in important changes leads to more commitment of the staff in the implementation of changes The employee representation can be trusted
	Organisational learning	H7-D	Did the training for your staff have any of the following objectives...? To enable employees to rotate tasks with colleagues
		T9	Do employees in this establishment document and keep records of their good work practices or lessons learned, with the purpose to share these with other employees?
	Labour contract and job description	H23 - C	Variable extra pay linked to the performance F-T1: of the team, working group or department
		H23 - A	Payment by results, for example piece rates, provisions, brokerages or commissions
		H23 - E	Variable extra pay in form of share ownership scheme offered by the company
		H23 - D	Variable extra pay linked to the results of the company or establishment (profit sharing scheme)
		H8	Approximately what percentage of employees have a performance appraisal or evaluation interview at least once a year?
	Organisational structure	Q24	How many hierarchical levels do you have in this establishment […]? -Number of levels
		Q25	Since the beginning of 2010, the number of hierarchical levels has ... -Increased or -Stayed the same or -Decreased?
Societal enablers		None	

3rd European Company Survey 2013 _Questionnaire for Management			
Process	**Learning**	None	
	Autonomous decision making	Q27	Who normally decides on the planning and execution of the daily work tasks of the employees at this establishment?
	Team work	F – T1	Do you have any teams fitting this definition ["A team is a group of people working together with a shared responsibility for the execution of allocated tasks, within or across units of the establishment"] in your establishment?
		F – T2	With regard to the employees doing teamwork, do most of them work in a single team or do most of them work in more than one team at the same time? - Most of them work in a single team - Most of them work in more than one team
		F – T3	If you think about the tasks to be performed by the teams: Do the team members decide among themselves by whom the tasks are to be performed, or is there usually a superior distributing the tasks within the team?
	Internal cooperation		In this establishment, which of the following practices are used to involve employees in how work is organised? Regular meetings between employees and immediate manager Regular staff meetings open to all employees at the establishment Meetings of a temporary group or committee or ad hoc group Dissemination of information through newsletters, website, notice boards, email etc. Discussions with employees through social media or in online discussion boards Suggestion schemes (the collection of ideas and (the collection of ideas and suggestions from the employees, voluntary and at any time, traditionally by means of a 'suggestion box') Employee surveys among employees
	External cooperation	T11	Does this establishment monitor external ideas or technological developments for new or changed products, processes or services? – Yes, using staff assigned specifically to this task / yes, as part of the responsibilities of the general staff / No
	Involvement	E1	In this establishment, which of the following practices are used to involve employees in how work is organised? Regular meetings between employees and immediate manager Regular staff meetings open to all employees at the establishment Meetings of a temporary group or committee or ad-hoc group Dissemination of information through newsletters, website, notice boards, email etc.

3rd European Company Survey 2013 _Questionnaire for Management			
Process	**Involvement**	E1	Discussions with employees through social media or in online discussion boards Suggestion schemes (the collection of ideas and suggestions from the employees, voluntary and at any time, traditionally by means of a 'suggestion box') Employee surveys among employees
		E0	Could you please let me know for this major change whether or not the official employee representation has been... Informed by management? Asked to give their views ahead of the decision? Involved in joint decision making with the management?
		E0	Could you please let me know for this major change whether or not employees have been directly...? Informed by management? Asked to give their views ahead of the decision? Involved in joint decision making with the management?
			Could you please let me know for this major change whether...? The involvement of the official employee representation in the discussion on this issue reflects common practice in this establishment. The direct involvement of employees in the discussion on this issue reflects common practice in this establishment.
Result	**Result**	Q31-BINNO-ORG	Since 2010, has there been any organisational change? ["organisational change" could be any of the following: New business practices for organizing procedures, new methods of organizing work responsibilities and decision making; New methods of organizing external relations with other firms or public institutions]
			Please tell me, whether any of the following changes have been made since the beginning of 2010: Changes in the remuneration system Changes in the use of Technology Changes in ways to coordinate and allocate the work to employees Changes in recruitment Policies Changes in the working time arrangements
Outcomes and impacts	**Outcomes and impacts**	E0	Which of the changes that you reported had – in your opinion – the most important implications for employees in your establishment?
		Q31	Since the beginning of 2010, has this establishment introduced
		Q31 BINNM APR	Any new or significantly improved marketing methods?

