

CHANGE PROCESSES

Change processes and methodologies
of future perspectives on work

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1 Change processes and methodologies of future perspectives of work¹

1.1 Abstract

The main topics in this thematic report are based on the hypotheses on the nature of work in the knowledge-based society how it is described in the theoretical framework of the WORKS project (Huws, 2006). The objective of the report is to develop some conceptual approaches for a methodology of scenario building and construction processes of the scenarios in order to provide some ideas about the future of work in European countries.

Thus, this study is presenting information that is taken from other foresight experiments and its methodological features. The main needs for a scenario structure are provided in the explanation of four steps in order to develop such a process. The first step establishes a model on the changing structures of work in the knowledge-based society and a set of dimensions related with the central WORKS theoretical framework with the key variables and indicators that allows to find the information to be developed in step 3 (drivers of change). The second step provides the information about these dimensions in the theoretical analyses and complements it with data from the quantitative and qualitative pillars. It also could identify the main components as well as the variables more important to understand the changes, observing and defining the relations between them and clarify the trends. In the final step, one should define a set of periods for scenarios, and establish a set of possible scenarios of the different ways work organisation might evolve into different models of a knowledge-based society. Some examples are presented.

The annexes are not included in the paper version of this report. They are accessible and downloadable from the WORKS website (http://worksproject.be/Subgroup_1_proj_reports.htm).

¹ This report is based on several contributions: (a) an initial report on the process of scenario construction (cf. Moniz & Paulos, 2007) and results from further commentaries on the initial versions of this thematic report on 'Change and future perspectives' in the WORKS project; (b) a contribution on the scenario building methods (cf. Moniz, 2008a); (c) contributions from Duco Bannink to this report; and (d) a report on the qualitative information on the scenarios key variables (cf. Paulos, 2008) and reports of the WORKS policy pillar. Special thanks to Linda Nierling and especially to Bettina Krings, who have revised carefully all the draft versions. Also Ursula Huws has offered very interesting discussion points in her review of this report.

1.2 Introduction

It is generally agreed that major upheavals are taking place in the organisation of work as corporate structures are transformed in the context of economic globalisation and rapid technological change. But how can these changes be understood? And what are the impacts on social institutions and on workers? The European Commission funded the 'Work organisation restructuring in the knowledge society (WORKS)' project in 2005 under its 6th Framework Programme to investigate these questions. With partners in seventeen different institutions in fourteen EU member states, this ambitious research project has combined theoretical work and a detailed analysis of a wide range of statistics with in-depth case studies to analyse the forces that bring about these changes, including global value chain restructuring and the policy environment.

One of the underlying assumptions of the WORKS project is that the reorganisation of work can only be understood fully in the context of a global restructuring of value chains, entailing a simultaneous decomposition and recomposition of sectors, organisations, labour processes and skills. However, the considerable heterogeneity within Europe of skill supply, levels of employment, welfare systems, and economic sectors makes it especially difficult to disentangle the causes and effects of such processes and to isolate the primary drivers of change. Yet it is particularly important for Europe both to understand the factors that will enable firms to sustain their competitive edge, to ensure a future supply of jobs that is satisfactory both quantitatively and quality and to examine the impact of these changes on the quality of life. At the heart of this is a single issue: how are employment practices adapting to change and with what effect? If we can answer this more effectively on a Europe-wide basis we will be able to propose practical solutions to real problems.

Starting in June 2005, the WORKS consortium, involving partners from seventeen different institutes across fourteen EU member states, carried out an ambitious programme of theoretical and empirical work. These were carried out under five main pillars: 'theories and concepts', 'quantitative research', 'policy', 'qualitative research on organisations' and 'qualitative research on individuals'. The work of these pillars is summarised more fully below.

This is one of eleven thematic reports that bring together the results of all five pillars to deepen our insights into the topic of 'Change processes and future perspectives'. The other reports will focus on the topics of: value chain restructuring in Europe in a global economy; changes in work organisation and representation at the workplace; strategies to reach flexibility in the organisation; skills and qualification policies and HRM; new career trajectories and biographies; changing gender and ethnic relations in the workplace; working time, gender and work-life balance; changes in work in transitional economies; health, safety and the quality of working life; and employers' use of technology and the impact on organisational structure. The material on which this report draws is summarised below.

1.2.1 Theories and concepts

In the first stage of its work the WORKS partners collectively carried out a review of the very large body of literature with relevance to the project's research questions, in order to

map the field, formulate hypotheses to be tested in the empirical work and develop a clear conceptual framework for the research. This was no easy task. There are many lenses through which one can view the restructuring of work in a global knowledge economy. There are the lenses of different academic disciplines, for instance the sociology of work, economic geography, organisational theory, social psychology, ethnography, gender studies, industrial relations or political science. Then there are the lenses of different social perspectives, for instance those of international development agencies, of national governments in developed and developing countries, of technology providers, of statisticians, of employers, of trade unions, of educators, of civil society, of skilled professional workers who are may be beneficiaries of change, and of those groups that are potential losers. There are also differences deriving from different national research traditions, different ideological approaches and many other variables. In each of these many fields, a body of literature has grown up, trying to make sense of the changes taking place and supplying fragments of evidence. Piecing all this evidence together was a major challenge. The very disparity of the origins of this literature means that it is difficult to find a common frame of reference. Even when the same terms are used, they may be used with different meanings and the lack of commonly agreed definitions can make the refracted pieces of evidence difficult to compare, often giving them a contradictory and anecdotal character.

Nevertheless, in its first six months, the project managed to bring together in a single report (Huws, 2006) a remarkably comprehensive overview of the available evidence, thanks to the large collective efforts of the interdisciplinary WORKS team. This evidence was carefully sifted with the aim of distilling insights that could help to produce a clear conceptual framework in order to develop hypotheses and research questions to guide the empirical research to be undertaken by the WORKS project. This programme of work was, however, highly-ambitious, encompassing the aims of: improving our understanding of the major changes in work in the knowledge-based society, taking account both of global forces and of the regional diversity within Europe; investigating the evolving division of labour within and between companies and the related changes at the workplace; exploring the implications for the use of skills and knowledge, for flexibility and for the quality of working life; and examining the impact on occupational identities; time use and learning; as well as the impact on the social dialogue and the varieties of institutional shaping. Balancing the need to take account of these many dimensions whilst still retaining a focus on clear research questions that could be addressed feasibly within a coherent research design in a relatively short space of time was a major challenge, and we begin by presenting the methodology that was adopted to achieve this.

The first task was to achieve a division of labour that on the one hand took full advantage of the specialist subject expertise of partners whilst also recognising the diversity of national research traditions across Europe and the need to take account of the literature in all major European languages. Once topics had been assigned to partners, in a second stage, these partners were asked to produce a list of 'key concepts' for inclusion in a glossary.² The purpose of the glossary was to ensure that all partners could share a common understanding and make visible any differences of interpretation or definition of key terms so that they could be discussed and agreed, in a process whereby, in its contribution to the cohesion of the whole group, the dialogue involved in producing the entries was as valuable as the end result. The next stage involved the production of draft reports cover-

² Available on-line on http://www.worksproject.be/Glos_and_defint.htm.

ing the main concepts and the associated literature. Despite the authors' broad knowledge of their chosen topics, and the fact that each report included inputs from institutes in more than one country, it was felt that the only way to ensure that each report covered the full range of relevant European scholarship was to add a further, vital stage in the work. This involved circulating each draft report as it was completed to all the other WORKS partners, including those who had not been involved in the actual process of report writing. In this stage, partners were asked to draw on their knowledge of the literature in their own language or national setting, as well as their specific subject knowledge, to comment on the reports, point to issues that might be regarded as contentious and add references to relevant sources. This process of peer review enriched and refined the report that was then used by all partners as an input to the development of research questions, methodologies and research instruments for the empirical research.

1.2.2 Quantitative research

The 'quantitative research' pillar of the WORKS project studied the changes in work in Europe on the basis of comparative analyses of data from existing organisation and individual surveys. In a first step, major European organisation surveys and individual and household surveys relevant for changes in work were mapped and benchmarked in order to assess their relevance and their strengths and weaknesses for comparative analyses on changes in work. Next, and more important for the thematic reports, the research focused on the secondary analysis of the results of the organisation and individual/household surveys. For the organisation surveys, a thematic analysis of thirteen major national and international organisation surveys, focusing on the major results with respect to the key issues of the WORKS project, resulted in an overview report 'Comparative analysis of organisation surveys in Europe' (Ramioul & Huys, 2007). The key issues addressed in this report are:

- new forms of work organisation, organisational and technological innovation, changes in work. Here in particular some findings with respect to skill-biased organisational change and the role of employee involvement and participation are relevant;
- changes in skills and qualification and vocational training policies at establishment level;
- work-life balance and working time arrangements. Here conclusions from EU wide research on working time arrangements and flexibility policies are of particular interest;
- quality of the working life as measured in organisation surveys.

For each of these issues, the most relevant conclusions from the organisation surveys were summarised, thus leading to a comprehensive overview of organisational changes in Europe based on this particular data source.

For individual surveys, three major sources of individual and household data made it possible to carry out longitudinal and EU comparative analysis on the issues relevant for the WORKS project: the Community Labour Force Survey (CLFS); the European Working Conditions Survey (EWCS) and the European Community Household Panel (ECHP). Based on these three key data sources, four different reports were published, each focusing on the EU comparative analysis and on the identification of trends with respect to key WORKS issues. The reports focused on the following issues:

- tracing employment in business functions: a sectoral and occupational approach: in this report an innovative method was used to measure changes in employment related to value chain restructuring (Geurts, Coppin & Ramioul, 2007);
- trends in work organisation and working conditions. For this report, three waves of the EWCS were analysed in a longitudinal and EU comparative perspective, shedding light on changes in task complexity, autonomy, working time independency, health and safety issues and working conditions (Greenan, Kalugina & Walkowiak, 2007);
- work flexibility in Europe: a sectoral and occupational description of trends in work-hours, part-time work, temporary work, and self-employment was carried out based on the CLFS (Birindelli & Rustichelli, 2007);
- occupational change in Europe: based on longitudinal data, aspects of work satisfaction, occupational mobility and overqualification were investigated (Brynin & Longhi, 2007).

1.2.3 Qualitative research on organisations

The organisational case studies within the WORKS project covered a number of generic business functions that represent a wide variety of activities and labour processes in the 'knowledge society' ranging from highly-skilled 'knowledge work' to semi-skilled manual tasks. The research also aimed to focus on those business functions that feature prominently in the external restructuring of companies and thus in the restructuring of global value chains. The selected business functions were: research and development; production; logistics; customer service; and information technology.

To study the restructuring of value chains these business functions need to be located in specific sectors. The selection of sectors reflected the emergence of global value chains in different historical stages: sectors where vertical disintegration and internationalisation is already a rather old fact and sectors where these have developed only very recently. The sectors under study were:

The *clothing industry* is an example of an 'old' industry where restructuring of global commodity chains was already an issue in the 1970s. Recently, the integration of Central and Eastern Europe in pan-European production networks and the phasing out of the Multi-Fibre Arrangement and the WTO Agreement on Textiles and Clothing considerably changed the trade regimes and resulted in a new wave of restructuring mainly affecting production in Southern Europe and the CEE countries. This sector also provides interesting examples of 'head and tail' companies which concentrate high-skilled work within Europe but carry out the rest elsewhere.

The *food industry* is the largest manufacturing sector in terms of employment in the EU. It was subject to major restructuring after the completion of the single market in the European Union in the early 1990s that allowed companies to replace their country-by-country organisation with a pan-European structure. In contrast with parts of the clothing industry, food production is by and large highly-automated. Both industries are interesting as examples of buyer-centred value chains in which the demands of the retail trade play a pivotal role.

The *IT industry* is a growing industry that saw a major wave of restructuring during and after the boom years in the late 1990s and around 2000, partly associated with off-shoring. Internationally, this has contributed to the emergence of a 'new breed of TNCs',

global companies that supply services to other companies. To a large extent the IT service provider companies have grown through large outsourcing contracts that include the transfer of personnel from their public or private sector client organisations, a tendency highly-relevant for the research questions of WORKS.

Public sector organisations and *services of general interest* are currently subject to far-reaching restructuring because of liberalisation and privatisation policies and budgetary constraints. In these sectors the lengthening of value chains through large-scale outsourcing is a very recent phenomenon. The consequences for the quality of work are highly-influenced by traditional differences in the regulation of work between the public and private sectors.

Each business function located in a particular sector was studied in a range of countries with diverse employment and welfare regimes (liberal, conservative, socio-democratic, etc.). This made it possible to analyse the influence of institutional frameworks on the consequences of restructuring. Overall, 58 case studies were conducted in fourteen countries. The following overview shows the distribution of case studies.

Table 1.1 Sample of case studies

	R&D design	Production	Logistics	Customer service	IT
Textiles/clothing	BE; FR; DE; PT; IT	BE; IT; PT; HU; GR	FR; DE; NL; PT; HU		
Food		GR; BG; IT; NO; DK; UK	BE; NO; BG; GR; UK		
IT	DE; AT; UK; BE; FR; NO	DE; AT; HU; BG; SW			
Public sector administration				AT; BE; BG; HU; IT; UK; SW	BE; NL; UK; FR; DE; NO; SW; PT
Services of general interest: post and rail				DE; AT; SW; NL; GR	

For each case study, eight to ten interviews with management, key employees, and shop stewards (in the selected business functions) were conducted. Company documents and other material that made it possible to produce a comprehensive picture complemented the interviews. Researchers in the respective countries synthesised the individual case studies from the interview data. On the basis of the individual case study reports, comprehensive comparative analyses were carried out to compose this report. The authors of the report are deeply indebted to the researchers who carried out the case studies in the various countries and to the respondents who devoted their time to our research and helped us to understand the developments in their companies and sectors. For the presentation in this report, all company names have been changed to assure anonymity.

1.2.4 Qualitative research on individuals

The organisational case studies were complemented by case studies designed to investigate the impacts of changes at work on individuals and their households. Thirty of these occupational case studies were achieved in fourteen countries, between June 2006 and May 2007; in total 246 in-depth individual interviews were carried out, according to common interview guidelines elaborated in May 2006.

These occupational case studies are closely related to the organisational case studies that were carried out in a selected number of business functions, during the same time span. In the WORKS project, the concept of the 'business function' lies at the core of the qualitative empirical research, since these business functions provide the most useful unit of analysis for studying value chain restructuring and changes in work. In order to study changes in work at the individual level, individual workers were selected within specific occupational groups linked to key business functions.

Six occupational groups were selected: designers in the clothing industry; researchers in information and communication technology; IT professionals in software services; production workers in food or clothing; logistics workers in food or clothing; front-office employees in customer relationships in public services. In each occupational group, three to seven case studies were conducted in different countries, covering a variety of socio-economic and institutional contexts. Each case study relied on seven to nine in-depth individual interviews, including a biographical dimension.

The analysis of the interviews was structured around five themes that grouped together the WORKS research questions. These were: career trajectory, occupational identity, and quality of work, knowledge and learning, and work-life balance.

Particular attention was paid to gender issues. Gender was treated as a transversal theme in the analysis of changes in work at the individual level. The principle of gender mainstreaming (*i.e.* taking systematically into account the differentiated experiences of men and women in all items of data collection and analysis) formed one of the basic guidelines for the individual interviews.

1.2.5 The policy pillar

A central task in WORKS is to examine what effect policy initiatives and regulation at various levels - international, European, national, regional, sectoral and company - actually have on work life and work experience. Especially relevant in this regard is the role of institutions in the determination, implementation and enforcement of policy. We began with the question: Can we expect divergences in the ability to regulate changes in work due to restructuring according to different types of production or employment regimes, different types of industrial relations models, diverse institutional frameworks? Toward this end, all of the organisational case studies included a section on industrial relations and regulation of work. Within each company that was investigated, data was collected on the forms that worker representation took, which issues were negotiated, the role of workplace representation in restructuring (information, consultation, active intervention), the impact of European or national regulations, and the pressures on regulations and institutions due to restructuring. Additional interviews with trade union representatives and works councillors were carried out where possible.

The research agenda motivating this line of inquiry was to examine what role the institutions and actors of industrial relations play in restructuring across value chain in diverse settings and across diverse institutional contexts. A further issue is what role workers' representatives have in tempering the effects at the workplace that result from this restructuring, including the terms and conditions of employment, fragmentation and segmentation, gender equality, training and skilling, and quality of work life. Existing studies have shown that there are major challenges for existing institutions and forms of social dialogue to deal with current trends in restructuring and changes at work. Therefore, the case studies also investigated the impact of restructuring on the strategies or effectiveness of workers' representation and workers' voice.

1.2.6 Report's development

One of the most important outcomes of the project will be the development of some scenarios about the future of work below global restructuring processes. These scenarios are considered as relevant results of the WORKS project and may be used by policy stakeholders and researchers interested in the future of work in the knowledge-based society. This intention was expressed in the WORKS proposal. The scenarios will be developed integrating the results of the *quantitative* and *qualitative research* as well as the results from the *policy pillar*.³ Several references are also made to the different *thematic reports* already published and publically available. In this report however, is not expected to present already complete future scenarios, but to provide the methodologies for such a construction and to present (for further discussion) arguments to agree on a scenario structure on future perspective of work in different contexts. Based on that structure three scenarios were proposed for further discussion. This report is a result of a very intensive work that took more than half of a year and includes the contributions from researchers from different countries with different research and socio-economic frameworks and traditions.

In this sense, we took in consideration several draft proposals, the discussions at the Sofia general assembly meeting of the WORKS project, the final project conference (October 2008, Rome) and a specialised conference (January 2009, Monte de Caparica, Portugal)⁴, as well as other parcelled methodological contributions, and proposed a scenario structure that is based on several steps:

- definition of a set of dimensions;
- establishment of a typology of policy contexts that influence the chosen dimensions;
- typology of knowledge-based work contexts;
- 'feeding' the dimensions with information from the qualitative analysis, policy pillar studies as well as from the theoretical pillar;
- identification of the main components of the scenarios (which variables will be chosen to clarify the scenarios dynamics);
- use of forecasting methods with quantitative elements to have dynamic relations of variables;

³ In this report we were using the results from those studies, but such scenarios should be developed after a more intensive and collective discussion on the design of it.

⁴ The 2nd Conference on 'Foresight studies on work in the knowledge society' was organised by IET-Research Centre on Enterprise and Work Innovation (Portugal).

- the establishment of scenarios and tests to clarify policies and recommendations.

In the following pages the information taken from other foresight concepts are used as models in order to find a methodical framework. Namely, some information is given on the statistical analysis that should be provided to make the main conclusions more accurate and workable for policymakers and stakeholders, the principal recipient of this exercise. The main needs for a scenario structure are provided in the explanation of four steps for such a process. In the first step, after the definition of the theoretical framework it is necessary to establish a set of dimensions based on the characterisation of the change processes in the knowledge society. When balancing the dimensions the key variables of the scenarios have to be identified. In the second step related information on those dimensions has to be collected from the empirical results, identifying the main components of possible scenarios. Here, one should build up a matrix to enable an interpretation of influences of the different dimensions. Weighting the matrix one can have a grid system where the driving forces can be identified. This process should be done using expert's panels or organising several related workshops to discuss the main trends, the pertinent events, and the information on dimensions and variables.

Step 3 allows the relation between variables and dimensions that can be important in order to shape the scenarios. This means an identification of drivers of change. Modelling the scenarios usually begins in this step, and can provide high quality information on the dynamics of its components. In Chapter 6 we will analyse the different possibilities of extrapolations of current trends (already identified in the previous step). Different implications can be clear after choosing how to extrapolate some current trends.

Finally the last step establishes the set of periods that are pertinent for the scenario model chosen. This depends also on the time series that can be available. The shape of scenarios and the associated techniques that have been chosen to give more accurate information on the forecasted events are elements for the success of the foresight exercises at project level. Here we try to present some possibilities of scenario design. But those possibilities can be, in this moment, rather simplistic and not yet a result of a more developed work that would involve a large community of experts in this field. In that sense the propose of this report is not the construction of groups of scenarios, or one scenario with its own dynamics, or even more fictional proposals, but a methodical approach combined with future relevant thematic issues. According to the WORKS context this approach is related to the restructuring of work in knowledge-based societies.

2 The nature of work in the knowledge society

Work in the knowledge-based society is different from work in industrial society. In the previous workpackages of the WORKS project, case studies about the organisation, the nature as well as the quality of work in the knowledge-based society was conducted. The pressures of the knowledge society can be argued to consider two main aspects of work and economic production – its flexibility and knowledge intensity. These are considered to affect the organisation and quality of work. The spatial and/or contractual restructuring of work (value chain restructuring, VCR) takes a prominent place among the changes in the organisation of work. Furthermore, increased flexibility and/or knowledge intensity pressures lead to changes with respect to skills formation strategies and work contractual conditions, including working time arrangements (WTA).

The case studies conducted in the WORKS project were selected from different economic branches and national and/or branch level policy contexts. Hall and Soskice (2001) aim at explaining company strategies, primarily in the field of skill formation and innovation strategies, with references to the environment they move in. This environment exists of economic pressures (changing market conditions) and institutional options (regulations supporting specific types of work organisation and discouraging others). The environment supports – but not fully enforces – specific strategies, while limiting – but not fully blocking – the room for other strategies. These arguments show resemblance to the work of Esping-Andersen (1990). He, although using a different typology of systems and drafting the analysis at a higher level of aggregation, argued that the social and labour market policies of a welfare state affect the direction of economic development and the level of social equality of these nations. Combined, these approaches to social and labour market policies underscore the importance of the economic and regulative context of economic actors for the decisions they make concerning the nature and organisation of work.