3rd European Company Survey 2013 _Questionnaire for Management			
Outcomes and impacts	**Outcomes and impacts**	Q32 BINNM APU	Any new or significantly improved methods of communicating your activities to the public?
		Q22 BINNP RSE	Any new or significantly changed products or services (either internally or externally)?
		Q23 BINNO PROC	Any new or significantly changed processes, either for producing goods or supplying services?
		P7. KLABPRCH	Since the beginning of 2010, has the labour productivity of this establishment... Increased Decreased [Remained about the same] [Not applicable] [Don't know] - [No answer]
		P8. KGOSEPR	Since the beginning of 2010, has the amount of goods and services produced by this establishment ... Increased Decreased [Remained about the same] [Not applicable] [Don't know] - [No answer]
		P8. KSERPROV	Since the beginning of 2010, has the amount of services provided by this organisation … Increased Decreased [Remained about the same] [Not applicable] [Don't know] - [No answer]
		P4. KFINANCH	Since the beginning of 2010, has the financial situation of this establishment... Improved Worsened [Remained about the same] [Not applicable] [Don't know] - [No answer]

Available from:
http://www.eurofound.europa.eu/surveys/ecs/2013/documents/3ecsquestionnairemm.pdf

Table 10: Community Innovation Survey 2010 assignments

Community Innovation Survey 2010			
Individual level enablers	**Health**	None	
	Job satisfaction	None	
	Job engagement	None	
	Basic work skills	None	
	Special work skills	5.1	During the three years 2008 to 2010, did your enterprise engage in the following innovation activities: -In-house R&D: Creative work undertaken within your enterprise to increase the stock of knowledge for developing new and improved products and processes (include software development in-house that meets this requirement)? -Training for innovative activities: Internal or external training for your personnel specifically for the development and/or introduction of new or significantly improved products and processes?
		11.2	During the three years 2008 to 2010, did your enterprise use any of the following methods to stimulate new ideas or creativity among your staff? If yes, was the method successful in producing new ideas or increasing creativity? -Multidisciplinary or cross-functional work teams -Job rotation of staff to different departments or other parts of your enterprise group -Non-financial incentives for employees to develop new ideas, such as free time, public recognition, more interesting work, etc. -Training employees on how to develop new ideas or creativity?
	Social skills	None	
Individual task level enablers	**Work task**	None	
	Work time	None	
	Work environment	None	
Organisational level enablers	**Management system and style**	7.1	How important were each of the following objectives for your activities to develop product or process innovations during the three years 2008 to 2010? -Improve flexibility for producing goods or services -Increase capacity for producing goods or services

Community Innovation Survey 2010			
Organisational level enablers	**Incentives for employee involvement in innovation activities**	9.1	During the three years 2008 to 2010, did your enterprise introduce: -New methods of organizing work responsibilities and decision making (i.e. first use of a new system of employee responsibilities, team work, decentralisation, integration or de-integration of departments, education/training systems, etc.) -New business practices for organizing procedures (i.e. supply chain management, business re-engineering, knowledge management, lean production, quality management, etc.)
		5.1	During the three years 2008 to 2010, did your enterprise engage in the following innovation activities: -In-house R&D: Creative work undertaken within your enterprise to increase the stock of knowledge for developing new and improved products and processes (include software development in-house that meets this requirement)? -Training for innovative activities: Internal or external training for your personnel specifically for the development and/or introduction of new or significantly improved products and processes?
		11.2	During the three years 2008 to 2010, did your enterprise use any of the following methods to stimulate new ideas or creativity among your staff? If yes, was the method successful in producing new ideas or increasing creativity? -Brainstorming sessions -Financial incentives for employees to develop new ideas -Non-financial incentives for employees to develop new ideas, such as free time, public recognition, more interesting work, etc. -Training employees on how to develop new ideas or creativity?
	Dialogue and voice	None	
	Organisational learning	None	
	Labour contract and job description	None	
	Organisational structure	None	
Societal enablers		None	
Process	**Learning**	None	
	Autonomous decision making	None	