Drafting a future perspective of work in the knowledge-based society and drafting feasible policy recommendations, requires a good understanding of these issues: ‘How do knowledge-based society pressures – pressures of work flexibility and knowledge intensity – affect the nature and organisation of work, in different contexts of interrelated economic regulative contexts?’.

2.1 Model of changes in work in the knowledge-based society

As stated, economic actors make decisions that concern the nature and organisation of work and they do so while referring to the economic and regulative context they move in. These decisions are being made at various levels of aggregation (individual, company level, branch level, national level) and by different types of actors (employees, employers,

social partners, governments). An important interface of labour demand and supply is the company. In the company, the concrete impact of such decisions upon the nature and quality of work can be observed relatively easily. The observation theory that we build upon below is that the company level provides a good entrance to the issue of changes in work. The impact of increased flexibility and/or knowledge intensity on work organisation and quality can be observed through the company. An observation theory should be distinguished from a substantial theory. Orienting oneself on the company level should not be taken to imply that we adhere to the substantial theory that company decisions fully determine work organisation impacts nor that we argue that impacts do not stretch beyond the level of the individual company. Instead, the regulative and economic context of companies structures company decisions and processes of value chain restructuring create impacts of changes in work at large distances from the individual company.

Companies are considered economic units that try to cope with the requirements of the knowledge society, among other things by implementing changes in the organisation of work. The regulative context of social and labour market policies on the one hand and the economic context of market conditions pressuring for increased flexibility and/or knowledge intensity on the other affect the strategic choices companies make with respect to the nature and organisation of work at company level. These choices affect skills formation, contractual relations (including WTA) and organisational restructuring (including VCR).

The following preliminary model roughly illustrates the causal relations between national social and labour market policies ('regulative context'), economic and technological characteristics and the economic context of branches ('economic context') on the one hand and individual company level labour regulations and policies ('company strategies') on the other. Company strategies with respect to (1) skill formation, (2) working time arrangements and contractual conditions and (3) work organisation and value chain restructuring (including internal organisational restructuring) are concerned. These company strategies determine the quality of work in the knowledge society.

Regulative context

Social and labour market policies structure how the nature and quantity of labour supply is adjusted to the nature and quantity of labour demand. The 'Varieties of Capitalism'-literature makes a distinction between two main routes of connecting labour supply and demand. In so-called 'co-ordinated' systems, various institutional arrangements exist in which the mutual adjustment of labour supply and demand is organised. Decision-making on these issues is to a significant extent collective. These systems are characterised by institutional support for relatively stable labour relations, a relatively high 'asset specificity' of mutual investments in the labour relation (with respect to skill formation for instance) and as a result the formation of 'deep', and specific skills supporting an incremental style of innovation (cf. Estevez-Abe, Iversen & Soskice, 2001). 'Unco-ordinated' systems on the other hand are characterised by institutional support for flexible labour relations, a relatively low asset specificity of mutual investments and as a result the formation of broad and 'general' skills supporting a radical style of innovation. Not only the extent of co-ordination of labour market policies determines the feasibility of varying company strategies, also the extent of social protection/provision does so. These two ele-

ments (labour market co-ordination and social protection level) constitute the regulative context of companies.

Economic context

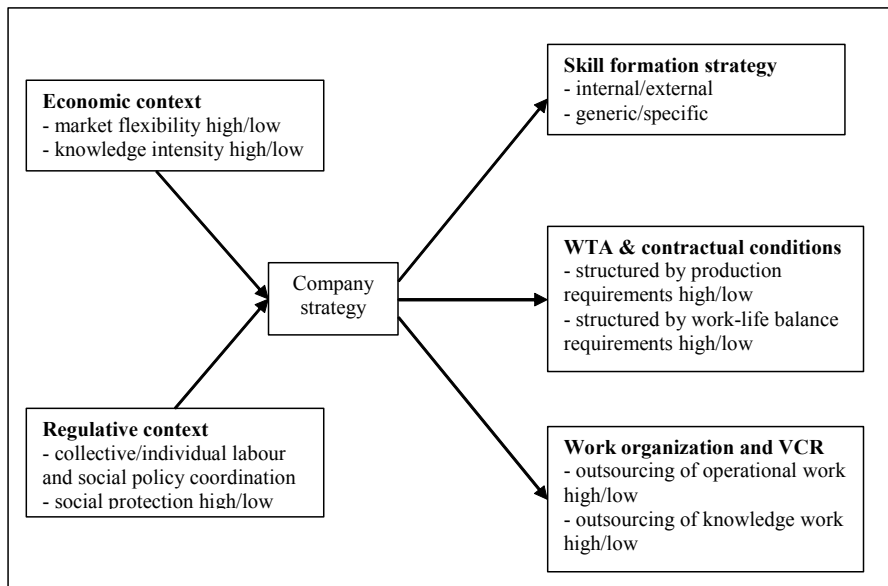
The economic context of a company defines the intensity of knowledge that is applied in a branch and the extent of flexibility that prevails in a segment of the market. In other words, it determines the requirements companies in the branch face with respect to the type of skills and labour supply that is needed in order to be economically successful. While, *e.g.*, the IT branch in general applies general knowledge and skills and shows high flexibility of production and market relations, the smaller subfield of municipal database systems applies highly-specific knowledge and skills and shows relatively stable economic relations between the purchasers and providers of these services. The flexibility and cost requirements of the market and the knowledge intensity of the products and applied production technologies constitute the economic context of companies.

Company level

Companies find themselves in a context defined by (1) the regulative context of policy arrangements structuring labour supply and demand and (2) the economic contexts defined by the demands of their specific product markets. It is in this context that they take decisions concerning the actual flexibility of work, skill formation, the structure of internal labour markets (ILMs), working time arrangements in general and the conditions of work and concerning the spatial and contractual organisation of work and the restructuring of value chains. This observation model does not imply that companies autonomously decide on work organisation, or that the effects of work organisations decisions are confined to the level of the individual company. Instead, company decisions are structured by the regulative and economic context they move and the effects may stretch well beyond the borders of the individual company and be experienced further down the value chain.

The relevancy of this model for WORKS 'theory' and 'policy pillar' (Figure 2.1) is that various sets of regulative and economic contexts are expected to support specific, differentiated constraints and opportunities for company strategies. Therefore, they support specific trajectories of change in response to pressures of the knowledge-based society. Scenarios simulating the outcomes (with respect to work organisation, contractual relations and skills formation) of this triangle of policies, economic pressures and company decisions entail crucial policy implications with respect to the regulation of work in the knowledge society. Different pathways of regulative and economic development engender differentiated future expectations as concerns the nature and quality of work.

Figure 2.1 Model of changes in work in the knowledge society

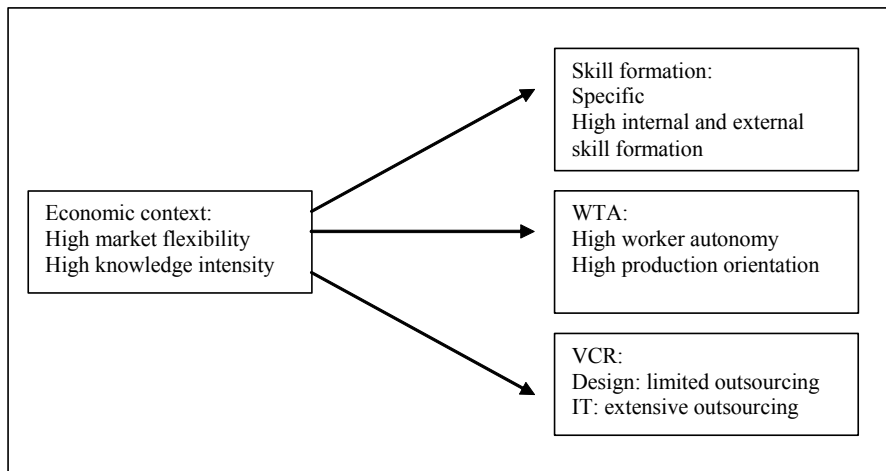


2.2 Findings of the WORKS studies

The quantitative and qualitative studies of the previous WORKS workpackages are used in order to make the model more concrete. The studied companies (organisational case studies) and individuals (occupational case studies) are located in different economic and regulative contexts. It appeared that companies show different strategies to cope with the pressures of the knowledge society. In order to reconstruct the impact of economic and regulative factors, inter-branch, intra-nation (the regulative context is standardised to some extent) and international, intra-branch (the economic context is standardised to some extent) comparisons of the quantitative and case study outcomes are made.

We shortly discuss these findings below. Structured comparisons clarify the influence of the economic and regulative contexts on company decisions with respect to work. After that, in the next steps of this report, we build a scenario model on the basis of the WORKS organisational and occupational qualitative case studies and the quantitative studies.

The WORKS case studies show strong differences of company strategies in different branches. Analysis of the case studies shows that not only branch *per se*, but also business function is related to market flexibility and knowledge intensity of the work. Both branch and business function determines the flexibility pressures upon work and the knowledge intensity of work.

Figure 2.2 Economic contexts and company strategies of business functions IT and design

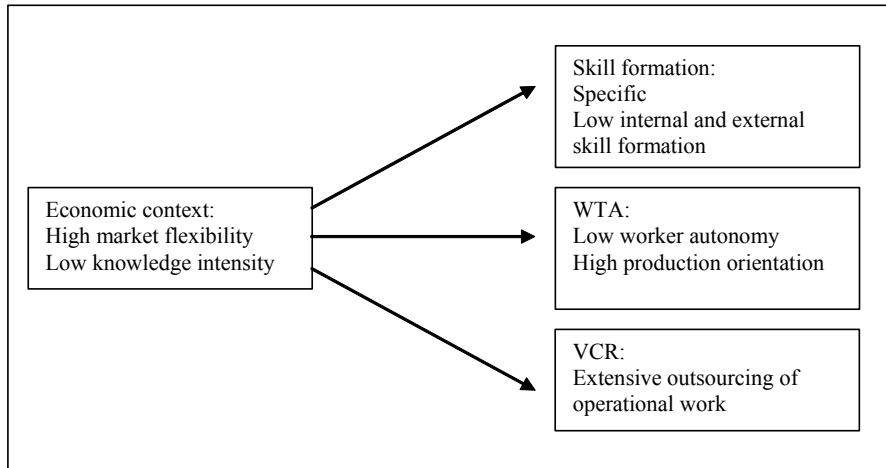
With respect to business function, we found that the business functions of information and communication technology (ICT) and design sectors (in clothing industry) show relatively high levels of knowledge intensity, but also relatively high levels of market flexibility demands. The economic context of these business functions is characterised by high market flexibility and high knowledge intensity.

With respect to the company strategies that are chosen in this context, the following is found. There are comparatively strongly elaborated internal labour markets (ILM) with a relatively strong emphasis upon skill formation, both externally and internally organised. The substance of skills is relatively strongly specific, related to the knowledge base of the own company. Working time arrangements: there is relatively strong employee autonomy with respect to working hours. This high autonomy, however, goes along with relatively strong time pressure because customer orientation – both intra-firm and in the market – is increased. This is a WTA strategy, in which a trade-off has been made between a strong accommodation of working time to the demands of production/customers, compensated by a relatively high autonomy of employees to adjust their working hours individually. In terms of value chain restructuring there is a difference between the design and IT functions. In both cases, it concerns the strongly knowledge-intensive work. There is a difference, however. While design is mostly kept inside the company, because it appears to be seen as the main core of the company's identity and economic value, IT is often purchased from elsewhere or made internally independent or – in the case of an IT specialised company – the function is executed at a purchasing company's location.

Company strategies are almost completely the opposite when the business function of production is concerned. Production is located in an economic context where market flexibility, customer orientation, just-in-time delivery, *etc.* are increasing; market flexibility is relatively high. The knowledge intensity of the production process is mostly relatively low (notwithstanding the sometimes high knowledge intensity of the actual product). In this context, companies tend to show strongly limited career paths and a virtually lacking emphasis upon skill formation. If training is offered, it mostly concerns operational issues

related to the individual company's working procedures. Relatively low worker autonomy with respect to working hours is observed. Next to that, there is a relatively strong tendency of offshoring the function to other location (with cheaper labour regulation) or outsourcing the function and the associated market flexibility requirements to other organisations. As we will see in the next section, this overall pattern is not fully universal. In some political contexts the impact of these market flexibility pressures is mitigated.

Figure 2.3 Economic context and company strategies of business function production

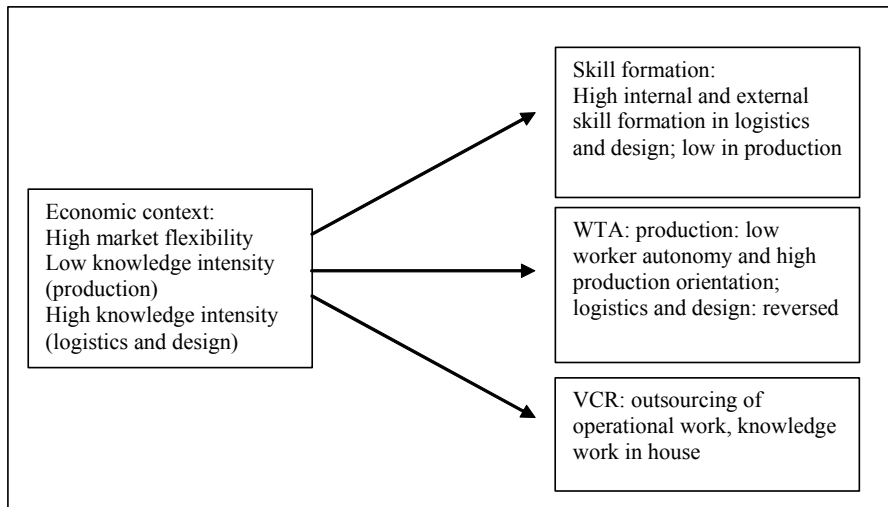


Turning over from the analysis of business functions to the analysis of branch differences, a comparison of the clothing and IT branches shows a similar pattern as the comparison between IT/design and production. Market flexibility requirements in the clothing sector are relatively high as compared to other sectors, while knowledge intensity of most of the work is relatively limited. For the IT branch this is the other way around.

In the clothing industry a strong tendency of dualisation of labour is shown. Production and operational work is often outsourced to countries where wages are low and labour regulation is limited. Worker autonomy with respect to task execution and time management in these outsourced units is often severely limited, while the requirements of the production process and of the highly-volatile market demand structure tasks and working time. Skill formation is limited, which is also explained by the relatively flat function hierarchy that does not allow the development of elaborate career paths. Design and logistics functions on the other hand are kept in-house. The working conditions allow greater task and time autonomy than in production, although time pressure is relatively high: working time arrangements accommodate both market flexibility requirements and employee work-life balance requirements. Especially in logistics, there is a relatively strong emphasis on skill formation, to accommodate the increasing flexibility demands of the market. Internally formed, specific and tacit knowledge and skills in logistics are related to the structure of the particular market. In design, this type of skill formation is related to the identity of the designs of a company. Next to that, externally formed, general and codified

skills are related to logistics methods and techniques. Skill formation in logistics leads to an increase of the knowledge intensity of work.

Figure 2.4 Economic context and company strategies in clothing: labour dualisation



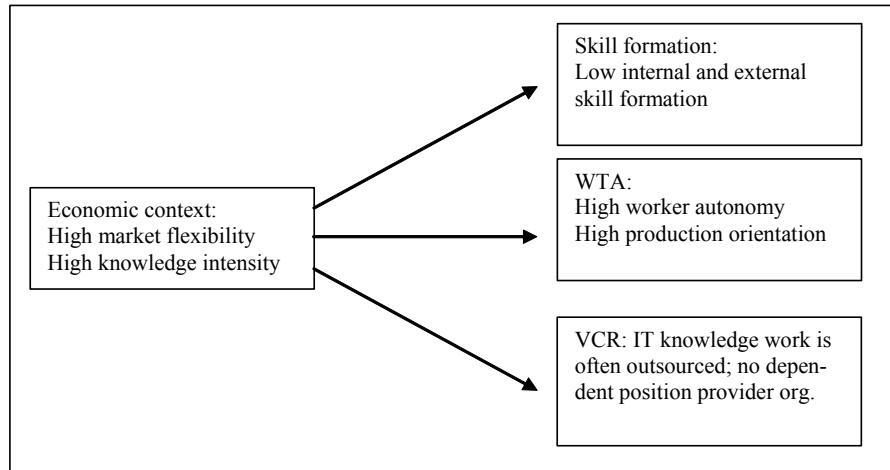
While labour dualisation is feasible in clothing because there is a relatively strong difference with respect to knowledge intensity of the work and a relatively strict organisational separation, this is not so much the case in IT. IT projects are often conducted on site for customers. Often, there is intensive knowledge sharing between the IT producer and customer. This does not allow producer organisations to employ their work force in a highly flexible manner, without taking into account the working time requirements of the staff. At the same time, however, customer orientation increases while customer's demands with respect to the flexibility of the product and production process are highly flexible. This leads to a set of working time arrangements that combines a high level of work-related flexibility (working over time and at irregular hours, with strong peaks related to project deadlines, *etc.*) with a high level of employee-related flexibility (compensatory arrangements for overtime, in order to come up to care and other private obligations).

The IT producer is often an independent company selling its products to customer organisations. From the perspective of the customer organisation, this is the outsourcing of IT work. Historically, it appears from the case studies that indeed the IT work that was previously organised in-house is now more and more transferred to specialised IT producers. Because of the relatively high knowledge intensity of the work, this does not imply a position of high dependency for the provider organisation.

Skill formation strategies appear from the case studies to be less well-developed than expected. In both the IT organisational case studies as in the occupational studies, reported is that the responsibility for skill formation is individualised. Employees - working as pseudo-independent workers - need to make their own investments in skill retention.

A similar pattern actually occurs in relation to additional contractual conditions like the pension, which is often also not arranged by the company, especially in the smaller IT providers.

Figure 2.5 Economic context and company strategies in IT



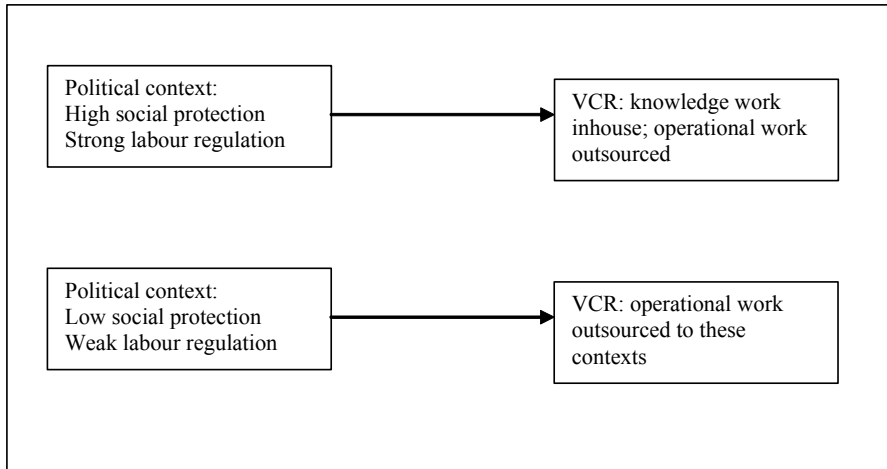
One can conclude that market flexibility demands and knowledge intensity of the product and production technology in a specific branch to a strong extent affect the work organisation strategies of companies. In virtually all case studies, an increased flexibility in the production/provision of goods and services is demanded and company work organisation is structured so as to more and more address this demand and show a stronger customer orientation of production and servicing. The way this is attained differs. This difference is related to the knowledge intensity of the work.

A higher level of knowledge intensity leads to a stronger dependence of companies from their work force. This higher dependency causes companies to take into account a number of worker needs. The outcome is a set of arrangements (concerning skill formation, working time and work organisation) that in a more or less balanced way respond to both employee needs and the requirements of customers and production technology. In companies that produce at lower levels of knowledge intensity this balance does not emerge. Instead, the requirements of production technology and customer demands are directly transferred to the skill formation, time and work organisation strategies of the company.

Variations in work regulation are also related to outsourcing decisions. The case studies, especially in clothing, where market flexibility appears relatively high, show the outsourcing of production and operational work to weakly regulated branches (handicraft instead of industrial clothing in Italy, *e.g.*) and to central and Eastern European countries. A similar situation exists in food production. The outsourcing companies normally keep logistics, design, marketing in-house, since these are more related to the core of the com-

panies' work, more strongly affect the strategic position of the company and because the level of knowledge intensity in these business functions is higher.

Figure 2.6 Regulative context and company strategies



There are two important anomalies that appear from our analysis of the case studies. Some branches or business functions have a stronger impact than the policy context effect. This goes for the business function of production. The skill formation, working time arrangements and work organisation deteriorate for employees in all included countries (except the Scandinavian). This implies that the effect of the high flexibility demands combined with low knowledge intensity of the work is not mitigated by the institutional regulation of work.

As stated, this goes for all nations, except Scandinavian production organisations. The Scandinavian policy context seems to overrule the effect of the economic context. Production employees in Scandinavian companies have relatively favourable skill formation arrangements, working time arrangements and work organisation. Next to that, also the more knowledge intense branches, like the case of CompA in Norway suggests, seem to show some insulation from increased market pressure. Value chain restructuring (next mentioned as VCR) shows a number of specific patterns:

- value chain restructuring towards weak regulation: one of two main patterns of VCR is the transferral of operational work to weakly regulated countries, within Europe. This concerns the New Member States (NMS). This pattern appears related to the fit between the economic and the political context of companies. While originally, production work was shifted from North-West to Southern Europe, after the accession of the Central and Eastern European countries to the EU a further shift to these countries occurs. Next to that, we also observe a transfer of operational work to new branches where social protection and co-ordination of work is weaker developed. An example is the outsourcings of production work in clothing that implied a shift in branches from the clothing to the less regulated small handicraft branch;

- value chain restructuring towards increased knowledge intensity: the second main pattern of VCR is restructuring in order to capture greater knowledge intensity, so to come up to complexity requirements a company itself cannot address. Geographically, this pattern of outsourcing partially goes the other way around than VCR towards weak regulation. And shows outsourcing of work towards branches and countries with more strongly developed knowledge in relation to *e.g.* IT, design and logistics. The causal relation to the political context is indirect. It seems that work is transferred to locations where knowledge development conditions were more favourable.

These patterns show that at least two types of work regulation and skill formation policies may be feasible in a knowledge society context. Increased flexibility demands and increased customer orientation go along with an increased flexibility of work organisation. On the other hand, increased knowledge intensity of work goes along with the stronger regulation of work. The optimal combination of the support of knowledge and skill formation on the one hand and work flexibility on the other differ per business function/branch. IT, for instance, required weak work regulation and high flexibility, combined with stronger support for skill formation. It appears that IT companies externalise skill formation responsibilities to the individual worker (and the state) and this may indeed be a feasible strategy if the required knowledge and skills are not directly bound to the company's applied technology. In the case of design, this may be different, because the knowledge and skills in this business functions are more strongly related to a company-specific identity. Support for skills formation is less feasible in production, while - from an economic viewpoint - deregulation of work might be feasible.

The new Europe seems to show regional specialisation in specific types of branch or business function. IT is well-developed in Scandinavia and North-West Europe and financial services in the Anglo-Saxon nations. These sectors possible can best be supported by deregulation of work, combined with strong support of skills formation, most likely externalised from the company. The more complex branches of industry are well represented in Continental Europe. Company-bound skill formation, which requires the relatively strong regulation of work, might be the optimal strategy in these nations. The New Member States of Central and Eastern Europe currently specialise as relatively cheap production centres. Production work is outsourced to these contexts, because of the lack of work regulation and the low cost of labour.

In the next chapter, we build upon these findings for the construction of our scenarios.

3 Scenario building

3.1 Some experiences on scenario building

In general, scenarios are used to describe a future history - *i.e.* the evolution from present conditions (for example, labour market, technology, organisational models, economical structures, social behaviours, and industrial relations) towards several models of future perspectives. The scenario building approach can point out some causal chains of decisions and circumstances that lead from the present to emerging dependent variables. The display of the variable conditions can reveal the quantitative dimensions that will enrich the narrative of those 'futures'. Defining a large number of alternative worlds is often neither necessary nor desirable. The final selection of 'future worlds' should consider the sufficiency to present a range of opportunities and challenges. Nevertheless, it should be small enough in terms of the number to develop political strategies. Four to five scenario 'worlds' seems ideal to capture that range.

The key measures and variables need to be selected with care. Every scenario should include projections of the same measures in order to clarify the implications for decisions. The objective of building scenarios is based on the need for development of lead visions. And these can be considered to organise systems of decisions, especially strategic decisions, either at company level, or at governance level.

Based on these principles the European Commission document on 'New skills for new jobs anticipating and matching labour market and skills needs'⁵ explains that 'the essential rationale for forecasting and the basis for the public sector funding of forecasting and the associated data collection is that labour markets are imperfect and that there are long and variable lags between decisions on investment in skills and when these are finally available' (European Commission, 2008: 6).

In that same document it is also stressed that 'the assessment and anticipation of skills and labour market needs is seen as a key instrument: for the efficient functioning of labour markets and the mobility of labour within the EU; for a better match between labour supply and demand to reduce bottlenecks; and for a better definition of the content and structure of education and training systems as they seek to develop human resources, skills levels, creativity and entrepreneurship. Many Member States currently carry out such activities, but until recently little has been done at pan-European level. Given the increasing interdependency of European labour markets and the growth in cross-border mobility, the case for a pan-European assessment has strengthened. While this approach is important for policy (especially in education and training provision), it has an equally

⁵ COM (2008) 868.

important role in providing robust information for individual citizens and organisations' (idem).

According to the UN Millennium futures research report: 'The goal of generating scenarios is to understand the mix of strategic decisions that are of maximum benefit in the face of various uncertainties and challenges posed by the external environment. Scenario building, in conjunction with a careful analysis of the driving forces, fosters systematic study of potential future possibilities - both good and bad. This forecasting approach enables decision makers and planners to grasp the long-term requirements for sustained advantage, growth, and avoidance of problems' (Glenn, 1999: 3).

The long-run forecasts have been used in social sciences since the decade of 1960s. For example, the study of Kahn and Wiener on 'Toward the year 2000' was published in 1967 and used several forecasting techniques, as trend lines for economy and demography forecasts, scenario thinking on plausible futures, and a Delphi technique to look on scientific breakthroughs with experts panel. The objective was to use the data available in 1966 to forecast it around the year 2000 in terms of economy and society. That means an experience with thirty years forecast analysis, which means a rather non-accurate result. According to some authors that also underlines this same perspective, 'it is difficult enough making forecasts for economic variables over a thirty year period, while some could decline because of changing tastes or scarcity of resources. Other growth rates could increase because of new opportunities and scientific advances. The real forecasting skill comes in deciding what are reasonable or likely changes in the growth rates' (Granger & Jeon, 2007: 540). In this sense, reasonability and plausibility are also conditions for such long-run forecasts.

Peter Schwartz, a member of the Royal Dutch/Shell scenario team, describes several steps in the scenario development process in his work 'The art of the long view' (Schwartz, 1991). These steps include:

- identification of the focal issue or decision;
- identification of the key forces and trends in the environment;
- ranking the driving forces and trends by importance and uncertainty;
- selection the scenario logics;
- filling out the scenarios;
- assessing the implications;
- and selection of the leading indicators and signposts for monitoring purposes.

In fact, Shell developed its first set of global scenarios in 1972. There have been many global scenario cycles since then, each reflecting different challenges in the business environment, as well as changes within this transnational company (TNC). As an example, the 1960s was a decade of rapid growth for the energy industry and stable low oil prices. However, Shell's scenarios raised the possibility of high oil prices which happened in 1973. And during the evolution process from that period this company could present what they call as the 'ongoing scenario-building process' (Shell International, 2003; Moniz, 2008b).

The scenario construction process involves, according to Michel Godet⁶ approach, the examination of the current situation and identification of the mechanisms and the leading actors (influencers of the system through variables, as policymakers, institutions) that

⁶ From the Laboratory for Investigation in Prospective Studies in Paris (Godet, 1993).

have controlled or altered the system in the past.⁷ This process integrates yet the explicitly of actors' strategies. Construction of the database is followed by construction of the scenarios.

Another example of use of this method of forecasting based on scenario building is the one that the European Commission developed in late 1990s under Jacques Delors co-ordination. The aim was to provide a series coherent visions of how Europe could be developed towards the end of the first decade of the new century, *e.g.*, with a time frame of 2010. There, the option was based on qualitative scenarios and on the narrative style.⁸ 'Five themes were chosen for their capacity to capture and illustrate developments relevant for the future of Europe and its process of integration. They were: institutions and governance; social cohesion; economic adaptability; enlargement of the EU; and Europe's external environment' (Bertrand, Machalski & PENCH, 1999: 89).

A wide international experiment was the methodology used by the UN Millennium study on '2002 State of the Future on science and technology research' that began by asking: 'What are the most important questions to ask about science and technology, given our interest in emerging issues and forces that are likely to influence the future of science and technology programs and their management?'.⁹

Another method was developed by the German foresight process called 'Futur' running on behalf of the German Federal Ministry of Education and Research (BMBF). This was considered as a means of priority setting for future innovation-oriented research policies. The 'Futur' programme is oriented towards the identification and inclusion of societal needs in future research agendas. This foresight process is based on surveys or workshop panels and is an iterative one that be changed if experiences make this necessary

⁷ He proposes starting the scenario development process by constructing of a base image of the present state of a system including a comprehensive, dynamic description of forces or vectors for change. A complete listing of the variables that should be taken into consideration is the next step of the scenario building process, as well as the listing of subdivisions of these variables (*i.e.* internal and external). Then, this step is followed by a search for the principal determinants of the system and their parameters, often using structural analysis.

⁸ Besides the expertise contributed by the participants to the scenario-building exercise, the Forward Studies Unit of the European Commission engaged in an analysis of a number of deepening trends affecting Europe that could be 'set' within the time horizon of 2010. The illustration of the trends was a necessary complement to the scenarios in order to give the reader a multi-sided and more complete picture of the future (cf. Bertrand *et al.*, 1999).

⁹ To this end a meeting was organised with Science Attachés that resulted in the choice of a set of initial list of questions. These were further discussed with the Millennium Project Planning Committee and rated by this study Steering Committee. Based on this feedback, round 1 was designed. Round 1 asked the panel to rate the questions in terms of both their global importance and the priority to their own country. In addition panellists were asked to suggest other questions and to judge some staff-generated answers/actions to address these questions in terms of importance, likelihood and confidence, and, most importantly, to add to the list. The final section asked the respondents about S&T priorities in their countries.

(reflexivity).¹⁰ Based on that, consistent scenarios had to be built and highlighted as ‘pictures of the future’. In fact, scenarios seem helpful for the development and visualisation of lead visions that can be understood as recommended strategies to be followed by the ‘client’ of the exercise.

Another case of foresight method based on scenario building is the Cedefop experience. The recent forecast made by this European institution (Future of Skills in Europe, 2008) adopted a modular approach to explore skill needs focusing four key components (modules).¹¹ From these methods one can have a further idea on the necessary steps for scenario building. Although these methods are rebuilt in different ways, one may agree on the following necessary issues for scenario building method:

- definition of the scenario space: a scenario study begins by defining the domain of interest. This can include visions and scenario topics and themes. These themes emerge from the trends which have been identified by the theoretical framework;
- within each scenario, certain key measures should be described: These measures include issues such as economic growth, political and legislative organisational environment, technology infrastructures, or labour market dynamics, among others;
- a list of ‘events’ also appears in each scenario: of course, the probabilities of the events are different in each scenario, and for example, it can make certain policies (technological, educational, employment, *etc.*) more or less likely to work;
- although some authors prescribe the need for probability analysis and quantitative forecasting for each measure, it seems sufficient to contrast the implications of alternative futures.

¹⁰ The sketching ‘pictures of the future’ and ‘leading visions’ (Leitvisionen) is a guide to innovation-oriented research policy decisions of the German Ministry (major decision maker in the process). Thus, a link to implementation is included in this foresight exercise. Within this method, the workshop participants were asked to write in a mind map what they thought society might look like in the year 2020. The second step was to think about how they own field might develop, written down in a kind of brainstorming (not methodologically strict) session. This part of the process was called trend collection. After the workshops, trend clusters were identified. After the definition of twelve most-wanted topics, focus groups were later formed and had the task of refocussing their topic according to pragmatic criteria, identification of perspectives, driving factors and frame conditions of their area. Being conceived as a participatory process, the participants were selected by the co-nomination method. They stem from a broad variety of professional backgrounds (cf. Cuhls, Blind & Grupp, 2001; Cuhls & Georghiou, 2004).

¹¹ The first key component is a multi-sector macroeconomic model, called E3ME (energy-environment-economy model of Europe). Using the classical Leontief input-output tables, it considers the links between economic sectors. In addition, it takes into account the interactions between the economy, energy supply and demand, and environment (E3), as well as the contribution of research and development, and associated technological innovation, and the dynamics of growth. The second key component is a module which translates the employment projections from the multi-sector model into implications for the expansion demand for occupations. The third module, very similar to the second one, focuses on the implications for formal education attainments. Ideally, the second and third module should relate occupational and qualifications structure to technology and work organisation, price (wage) and other economic factors. In practice, time is the main independent variable acting as a proxy for technological change and other factors. The fourth module estimates the ‘replacement demand’. On the demand side of the labour market it is important to make the distinction between demand that results from future changes in employment levels – expansion demand – and the so-called replacement demand, influenced by retirement, mortality, inter-occupational, geographical mobility and migration. Obtaining robust estimates of migration flows is not straightforward, since available data are rarely adequate, but this module tries to estimate the impact of all types of mobility, including migration.

3.2 From substantial theory to scenarios: the scenario dimensions

As described before, the first step implies the definition of the *scenario space*. Thus, a scenario study begins by defining the domain of interest. This can include visions and scenario topics which emerge from the identification of trends elaborated by the theoretical framework. Also Von Reibnitz (1988) proposes the scenario process as a sort of ‘task analysis’. That includes the main characteristics of the elements which have to be studied.

Within each scenario, certain *key measures* have to be described (*i.e.* economic growth, political and legislative organisational environment, technology infrastructures, or labour market dynamics, among others). But the issues that can be chosen from the development of a set of dimensions related with the central WORKS framework are developed in step 3. That set of dimensions is the following:

- business policy – A:
 - regulation A1;
 - social dialogue A2;
 - labour market A3;
 - branch policy context A4
- organisational and employment structures – B:
 - work organisation at company level B1;
 - flexibility B2;
 - internal labour market B3;
 - bargain B4;
 - benefit system B5;
 - company knowledge requirements B6;
- work patterns and terms of employment – C:
 - work content C1;
 - business function, occupation profile C2;
 - ICT C3;
 - skill policies C4;
- quality of life and working conditions – D:
 - work-life balance – including gender and occupational issues D1;
 - career trajectories D2;
 - training D3;
 - quality of work D4;
- policy of working life – E:
 - cultural values E1;
 - norms and regulations E2;
 - globalisation factors E3;
 - national policy context E4.

In this characterisation it seems important to know that one of the central aims of the WORKS project is to understand how the relationship between changes taking place at the level of the global economy and changes taking place at the workplace level (cf. Birindelli *et al.*, 2007: 13). Having this in mind it is possible to develop the following assumptions related with these dimensions:¹²

¹² They are based on the case study reports (business functions cases and occupational case studies).

- *business policy - A* (regulation; social dialogue; labour market, branch policy context). A major assumption is that there is a shift of certain business functions to other sectors through processes of concentration and outsourcing and to other regions through the relocation of activities. There are ambivalent developments about the relevance of increasing the growth of flexible employment on different levels (organisation, time, contract);
- *organisational and employment structures - B* (work organisation at company level, flexibility, internal labour market, bargain, benefit system, company knowledge requirements). Restructuring of value chains implies that the division of labour may change at the level of the work organisation within the firms, as well at the individual workplace level. Key issues are new processes of standardisation of work, specialisation of work into separated fragmented tasks, new forms of division between the high-skilled work and low-skilled work, the management co-ordination and control mechanisms, and the balance between autonomy and forms of workers participation;
- *work patterns and terms of employment - C* (work content, business function, occupation profile, ICT, skill policies). Technological innovations and a growing pressure from markets may affect the job content and the autonomy of workers, both with respect to job content and time use;
- *quality of life and working conditions - D* (work-life balance, career trajectories, personal valorisation, training, quality of work). Changes in the division of labour along the value chain, in workflows, in control strategies *etc.* directly have an impact on day-to-day work practices with possible consequences for all dimensions of the quality of work. Here, specifically the reconciliation of working demands and family needs seems crucial;
- *policy of working life - E* (cultural values, norms and regulations, globalisation factors, national policy context). Restructuring refers to legal/contractual and/or geographical changes at the level of the value chain: on the one hand processes of outsourcing, in sourcing mergers (legal dimension) and on the other hand the relocation (spatial dimension) of business functions. Trends with respect to the contractual dimension and related work (in) security refer to the separation between core and peripheral work, as well as the quality of working life.

One of the most challenging tasks in scenario methodology is balancing the dimensions, because not all issues have the same level of influence. 'Within each scenario, certain key measures are described. These measures might include forces such as economic growth, legislative environment, technology diffusion and proliferation, or competitive capability, among others. The key measures need to be selected with care. They should have the potential for great impact on the outcome of the scenario; a factor is largely irrelevant if it could develop over a wide spectrum of future values but have little impact on the issue at hand. Every scenario in the set will include projections of the same measures' (The Futures Group, 1994: 6). Such 'key measures' can be understood as possible predictors.

For the dimensions we choose between four and six key measures¹³ and for all (including the key measures/variables of each), is possible to give an immediate *weight* (even

¹³ Dimensions from A to E, but one can choose more or less dimensions. In this exercise we used 22 measures for those five dimensions.

qualitative) to those variables.¹⁴ This weighting process should lead to the need of a choice of fewer key-dimensions or fewer key variables to understand a better influence in the trend process. ‘Regulation’ or ‘Work-life balance’ cannot be compared with or weighted against each other. However, if one collects a large variety of ‘impressions’ from the opinion of the experts panel (based on national, regional or branch features) or subjective dimensions (at present and in the future), it could be possible to assess a weight to every condition. In the following table these different dimensions have been elaborated.

Table 3.1 Weighing instrument, scenario dimensions

Dimension/key variable	Very important		Important		Less important	
	At present	In future	At present	In future	At present	In future
<i>Business policy - A</i>						
Regulation - A1						
Social dialogue - A2						
Labour market - including gender and ethnicity - A3						
<i>Organisational and employment structures - B</i>						
Work organisation at company level - B1						
Flexibility - B2						
Internal labour market - B3						
Bargain - B4						
Benefit system - B5						
Company knowledge requirements - B6						
<i>Work patterns and terms of employment - C</i>						
Work content - C1						
Business function, occupation profile - C2						
ICT - C3						
Skill policies - C4						
<i>Quality of life - D</i>						
Work-life balance - including gender, institutions and occupational issues - D1						
Career trajectories/personal valorisation - D2						
Training - D3						
Quality of work - D4						
<i>Policy of working life - E</i>						
Cultural values - E1						
Norms and regulations - including ethnicity - E2						
Globalisation factors - E3						
National policy context - E4						

This weight could be provided by the results from the WORKS project. Nevertheless, one objective should be to provide the major participation in terms of weight for indicators considered as more important or relevant. The larger number of participants the more accurate will be that balance of the importance of variables and their occurrence (at present, or in the future).

¹⁴ Like ‘yes/no’, ‘0=exist/1=don’t exist’; ‘0=no, 1=some, 2=high, 3=very high’.

In a first phase it was thought planned that all the researchers involved in the WORKS project participate as experts on the assessment of this foresight exercise. That would not mean a Delphi panel, but experts could give possible measures to the appointed dimensions. When that was proved to be not possible due to several reasons, most of the information used here was based on the organisational and the occupational case studies.¹⁵

As Abberger (2007: 8) mentions in his working paper, it is possible to establish a number of possible predictors related with some industrial sectors as presented in the following example:

- manufacturing: current business situation, expected change of business situation, assessment of stock of orders, stock of orders compared to last month, assessment of stock of finished goods, demand situation compared to last month, production compared to last month, production plans;
- construction: current business situation, expected change of business situation, development of construction activity, expected construction activity, stock of orders compared to last month, assessment of stock of orders;
- wholesaling: current business situation, expected change of business situation, turnover against same month last year, assessment of stock of orders, order activity;
- retailing: current business situation, expected change of business situation, turnover against same month last year, assessment of stock of orders, order activity.

As this author clarifies, 'since the number of possible predictors is quite large when all the questions for the four sectors are included, one can try to extract the contained information in a few principal components. Principal components is a classical method of multivariate statistical analysis' (Abberger, 2007). Thus, the same procedure was applied to the analysis of the sectors and branches chosen by the WORKS project in the qualitative studies. In such way, the information of the context of those studies was given by the quantitative analysis (Birindelli *et al.*, 2007).

3.3 Dimensions, events, variables and trends: choosing the elements of a scenario

Generally, a *list of events* will always appear in each future scenario. Those events are occurrences that might happen in the future (in the short-term or mid-term) and can influence one or several dimensions or key variables. The relationship between such events and the periods considered in each scenario is of high relevance for scenario building. For example, one can consider that a drastic increase in food price can occur in the mid-term, and that can influence on larger waves of immigration to New Member States (NMS). On the long-term, the configuration of the labour markets in those countries can change, with an increase of cheaper labour force. Such possibilities, if anticipated, can motivate employers to intensify the transplanting of manufacturing activities (or cheaper services) from West and Central Europe to the Eastern countries.

The probabilities of trends are different in each scenario, and can strengthen very much certain policies (technological, educational, employment, *etc.*) distinctively. In other

¹⁵ More exactly, the information used for the scenario building is described in the two following reports: Flecker, Holtgrewe, Schönauer, Dunkel & Meil (2008) and Valenduc, Vendramin, Krings & Nierling (2008).

words, the resulting events or consequences of the relation of variables and trends must be assessed appropriately. Expected policies should be designed to prevent or face problems that (probably) will occur. For different scenarios one should test different types of policies to evaluate the results from different policies (see Chapter 2).