Community Innovation Survey 2010			
Process	**Team work**	9.1	During the three years 2008 to 2010, did your enterprise introduce: -New methods of organizing work responsibilities and decision making (i.e. first use of a new system of employee responsibilities, team work, decentralisation, integration or de-integration of departments, education/training systems, etc.)
		11.2	During the three years 2008 to 2010, did your enterprise use any of the following methods to stimulate new ideas or creativity among your staff? If yes, was the method successful in producing new ideas or increasing creativity? -Multidisciplinary or cross-functional work teams
	Internal cooperation	None	
	External cooperation	2.3-3.3	Who developed [these] product _ process innovations -your enterprise by itself -Your enterprise together with other enterprises or institutions -Your enterprise by adapting or modifying goods or services originally developed by other enterprises or institutions* / Other enterprises or institutions*
		6.1	During the three years 2008 to 2010, how important to your enterprise's innovation activities were each of the following information sources? -Information source: internal, Within your enterprise or enterprise group?
	Involvement	None	
Results	**Results**	9.1	During the three years 2008 to 2010, did your enterprise introduce: -New methods of organizing work responsibilities and decision making (i.e. first use of a new system of employee responsibilities, team work, decentralisation, integration or de-integration of departments, education/training systems, etc.) -New business practices for organizing procedures (i.e. supply chain management, business re-engineering, knowledge management, lean production, quality management, etc.)
Outcomes and Impacts	**Outcomes and Impacts**	2.2	During the three years 2008 to 2010, did your enterprise introduce: - New or significantly improved methods of manufacturing or producing goods or services - New or significantly improved logistics, delivery or distribution methods for your inputs, goods or services

Community Innovation Survey 2010			
Outcomes and Impacts	**Outcomes and Impacts**		-New or significantly improved supporting activities for your processes, such as maintenance systems or operations for purchasing, accounting, or computing
		2.3	Were any of your process innovations introduced during the three years 2008 to 2010new to your market?
		2.3	…please give the percentage of your total turnover in 2010 from (…new to the market / …new to the firm)

Available from: http://epp.eurostat.ec.europa.eu/portal/page/portal/microdata/cis

Table 11: 5th European Working Conditions Survey assignments

5th European Working Conditions Survey[35], implemented January till June 2010			
Individual level enablers	**Health**		
	Job satisfaction	Q77	The organisation I work for motivates me to give my best job performance
	Job engagement	Q77	The organisation I work for motivates me to give my best job performance
	Basic work skills	Q54	Do the tasks require different skills?
	Special work skills	Q53	Does your job involve rotating tasks between yourself and colleagues?
	Social skills	None	
Individual task level enablers	**Work task**	Q50	Are you able to choose or change... Your order of tasks? Your methods of work? Your speed or rate of work?
		Q53	Does your job involve rotating tasks between yourself and colleagues?
		Q54	Do the tasks require different skills?
		Q57	For the team in which you work mostly, do the members decide by themselves… A - … on the division of tasks
	Work time	CHECK	They are set by the company / organisation with no possibility for changes You can choose between several fixed working schedules You can adapt your working hours within certain limits (e.g. flexitime) Your working hours are entirely determined by yourself
		Q37A	Do you work the same number of hours every day?
		Q37C	Do you work the same number of hours every week?
		Q57	For the team in which you work mostly, do the members decide by themselves… C - … the timetable of the work
	Work environment	None	Homework

[35] *Summary of the overview report: "Work plays a pivotal role in people's lives, in the functioning of companies and in society at large. Improving the quality of work and working conditions has long been at the forefront of EU policy, most recently in the Europe 2020 Strategy towards 'Smart, inclusive and cohesive growth'. The fifth European Working Conditions Survey (EWCS) explores topics as diverse as physical risks, working time, gender segregation, work–life balance, employee representation, work organisation, stress at work, skills development and pay, as well as health and well-being. The survey charts trends in working conditions, identifies major risk factors and highlights issues meriting policy attention. Based on interviews with 44,000 workers across 34 European countries, the fifth EWCS represents a rich store of information and analysis on work in all its dimensions in Europe today." (http://www.eurofound.europa.eu/surveys/ewcs/2010/)*

5th European Working Conditions Survey[35], implemented January till June 2010			
Organisational level enablers	**Management system and style**	Q58	In general, your immediate manager / supervisor …. A - Provides you with feedback on your work E - Encourages you to participate in important decisions
		Q51 - C	You are consulted before targets for your work are set (NEW)
	Incentives for employee involvement in innovation activities	Q51 - D	You are involved in improving the work organisation or work processes of your department or organisation (NEW)
	Organisational learning	Q51 - D	You are involved in improving the work organisation or work processes of your department or organisation (NEW)
	Labour contract and job description	None	
	Organisational structure	None	
Societal enablers		None	
Process	**Learning**	Q51 - I	You are able to apply your own ideas in your work (TREND 2005)
	Autonomous decision making	Q51 - O	You can influence decisions that are important for your work (NEW)
		Q55	Who decides the division of the tasks? (AUTONOMY)
		Q57	For the team in which you work mostly, do the members decide by themselves… A - … on the division of tasks B - … who will be head of the team
	Team work	Q56	Do you work in a group or team that has common tasks and can plan its work?
		Q57	For the team in which you work mostly, do the members decide by themselves… A - … on the division of tasks B - … who will be head of the team
	Internal cooperation		
	External cooperation		
	Involvement		
Results			
Outcome and impact			

Available from:
http://www.eurofound.europa.eu/surveys/ewcs/2010/documents/masterquestionnaire.pdf

Table 12: MEADOW Employee survey assignments

Meadows Employee survey			
Individual level enablers	**Health**	Section G: Employee well-being	Now, specifically thinking about your job with [<enter name of employer>], in the past week how much of the time has this job made you feel each of the following: a. Tense? b. Uneasy? c. Worried? d. Depressed? e. Gloomy? f. Miserable? 1. Never 2. Less than 1 day 3. 1-2 days 4. 3-4 days 5. 5-7 days
		Section G: Employee well-being	Over the past year [< or if < 12 months start question with "Since you started working for …], how many days were you absent from work because of poor health?
		Section G: Employee well-being	The days of absence, were any attributable to accidents or other health problems caused by your work?
	Job satisfaction	Section A: Occupation	All in all, how satisfied are you with this job? 1. Very satisfied 2. Satisfied 3. Not very satisfied 4. Not at all satisfied
		Section G: Employee well-being	Now, specifically thinking about your job with [<enter name of employer>], in the past week how much of the time has this job made you feel each of the following: a. Tense? b. Uneasy? c. Worried? d. Depressed? e. Gloomy? f. Miserable? 1. Never 2. Less than 1 day 3. 1-2 days 4. 3-4 days 5. 5-7 days
	Job engagement	None	
	Basic work skills	Section B: Work organisation:	Sometimes people want to get assistance with a work overload or difficult situation. Do you ever feel the need for assistance?
	Special work skills	Section B: Work organisation	Have you been trained by your current employer to undertake more than one job requiring different skills?
		Section D: Skill Utilisation	Is this level of education necessary to acquire the skills to perform your job satisfactorily? 1. Yes 2. No, a lower level of education would be sufficient
		Section D: Skill Utilisation	Do you feel that you have the skills to cope with more demanding duties than those you are required to perform in your current job?

Meadows Employee survey			
Individual level enablers	**Special work skills**	Section D: Skill Utilisation	How would you compare the level of skills needed for your current job today with the level needed for the same job [< two years ago/ or, if Job < 2 years, enter "when you started working for …]? 1. Increased 2. Decreased 3. Stayed the same
	Social skills	None	
Individual task level enablers	**Work task**	Section C: Participation and Control	In your job, what proportion of the time can you choose or change the content of your work tasks? 1. Less than 25% of the time 2. 25% up to 50% of the time 3. 50% up to 75% of the time 4. 75% or more of the time
		Section C: Participation and Control	What proportion of the time can you choose or change the speed at which you work? 1. Less than 25% of the time 2. 25% up to 50% of the time 3. 50% up to 75% of the time 4. 75% or more of the time
		Section C: Participation and Control	What proportion of the time can you choose or change the order in which you undertake tasks? 1. Less than 25% of the time 2. 25% up to 50% of the time 3. 50% up to 75% of the time 4. 75% or more of the time
		Section C: Participation and Control	What proportion of the time can you choose or change how you undertake tasks? 1. Less than 25% of the time 2. 25% up to 50% of the time 3. 50% up to 75% of the time
	Work time	Section B: Work organisation	How often does your job involve working to tight deadlines or at very high speed? 1. Less than 25% of the time 2. 25% up to 50% of the time 3. 50% up to 75% of the time 4. 75% or more of the time
		Section B: Work organisation	Thinking of your job [<enter month two years ago/ or, if < 2 years, enter "when you started working for <name of employer>], how often did your job involve working to tight deadlines or at very high speed? 1. Less than 25% of the time 2. 25% up to 50% of the time 3. 50% up to 75% of the time 4. 75% or more of the time
		Section A: Occupation	Are you working full-time or part-time? 1. Full-time 2. Part-time AHOURS [Ask all] How many hours do you usually work in your job each week? Please include paid and unpaid overtime, but do not include meal breaks and time taken to travel to work. ... Hours per week (to nearest hour)
		Section A: Occupation	Please give me your best guess of the average hours you worked per week over the last month.