To contrast these trends it is possible to choose more 'positive' scenarios with 'dramatic' events where 'intelligent' policy decisions could be made in order to prevent 'negative' consequences. Or 'pessimistic' scenarios with innovative events where confused or short-term decisions would be made and provoking 'negative' consequences that would affect further generations. Obviously, all possibilities can be generated and anticipated. The crucial point seems to create a relationship between the different variables. In order to generate scenario dimensions which are based on the quantitative and qualitative results of the WORKS project.

The scenarios developed here include four dimensions, related to the four main variables of the presented model. These dimensions are integrated into the most possible model of work in the knowledge society:

- A. an increased focus on the policy context (variables A1, A2, A3, B4, B5, E1, E2, E4);
- B. the economic context of the changing processes (variables E3, C1, C2, B6). This dimension may have to be developed further;
- C. company level strategies, with three sub-dimensions, as follows:
 - skill formation (variables D3, C4, B3);
 - working time arrangements (WTA) and contractual conditions (variables C3, B2);
 - value chain restructuring and work organisation (variable B1);
- D. Outcomes: quality of life (variables D1, D2, D4);

The change from the first proposal of assessing the chosen key variables (five, from A to E), can become now a new order of four dimensions, as it is shown in Table 3.2.

The analyses of the organisational and occupational case study results enable us to outline the relation between the changing economic and political context of companies and the strategies with regard to work organisation. In Chapter 2, we discussed the strategic responses of companies in *differentiated* economic and policy contexts. The level of analysis was the business function within companies. This analysis generated an understanding of the varying influences of different types of companies' changes in different branches and in different institutional settings.

This part of the analysis provided the building blocks of policy-oriented scenarios. It enables the identification of politically adjustable variables and their effects. In other words: it supports the understanding of the effects of changes within the institutional regulation of work and therefore the probable effects of feasible scenarios of policy changes, which are identified.

After the changes of policy issues, common contextual trends that were visible in most case studies are discussed in the next section. The level of analysis, here, is the level of variables/dimensions. Based on these dimensions, changes in the environment of companies occur. Although distinguishing to what extent these changes occur in varying economic branches and in varying institutional settings, there is no reconstruction of the relation between context characteristics and responses. Generally, the analysis generates a rough understanding of the changing pressures companies have to face in knowledge-based societies and their strategic responses towards these pressures.

Table 3.2 New configuration of the key variable grouping

<i>Dimension/key variable (proposal 1)</i>	<i>Dimension/key variable (proposal 2)</i>
<i>Business policy A</i>	<i>Policy context</i>
Regulation A1	Regulation A1
Social dialogue A2	Social dialogue A2
Labour market – including gender and ethnicity A3	Labour market – including gender and ethnicity A3
<i>Organisational and employment structures – B</i>	Bargain B4
Work organisation at company level B1	Benefit system B5
Flexibility B2	Cultural values E1
Internal Labour Market B3	Norms and regulations – including ethnicity E2
Bargain B4	National policy context E4
Benefit system B5	<i>Economic context</i>
Company knowledge requirements B6	Company knowledge requirements B6
<i>Work patterns and terms of employment – C</i>	Work content C1
Work content C1	Business function, occupation profile C2
Business function, occupation profile C2	Globalisation factors E3
ICT C3	<i>Company level strategies</i>
Skill policies C4	Internal labour market B3
<i>Quality of life – D</i>	Skill policies C4
Work-life balance – including gender, institutions and occupational issues D1	Training D3
Career trajectories/personal valorisation D2	Flexibility B2
Training D3	ICT C3
Quality of work D4	Work organisation at company level B1
<i>Policy of working life – E</i>	<i>Outcomes: quality of life</i>
Cultural values E1	Work-life balance – including gender, institutions and occupational issues D1
Norms and regulations – including ethnicity E2	Career trajectories/personal valorisation D2
Globalisation factors E3	Quality of work D4
National policy context E4	

3.3.1 Qualitative information on the scenarios key variables: analysis from the organisational and occupational case studies

Restructuring of work in knowledge-based societies, basically, imply many forms of consequences for sectors, companies and individuals. These have to respond to a diversity of opportunities and constraints emerging from the policy and economic context. The indicators developed below have the purpose to help finding the drivers of change. Taking into account the conclusions of the synthesis reports from the case studies the general tendencies are: fragmentation of employment, standardisation and formalisation of work, emergence of new functions and work roles, acceleration of work process, shortness of time horizons, bigger heterogeneity of business processes and intensification of work, decrease of work organisation structuring on the basis of production requirements and increase on the basis of customer demands (cf. Flecker, Holtgrewe, Schönauer, Dunkel & Meil, 2008; Valenduc, Vendramin, Krings & Nierling, 2008).

The scenarios include four dimensions related to these variables that can be divided into four main groups: (1) the policy context, (2) the economic context, (3) the company level strategies and (4) the outcomes to the quality of life. There are some significant differences between sectors and also between countries (especially between Scandinavian

and Southern countries). In some of these variables, more accentuated in public sector, where institutional context play a bigger role. However, it is possible to see that in some variables there are some common trends between sectors and countries, due to the weight and importance of the economic context. According to some conclusions of occupational case studies one can say that this increasing economic pressure affects all workers groups in different ways. The main consequences are speeding up processes and work intensification (designers), market orientation and broadening of skills (ICT workers), flexibilisation of production modes and higher level of insecurity (production workers) and customer orientation as in market services or public services (cf. Valenduc *et al.*, 2008).

The empirical information was collected from the synthesis report of organisational and occupational case studies developed from the 58 case studies carried out in some selected business functions: research and development, production, logistics, customer service and information technology. Inside each business function some occupational groups were also analysed: designer, R & D, production workers, skilled and semi-skilled workers, front-office employee and IT professionals (as mentioned in the beginning of this report). In Annex 1 it is possible to find detailed information about these summarised trends and features.

3.3.1.1 Policy context

A1. Regulation

Generally, there is less information about this variable in the case studies; nevertheless it is possible to observe some differences between sectors. In IT sector there is a low level of regulation and no collective agreement (with the exception of the Austrian case), which reflects a strong individualisation in the attribution of benefits and bonus and in some cases of the fixed salary. On contrary, in the food industry as well as in the public sector most companies are traditionally embedded into collective agreement, although due to restructuring a large number of public organisations are no longer covered by the same collective agreement.

Trends: strong individualisation and low regulation in 'new' sectors; still high importance of collective agreements in 'traditional' sectors; a trend to less regulation in public sector due to restructuring and privatisation.

A2. Social dialogue

There is no substantial difference between countries with regard to social dialogue. The main differences are between sectors, with the exception of public sector. In 'traditional' sectors, like food and clothing, the union density is high in all the studied countries (with the exception of Norway). Although due to restructuring processes the power of unions is getting weaker. Among the production workers the feeling of co-operation and collectiveness seem still very strong but is not necessarily related to unions anymore. Unions' bargaining power is very limited in the clothing industry; the main decisions of reorganising work and restructuring are taken by the companies without participation or influence of unions. In IT industry there is a low participation or representation in formal structures of industrial relations (with the exception of UK and Sweden). In the case of IT researchers

main reasons pointed-out are better conditions and high wages if they are negotiating individually. Fixed or regulated working times seems not a priority for the employees. Social dialogue in the public sector differs very much in each country, reflecting the diversity of national models of industrial relations and labour regulation. In general, there is a high level of collective representation in most cases and unions were involved in the processes of restructuring.

Trends: 'traditional' sectors are very much unionised although the unions are getting weaker; in IT industry social dialogue and representation do not have a high importance; in public sector unions are strong and still play an important role on bargaining processes.

A3. Labour market

Between 1996 and 2004 employment in clothing industry declined 32 *per cent* in EU-15 and 15 *per cent* in NMS. In the same period in IT sector employment increased 106 *per cent* in EU-15 and 48 *per cent* in NMS, although still represent a low share in total employment. Also in public sector employment had increased, 5.8 *per cent* in EU-15 and 7 *per cent* in NMS, but with large differences between countries. Food industry is the largest sector in EU, employment in R&D has a very low rate (as well as in clothing industry), and logistic is gaining importance.

Trends: decline of jobs in clothing sector, especially 'blue-collar' work; a substantial increase of jobs in IT industry; a small increase of employment in public sector, although strongly connected with national policies.

B4. Bargain

The four sectors of the business functions have some common characteristics: employment in subcontractors' companies and outsourcing processes which go ahead with more often precarious conditions and atypical contracts (part-time, fixed-term, overtime). In formal employment conditions little change appears with regard to restructuring. Most of the employees with permanent full-time contracts have maintained their working conditions. In clothing industry the companies investigated showed an increase of irregular working time. In IT industry the working time also appears quite stable with regular working weeks of 38-40 hours, but there are some characteristics due to project work quite usual in this sector. In the food industry most of the workers work full-time, although there are a variety of innovative working time arrangements that were created because of the seasonal fluctuation and companies often try to solve this problem with temporary work force during peak periods. In public sector there are notorious changes of employment due to privatisation and outsourcing of activities to private companies. Here flexible working pattern very often changed towards stable working hours. As a very female dominated sector the part-time form of work is often used.

Trends: in all sectors permanent full-time employment prevails, with a trend to become atypical, flexible and precarious development of core and peripheral working structure in subcontractors companies and private ones.

B5. Benefit system

There is no relevant information in the case studies about this variable, only a few examples: in clothing sector, the downsizing mostly has taken place with few actual redundancies; in IT industry, R&D workers are involved in employment contracts whereas the professional careers are based very much on individual performance (annual evaluations).

E1. Cultural values

There is very few information about this variable in the case studies. It can be relevant to underline that the level of part-time has created a certain working culture among women in Germany and Austria. Aspects related to working culture in a Danish case study of the food industry can be interesting to understand some differences in the behaviour of generational groups in the same company.

E2. Norms and regulations

Also in this variable there are just a few examples: in food industry there was created a single market in EU with specific rules, and in clothing sector there was the liberalisation of trade and the Multi-fibre Arrangement (MFA) during the 1990s. Both acknowledged large implications in their specific sectors, either in technology or in employment levels.

E4. National policy context

There are some specificities of each country' policy that can be found in the case studies: in clothing and food industry work is embedded into each national institutional context. Main national differences can be detected between the institutional arrangements of the Scandinavian countries and the Southern countries in Europe. These differences seem more apparent in the public sector where restructuring reflects the history of the different countries.

3.3.1.2 *Economic context*

E3. Globalisation factors

In clothing sector one may observe a common trend in all case studies: a concentration in the core activities and outsourcing processes of non-core or peripheral activities. There is an increasingly relocation of production to low-cost countries and the value chain is becoming highly-fragmented and internationalised. Some examples: French clothing company (*Adele*) only kept a small pilot production unit with strong technical skills in France and outsourced all the production to Eastern countries; the Italian company (*Green S.p.a*) carried out the highly-quality products, but the production of samples has been outsourced to Italian subcontractors; the German business (*Menswearco*) had outsourced the production to Poland and Romania in the 1990s; *Copy Fashion* has managed to keep high-quality production in Hungary while low-quality products are now manufactured in Romania and Bulgaria. In IT industry one can see different forms of restructuring and an

emergency of global companies' suppliers of services to other companies, the complexity of the value chain and the internationalisation and transnationalisation of companies. Nevertheless there is a clear trend to outsourcing low-skilled work or at least keeping the most knowledge-intensive work at the headquarters. There is a shift in production activities toward Eastern and Southern Europe, but due to the demanding of food production and quality control, France, Germany, Italy and the UK are the leading producers of food and drink, accounting for 70 per cent of total EU turnover. In public sector there is recent large-scale outsourcing motivated by the increase of customer orientation, rationalisation and reduction costs. Generally, the restructuring takes different forms: *IT outsourcing*: private IT service provision for public administration organisations; *centralisation*: IT outsourcing to newly established, central IT service provider in public ownership; *business-process outsourcing*: public organisations outsource back-office functions to private companies; *public-private partnership*: joint technology development and application.

Trends: restructuring takes many forms and differ meaningfully between sectors. In clothing sector there is a clear trend to outsource production activities to low-cost countries; in food industry there is also a trend to outsource lower skilled work, but in restructuring was considered the proximity to markets due to constraints of the sector and the demands for quality; in IT sector there is an emergence of global supply companies and the increased internationalisation and complexity of value chain; in public sector outsourcing become common especially in specialised services like IT or tasks that can be standardised, for example, in the call centres.

C1. Work content

Both workers from clothing industry and IT industry felt changes in their work content due to the new policy of companies – market and cost orientation.¹⁶ All occupational profiles refer an intensification of work and higher demands on flexibility, at the same time often a change of tasks. New skills are needed related to customer orientation and commercialisation: communication, marketing, foreign languages, etc. Designers and IT researchers also refer to stronger standardisation and limitation of their creativity due to this market and customer orientation policy. In food industry, work is often very simple, monotonous and repetitive, workers at the level of production experienced the effects of restructuring very indirectly. Most workers reported that their job content did not change significantly; restructuring has not resulted in broader, more challenging jobs. Like in other sectors, the general outcome has been increased standardisation and some flexibility in time use. In public sector, the outcomes from the case studies are very different, although it is possible to observe an increase move toward market and clients. In some cases there is an increase of standardisation (in Swedish and UK cases) and on others an increase in knowledge intensity (in German and Austria cases).

Trends: in all sectors there is a move to market and client orientation and an intensification of work and higher demands of flexibility; work content in food industry did not change significantly; in public sector it is not possible to refer a common trend.

¹⁶ The information collected from the synthesis reports made no significant distinction about high and low qualified workers in this point. It is referred this intensification and the increase of flexibility in all occupational groups, but with big differences within the countries. It is possible, however, to give more detailed information for each group.

C2. Business function, occupation profile

In clothing industry the majority of production workers have a low level of skills (like in Portugal), and technical and specific skills in majority of cases. Designers have a high school specialisation. In IT sector the university degree is a prerequisite for entering a career as IT professional, but through the shift towards market demands the profile of workers has been diversified. Technical skills are the precondition for this profession but managerial as well as communication skills have gained importance. The food industry has invested in automation of production, process and logistic functions, increasing capital utilisation and changing skill demands, although remains quite traditional and low-skilled. The content of work in the food industry has remained quite stable over the years. In public sector, once again, due to the diversity of cases it is difficult to find common trends, although it is possible to observe about IT service provision that crucial knowledge tends to move from the public organisation to the service provider, and there is a creation of new functions and work roles for liaison and co-ordination tasks. In services of general interest it is possible to observe that customers become part of the value chain (self-service) and customer-service functions have now become explicit tasks. For 'core' employees, changes are mainly perceived as limitations, rarely as opportunities; for 'peripheral' employees, there is no organised career path. Career trajectories are more and more characterised by mobility and flexibility, which has to be managed by the individuals.

Trends: in clothing industry there is a large difference between production workers and designers, but both fell the impact of restructuring; in IT sector there is a change in skills needed, not only technical ones but also non-technical; in food industry despite some investments in automation and skills, the sector remains traditional and low-skilled; in public sector there is an increase importance of the client, privatisation and outsourcing of some functions (IT service, customer contact, telephone service, back-office service).

B6. Company knowledge requirements

There is no clear evidence in the case studies about this dimension. Only in IT industry it is possible to find some information: the demands on the knowledge are high and there is a necessity of continuous learning. Also new technical skills for the designers' occupational groups are increasing rapidly. There is some specificity towards thematic fields.

3.3.1.3 Company level strategies

C3. ICT

In both, clothing and food industry, the use of ICT allowed the restructuring of work processes and the outsourcing and internationalisation of various business functions. For production workers it seems that daily work routines have not much changed due to the introduction of new techniques and machinery. Only few workers, often those that already have a higher position, were challenged by new tasks and enjoyed corresponding training opportunities. The main concern of dress designers for their future is the risk of growing standardisation, driven by market reorientations and supported by software

tools. In food industry the implementation of ICT in some cases represented an increasing Taylorisation of work processes (in Denmark), in others an improvement in work content and reduction of the amount of repetitive manual labour. In public sector there is an increasing trend towards self-service, a way of involving the customer in the value chain, heavily dependent on information technology. The main implication of the increasing use of ICT tools is the standardisation of tasks and knowledge.

Trends: in food and clothing industry the use of new technologies doesn't have a big impact on structure of work; it allows the outsourcing of production; there is a trend towards standardisation and Taylorisation in some cases, and in others an improvement of work content and less repetitive tasks. But generally there is a higher temporal pressure.

C4. Skill policies

In clothing sector, off shoring and relocation of the more standardised and repetitive functions rarely meaning deskilling in the studied cases. Instead, the remaining production workers' skills have been upgraded and expanded with required of new generic skills like: communication with customers, foreign language skills, basic IT skills, *etc.*¹⁷ In this sector qualification takes place as 'training on the job' and is received via a long work experience. In IT industry the levels of skills of employees brought into the companies are very high in all cases – usually high level university or post graduate degrees and levels of specialisation and concentration within one IT area of expertise are also very high. Like in clothing sector the restructuring process did not lead to a decrease in opportunities for skill acquisition or development. However, it has led to a shift in the types of skills that employees are expected to possess where skills development and training are characterised by a strong individualisation. In food industry the levels of skills and education is quite low, although there are significant differences between countries.¹⁸ Nonetheless, there are aspects of work that are quite knowledge-intensive, for instance in the R&D function, with the introduction of new techniques (genetic bio-technologies, freezing techniques, use of flavouring or chemical additives) and also, in logistics, as worldwide distribution networks are highly-computerised. In public sector it is difficult to find some common characteristics due to the diversity of the case studies.¹⁹

Trends: there is no single model of skill policies. In clothing sector deskilling was not felt due to restructuring and new skills were required; in IT sector the majority of workers have already a high level of education, changes are related with the acquisition and development of non-technical skills (like communication and managerial skills); food

¹⁷ Cf. from the synthesis report: 'Overall, with the off shoring and relocation of the more standardised and repetitive functions there is rarely any deskilling to be observed in our cases. Instead, the remaining production workers' skills have been upgraded and expanded', and in addition, 'the fragmented value chains require new generic skills across board: communication with customers (...), language skills, management skills' (Flecker *et al.*, 2008).

¹⁸ For example, in Denmark there are 1,450 workers of which 1,136 are semi-skilled or skilled in contrast with the cases from Southern or Eastern Europe, where workers are basically categorised as unskilled, although they do acquire a large amount of tacit knowledge for their work on the job.

¹⁹ The software developers in UK's case experienced restructuring as deskilling; in the German case, while the private IT company has a very high qualification level, on the side of the public organisation – the police force – people had only internal training as police officers; in the Dutch case the municipal worker experienced deskilling related to the legal-substantial aspects of their work.

industry still being characterised by quite low-skilled work force with significant differences between countries; in public sector there is a large diversity of situations.

B1. Changes in work organisation

In clothing industry there is a general trend in concentration on core activities and in outsourcing non-core activities like production and other business functions (for example, partly logistics). The selection of subcontractors is based on different criteria (quality, flexibility, small batch sizes and short delivery times, and geographical proximity). All companies in the sample have passed through considerable downsizing, and also have to deal with the overall acceleration of business activities and workflows. Food industry is highly-automated and is strongly embedded locally (although most companies are big corporations). Restructuring goes into all possible directions, we see outsourcing and subcontracting as well as centralisation and takeovers. In IT industry work is generally organised in projects and teams. There is a general feeling of speeding up with time horizons increasingly matter. Increasing cost emerges as a matter of definition and locations are encouraged to pool specific competencies. In public sector, cost efficiency has become crucial to survival. Also increasing customer orientation and the rising need for efficiency are other important factors behind restructuring processes. Central aspects of the restructuring observed in the various cases have been the reorganisation of the workflow, new division of labour and the establishment of new services. Most common has been the outsourcing of customer services that can be standardised, formalised as well as technically empowered. But also IT business function in order to guarantee the necessary expertise, reduce development costs and increase the speed of difficult developments. Restructuring has partly been followed by an increase in employment and partly by staff reductions and the dominant trends are standardisation and intensification of work regimes.

Trends: there is no single model of work organisation. In food and clothing industry the general trend is a concentration towards knowledge-based activities, downsizing and outsourcing production; in food industry restructuring takes many forms, but is still quite traditionally organised; in IT there is a specialisation of locations in specific knowledge and competencies; in public sector there is a general trend towards outsource customer services that can be standardise and towards IT based services; in all sectors there is a strong reference towards the intensification and acceleration of work.

B2. Flexibility

In all sectors the results show an increase of flexibility with regard to temporal, functional and contractual work organisation. In clothing industry there is a demand for increasingly rapid production pattern that often results in a speeding up of work processes, for example in longer working hours and in high demands on temporal flexibility. In the case of designers, besides speeding up processes companies tend to use more flexible design

work force, preferring freelance contracts instead of fixed employment contracts.²⁰ In IT industry, the demand for flexibility and mobility for the individuals is increasing due to global restructuring. In food industry, the demands for flexible employment is very high and some of this flexibilisation demanded, due to time and cost pressures, results in the use of outsourcing and subcontracting of poor working conditions outside the main production. In public sector, there is strive for functional flexibility in all case studies of front-line workers. The newly established jobs in call centres, outside the public sector, show quite similar employment conditions to those in the private sector and minor changes in working time regulations are spreading: working one hour longer without being paid for it, working at weekends, and overtime work as a rule.

Trends: there is a general increase in the use of flexibility; in clothing sector there is a trend to work longer schedules and to intensify work processes; in IT industry the demand for flexibility also is increasing; in food industry this demands are already very high; in public sector there a strive for functional flexibility and also a trend to import more flexible working conditions from the private sector.

B3. Internal labour market

In clothing industry speeding-up processes, the increasing time pressure, the decline of blue-collar work and employment rate are common current trends. Dress designers and production workers are mainly feminine but the normative model for the organisation of work still seems the 'male breadwinner model' in all countries. It is characterised by a very labour-intensive and a low level of automation. In contrast, in IT industry, the employment effects have been mainly positive and the small companies have remained either stable or increasing in size. General trends in the evolution of the software business are standardisation, internationalisation, customer orientation and speeding-up of work. In all the cases restructuring weakens the guarantee of job security. It is a male dominant occupational group and predominantly white-collar sector. The food industry had a relatively stable development and there is an evidence of ongoing automation in the industry with an increasing number of skilled factory workers, however in all case studies the formal education level of the production workers is low. Public sector is characterised by a rather modest qualification level and often very heterogeneous background. Most employment in the public sector is characterised by high job security, although restructuring processes leads in majority of cases to more flexible, but often more constraining, working time management; systematic staff reduction and increased work load; weaker job security and fragmentation of workers' status.

Trends: there is a general trend towards intensification of work, speeding up processes as well as market orientation. In clothing industry general trends are: speeding-up processes, decline of production and lower rate of employment; in IT industry the trends are: standardisation, internationalisation and speeding-up the work processes; in food industry changes are not that relevant, with regard to working conditions. Nevertheless

²⁰ Cf. from the synthesis report: 'Changes of employer (or of principal contractor for freelance designer) or changes of positions are considered quite normal. They can be explained by three categories of factors: individual creativity; career progression; consequences of restructuring' and 'Companies tend to use more flexible design work force, preferring freelance contracts to employment contracts' (Valenduc *et al.*, 2008: 35 & 37).

through the introduction of new technologies work rationalisation has been taken part with different consequences for the workers. In public sector there is a decrease of job security and staff reduction in general.

D3. Training

In clothing industry, formal training is very rare. Work experience and ‘learning by doing’ is therefore the most important way for further training. In IT sector there are some programs for formal skills acquisition, although training in the companies tends to be on-the-job. Learning and skills development is an integral part of the work and the necessity of lifelong learning is part of the self-conception of the R&D workers. Two patterns of skills development coexist in all case studies: informal learning and formalised training. In food industry training is on-the-job by watching and trying and kept to the minimum in all the cases, with the exception of Norway where the less skilled production workers are encouraged to obtain a completed certificate of apprenticeship. In public sector there is a one side good training opportunities for IT workers in service provision, and a lack of training to front-line workers that mentioned the learning by doing as a source of gaining the appropriate skills.

Trends: in general there is a lack of training policy in several countries, with an increasing use of eLearning as a support for self-training in public sector;²¹ ‘learning by doing’ is the most common way of training and acquisition of skills; the IT sector and some manager positions in the others sector are the only ones who have significant opportunities of formal training.

3.3.1.4 Outcomes: quality of life

D1. Work-life balance

In clothing sector 90 *per cent* of workers are women.²² Especially for designers work-life balance seems an issue because of flexible demands on the work level. Traditionally, there have been blurring boundaries between work life and private life but through restructuring it seems that this situation has been intensified. In none of the analysed cases the firms offered special family-friendly settings. However, in some cases formal as well as informal working time arrangements were provided in order to ease the combination of work and family. In IT industry, women were underrepresented at high levels of qualification and no case study mentions any family-friendly policy in the studied companies, with the exception of Norway. Nevertheless a fair amount of flexibility exists in arranging working schedules that may help both women and men to arrange family responsibilities. In food industry, case studies show that there is pronounced segregation according to gender in most companies. Women dominate the more monotonous jobs while men perform all technical and more advanced tasks. In neither of the firms special family-friendly setting were provided. However, in general no major difficulties regarding the combination of work and family were reported. In public sector, women in white-collar positions, com-

²¹ Cf. from synthesis report: ‘There is a lack of training policy in several countries, with an increasing use of eLearning as a support for self-training’ (Valenduc *et al.*, 2008: 157).

²² Cf. from synthesis report (Flecker *et al.*, 2008: 23).

pared to other business functions, over-proportionally dominate customer services. The only cases that mention the existence of family-friendly policies within the organisations are the British and Belgian cases.

Trends: in none of the sectors there is a policy that conciliate work and private life; in all the cases there are different forms of working pattern that allows workers to combine work and private life; women dominate in clothing sector and in less skilled work on food, IT industry and public sector; men dominate IT industry and skilled and technical work in food and clothing industry. Generally, the dominance of either men or women is reflected by working time structure. Reconciliation of work with family needs is basically managed by women in all the analysed countries.

D2. Personnel valorisation/career trajectories

There is no significant information about this variable in the case studies. There is some information especially about designers and IT developers, however, we did not find it relevant with regard to the construction of trends for scenarios building.

D4. Quality of work and working conditions

In clothing sector there a general feeling among production workers of the increase of instability, unpredictability and insecurity. Working conditions become increasingly pressurised in general and for designers the speed of production, working hours and stress have increased. The level of job satisfaction of production workers is generally low due to monotonous and repetitive tasks and payments are also low. In IT industry most of the employees have a standard employment relationship as well as standard working week (although flexible) and generally, the restructuring processes have not changed employment conditions. Workers are generally satisfied with their working conditions, despite an increasing workload to internationalisation of markets and worldwide competitiveness and the increase formalisation and standardisation of procedures. In food industry the attempt to respond quickly to market demand has led to increased pressure for efficiency and speed in all the cases, additionally the growing attention to customer demands for more flexible working time arrangements. In public sector there is a diversity of situations, but in general employment contracts at subcontractors are mostly fixed-term or even freelance contracts, which have very low employment security, lower salary and negative effects on individual social security compared to the contracts of employees in in-house departments. In general the restructuring processes had lead to: staff reduction and correlative increased workload lead to higher time pressure; the increase of the number of temporary jobs or freelance contracts; the introduction of new management methods to measure or enhance the performance of workers; an increasing limitation of the labour market/career opportunities; the orientation of function to customer, leading to hire people with special background.

Trends: in all sectors the speeding up of work has been introduced; production workers have an increasing feeling of job insecurity and instability. In IT industry the working conditions are good; in public sector there is a trend towards staff reduction and towards less 'secure' (stable) jobs.

3.4 Clarifying trends: some methods

In order to use the issues chosen for a scenario, one should identify the main components that are considered as important to understand the changes, and observing and defining the relations between them. With this information it will be possible to identify some future trends in European countries.

After collecting the information from the qualitative and quantitative data, we can analyse which indicators have major relevance and how the relation skips between the different indicators, can be assessed. This step can be done with an experts' panel. In this step one can build up a matrix to enable an interpretation of influences (active and passive) of the different dimensions, which could have the following appearance:

Table 3.3 Active and passive influence of the scenario dimensions

Dimension/key variable	A	B	C	D	Active total
Policy context - A	X	bA/Ab	cA/Ac	dA/Ad	Ab+Ac+Ad
Economic context - B	aB/Ba	X	cB/Bc	dB/Bd	Ba+Bc+Bd
Company level strategies - C	aC/Ca	bC/Cb	X	dC/Cd	Ca+Cb+Cd
Outcomes: quality of life - D	aD/Da	bD/Db	cD/Dc	X	Da+Db+Dc
Passive total	aB+aC+aD	bA+bC+bD	cA+cB+cD	dA+dB+dC	

* Scale of influence factors for the network matrix: 1=no influence; 2=weak or indirect influence; 3=strong or direct influence.

If necessary, it is possible to include all the other key variables ($A_1, A_2, B_1, C_1, \text{etc.}$), and generate also a more complex network matrix. But we attain to these four main dimensions (A, B, C and D). Here *active* influence means B can influence (strongly, weakly or having no influence at all) A (Ba), can influence C (Bc) or D (Bd). The same happens with A (can influence B - Ab, or C, Ac - or D - Ad). A *passive* influence means that A is influenced by B (aB) or by C (aC) or even by D (aD). And to influence can be much stronger than to be influenced. Or on the other way round, in some circumstances or in some dimensions, to be influenced can be much stronger (or have larger impacts) than the influence that some dimensions can have. In that way we can identify the driving forces of changes. Let's take an example filling such matrix (it could be done for each industrial sector under study in WORKS, or for each country, or even for each region).²³ This filling up process can be related either to 'business functions', 'occupational profiles' or even to supra-national regions or industrial sectors. We think it would be difficult to be used in a very wide or general way, but it would be better understood if applied to a more concrete field or area.

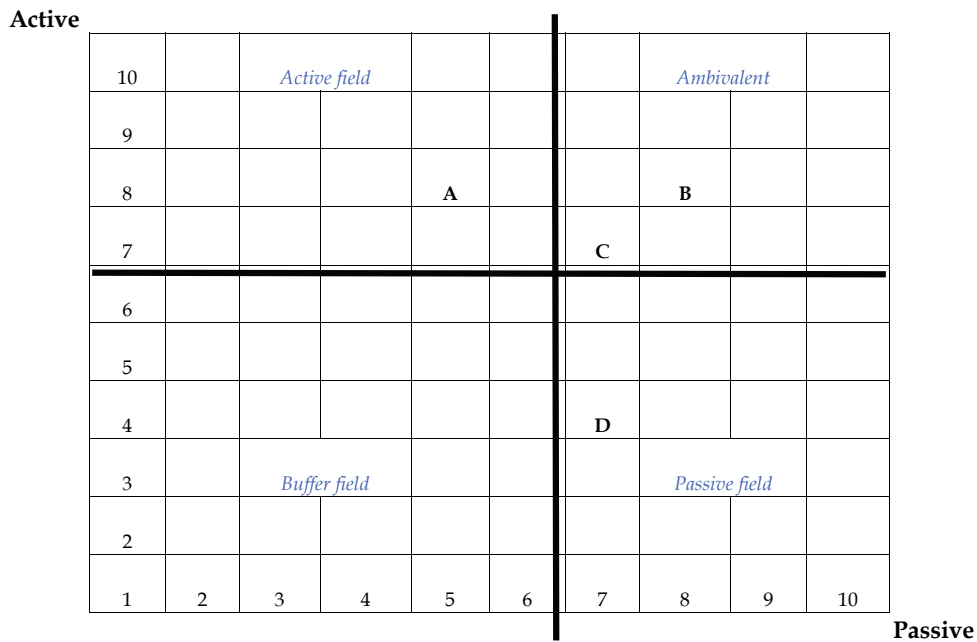
²³ 'Passive' and 'active' is related to the fact that a dimension have the influence over another one (active) or is influenced by another one (passive).

Table 3.4 Result of active/passive influence of scenario dimensions

Dimension	A	B	C	D	Active total
A	X	3	3	2	8
B	3	X	3	2	8
C	1	3	X	3	7
D	1	2	1	X	4
Passive total	5	8	7	7	27/4=6.8

Using the evaluation of dimensions influences over each other, we can arrive to such example, where we can find the position of the axes for this matrix. That is the average measure found in this influence measure. In this case it was 6.8. The finding of the possible driving forces for a scenario building process is possible with the interpretation of the network analysis with a system grid, as in the next figure using the positioning of the axes and knowing before the characteristics of each matrix field (active and passive, and an 'ambivalent' that means that influences and can be influenced almost in the same way, and finally a 'buffer' field).

Figure 3.1 Matrix fields and location of dimensions



With this configuration one can interpret the grid saying that the dimension A - 'policy context' has relatively high influence on the overall system, although with some susceptibility to being influenced by (but less) the others.

The dimension D - 'outcomes: quality of life' is located in the so-called 'passive' field. This means that it is very strongly influenced by all the others but itself influences the system very little.

The dimensions B - 'economic context' and C - 'company level strategies' can have a powerful influence in the system and are also strongly influenced by the system.

This correlation means that the *policy dimension* seems to be very decisive in this system grid. Variables like regulation, social dialogue, labour market have the same active position as cultural values, norms and regulations, globalisation factors or national policy context,²⁴ which means that they can be driving forces in the scenarios to be built. The issues related with a meso level (organisational and employment structures and the work patterns and terms of employment) can play also an important role. But definitively, the dimension 'quality of life' is the one that will be influenced by all the others.

Due to the comprehensive approach of the WORKS project a more or less detailed system grid of influences of dimensions of work can be constructed. This also means that quantitative information can be pertinent to justify the influential relation between dimensions and/or variables. The following examples show quantitative trends which already demonstrate some causal linkages between dimensions.

- Overall employment in the EU-25 increased by 2.4 *per cent* between 2001 and 2004 (based on three-year averages). This means that between 2001 and 2004, almost 4.5 million jobs have been created, resulting in a total of around 195 million workers in the European Union in 2004. This increase can be attributed to the EU-15 countries: total employment has increased by 2.8 *per cent* in these countries whereas total employment in the New Member States remained stable over the same period in time. Over a longer period, the increase in total employment in the EU-15 has been even more important: the rise in total employment in the 'Old' Member States amounts to 10.6 *per cent* between 1996 and 2004:
 - with approximately 166 million employed in 2004, the Old Member States are responsible for 85 *per cent* of the labour market of the Union as a whole. The number of employed persons in the New Member States amounts to about 29 million.
 - some countries deviate from these general trends. Among the EU-15 countries, it is Spain and Ireland that stand out in a positive sense. Employment growth of 40 *per cent* in Spain and 43 *per cent* in Ireland between 1996 and 2004 represents more than 5 million new jobs in the former and 560,000 in the latter. Germany on the other hand went through a relative downturn in its economy. Employment increased by merely 1 *per cent* as opposed to the EU-15 average of 10.6 *per cent* over the eight years under consideration. In the NMS-10, the Baltic member states put themselves in the spotlight with increases in employment of about 5 *per cent* between 2001 and 2004. The largest New Member State, Poland, on the other hand, witnessed negative growth - a decline of 2.3 *per cent* between 2001 and 2004 - dragging the NMS-10 average down to zero growth.
- Whereas only 27.0 *per cent* of EU-15 jobs is in industries, this percentage amounts to 32.1 *per cent* in the New Member States. The decline in industry (plus the decline in

²⁴ Although these last ones are in a less passive position.

employment in the primary sector in the NMS-10) is compensated by a growth of the services sector that is of the same magnitude in terms of share of the total employment in both the old and the New Member States (somewhat less than two percentage points). Within the broad category of services, we find that all sectors except one in the EU-15 are growing. The financial services sector is the only exception. We thus find a different structure of the economy in the old as opposed to the New Member States. The importance of services is lower in the New Member States and that of industries higher. The still relatively high importance of the primary sector is also remarkable.

- In both parts of the Union, the share of white-collar workers in total employment increased between 1999 and 2004. This increase was however stronger in the old than in the New Member States. The overall share of white-collar workers is also much higher in the EU-15: 64 *per cent* against 53 *per cent*. The evolution of blue-collar jobs is the mirror image of that of white-collar jobs. While all but one category of white-collar employment increased, we find a decrease in almost all categories of blue-collar work in the EU-15. We thus see a remarkable evolution: all forms of skilled blue-collar work decline, while employment in the category of unskilled labour increases substantially.
- Average working time in Europe is slowly declining since the early nineties, as a result of many circumstances. On one side the growth of part-time contracts - especially in EU-15 countries should be taken into account, on the other side the proportion of long working hours workers has decreased in most EU-15 countries and NMS (European Foundation, 2007).
- In summary, we observe a continued shift of employment over the period into professional and white-collar technical work. We also observe slight changes in working hours, a decrease in self-employment (in the New Member States) but a substantial increase in atypical working hours. However, the extent to which the latter changes are associated with the shift in employment cannot be determined from these figures.

These conclusions are from the report of Birindelli *et al.* (2007).²⁵ These results show that the quantitative elements can offer some insights of the dynamic relations of key variables to establish and clarify trends.

²⁵ A step that would be interesting to perform in the project would be the analysis of information on bibliography and research techniques on foresight analysis related to work changes and restructuring in the consortium members own countries. This could enable the possibility to collect a wide range of information on such topics that are still not very well-known. Most of the foresight research has been done on science and technology dimensions, or on innovation policies, but very little has been collected on foresight studies on labour issues and restructuring impacts on employment market or work structures. Thus this could be a new additional element for the project outputs.

4 Drivers of change: which scenarios are to be simulated?

After defining the dimensions and the key variables the third step will allow to respond to the following questions: 'Which issues do introduce changes on different levels? In other words which are the drivers of change? Are they new forms of knowledge (in a broad sense; from technology to new organisational methods)? Are they new business interests and strategies?'

On the issue of scenario building on skills and qualification, Rodrigues *et al.*, (2007) identifies three main driver categories: economic, technological and organisational drivers, with the economic dimension representing the main trends in demand and supply, the technological dimension covering the main trends in process and product innovation (including services) and the organisational dimension representing main trends in job functions (conceptual, executive). The Rodrigues' approach in principle enables the identification of drivers and especially at the meso (sector) and micro (firm or company) level. By linking consistently the search for drivers with the findings in existing foresight and other future studies, a more coherent and all-embracing methodology to finding sector specific drivers can be deployed. This so-called '*meta-driver*' approach of identifying main sector drivers starts from a more generic list of meta-drivers derived from a literature survey, and subsequently in a step-wise manner delimits the drivers to a set of most relevant and credible drivers. The project did not aim to organise such systematic identification process and discussion.

4.1 Establishing a set of possible scenarios of different models of a knowledge-based society

When defining the steps for scenario building 'although some authors prescribe the need for probability analysis and quantitative forecasting for each measure, it can be considered sufficient the contrast of implications of the *alternative futures*' (Moniz, 2008a). These possible different scenarios can be presented in different ways. Mostly they are based on simple contrasting positions like the following:

- Scenario a – optimistic;
- Scenario b – 'business-as-usual';
- Scenario c – pessimistic.

Although, another Scenario *n* can be added, the aim is to propose clear contrasting situations like, positive/negative, or optimistic/pessimistic, and a mean one that is a simple extrapolation of actual trends (the *b* one). The three scenarios allow having a several dif-

ferent versions of the future at the same time. The future then appears as a construction of different possibilities.

Each scenario describes a different way in which the uncertain aspects of the future are strengthened. The two opposites (optimistic *versus* pessimistic) that allow to see how the variables could evolve (the desirable and the possible), and the 'business-as-usual' show the probable evolution if everything stay in the same conditions. Another possibility is to suggest mixed situations like:

$$(a + b) = d$$

being *Scenario d* a situation that is sometimes described as very positive related to the development of governmental strategies in Finland in the 90s or Ireland in the 80s, that could lead to significant step in terms of economical growth.

Or

$$\{ a^1 \neq a^2 \neq a^n \}$$

as different alternatives to a so-called 'optimistic' or 'positive' scenario. But this situation could lead to five or more possible scenarios.

For example, with the exercise *Scenarios Europe 2010* (cf. Bertrand *et al.*, 1999) were used five scenarios (i-Triumphant Markets, ii-Shared Responsibilities, iii-Creative Societies, iv-The Hundred Flowers and v-Turbulent Neighbourhoods) and for the key drivers 'technology/work organisation', it was understood that some scenarios can be more relevant than others.²⁶ On the key drivers 'labour market and social policies' it was concluded that *Triumphant Markets*, *Shared Responsibilities* and *Creative Societies* are scenarios of radical reform in the field of labour market and social policies.²⁷

²⁶ 'Two scenarios, Triumphant Markets and Shared Responsibilities, are characterised by trend acceleration in productivity growth and new technologies, especially in the field of information and communication, fully realise their potential. Both scenarios differ fundamentally, since the hypothesis underlying the successful exploitation of the new technologies. In Triumphant Markets, this occurs through the unleashing of the forces of competition, whereas the guiding idea of Shared Responsibilities is that the new technologies will fulfil their promise only if a process of social apprenticeship is properly encouraged. The other scenarios are characterised by a slight slowdown of growth, which is broadly consistent with the performance of the European economy in the last two decades and the expected effects of demographic evolution. The slowdown is more accentuated in Turbulent Neighbourhoods, which is characterised by armed conflict and rising protectionism, and, at least in an initial phase, in Creative Societies' (cf. Bertrand *et al.*, 1999: 77).

²⁷ Triumphant Markets, follows the failure of the social-democratic experiments of the turn of the century, US style deregulation prevails, with increasing individualisation of industrial relations and radical downsizing of the safety nets. In Shared Responsibilities, the European corporatist model stages a successful comeback, including a managed deregulation of labour markets accompanied by welfare-to-work reform of social protection. Creative Societies provides the most radical alternative to the existing social institutions, as the social economy takes centre stage and social protection is reformed to encourage participation. The reforms also include a radical overhaul of accounting systems, both economy-wide and at the level of the firm, and an accompanying reorganisation of taxation. The Hundred Flowers and Turbulent Neighbourhoods, by contrast, are characterised by relative inertia on labour markets and social policies, at least on a European scale. This is consistent with the increasing differentiation of national and regional situations in The Hundred Flowers, with the national level losing control in some countries, and with the absorption with security preoccupations in Turbulent Neighbourhoods' (cf. Bertrand *et al.*, 1999: 80).