Meadows Employee survey			
Individual task level enablers	**Work time**	Section E: Working time and work life balance	Can you choose the times at which you begin or finish your daily work?
		Section E: Working time and work life balance	Can you choose the days you work?
	Work environment	Section B: Work organisation	Does your job ever involve working in places other than [<enter name of employer>]'s premises
		Section B: Work organisation	How much time do you spend working at places other than [<enter name of employer>]'s premises? 1. Less than 25% of the time 2. 25% up to 50% of the time 3. 50% up to 75% of the time 4. 75% or more of the time
		Section B: Work organisation	Compared to [in <enter month> two years ago/ or, if < 2 years, enter "when you started working for <name of employer>], has the amount of time you spend working at places other than [<enter name of employer>]'s premises
		Section B: Work organisation	When working away from <name of employer>'s premises do you use a computer as part of your job? (Interviewer note: This can include, for example, laptops or electronic notebooks)
Organisational level enablers	**Management system and style**	C: Participation and control	At your workplace, does management organise meetings where you are personally informed about what is happening in the organisation?
		Section B: Work organisation	Sometimes people want to get assistance with a work overload or difficult situation. Do you ever feel the need for assistance?
		Section B: Work organisation	In these situations, how often do you receive assistance from your supervisor or manager? 1. Always 2. Sometimes 3. Never 4. Not applicable
		Section B: Work organisation	In these situations, do you receive assistance from other co-workers? 1. Always 2. Sometimes 3. Never

Meadows Employee survey			
Organisational level enablers	**Incentives for employee involvement in innovation activities**	None	
	Dialogue and voice	Section C: Participation and Control	At your workplace, does management hold meetings in which you can express your views about what is happening in the organisation?
		Section C: Participation and Control	At these meetings, can you express your views about the following work issues: a. Planned changes in working methods? b. Planned changes in products or services? c. Health and safety issues? d. Training plans? e. The investment plans of your firm [organisation]? f. The financial position of your firm [organisation]? g. The environmental impacts of your firm [organisation]?
		Section C: Participation and Control	Does expressing your views in such meetings ever have any effect on what is done?
		Section C: Participation and Control	Compared to [<enter month two years ago/ or, if < 2 years, enter "you started working for <name of employer>>], has the amount of time you spend in meetings: 1. Increased? 2. Decreased? 3. Stayed the same?
		Section B: Work organisation	Was a trade union or works council involved in negotiating the change(s)?
	Organisational learning	None	
	Labour contract and job description	Section A: Occupation	Which of the following best describes your job with [<name of employer>]? 1. Permanent job 2. Contract job with a fixed end date, even if several years in the future 3. Seasonal job 4. Casual job 5. Internship 6. Job through an agency that finds temporary employment
		Section F: Employment security	What do you think is the percent chance that you will lose your job during the next 12 months? That is, be made redundant, not have your contract renewed, or get fi red.
	Organisational structure	None	
Societal enablers		None	

Meadows Employee survey			
Process	**Learning**	None	
	Autonomous decision making	Section B: Work organisation	Did you personally take part in deciding the change(s)?
		Section B: Work organisation	How satisfied were you with your level of involvement in decisions about the changes?
		Section B: Work organisation	Did you personally take part in negotiating the change(s)?
		Section B: Work organisation	Were you personally consulted on the change(s)?
		Section B: Work organisation	Were you personally informed of the change(s) before they were introduced?
		Section B: Work organisation	How satisfied were you with your level of involvement in decisions about the changes?
	Team work	Section B: Work organisation	In performing your tasks, do you ever work together in a permanent or temporary team? (Interviewer note: People could be from your firm [organisation] or from another firm
		Section B: Work organisation	Excluding the team leader, can the others in this team influence what tasks you do yourself?
		Section B: Work organisation	Excluding the team leader, can the others in this team influence how you do your own tasks?
		Section B: Work organisation	How much of your time at work is spent working with a team? (Interviewer: if they state '25%' or '50%', code to 2 and 3 respectively, etc.) 1. Less than 25% of your time 2. 25% up to 50% of your time 3. 50% up to 75% of your time 4. 75% or more of your time
		Section B: Work organisation	Since [enter month two years ago/ or, if < 2 years, enter "you started working for <name of employer>], has the amount of time you spend working in teams increased, decreased, or stayed the same?
	Internal cooperation	None	
	External cooperation	Section B: Work organisation	In performing your tasks, do you ever work together in a permanent or temporary team? (Interviewer note: People could be from your firm [organisation] or from another firm
	Involvement	None	