Finally, on the key factor 'globalisation' the following was stated in relation to the 2010 scenarios: 'In economic terms at least, *Triumphant Markets* is the most favourable to the rapid advance of globalisation as all the major areas of the world increasingly share the same politico-economic outlook, largely shaped by the United States' (cf. Bertrand *et al.*, 1999: 81). This is clearly based on the debate held one decade ago on the relation on globalisation and liberalism that could reach further (positive) developments on the capitalist societies. Recent events demonstrated other trend.²⁸ Later, the Cedefop/ETF case (cf. Sellin, 2002) used only four scenarios, also with a time horizon of 2010, and they were:

- scenario 1 – stagnation;
- scenario 2 – good will but no results;
- scenario 3 – short-term development;
- scenario 4 – comprehensive development.

In the Shell group scenario building process and at the scenario-building workshop, after the themes had been presented and discussed, three groups were formed to explore possible scenarios.²⁹

Another possibility is to use a basic two fundamental *axis* of work change in the knowledge society. For example, (1) 'intensification of work' and (2) 'restructuring of value chains'. They can have +/- signs (or, positive/negative). In the case of *Axis* 1 it could mean a stronger intensification of work activities (+) in terms of working hours, simplified work organisation procedures, or even rationalisation of labour. In terms of *Axis* 2 it can mean an up-scaling in the value chain (+) in terms of quality control, or design elements, or even manufacturing management and control features, or a down-scaling in the same chain (-) that could mean an orientation to less creative aspects of production activities with possible outcomes related to companies transplanting to other countries the more

²⁸ For example, in other scenarios that debate is still prevalent: 'In Shared Responsibilities, progress on trade and investment liberalisation is matched by an increasing influence of regional groupings in shaping the international economic order. The increasing assertiveness of the EU in this scenario leads to frequent clashes with the United States. Globalisation loses some of its momentum in the other three scenarios. In *The Hundred Flowers*, globalisation continues to advance where technology is the main driving factor (for example, internet transactions) but is hampered elsewhere by the lack of political will to reach and enforce new agreements. In *Creative Societies* and *Turbulent Neighbourhoods*, by contrast, there is an explicit political will to slow down globalisation, linked to societal concerns in the former, to old-fashioned protectionism in the latter. With the exception of *Turbulent Neighbourhoods*, all the scenarios envisage an increasing international role for nongovernmental organisations and the emerging global civil society'. (op. cit.)

²⁹ One group came up with the focal question 'Who will have the power to shape developments?' and branches exploring the uncertainties surrounding a global regime and diffused power. They developed two scenarios investigating the global commons, patterns of economic development, political participation and concerns about inequality. Another group identified the focal question, as 'How will tensions be resolved?'. They considered how different social frictions might manifest themselves in different cultures, including the nature of those frictions, perceptions of them within those cultures and how they might be resolved. The critical uncertainties they identified were whether solutions would be imposed or bought into, and whether the responses would be straightforward and familiar, or complicated and unprecedented. The third group came up with three scenarios. The uncertainties explored in the three were the role of the US, global governance, inequality, regulation, economic slump, social attitudes, energy technology, OPEC and the status of big companies. The team combined this work on possible scenarios into a single scenario structure with two rudimentary scenarios, which eventually became *Prism* and *Business Class*. Working back from this material, the focal question of Shell's 2001 Global Scenarios was formed: 'How will people and societies shape liberalisation, globalisation and technology in a more connected world?' (Shell International, 2003: 47).

valuable activities. Such scenario structure could, however, not be feasible with a possible demonstration of dynamics of working structures changes because is too much schematic in the results it can present. Each scenario results in a two-*vector* trend and show now internal dynamism.

The scenarios on the Future of Manufacturing in Europe 2015-2020 (FutMan) can offer some imaginative pictures about potential socio-economic developments and future technologies that are likely to shape the European manufacturing sector over the coming years.³⁰ These FutMan scenarios could be used as a tool to stimulate strategic thinking about policy options in order to be prepared for the manufacturing challenges ahead.

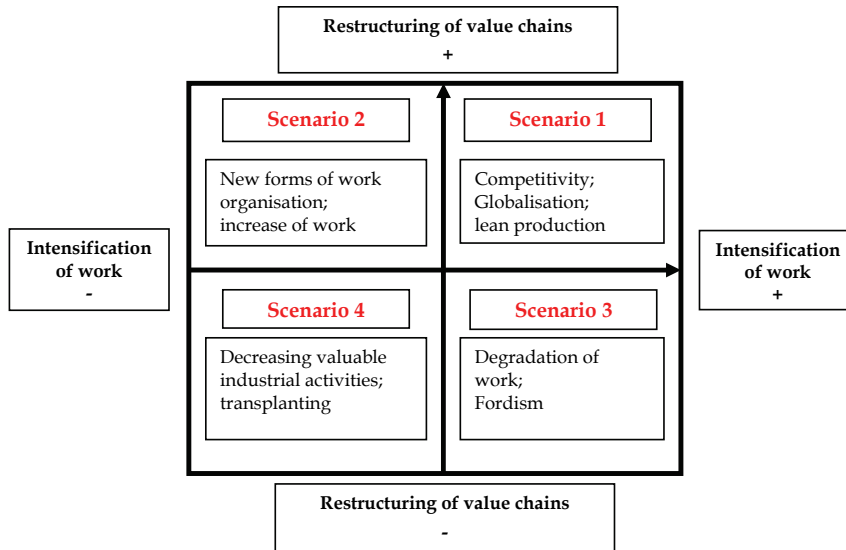


Also this case is based in a two-*vector* trend (individual/collective public values and consumer behaviour, and concerned/loose sustainable policies) and can not reveal the dynamics of manufacturing developments once is based only on sustainability trends. But anyway, they all offer different paths choosing key drivers of change. However, 'when scenarios are used in policy analysis, the nature of evolutionary paths is often important since policies can deflect those paths. In policy studies, families of scenarios are often used to illustrate the consequences of different initial assumptions, different evolutionary conditions, or both' (The Futures Group, 1994: 2).

The matrix that could appear according to the WORKS results after such presentation would comprehend four possible scenarios³¹ as follows:

³⁰ They map the space for developments in the coming years based on the personal views and judgements of the expert group involved in the scenario building exercise.

³¹ Although this matrix is not our main option as scenario model, we present it here to give the larger range of possibilities and alternative scenario structures that can emerge from the WORKS results.



The justification of this matrix can be evident from the following assumption made by Birindelli *et al.* (2007: 13) where the authors mention that ‘the core focus of WORKS is on the interrelations between restructuring of value chains, changes in work organisation and the quality of working life. These changes concern first of all shifts in employment, job growth and job decline related to the global restructuring of value chains. Second, there are changes in the nature of the work, which global restructuring might cause. This implies change in the quality of work, the conditions of work, and its rewards. The latter include wages but can also include aspects such as job satisfaction, while all three of the elements just mentioned entail consideration of the role of factors such as the extent of work autonomy and of required work skills’. This means that the *axis* based on changes in work organisation (or restructuring of value chains) and the quality of working life (intensification of work) can be recognised.

However, this matrix-structured group of scenarios can be too much formal or do not present the several possible relations between key variables. Thus the option for another type of scenario can be more feasible for the WORKS project presentation of final results: the organisation of two (or three) main important trends that involve all the dimensions that will play a central role on the restructuring process. Those dimensions (as seen before) are the following: policy context - A; economic context - B; company level strategies - C; and outcomes: quality of life - D. Also the relation among them can reveal their position in the grid found above.

Active									
10		<i>Active field</i>						<i>Ambivalent</i>	
9									
8				A			B		
7						C			
6									
5									
4						D			
3		<i>Buffer field</i>					<i>Passive field</i>		
2									
1	2	3	4	5	6	7	8	9	10
Passive									

We concluded that the dimension A - 'policy context' has relatively high influence on the overall system, while the dimension D - 'outcomes: quality of life' is located in the so-called 'passive' field. Is strongly influenced by all the others but itself influences the system very little. The dimensions B - 'economic context' and C - 'company level strategies' can have a powerful influence in the system and are also strongly influenced by the system. This can mean that the policy dimension seems to be very decisive in this system grid. As a conclusion, we will use this A dimension as basis of two alternative scenarios.

Dimension/key variable (proposal 2)

Policy context

Regulation A1
 Social dialogue A2
 Labour market - including gender and ethnicity A3
 Bargain B4
 Benefit system B5
 Cultural values E1
 Norms and regulations - including ethnicity E2
 National policy context E4

Economic context

Company knowledge requirements B6
 Work content C1
 Business function, Occupation profile C2
 Globalisation factors E3

Company level strategies

Internal labour market B3
 Skill policies C4
 Training D3
 Flexibility B2
 ICT C3
 Work organisation at company level B1

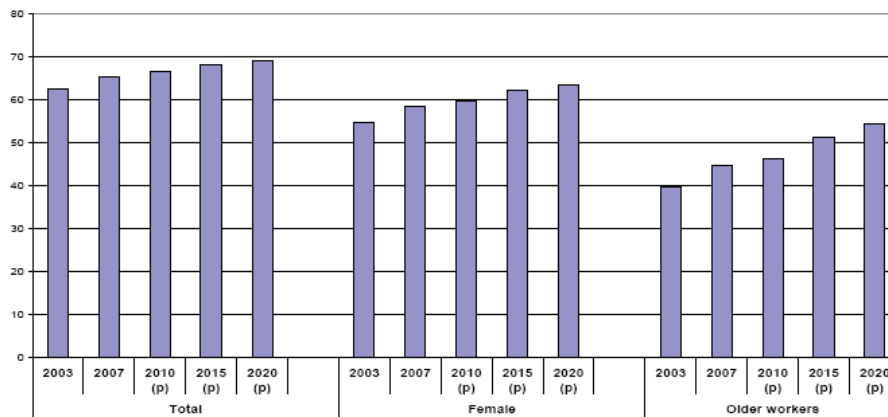
Outcomes: quality of life

Work-life balance - including gender, institutions and occupational issues D1
 Career trajectories/personal valorisation D2
 Quality of work D4

Still inside this step (or procedure) is possible to include a Trend Impact Analysis (TIA).³² This technique was developed in the late decade of 1970s to answer a particularly difficult question in foresight research. The quantitative methods based on historical data are used to produce forecasts by extrapolating such data into the future, but such methods ignore the effects of unprecedented future events.

However, the so-called *Scenarios Europe 2010* (cf. Bertrand *et al.*, 1999) seems to be no longer adequate to a foresight analysis based on issues related with changes on work structures. It could be still updated with minor changes on issues related with macro economic trends, but not on labour market issues. The new WORKS scenarios will use the possible quantitative dimensions already tested in the previous step. Such relation of variables can give a meaning to each scenario and make it clear. And that would include statistical information on trends on labour markets, like the demographic aspects that influence the change process, as one can understand from the next figure.

Figure 4.1 Projected employment rates in the EU-27



Source: European Commission and Economic Policy Committee (2008)

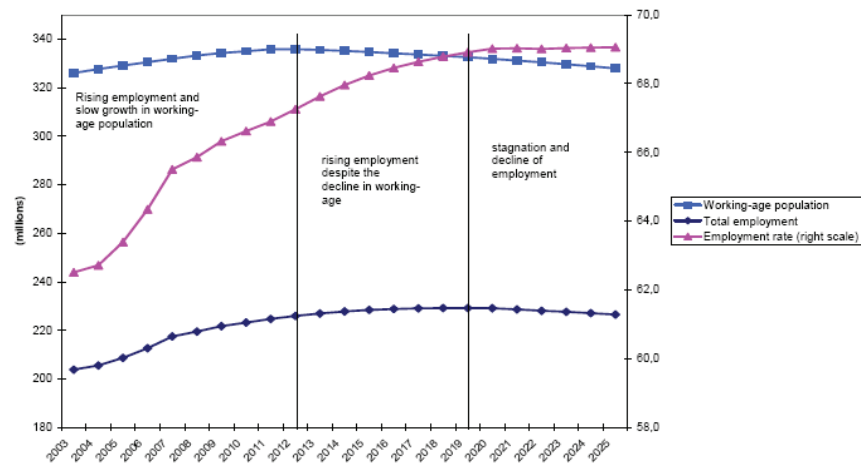
In this forecasting exercise of the European Commission the overall participation rates (for the 15-64 age group) in the EU-25 are expected to increase over the coming decades and the overall employment rate is projected to rise from 65.5 *per cent* in 2007 to 69 *per cent* in 2020. The projected increase is mainly due to higher female employment rates, which will rise from 58.4 *per cent* in 2007 to almost 63.4 *per cent* by 2020. Even steeper is the projected increase in the employment rate of older workers, from 45 *per cent* in 2007 to

³² In fact 'TIA is a simple approach to forecasting in which a time series is modified to take into account perceptions about how future events may change extrapolations that would otherwise be surprise-free. In generating a TIA, the set of future events that could cause surprise-free trends to change in the future must be specified. When TIA is used, a database is created of key potential events, their probabilities, and their impacts' (Gordon, 2004: 1). This can be particularly useful for the scenarios to be built upon elected WORKS assumptions.

54.5 per cent in 2020. The total number of persons employed (15-64 years old) is projected to increase significantly up to 2019, but after 2019 the demographic effects of an ageing population will outweigh this effect.

This implies also a need for a periodisation in the scenarios. Based on a recent study from the European Commission (2008) is mentioned that between 2004 and 2012, both demographic and employment developments will support a growing labour supply. Between 2013 and 2019, rising employment rates will offset the stagnation and decline in the working-age population: during this period, the working-age population will start to decline as the babyboom generation enters retirement. The ageing effect will dominate as from 2020, and the number of persons employed will fall.

Figure 4.2 Projected working-age population and total employment, EU27



Source: European Commission and Economic Policy Committee (2008)

However, still there are uncertainties over life expectancy. The life expectancy projections are not accurate. Past projections from official sources have often underestimated the gains in life expectancy. But also one have to consider that labour supply is sensitive to labour demand. The employment rates, particularly on female employment and rates among older and younger workers affect the labour supply and associated activity rates. Such employment rates are themselves sensitive to labour demand, the wage rates for different skill groups, and conditions affecting decisions to retire or otherwise become inactive. Finally, the estimating third-country immigration to the EU must be taken into consideration. The same for the estimating intra-EU migration and the intra-Member State migration flows.

The Cedefop report *Focus on 2020* anticipates that 19.6 million new jobs will be created by 2020 and 80 million jobs will become available as workers retire or leave the labour market for other reasons. The Eurostat baseline scenario estimates that the working-age population (15-64 years) for the EU-25 will decline from 308.6 million in 2006 to 302.5 mil-

lion in 2020. These figures imply that Europe will need an employment rate of almost 74 per cent to satisfy labour market demand.

In this exercise we can use than most used period references. For short-term, one can consider the years 2010 or eventually 2011. But 2010 was taken by several mentioned studies as a future time reference. That can be also used, but now for the short-term, and verify their forecasting plausibility. Most recently we can discuss over several other studies that use 2020 as a period reference. Thus 2011-2020 can be a medium-term reference, and from 2021 a long-term one.

Such 'clarity' is a support for the set of recommendations and policy alternatives related to each scenario. In terms of elements of the next scenarios we can consider the following:

1. each scenario is based on one specific driver of change, or one dimension that have a common characteristic;
2. the weights (+) and (-) mean a positive or a negative impact in the variable considered (A1 => E4). Such weight should be given by expert assessments; however, we present here only a hypothesis based on several conclusions from the qualitative and quantitative reports of WORKS project;
3. this influence can be more (- - -) or less negative (-). 'To whom?' one may ask. All the analysis in WORKS research is focused on the implications of changes in the labour structures and especially on those implications that affect the labour force; or on those that have fewer access to the decision making process, which may increase their dependency on those changes;
4. each scenario can have different trends: either one can experience an upgrading in the value chain (T1) or a downgrading in the value chain (T2). Those different trends T will represent different dynamics across the periods considered;
5. for all scenarios we considered three periods: Period 1 (short-term) - until 2010; Period 2 (mid-term) - 2011-20; and Period 3 (long-term) - after 2021.

4.2 Results of scenario 1 - 'the dark side of flexicurity'

The Scenario 1 proposes a dual scenario based in the actual possibilities and alternatives of work organisation restructuring, like flexicurity *versus* classical social-democratic models but both assumptions imply an increase of work intensity.

The Rhein-capitalistic model and its implication on the policy choices and the emergence of service economy applied to the manufacturing industry. As mentioned in the Section 2.1.3 *a propos* the concept of 'industrial regimes' the flexicurity regulations also come to enable internal-numerical flexibility. Social-democratic regimes emphasise the external-functional flexibility of the work force. In order to adjust to changing market demands companies depend for their adjustment to changing market demands on state intervention, while the state (consulting social partners) supports workers' employability and labour mobility. But in such condition a 'culturally fragmented' constellation seems to emerge. As mentioned there, the greater integration of and interaction between the knowledge at the intra- and inter-firm level is the central characteristic of the second wave knowledge society. Cultural fragmentation and diversification goes hand in hand with efforts towards cultural homogenisation.

Changing economic conditions affect the feasibility of the policy-production regime constellations. Companies may seek flexibility or access to and production of knowledge that is not supported by the policy regime, while the other way around, policy regimes may support a specific mode of labour relations that economic changes do not allow. As a result, these constellations become unstable.

In the scenario 'the dark side of flexicurity', the constant variable is the *increasing of the intensification of work*. In this sense the main direct negative (-) influence would be on the dimension 'quality of life' and its variables 'work-life balance - including gender, institutions and occupational issues' (D1), 'career trajectories/personal valorisation' (D2) and 'quality of work and working conditions' (D4).

Table 4.1 Outcomes: quality of life

Work-life balance - including gender, institutions and occupational issues D1	---
Career trajectories/personal valorisation D2	--
Quality of work and working conditions D4	---

Such assessment means that with increasing intensification of labour all the variables of the dimension 'quality of life' will acknowledge a strong depreciation (work-life balance, career trajectories and the quality of work). This can be evidenced from several WORKS case studies and synthesis reports.³³

The following table shows that when the main dimension ('quality of life') is characterised by the intensification of work, the other dimensions will have different results, either if the companies/sector are knowing an *upgrading* in the value chain (T1) or a *downgrading* in the value chain (T2). The situation in each of the variables mentioned will be clearly different under those trends. The effects can be expected in the chosen periods (short, mid and long-term).

The dimensions of Scenario 1 would be based on the policy trends and alternatives, on the economical trends and on the enterprise and branch strategies. The results from those trends can be the following:

³³ Cf. Ramioul & De Vroom, 2009; Krings, Nierling, Pedaci & Piersanti, 2009; Brynin & Longhi, 2007; Meil, Tengblad & Docherty, 2009; Greenan, Kocoglu, Walkowiak, Czismadia & Makó, 2008; Flecker, *et al.* 2008; Dahlmann, Huws & Stratigaki, 2009, among others.

Table 4.2 Scenario 1 policy trends (T1 and T2)

	T1	T2
Economic context		
Company knowledge requirements B6	+++	--
Work content C1	++	--
Business function, Occupation profile C2	+++	+-
Globalisation factors E3	++++	++
Company level strategies		
Internal labour market B3	+-	-
Skill policies C4	++	-
Training D3	++	--
Flexibility B2	+++	++
ICT C3	++++	++
Work organisation at company level B1	+++	--

- **Period 1** (short-term) – until 2010. Major trends: E3/T1 – quick growth of globalisation, C3/T1 – strong investment on ICT

In spite these restructuring processes, the intensification of work leads to a decrease in the quality of work (D4). Specially, if occurs T2. In a short-term, the trends for globalisation and investment in ICT can be limited to the frame of economical growth patterns (strong limits to credit support and higher price of money).

In this first period an overall increased customer orientation is expected. At the same time, it can be expected a decrease of work organisation structuring on the basis of production requirements. The increase of work organisation structuring will be done on the basis of customer demands.

The value chain restructuring and standardisation are closely interrelated, and mutually enforcing. When processes and routines are standardised, further outsourcing and relocation of work become easier over time. These moves, however, are likely to increase external and numerical rather than the internal and functional flexibility of enhanced work organisation (cf. Flecker *et al.*, 2008: 61).

- **Period 2** (mid-term) – 2011-20. Major trends: C3/T1 – major increase on ICT investments, B6/T1 – upsurge of company knowledge requirements, B1/T1 – new experiences with work organisation

An increased segmentation of companies in terms of evidence of T1 or T2 is expected. In this period some trends shown in the first period will be clarified. Maintenance of decrease of quality of work will produce effects on productivity growth. In such conditions the segmentation can occur between companies with positive internal social policy as an option to face problems on productivity. Many companies that are failing to find solutions only with larger investments on ICT and increase of flexibility.

In a European Commission report from 2008 and already referenced is mentioned that the so-called Skill-Biased Technological Change (SBTC) thesis is a common approach to explaining the shift in labour demand towards high-skilled workers in Europe. The basic idea is that new technologies that improve the effectiveness of the production process, for example information and communication technology (ICT), are ‘skill-biased’ and that

technological change increases the demand for higher-educated workers (cf. Machin & Van Reenen, 2007). At the same time, less-educated workers become relatively less productive, and are less in demand, which reduces their wages or increases their likelihood of unemployment.

'An important result from the WORKS organisational case studies is thus that most VCR processes involve technologies and we can even be more precise by saying involve ICTs. Second, technologies cluster in two groups: ERP,³⁴ supply chain management technologies, workflow management technologies, call centres are more "generic" in VCR, while the remaining technologies are more specific' (Greenan *et al.* 2009: 20-21). In the same report it is mentioned that 'ERP systems are numerous in the clothing sector that can be characterised by the dominance of the "Taylorist" work organisations with very low autonomy in work, particularly in the methods of work, low learning and problem solving capacity, low task complexity and repetitiveness and monotony of works, and precise quality norms. They tend to equip both production and logistics as the final ambition of an ERP is to integrate the information system of all the functions of a company. Like in the public sector or in the services of general interest sectors, ERP imposes standards on procedures and processes, generates a unique database, coding similarly materials on products in different production sites and in production as well as in the purchase or sales department, and favours monitoring and control. ERP solutions in the cases under review seem to integrate more modules in manufacturing than in the service sector' (p. 33).

There has been also a rapid increase of eGovernment on-line availability in European countries: from 36 per cent to 51 per cent for EU-15 between 2002 and 2006 and from 40 per cent to 51 per cent for EU-25 within between 2004 and 2006. In this Period 2 such increase can mean around 95 per cent for the EU-15 and 85 per cent for EU-25 around the year 2020.

In the public sector the technologies involved in value chain restructuring have always a strong organisational dimension. *Call centre technologies* and *web portals* at the front-office, *workflow management technologies* between the front and the back-office are prominent technologies in eGovernment schemes and they are often articulated to one another (cf. Greenan *et al.*, 2009: 27).

Finally, in this period it can be stressed that the flexible working hours will be more intensely used in all range of sector. 'Expressed by the metaphor of the 24/7 society the argumentation line follows the organisational and individual need for a high degree of flexible working models. These models have been developed historically by a wide range of working time pattern like shift work, part-time work or flexi trust time which have provided specific models of working culture in Europe. A prominent example is part-time work which seems to be a typical female working time pattern in many European countries. The amount of part-time work has steadily increased because it is offered as a work-time model which allows the reconciliation of work and family needs' (Krings, *et al.* 2009: 65-66).

³⁴ Enterprise Resource Planning System (ERP) is an integrated information system that serves all departments within an enterprise. ERP helps a manufacturer or other business to manage the important parts of its business, including product planning, parts purchasing, maintaining inventories, interacting with suppliers, providing customer service, and tracking orders. ERP can also include application modules for the finance and human resources aspects of a business. Typically, an ERP system uses or is integrated with a relational database system. The deployment of an ERP system can involve considerable business process analysis, employee retraining, and new work procedures (from WORKS glossary, Huws, 2008).

- **Period 3** (long-term) – after 2021. Major trends: C3/T1 – continuous investment on ICT, B2/T1-T2 – capacity of increased flexibility

If such segmentation increases on the long-term, the success of the ‘best practices’ can face problems or even stagnation. If quality of life is becoming a more difficult issue to be solved, the overall effects will be evident. Probably the solutions found by management structures are based on more investment on ICT and on flexible schemes of work organisation (either on the task organisation, or in time arrangements, and social support).

This increasing use of technology leading to increase intensity of work can be found on present trends: in 2005 about 40 *per cent* of employees across UE are concerned by the automatic speed of a machine. This share increases to 68 *per cent* in the manufacturing industry and falls to 24 *per cent* and 28 *per cent* in the real estate and business activities and public administration (as it can be verified in the last European working condition surveys editions). Using extrapolation we can calculate an increase of ICT investment in all sectors and thus such share can be around 90 *per cent* in the manufacturing industry and 60 *per cent* in the business sector and public administration in mid-20s of this century.

Krings *et al.* (2009: 27) mention that ‘case studies revealed significant differences depending on the position within the value chain, becoming more flexible the further one moves away from the central node of the network company (normally the brand name owner, the source of the outsourcing process, the company that is in the position to wield a heavier clout in terms of control/domination) towards the periphery, represented by subcontractors, second-tier subcontractors, single freelance workers, outworkers’.

In the same report it is mentioned that ‘short working hours are on the rise, but, at the same time, long working hours are on the rise, above all because of overtime is increasing. Atypical working schedules are spreading, with new forms of shifts, unusual times (namely during the evening, at nights or during holidays), different schemes of flexi-time. Although on an institutional level working time remains as an important means of work organisation the variety of individually-shaped working time pattern has increased especially in high qualified occupations’ (Krings *et al.*, 2009: 66).

Story 4.1 The end of borders

Pablo always liked to draw clothes for his sisters, imagining that one day he could have his own atelier. With 34 years old he has already a large work experience. After his graduation he went to a small company situated in London to start as a clothing designer, and after that he never stopped. Today he doesn’t know anymore where he lives or where he works. Sometimes he works in the morning in Paris and at the end of the day he is in Rome. His work is not limited anymore by a company or a place, he goes to anywhere he is needed. ‘It is difficult to have a family like that, because I enjoy very much all this travel and new experiences.’

Features:

- accentuation of fragmentation of work;
- a longer and more complex global value chain;
- a decrease of companies’ importance and an increase of the role of business functions;
- bigger homogeneity between European countries;
- an increase of the role of global markets and a decrease of national policies;

- flexibility is the key to success and it is much easier to use it;
- less regulation and less social dialogue;
- accentuation of the dichotomy: low skill workers and high skill workers;
- more opportunities to high skill workers;
- commitment to the function and not the companies;
- 'boundaryless careers';
- an increase use of ICT;
- the use of knowledge is in the centre of organisation of economies;
- intensification of work;
- poor work-life balance policies;
- a clear increase of unemployment of low-skilled workers;
- increased instability, unpredictability and insecurity.

Story 4.2 The clothing industry in 2020

Almost all production has left Europe. Companies have in several countries headquarters or branches dedicated to control production in low cost regions outside Europe, producing samples and new collections, assuring the quality of products and doing the marketing of the company. Companies and countries are getting closer in terms of characteristics, wages and skills. The importance of market and economy is leading to a decrease of differences.

Fragmentation of work and value chain is very high, with a strong support of less regulation and bigger liberalisation of EU trade. The clothing sector in Europe is now a big and strong industry. The increase use of ICT, the intensive use of knowledge and innovative processes and products allowed the sector to become one of the most important in Europe in terms of investment in skills and R&D.

When we look at the sector we no longer see a large amount of dressmakers and sewing machines, but instead offices and ateliers with high-skilled workers and new and modern equipment, allowing professionals to use ICT in a more intensive way. Collections are now changing very fast, using more often biomaterials and biotechnologies. Each company must be able to have new products and innovative materials almost every week. This is possible with the help of new equipment and also new skills of professionals that have courses and training in a very intensive way.

Unemployment of 'blue-collar workers' had increased dramatically. Some workers, who worked in the industry since long time, were able to update and change their skills in order to integrate this renewal sector, but the majority had lost their jobs and couldn't find a new one. The 'core workers' have now more opportunities to find a job and to change jobs if they want, but at the same time the pressure of time and market are very strong. When they choose to integrate the sector and the profession they are aware of the constraints and demands of a high competitive and high globalised industry.

Contracts, working hours and work place are much more flexible. Companies are able to replace workers and moved them to another place if they need or to operate long working hours. ICT facilitates the communication between branches and units, allowing the control of production and quality in long distances. Workers have to deal with a great mobility, in terms of career, hours, and place of work.

Story 4.3 Public sector in 2020

With the increase importance of markets and private companies, states and public sector become more passive and dependent of external agents. In order to reduce costs and work staff the use of flexible strategies, like privatisation, outsourcing of some specialised services and tasks and also liberalisation are common.

Restructuring meant reorganisation of the workflow, new division of labour, bigger importance of customer in the value chain and self-service in order to raise efficiency and productivity. Information technology has a very important role in this process, and its use became indispensable. Most reorganisation could not be done without considerable changes in technical infrastructures.

Standardisation, formalisation and rationalisation of functions and tasks have become usual in most public services with consequences on skills and competences. More repetitive tasks, less training opportunities, an intensification of work, a decrease of responsibilities, more simple and small tasks, more specialisation and fragmentation of work. Formal skills are kept at the minimum, with a strong emphasis in 'soft' skills, like communication, interaction and client orientation.

There is an increase of instability and insecurity in a sector always characterised in the past by high job security and a 'job for life'. Careers are characterised by mobility and flexibility, few opportunities to evolve and change employment or functions, especially in the case of 'peripheral workers'. The sector is no longer view as attractive in general like it use to be in past decades, due to is security and long-term contracts, but as a semi-private sector that offers less opportunities and worse working conditions in majority of jobs when comparing to big private companies operating in similar conditions.

Temporary jobs and freelance contracts have increase dramatically in the last decade, together with a staff reduction and a correlative increase of workload and higher time pressure.

Comparing to private sector, unions and social dialogue still plays an important role in public sector, however, due to all these different and common flexible strategies and to the decrease of national policies, unions are becoming weaker and fragmented with less power and less members.

4.3 Results of Scenario 2 - 'the liberal Lisbon process'

Scenario 2 proposes a rather more complex scenario with the following characteristics: stagnation, recession and degradation of work condition (failure of social-democratic model and increase of the liberal/individualistic process of economic restructuring). Such example can be retrieved from several previously mentioned scenarios (cf. Bertrand *et al.*, 1999; Sellin, 2002). The current liberal policy regimes support a further development in the direction of post-Fordism. It seems that corporatist policy regimes support development in the direction of neo-Fordism and network co-ordination.

This means a situation where the 'Lisbon process' will be pursued without social policy. In such context it is expected that the concepts of 'competitiveness' or 'competitive advantage' will become the *motto* for the economic policy. There would have clear implications for the development of qualification, as well for the education system. This means a decrease on the investment in these fields, and this can imply effects on productivity growth, and later on economical growth and wealth. Finally, impacts on quality of life and on working standards will emerge in all European countries.

As mentioned before (Chapter 2) 'a shift towards more flexible, 'post-Fordist' production regimes took place that is characterised by greater de-collectivisation of the labour relation and more horizontal relations between workers and firms. Differences exist as concerns the type (internal, external; numerical, functional) and feasibility of flexibilisation. This is influenced by dependency-relations between a focal organisation and its work force and by the policy context in which the company is located' such hypothesis can be mentioned as a basic feature for a scenario model as the one we are presenting here.

Also we mentioned that it may be expected a further rise of network-forms of organisation and a gradual horizontalisation of relations between economic actors. This implies a decreasing role for central organisations and – as a result – increasing problems of co-ordination. In this scenario, a return to 'neo-Fordism' (Makó, 2005) may be expected. That means that company strategies can emerge to capture the knowledge that is attached to workers. More than before, however, companies need to be able to come up to specific, individual requirements workers may have. Although captured in an organisational form, network-elements creep in the hierarchical relation. Therefore, such neo-Fordism is a form of intra-firm network and knowledge management. Again, the concept of value chains seems to downplay the development of horizontalisation.

Another possible issue that comes with this scenario is, that the concept of employee looses relevance, while, secondly, knowledge production becomes more and more important. As a result, the interrelation of education, labour market and social policies that exists in the social-democratic and corporatist regimes becomes unfeasible to some extent.

In this scenario of liberalisation of the 'Lisbon process' the incipency of social policy (and the entire *policy context* dimension) as a constant variable. The most negative (----) situations can occur with the degradation of the 'social dialogue' variable (A2). Or the 'regulation' (A1) and 'labour market – including gender and ethnicity' (A3), both with --- impact weight. The inclusion of just one – in the Bargain variable (B4) could mean that, even with the increase the liberalisation process some bargaining procedures can be maintained or even emerged, to guarantee a less-conflictive change process or to guarantee the above-mentioned development of horizontalisation. The next table presents those assessments.

Table 4.3 Policy context impact assessment in scenario 2

Policy context	Impact
Regulation A1	---
Social dialogue A2	----
Labour market – including gender and ethnicity A3	---
Bargain B4	-
Benefit system B5	--
Cultural values E1	--
Norms and regulations – including ethnicity E2	--
National policy context E4	-

As for the previous scenario case, the weight + and - can be made by an expert's panel. And in this case, the dimensions of Scenario 2 are the economical trends, the implications for working conditions, and the competition dynamics and emergence of social problems. Again, the trends are T1 - upgrading in the value chain, and T2 - downgrading in the value chain evidences those possible alternatives. Results in the variables can be presented as follows:

Table 4.4 Scenario 2 policy trends (T1 and T2)

	T1	T2
Economic context		
Company knowledge requirements B6	++	--
Work content C1	++	----
Business function, occupation profile C2	++	+-
Globalisation factors E3	++++	++
Company level strategies		
Internal labour market B3	+-	---
Skill policies C4	++	--
Training D3	++	----
Flexibility B2	++++	++
ICT C3	+++	++
Work organisation at company level B1	++	--
Outcomes: quality of life		
Work-life balance - including gender, institutions and occupational issues D1	+	--
Career trajectories/Personal valorisation D2	++	++
Quality of work D4	+-	---

- **Period 1** (short-term) - until 2010. Major trends: E3/T1 - quick growth of globalisation, C3/T1 - strong investment on ICT, C1/T2 - depreciation of work content, D3/T2 diminishing of public training support schemes

Although, these two variables cannot grow as far as in the previous scenario, here the policy role is weak. This means that one will not find in the short-term national or regional policies to support meaningfully the internationalisation of companies (with legislation and financial supports), or to support new investment.

The intensification of work leads to a decrease in the quality of work (D4). Specially, if occurs S2.

The relation between introduction of new technology and standardisation and repetitive work as described in services sectors is also present in the manufacturing industry, especially in the food industry in WORKS case study reports. The case study Meat Inc. (Denmark), which concerns slaughtering and deboning activity, reports how the use of semi-automated lines for slaughtering and the use of conveyer belt change the content of job. First, we have to underline that the automation has a positive effect because the heavy and dangerous tasks decrease so the injuries decrease also. However, the change underlined by workers is higher standardisation of work with very repetitive tasks; the job was transformed from craftwork to industrial automatic labour. (...) [On the Belgium case] the new job content is less challenging than old job content (tasks are more repetitive, less

complex, require less know-how). Due to the decrease of job contents, workers feel over-qualified and they are anxious for the future of their job. (Greenan et al., 2009: 77-78)

- **Period 2** (mid term) – 2011-20. Major trends: C3/T1 – major increase on ICT investments, B6/T1 – upsurge of company knowledge requirements, B1/T1 – new experiences with work organisation, C1/T2 – impoverishment of work contents, D3/T2 disappearance of training and employment public policies

Story 4.4 The end of borders - 2

Ian never liked to study. When he was young he spends the time playing football or walking around with some friends. When he grows up he had to find a job and start in a warehouse with 18 years old and since then he already more than ten different functions and jobs in different companies. He is now 40 years old. He was never ambitious and have enough money to pay the bills was enough for him. However now he starts to think about the future. 'When I was younger everything was easy and smooth. I could easily find a job a keep my life as usual', says Ian. 'Now everything is different. I am looking for job but all I can get is some part-time jobs in peak periods and very low paid. I don't have any support from the Estate if I get sick or unemployed, it is very hard'.

Segmentation of companies in terms of evidence of T1 or T2. This segmentation with less social policy can mean a more intensive use of technocratic objective and approaches. Companies can have a passive support from national authorities, but basically will be no regulation. Also, there will be no regulation on markets, which can expose smaller companies to difficult conditions in global markets.

In the customer services in the public sector it emerges that all restructurings involve a new division of labour and a redesign of the workflow of the customer service and often the establishment of new services, in spite the considerable varieties in the case studies, (Flecker *et al.*, 2008: 107). The most obvious change in the division of labour can generally be described as a fragmentation of different types of customer services along the value chain according to their codifiability (Ramioul & De Vroom, 2009: 28). Such process can be expected to intensify under this scenario.

The business organisations in the EU are in this scenario rather evolving towards less learning job structures and work environments. If in EU-15 there was a certain decrease in complexity of work between 1995 and 2005, this scenario data will show a contrary trend. A large decrease has been recorded between 1995 and 2000 and has been recovered only partially since. That means that under such scenario the complexity of work will decrease very rapidly (cf. Birindelli & Rustichelli, 2007: 6).

It can occur however that new autonomous experiences are developed. US data on the internal structure of firms that have adopted ICT show that the increase in demand for high-skilled workers can be attributed more to the requirements of new work organisation than to the introduction of the new technology itself. The organisational changes possible through ICT may change labour demand in several ways. Firms that adopt ICT need workers that can get along in self-managed teams and can complete a whole process that earlier was fragmented because of the lack of centralised databases. Moreover, non-cognitive skills such as dealing with suppliers and customers or influencing team-mates and colleagues have become more important.

Story 4.5 IT sector in 2020

Due to an increase use of ICT in all spheres of life, the industry has grown considerably. The emergence of global supply companies is much accentuated, contributing to a bigger internationalisation and complexity of value chain. Market is controlled by giants who have the headquarters in key places and units in cities around the world, according to their needs. The importance is no longer the country or the localization, but some factors that can make the difference: the skills of the available work force, the innovative way of operate and think the use of knowledge and competences, the cost of production and workers.

Relocation of production and software development is common, although with some concerns, trying to combine high skills with low salaries. An increase in standardisation and formalisation of tasks allowed a more intense use of outsourcing production to remote places and a bigger concentration in 'core activities'. The sector in Europe is now strong and very competitive, using flexibility and ICT as tools to achieve economic success and stability.

'Core workers' have now to deal with more pressure. Time when they could be at the office imagining and creating new programs or products without any concern about the utility or the needs of the market is over. Professionals have to work close to the market and the client, have to be researchers but also talk to clients, have functions in marketing, sales, promotion. The need for new skills is now clearer. Starting in universities the formal education includes now new competences, like communication, management, customer-oriented, social interactive skills.

Comparing to others functions and sectors, these professionals continue to have good working conditions, with good opportunities of training and improvement of skills, high salaries, and also good opportunities of development a career. However, due to market constraints and an increase of available work force, the contracts are becoming more flexible and atypical. Workers have to deal with more mobility, less security and a stronger individualisation and isolation. Creativity and autonomy are decreasing due to formalisation of tasks, an increase of workload and market constraints.

Workers travel a lot and have to be available on weekends and atypical hours. To have a family is complicate, so most of workers choose the career and leave the family to a later period of their lives.

- **Period 3** (long-term) - after 2021. Major trends: C3/T1 - continuous investment on ICT, B2/T1-T2 - capacity of increased flexibility, C1/T2 - diffusion of Tayloristic work processes based on less qualified work force, D3/T2 - strong recruitment of less-skilled and no investment on training to face increased competition, D4/T2 - poor quality of work but E3/T1 better competitiveness based on outsourcing and globalisation processes

The reporting of the loss of professional 'tailor' knowledge due to externalisation of manufacturing activities in the process of value chain fragmentation is in particular interesting because it shows indeed that codification of standardised tasks inherently is limited and knowledge and experiences from the shop floor cannot be fully codified, even not in extremely codified and taylorised manufacturing processes such as cutting and stitching in clothing (cf. Ramioul & De Vroom, 2009: 46).

Also, in terms of relation between skills and use of working time in this scenario one can observe an ongoing process of differentiation of work-time pattern, and an increased intensification processes of work. Such intensification processes are expressed both in

terms of quantitative as well as qualitative changes of work-time pattern (cf. Krings *et al.*, 2009: 65). Also in this reorganisation process in the liberalised strategy of European development, women, and especially women from ethnic minority backgrounds, will end up in the most precarious and least protected positions, and these positions seem, in general, to be those nearest the bottom of the value chain (cf. Dahlmann *et al.*, 2009: 83).

Following an evolution path of the Period 2, on the long-term is possible that the absence of strong policy context, can produce disruptive situations, and increase social instability and struggles that can question all the restructuring processes.

Story 4.6 Food industry in 2020

Despite the modernisation and automation of the sector in the last decades, it remains a traditional sector with low investment in R&D and innovative methods of production. Majority of companies relocated production to lower cost regions, however it still situated in Europe, due to the need of proximity to the markets and quality control. The use of ICT is more intense allowing the decrease of work force and an increase of formalisation, standardisation and repetitive tasks.

It remains a very important sector in Europe, employing a large number of people. In order to cope with new demands and needs, there were some changes in the sector and some investment in technology and equipment, however it didn't become an innovative sector or an attractive sector to work on, due the low salaries and low investment on skills, new production methods or improvement of job contents.

The dichotomy between high skill and low skill workers is very strong. Skill workers have good conditions of work, high salaries and good opportunities of training and moving up on the organisation and in the career. Low skill workers have to deal with very precarious work conditions, flexible contracts and working hours, low salaries and no opportunities of training or improvement of competences. Intensification of work is felt by both groups in different ways. Production workers have to work long working hours in peak periods and with a work rhythm very high and high-skilled workers have to deal with market and customer demands to innovate and find solutions to problems in a short period of time.