Meadows Employee survey			
Result	**Results**	Section B: Work organisation	Since [<enter month two years ago/ or, if < 2 years, enter "you started working for <name of employer>>], have any of the following changes taken place in your workplace? a. Implementation of new or significantly changed machines, techniques or ICT systems b. Relocation of any employees c. Implementation of a new or significant change in the method of work d. Introduction of a new or significantly changed product or service
		Section B: Work organisation	Did any of these changes have a significant impact on your tasks and duties?
		Section D: Skill Utilisation	Have you: a. Figured out solutions for improving areas of your own work? b. Thought up new or improved products or services for <enter name of employer>? c. Tried to persuade your supervisor or manager to support new ideas? 1. Yes 2. No 3. Not applicable
Outcome and impact	**Outcomes and impacts**	Bchanges	Since [<enter month two years ago/ or, if < 2 years, enter "you started working for <name of employer>>], have any of the following changes taken place in your workplace? a. Implementation of new or significantly changed machines, techniques or ICT systems c. Implementation of a new or significant change in the method of work d. Introduction of a new or significantly changed product or service

Table 13: MEADOW Employer Survey assignments

Meadows Employer survey			
Individual level enablers	**Health**	Section A: Demographics and workforce characteristics	Over the past 12 months, what percentage of total working days at this establishment has been lost due to employee sickness? 1. None 2. 1% to 4% 3. 5% to 9%4. 10% or more
		Section D: Economic context and strategic objectives	In the last two years, did your establishment make significant new investments, changes in job tasks, or other major changes to your operations in response to each of the following factors? a. Changes in health and safety regulations b. Changes in environmental regulations c. Increased labour costs d. Increased raw material or other input costs e. Increased competition f. Changes in demand g. Introduction of new technology (including ICT) h. Budgetary constraints 1. Yes 2. No
	Job satisfaction	None	
	Job engagement	None	
	Basic work skills		Have any of your employees been given paid time-off from their work to undertake training in the past 12 months, either inside or outside your establishment's premises? What proportion of employees has been given paid time-off from their work to undertake training in the past 12 months? 1. Up to 24% 2. 25% to 49% 3. 50% to 74% 4. 75% or more
			Over the last 12 months, have any of your employees received on-the-job training to improve their skills? What proportion of employees has received on-the-job training in the past 12 months? 1. Up to 24% 2. 25% to 49% 3. 50% to 74% 4. 75% or more
	Special work skills	Section B: Organisational structure and change	Are any of the employees at this establishment trained to rotate tasks with other workers? The training could have taken place outside or within your establishment. 1. Yes 2. No 3. Not relevant
	Social skills	None	
Individual task level enablers	**Work task**	None	
	Work time	Section B: Organisational structure and change	Can any of the non-managerial employees at this establishment choose when they begin or finish their daily work, according to their personal requirements? What percentage of the non-managerial employees at this establishment can currently choose when they begin or finish their daily work? 1. Up to 24% 2. 25% to 49% 3. 50% or 74% 4. 75% or more

Meadows Employer survey			
Individual task level enablers	**Work time**	Section B: Organisational structure and change	Could any of the non-managerial employees at this establishment choose when to begin or finish their daily work two years ago?
		Section B: Organisational structure and change	Compared with two years ago, has the percentage of non-managerial employees who can choose when to begin and finish their daily work 1. Increased? 2. Decreased? 3. Remained approximately the same?
	Work environment	None	
Organisational level enablers	**Management system and style**	Section C: Human Resources	Have any of your employees been given paid time-off from their work to undertake training in the past 12 months, either inside or outside your establishment's premises? What proportion of employees has been given paid time-off from their work to undertake training in the past 12 months? 1. Up to 24% 2. 25% to 49% 3. 50% to 74% 4. 75% or more
		Section C: Human Resources	Over the last 12 months, have any of your employees received on-the-job training to improve their skills? What proportion of employees has received on-the-job training in the past 12 months? 1. Up to 24% 2. 25% to 49% 3. 50% to 74% 4. 75% or more
		Section C: Human Resources	Do you have meetings between line managers or supervisors and all the workers for whom they are responsible? 1. Yes 2. No (Interviewer note: if asked, these are sometimes known as 'briefing groups' or 'team briefings')
		Section C: Human Resources	How often do these meetings take place? 1. Every day 2. At least once a week 3. At least once a month 4. At least once a year
	Incentives for employee involvement in innovation activities	CHECK	
	Dialogue and voice	None	
	Organisational learning	Section B: Organisational structure and change	Do employees in this establishment regularly up-date databases that document good work practices or lessons learned?

Meadows Employer survey			
Organisational level enablers	**Labour contract and job description**	Section A: Demographics and workforce characteristics	Currently, how many employees do you have on the payroll at this establishment? Include all employees directly paid by your establishment (i.e. part-time, full-time, permanent and temporary employees) 1. Up to 19 2. 20 to 49 3. 50 to 99 4. 100 to 249 5. 250 to 499 6. 500 to 999 7. 1,000 or more (Interviewer note: if asked, this excludes employees paid through an employment agency.)
		Section A: Demographics and workforce characteristics	What percentage of the employees at this establishment has a temporary contract? This includes all employment contracts with an end date or for a defined period of time, even when the contract is for several years. 1. None 2. 1% to 9% 3. 10% to 24% 4. 25% or more
		Section A: Demographics and workforce characteristics	What percentage of the employees at this establishment is part-time? Part-time' includes all working-time arrangements below the usual full time hours that apply at your establishment. 1. None 2. 1% to 24% 3. 25% to 49% 4. 50% or more
		Section A: Demographics and workforce characteristics	Are there any employees contracted through an employment agency currently working at this establishment?
		Section A: Demographics and workforce characteristics	Please think of the total number of people working at this establishment, including employees on your payroll and people contracted through an employment agency. What percentage of this total consists of people from an employment agency? 1. Up to 4% 2. 5% to 9% 3. 10% to 24% 4. 25% or more
		Section A: Demographics and workforce characteristics	In the remainder of the interview, when I ask questions about the employees at this establishment, I would like you to include people from an employment agency.
		Section A: Demographics and workforce characteristics	How does the total number of employees at your establishment today compare with the number two years ago, that is in [MONTH, YEAR]? 1. The number of employees has decreased by over 5% 2. The number of employees has increased by over 5% 3. The number of employees is approximately the same
	Organisational structure	Section B: Organisational structure and change	How many organisational levels are there in your establishment, including the highest level (for example, senior management) and the lowest level (for example, production staff)? Number: ....
		Section B: Organisational structure and change	How many organisational levels were there 2 years ago? Number: ....

Meadows Employer survey			
Organisational level enablers	**Organisational structure**	Section B: Organisational structure and change:	Does this establishment have each of the following types of divisions or departments? [Provide separate 'yes or no' response options to each of questions a to c] a. Separate divisions or departments by function: sales, production, administration, research, etc. b. Separate divisions or departments by type of product or service c. Separate divisions or departments by geographical area: sales regions, etc.
Societal enablers	**Societal enablers**	Section D: Economic context and strategic objectives	In the last two years, did your establishment make significant new investments, changes in job tasks, or other major changes to your operations in response to each of the following factors? [Provide separate 'yes' and 'no' response options to each of questions a to h] a. Changes in health and safety regulations b. Changes in environmental regulations c. Increased labour costs d. Increased raw material or other input costs e. Increased competition f. Changes in demand g. Introduction of new technology (including ICT) h. Budgetary constraints 1. Yes2. No
Process	**Learning**	None	
	Autonomous decision making	Section B: Organisational structure and change	Are each of the following responsible for quality control? [Provide separate 'yes or no' response options to each of questions a to e] a. The employee undertaking the tasks b. Managers or work supervisors c. Specialist group or division within the enterprise or organisation d. External groups – customers, external evaluation experts, etc. e. [only ask if responses a to d are all 'no'] Quality control not relevant to this establishment
		Section B: Organisational structure and change	Who normally decides on the planning and execution of the daily work tasks of your non-managerial employees? 1. The employee undertaking the tasks 2. Managers or work supervisors 3. Both employees and managers or supervisors
	Team work	Section B: Organisational structure and change	Are any of the employees at this establishment currently working in a team, where the members jointly decide how work is done? 1. Yes 2. No (interviewer note : if asked, a work team is sometimes called an autonomous team or a self-directed team)
		Section B: Organisational structure and change	What percentage of the employees at this establishment currently works in such teams? 1. Up to 24% 2. 25% to 49% 3. 50% to 74% 4. 75% or more
		Section B: Organisational structure and change	Did any of your employees work in such a team two years ago? 1. Yes 2. No [only ask if B1TEAM 2007= 1]