The use of flexibility is common; companies choose temporary workers and low-skilled workers to the majority of positions. The investment is in a few high-skilled workers working in 'core activities' and on some R&D that can make the difference. Working conditions are still unpleasant, and salaries are still low. Production workers feel more insecure and unprotected in companies, due to the decrease of the role of nations and national policies in labour market.

In an Italian case study, the standardised business processes supported by ICT allow more space to the management in controlling the production and logistic process. The introduction of technology can also directly affect the control of employee's work with performance tracking system or automatic rhythm (report Greenan *et al.*, 2009: 79).

The manufacturing functions in Western Europe that were not offshored (for example, as in the clothing sector case studies) jobs that remained are mostly related to prototyping and higher quality production and thus have become less standardised with considerable job enrichment on the shop-floor (cf. Flecker *et al.*, 2008: 49). If this was the case in the end of the first period, under the conditions of this scenario in the third period one will acknowledge no decisive difference in the manufacturing business functions between off-

shored units or in the main units: all will be characterised by standardised tasks and poor job content, although with lower labour costs.

Still, across industries, outsourcing and relocation of work are usually accompanied by standardisation which takes different shapes, from ongoing Taylorism in material production to a codification of knowledge and an increased formalisation of documentation in the knowledge-intensive sectors (cf. Flecker *et al.*, 2008: 51). This process will be intensified under this scenario.

4.4 Results of Scenario 3 - 'new welfare - yes, we can!'

This scenario can be considered an optimistic one, but can also be considered a strategic option when some problems can be clear. It can be developed in a way that recommendations could be designed from it, even when some limitations can occur facing present economical frameworks in Europe.

Several authors mention the effectiveness of flexible organisational practices to be greatest in knowledge-intensive organisations. Such organisations are confronted with a high rate of technological change and should benefit from a flexible, decentralised and integrated organisational structure. In addition new organisational practices can better assist in creating and utilising local knowledge, and this is of more importance to knowledge-intensive organisations (cf. Flecker *et al.*, 2008: 52).

In this scenarios the *policy context* represents the main driving force once most of its variables are shown to have strong impact, like the 'social dialogue' (A2) and the 'regulation' (A1). Bargaining models (B4) and well the national policy contexts (E4) should not mean an important variable once it will be possible to find wide differences among regions and countries at EU-27 level.

Table 4.5 Policy context impact assessment in scenario 3

Policy context	Impact
Regulation A1	+++
Social dialogue A2	++++
Labour market - including gender and ethnicity A3	+++
Bargain B4	+
Benefit system B5	++
Cultural values E1	++
Norms and regulations - including ethnicity E2	++
National policy context E4	+

In this Scenario 3 the institutional setting is closer to the Scandinavian countries, where participation in the decision making is taken as a basic condition for economic wealth. Also most sectors are achieving principles of social regulation that one may find in sectors like the public administration one in Austria and Germany or the IT services in different countries. This sector is presented like a future emergence of a possible welfare state even under problematic conditions as the financial crisis.

The case studies in WORKS have shown a wide variation of working time models according to sectors. However, the *Fourth European Working Conditions Survey* conducted by the European Foundation in 2007 pointed out to differences between countries. It shows that workers in Northern countries can choose to adapt working time to their needs to a large extent, whereas in Southern and Eastern countries more than 75 per cent of employees have no means of deciding for themselves the organisation of their working time (Birindelli & Rustichelli, 2007: 35). These results are in line with the hypothesis that (worker-friendly) working time flexibility and functional flexibility are interrelated elements of a distinct form of work organization (cf. Flecker *et al.*, 2008: 68).

The trends expected in this scenario are also T1 – upgrading in the value chain, and T2 – downgrading in the value chain that can underline possible alternatives. This means that a development framework based on a policy context that promotes social dialogue and a positive regulation that balances the labour market towards a robust public sector, a protected mobility, a social and financial sustainability aims of social protection, and a new full employment strategic policy.³⁵ Such policies can have a strong impact in the upgrading process of companies in the value chain (and specially the global value chain).

However, T2 can occur when an increased work intensification continue to persist and dominates a trend (C1), and when (due to the financial crisis) the investment on training (D3) would be no more a management priority and, similarly, the support to work organisation innovations is shifted towards major technological investments. Results in the variables can be presented as follows:

Table 4.6 Scenario 3 policy trends (T1 and T2)

	T1	T2
Economic context		
Company knowledge requirements B6	+++	+-
Work content C1	+++	--
Business function, Occupation profile C2	++	++
Globalisation factors E3	++++	+-
Company level strategies		
Internal labour market B3	+-	+-
Skill policies C4	+++	+
Training D3	+++	--
Flexibility B2	++++	++
ICT C3	+++	+
Work organisation at company level B1	++++	--
Outcomes: quality of life		
Work-life balance – including gender, institutions and occupational issues D1	++	+
Career trajectories/Personal valorisation D2	+++	++
Quality of work and working conditions D4	++++	+

As mentioned in the report from Ramioul and De Vroom (2009) the value chain restructuring as studied in different sectors and for different business functions suggests indeed

³⁵ Some of these conditions were presented and discussed by António Dornelas keynote in the Conference on 'Foresight studies on work in the knowledge society', held on 26-27 January 2009 at Monte de Caparica (Portugal).

that organisations concentrate on the more knowledge-intensive activities because these are essential for their competitive positions while they externalise the most codified parts of the production process. Such a concentration on the more knowledge-intensive parts was observed for logistics and design in clothing, the complex parts of software production in software industry, experience-based production knowledge and quality requirements in the food processing.

In general, the features that can be recognised in this scenario can be the following:

- a slowdown in fragmentation of work;
 - decrease in complexity of value chains;
 - companies' importance raise in national contexts;
 - smaller companies have a bigger role in national economies;
 - bigger heterogeneity between European countries;
 - an increase of national policies together with global markets;
 - the use of flexibility is different in each case and much more regulated;
 - more regulation and more social dialogue;
 - more opportunities to low skill workers;
 - 'organisational careers';
 - an increase use of ICT;
 - investment in training and skills;
 - better work-life balance policies;
 - less opportunities to high skill workers;
 - less autonomy, diversity of jobs and tasks for high skill workers;
 - more stability, predictability and security.
- **Period 1** (short-term) – until 2010. Major trends: B2/T1 – increased possibilities for flexibility, E3/T1 – development of value chains at a global level, B1/T1 – policy support for experiences in work organisation restructuring, D4/T1 public measures for better working conditions

When the work restructuring is done with a strong labour policy to protect employment in globalisation process, several positive outcomes will be clear even on the short-term. In this scenario period, is possible to articulate national or regional policies to support clearly the internationalisation of companies (with legislation and financial supports), or to support new investment, even under financial framework based on a recessive condition. That should imply a vigorous regulation of financial system and a fiscal reduction of inequalities.

Those issues can be considered as immediate to measures to enable the support for development of global value chain with strong links at the regional and the national levels. That support being negotiated would enhance legislation to support flexicurity processes and work organisation restructuring at the company level. In external conditions of financial and political limitations, companies could base their business policies and restructuring aims to increase productivity levels. In that way they could activate flexible organisations and co-ordinate sector actions to support transfer of knowledge on innovative work organisation models and to increase investment on work force' training.

In different sectors, the explicit need for new, additional co-ordination of the value chain came to the forefront. In first period (short-term) this is expected to be developed in this scenario. It was observed that in the IT in public administration, a relevant condition

for an effective transfer to the forefront is the development of (new modes of) co-ordination to safeguard the sector-specific aspects: the public role, product specific knowledge, *etc.* Different case studies report tendencies of new types of co-ordination, and so also new co-ordination skills. Similarly, this requirement was observed in the clothing industry and the software development industry (cf. Ramioul & De Vroom, 2009: 32).

Furthermore, it was also observed that organisations need to move up the value chain, which might also explain the dynamics in restructuring (*e.g.* the acceleration of mergers, acquisitions, outsourcing and offshoring) in particular in sectors such as the software industry. This struggle for control of key activities and of the related knowledge puts the companies, especially those in the 'middle' of the chain, under pressure to develop strategies for organisational learning and innovation.

New policies should be designed to establish statutory minimum standards (including inspection and enforcement procedures) to ensure adequate wages, working conditions and safety standards to ensure that hard manual work is safe and properly rewarded, regardless of the gender and ethnicity of those who carry it out. The same for policies that ensure immigrants, asylum-seekers, refugees and members of vulnerable ethnic minorities are not discriminated against in the education system or the labour market. But also it should be taken into consideration the need for penalties for employers who breach these regulations, as well public education programmes designed to minimise sexual and racial discrimination; and the provision of public facilities for childcare and other services which reduce the private burden of care and make it easier for men and women to share their caring responsibilities.³⁶ As also mentioned in the Dahlmann *et al.* (2009: 84) report 'Finally, public authorities can take a lead in initiating a broad public debate about the future of local employment in a global economy, in order to identify the appropriate training and employment strategies and which groups might be "winners" or "losers" as a result of restructuring'.

The introduction of new technologies leads to improve working conditions in Fishing Company (Norway) through job enrichment and the replacement of workers by machines for the hardest work. The case study Eco Clothing (Germany) is also characteristic of strong positive effect of technology on working condition. Company introduced ICT to face crisis and rationalise their production. Consequently, the work intensity increased but with the new ICT and documentation system, the job becomes more interesting for workers. Employees recognise that the working conditions improved after the change, their motivation goes up, and the productivity increased. The importance of Eco Clothing (Germany) case study is that the decision about the degree of technology was taken with the participation of workers (Greenan *et al.*, 2009: 76-77).

'In recent years, engineering companies have found it difficult to find skilled workers, and even today there is a shortage of qualified engineers. In the 1990s, engineering companies drastically cut jobs, prompting the younger generation to spurn the sector. Wittenstein had planned for the downturn by introducing an accounting system for working hours. In the past few years - regarded as a golden age for German engineering - it's 1,350 employees put in a great deal of overtime, which was not paid but registered as credit in a "working account". Now that demand is in free fall - Wittenstein says order

³⁶ These proposals were present in Dahlmann *et al.*, (2009: 83-84).

income dropped more than 30 *per cent* in November and December – they work fewer hours but still earn the same wages’ (Financial Times, 26 February 2009: 10).

- **Period 2** (mid-term) – 2011-20. Major trends: E3/T1 – growing experiences on upgrading in the value chain with stronger role for SMEs, B1/T1 – national agreements on improvement of productivity and quality, D3/T1 – improved measures for training during unemployment periods, B2/T1 – legislation to improve flexibility and mobility in the labour market, D4/T1 increase of qualification demands and job performance

Story 4.7 Coming back home

Anna works in a small national food company that starts operating a few years ago. She always liked to be in the nature and was always concern about the environment and the quality of the products that people consume. The concept of these new business units is perfect for her: good and natural products produced nearby, with a good price and respecting the environment.

National policies give support to new initiatives that give employ to people from the region and have these concerns in mind. ‘I never wanted to work in a big and cold place way from home, without time to my family or friends’ says Anna, ‘so this small factory is perfect. It combines the traditional knowledge with modern equipment and good working conditions’.

Following the active policies started in the first years of economical and financial crisis (Period 1) more experiences of involvement of companies in the global value chain can be acknowledged. Also, results from organisation surveys on new forms of work organisation, often based on longitudinal survey data such as collected in the Danish DISKO, German ISI, French REPONSE and British WERS, confirm and stress the importance of a complementarily of organisational practices and of a comprehensive strategy towards the learning organisation for the innovative performance of the company (cf. Huys & Ramioul, 2007: 23-26). This is expected to continue in the next decade.

In the manufacturing sector the ‘virtuous’ case is represented by Eco Clothing (Germany). Due to normative orientation of the company towards ecological and social standards, management gives importance to the participation of workers to technological choice. (...) The guideline of this strategic choice is to consider that qualitative aspect of the working processes is important for production. Eco clothing demonstrates that high level of quality of working condition is compatible with increase of productivity. (Greenan *et al.*, 2009: 80). The case studies also showed some pressures for responsiveness to the market and for speeding-up processes. However, the main goals of current restructuring seem to be cost cutting and quality enhancement rather than flexibility (Flecker *et al.*, 2008: 15).

As mentioned in the report Ramioul and De Vroom (2009) in the knowledge-intensive organisations, and hence in a situation of restructuring resulting in a more knowledge-intensive organisation at the higher end of the value chain (such as we observe in the case studies too), a different approach will be required. The work organisation will have to allow or stimulate opportunities for learning, interaction and collaboration with others (inside and beyond the firm) in view of problem-solving and of new combinations of

implicit and explicit, individual and organisational knowledge. In this context, the management cannot content itself with implementing control and knowledge codification strategies to the limit and will develop collaboration strategies that stimulate employees to deploy their skills in the labour process in line with the company objectives (Grimshaw *et al.*, 2005: 60).

In this period will be very clear that organisations with innovation activity will more likely to engage in organisational change than organisations without innovation activity. Teamwork is most present in organisations with a knowledge-intensive character, in which complex work prevails and who are confronted with high client specificity and important fluctuations in demand (Ramioul & Huys, 2007: 12). This form of work will be, then, widely used in different sectors, and not only in larger companies, but also smaller ones.

However, it is clear from the findings on industrial relations at sector and company levels that it can continue to exist a large gap between existing policy and potential solutions and what is happening 'on the ground'. The large differences in national institutional context, sector and orientation of occupational groups make the challenge much greater. Moreover, value chain restructuring intensifies the power differences between labour and management by creating larger units, complex networks, and more remote contacts. The European level initiatives are even more necessary to support nationally anchored representative systems (cf. Meil *et al.*, 2009: 71).

In terms of job security was concluded that there is a significant correlation between an individual's type of employment contract and the degree of his/her job complexity: an individual who works under an indefinite contract is significantly more likely to have a complex job than an individual working under a fixed-term contract (Greenan *et al.*, 2007: 48). In addition, countries where job complexity is high have a well educated work force, a strongly feminised economy, with an important share of part-time workers and a low proportion of young workers (Greenan *et al.*, 2007: 48-50).

Story 4.8 Public sector in 2020

In the last decade public sector has become stronger and the employment in many areas and functions has increase. To support many private companies and to avoid the uncontrolled growth of unemployment, public sector has invested more in the creation of new jobs and has now a bigger role in the market.

In general working conditions are not bad for the very broad range of workers. There are some training opportunities, mainly for technical workers and also an update of competences for older workers in the use of new technologies and new equipments.

The use of ICT is intense and some of the more repetitive and routinised tasks are now made by machines. Workers that use to have simple and small tasks in the past have now other opportunities with the use of ICT and more interaction with clients and private companies. High-skilled workers have good working conditions with high salaries, although have fewer opportunities to change careers and to upgraded skills than in private sector.

The type of contracts is very diverse. The use of temporary and part-time workers is more common however permanent and full-time contracts are also used, mainly for core workers and technicians. Unions and social dialogue plays an important role in bargain and in general workers are unions' members or participate in decisions related with work organisation.

Public sector is now viewed as an important partner in economic growth of national economy and continues to be one of the most important employers in national context. Private companies use now some public services in order to achieve their goals and like this they don't need to have all sort of functions and can use this services with a lower price than private ones. This relation between private and public is become more common with benefits for workers and companies. Workers from public sector can have more training opportunities and interaction with private companies and private workers can use the facilities of public sector and have financial support when needed.

- **Period 3** (long-term) – after 2021. Major trends: E3/T1 – new parameters for globalisation and sustainable development, C4-B2/T1 – increased flexibility with further policies on skill improvement, C3/T1 – development of ICT to support collective decision-making and decentralised responsibilities, B1/T1 – support on increase of productivity and autonomy policies, D2-D4/T2 – policies of collective performance

The fact that no clear pattern emerges with respect to flexibility on a regional or socioeconomic basis, suggests strongly that the extent, form and impact of flexibility are highly-dependent on a complex mixture of factors such as individual company strategies, national regulatory environment, societal preferences, employee representation levels, skill endowments and sectoral characteristics. Co-operative labour relations, which are conditioned by, but not entirely reducible to, the above factors, are perhaps the single most influential factor for the extensive diffusion of all types of flexibility and the most favourable impact of flexibility on the quality of work (Flecker *et al.*, 2008: 16).

The externalisation of lower added-value activities implies the redundancy of the lower-skilled segments of the labour force. And it implies also a reorientation on innovation as a prominent survival strategy, rather than on pure cost-based strategies. In a long range term where competitive and accelerated market environment are even more intensive, the employees have to be able to execute more complex tasks and are required to have a view and knowledge of the wider process to which their tasks belong (cf. Ramioul & De Vroom, 2009: 45). In this Ramioul and De Vroom report is concluded that as in the research and design cases it became obvious that there might be quite a gap between the potential learning opportunities and the reality. The cases of the clothing industry showed that attempts to close the information loop were counterbalanced by knowledge fragmentation along the chain and by the increased speed of the innovation cycles.

A genuine importance of 'shop floor knowledge' for successful product innovation, especially in a context of shortened innovation cycles will be decisive in most of companies in upper levels of their value chains. 'In some food companies, the management was confronted with the consequences of ignoring the importance of such tacit knowledge. In the software industry, we can again refer to the difficult reconciliation of competition and collaboration in the context of internal tendering which may jeopardise effective knowledge sharing and circulation' (Ramioul & De Vroom, 2009: 46).

For all these reasons, it is taken from this period (and under this scenario) new directives at the EU level regarding the formation of European works councils and the minimum levels for information and consultation with interest representatives are especially oriented towards restructuring (cf. Meil *et al.*, 2009: 72).

Story 4.9 Clothing industry in 2020

Economic crisis had a stronger impact in larger and global companies that closed several units and factories all over Europe in the last decade, given space to small and national companies to increase and become more important in national contexts. Countries are more closed to global markets and big investments. National companies have a small amount of people, modern equipment and a focus in the needs of small niches and small markets.

To survive and become successful, companies have to invest in new products and new materials but in a small scale. Almost all companies have its own production unit with some qualified workers and modern equipment. The use of low-skilled workers with low salaries and poor working conditions is no longer usual in clothing sector.

There are more opportunities to low-skilled and production workers, however employment in the sector did not raise in the last decade. Investment in skills and competences is crucial and because of that almost all workers have train opportunities and skills improvement. In general working conditions are not bad and there is more equality between all workers.

For high skill workers there are fewer opportunities to change a career or a job. Because companies are smaller and countries less flexible and less open to the global market, high skill workers can find a job with good working conditions, but less mobility, travelling, autonomy and challenges. On the other hand there are more policies of work-life balance and is easier to have a child and a family for a high-skilled worker because he/she have now a more stable and closed job.

Working hours are more stable and the intensiveness of work is not so high. This is possible because of the use of modern equipment and ICT and also with the increase use of part-time workers. Contracts are less flexible, but the use of different kind of contracts is common. Usually companies have some full-time workers with permanent contracts and regular working hours and also some part-time workers with temporary contracts that can fill in the companies' needs.

The use of alternative materials that combine good quality and low price is one of clients' demands. Productions in small scale, innovation, research, use of eco-materials, small national units are now words that can define clothing sector in Europe.

4.5 Conclusions

We argued above that the *changes in work*, work organisation and restructuring in the knowledge-based society are being produced by companies' management and individuals making strategic choices in response to a policy context and an economic context. These contexts cannot simply be changed. They are functioning as a regime, supporting specific types of action and *vice versa* are operating against other types of action.

The regimes of European welfare states have their origin in the industrial era. These regimes differ in the extent they respond to the changed conditions towards a knowledge-based society with an increased importance of knowledge as a production factor in the global value chains. We have formulated a number of expectations with respect to the action of individuals and firms. These expectations can be indicatively tested on the basis of the WORKS qualitative and quantitative case studies. The empirical findings of the case study analyses are reported in Annex 2 and the analysis of the case studies was conducted on the basis of this model that referenced the scenario structure.

According to scenario methodology, scenarios can be considered as tools for policy analysis and with them it would be possible to describe possible a set of future conditions. When the WORKS project is going to analyse the changes of work organisation and the quality of the working life, this kind of tool will be decisive.

The intention of this report is to provide the basis for a process of discussion about possible implications of such scenarios expecting that policy recommendations should arise from such a process. The explicit aim of such exercise is the involvement of stakeholders and policy-makers into the discussion of the consequences of labour restructuring in the knowledge-based society. At least this process also should provide material for a communication process which deals with social policies and economical strategies, work and life balance in the future of European countries.

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- In this report, a model of work futures in the knowledge society is developed on the basis of the empirical phase of the WORKS project. Work in the knowledge society is structured by increased knowledge and flexibility requirements. This affects the organisation of work, i.e. skills formation, value chain management, contractual conditions and working time. The impact on work is structured by the particular market and regulative context of companies.

This model formed the input for a number of scenarios of work in the knowledge society. These scenarios differ with respect to the extent of value chain restructuring and work intensification. The 'dark side of flexicurity' scenario describes a dual development of work based on its increasing intensification; the 'liberal Lisbon process' scenario estimates the results of increased activation and labour supply quality, however with increasingly failed social policies; finally 'the new welfare' scenario can be considered as an optimistic one, is based on the development of social dialogue and related policies.

The objective of the report is to develop some conceptual approaches for a methodology of scenario building in order to provide more ideas about the future of work in European countries.

The discussion about possible implications of such scenarios provide policy recommendations that arise from such an exercise and material for a communication process which deals with social policies and economic strategies, work and life balance in the future of European countries.