Meadows Employer survey			
Process	**Team work**	Section B: Organisational structure and change	Compared with two years ago, has the percentage of employees currently working in such teams: 1. Increased? 2. Decreased? 3. Remained approximately the same?
	Internal cooperation	None	
	External cooperation	Section B: Organisational structure and change	Does this establishment monitor external ideas or technological developments for new or improved products, processes or services? 1. Yes, with staff assigned specifically to this task. 2. Yes, as part of the responsibilities of general staff3. No
		Section B: Organisational structure and change	Did this establishment monitor external ideas or technological developments 2 years ago? 1. Yes, using staff assigned specifically to this task 2. Yes, as part of the responsibilities of general staff 3. No
		Section B: Organisational structure and change	Is this establishment currently collaborating with other establishments or organisations in carrying out each of the following activities [the following activity]? [Provide separate 'yes' and 'no' response options to each of questions a to e] a. Design or development of new products or services b. Production of goods or services c. Procurement of inputs such as materials, parts, components, or services d. Sales or marketing of goods or services e. Administration
		Section B: Organisational structure and change	Did this establishment collaborate with other establishments or organisations on any of these activities [this activity] two years ago?
		Section B: Organisational structure and change	Did this establishment monitor external ideas or technological developments 2 years ago? 1. Yes, using staff assigned specifically to this task 2. Yes, as part of the responsibilities of general staff 3. No
		Section B: Organisational structure and change	Is this establishment partly or entirely outsourcing each of the following activities [this activity] to a third party that is not owned by your establishment or its parent company? [Provide separate 'yes' and 'no' response options to each of questions a to e] a. Design or development of new products or services b. Production of goods or services c. Procurement of inputs such as materials, parts, components, or services d. Sales or marketing of goods or services e. Administration
		Section B: Organisational structure and change	Did this establishment partly or entirely outsource or subcontract any of these activities [this activity] to another organisation two years ago?

Meadows Employer survey			
Process	**Involvement**	Section B: Organisational structure and change	Are any of the employees at this establishment currently involved in groups who meet regularly to think about improvements that could be made within this workplace?
		Section B: Organisational structure and change	What percentage of employees at this establishment currently participates in such groups? 1. Up to 24% 2. 25% to 49% 3. 50% to 74% 4. 75% or more
		Section B: Organisational structure and change	Did any of your employees participate in a group to think about improvements two years ago?
		Section B: Organisational structure and change	Compared with two years ago, has the percentage of employees participating in such groups 1. Increased? 2. Decreased? 3. Remained approximately the same?
Results	**Results**	Section D: Economic context and strategic objectives	In the last two years, did your establishment make significant new investments, changes in job tasks, or other major changes to your operations in response to each of the following factors? [Provide separate 'yes' and 'no' response options to each of questions a to h] a. Changes in health and safety regulations b. Changes in environmental regulations c. Increased labour costs d. Increased raw material or other input costs e. Increased competition f. Changes in demand g. Introduction of new technology (including ICT) h. Budgetary constraints 1. Yes2. No
		Section E: Establishment	During the last two years, has your establishment introduced any new or significantly improved processes, either for producing goods or supplying services?
		Section E: Establishment	During the last two years, has your establishment made significant organisational changes to your establishment? This can include new or changed business practices, methods of organising work responsibilities and decision making, or methods of organising relations with other firms.
		Section E: Establishment	Could you please briefly describe the most important organisational change introduced by your establishment over the last 2 years?
Outcomes and impacts	**Outcomes and impacts**	Section E: Establishment	During the last two years has this establishment introduced any new or significantly improved products or services?
		Section E: Establishment:	During the last two years, has your establishment introduced any new or significantly improved marketing methods?

Meadows Employer survey			
Outcomes and impacts	**Outcomes and impacts**	AEMPCH-CAUSE	Were any of the following major reasons for the decline in employment? [Provide separate 'yes or no' response options to each of questions a to e] a. Productivity increases due to technological innovation b. Productivity increases due to organisational changes or restructuring c. Decline in the market for your goods or services d. Sale or closure of part of your enterprise or organisation e. [only ask if APUB=2] Budgetary cuts (yes/no)
		DMKTCHNG	[only ask if APUB=1 and if ACUSTM > 1] (i.e. a private sector workplace that trades outside of its organisation) Compared to two years ago, has the total turnover of the goods and services produced by this establishment 1. Increased by over 5%? 2. Decreased by over 5%? 3. Remained approximately the same
		DMKTINC	[only ask if DKMKTCHNG=1 or DMRKTCHNGPUB = 1] Approximately how much has your [turnover / total amount of goods or services supplied] increased? 1. Increased by 5% to 9% 2. Increased by 10% to 24% 2. Increased by 25% or more
		DMKTDEC	[only ask if DKMKTCHNG=2 decreased or DMRKTCHNGPUB = decreased] Approximately how much has your [turnover / total amount of goods or services supplied] decreased? 1. Decreased by 5% to 9% 2. Decreased by 10% to 24% 2. Decreased by 25% or more