Investing in the Future of Jobs and Skills

Scenarios, implications and options in anticipation of future skills and knowledge needs

Executive Summary

Furniture

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Overview

This executive summary highlights the main results of the final report *Investing in the Future of Jobs and Skills. Scenarios, implications and options in anticipation of future skills and knowledge needs in the Furniture Sector*. Apart from analysing sector trends and developments, the study explores four plausible and distinctly different futures and their implications for jobs, skills and knowledge in the year 2020. The study is scenario-based, and is both forward- and backward-looking. It presents a variety of options and recommendations to address future skills and knowledge needs, aimed at the sector (firms, industry at large, sectoral partners), education and training institutes, policy-makers and other stakeholders.

The study should be placed against the background of the EU's renewed Lisbon Strategy for Growth and Jobs and the recently launched New Skills for New Jobs initiative. Investing in people and modernising labour markets is one of the four priority areas of the Lisbon Strategy. The EU New Skills for New Jobs initiative presents a very first assessment of the EU's future skills and jobs requirements up to 2020. The initiative aims to help ensure a better match between the supply of skills and labour market demand and to improve the Member States' capacity to assess and anticipate the skills needs of its citizens and companies.

This study appears in a series of 16 sector studies which are all based on the same common foresight methodology and uniform step-wise approach (see table). The study combines desk research and expert knowledge, and brought together various internal (project team) and external sector experts. The methodological framework that was initially developed by Prof. Rodrigues was further developed, operationalised and applied by a consortium consisting of TNO (lead), SEOR and ZSI.

Methodological framework – the study explained in ten steps
Step 1. Identification of economic activities (sector selection)
Step 2. Main economic and employment trends and structures
Step 3. Main drivers of change
Step 4. Main scenarios
Step 5. Main implications for employment – changes by job function
Step 6. Main implications for skills – emerging needs by job function
Step 7. Main strategic choices to meet future skills and knowledge needs
Step 8. Main implications for education and training
Step 9. Main recommendations
Step 10. Final workshop (validating, complementing, finalising)

The furniture sector – main characterisation

The furniture sector consists of different submarkets: chairs and seats; office shop furniture; kitchen furniture; other furniture (i.e. garden furniture) and mattresses. The countries with the largest furniture industries in Europe are Italy, Spain, France, Poland and Germany, which together represent 64 % of the total number of furniture manufacturing firms in Europe. In general there is a shift noticable from Western to Eastern European countries in manufacturing of furniture. The furniture industry traditionally is a wood-based industry in which skilled handicraft workers produce furniture made from wood, on the basis of a design by a specialised designer. The last years new trends have changed the furniture industry, including the use of new materials as an alternative to wood, the shift towards fair-trade and environmentally sustainable wood. Also new competition from outside Europe, mainly in China has put pressure on competitiveness in the sector.

Main economic and employment trends

The European furniture industry shows a small increase in production and value added in the period 1995-2006. Since 2000 growth has become negative in the EU-15 while continuing to show rapid growth in the New Member States (NMS). The countries which showed the largest decline are all Western European: Germany, Greece, Luxembourg, Denmark, Italy and Belgium. It has to be noted that the new Member States' high growth figures are starting from a low base.

In comparison to other manufacturing industries, the average furniture company in Europe is much smaller in terms of turnover. In terms of value added, three countries produced almost half of the total European value added, being Italy, Germany and UK. In terms of growth, the furniture sector developed strongly in the NMS with the best performing countries being Lithuania, Slovakia, Poland, and Estonia. In the EU-15 the value added showed a different picture for different countries. In France, Austria, Ireland and Spain, the value added of the furniture sector grew faster than the overall economy, while in Germany, Greece, Luxemburg, Denmark, Italy and Belgium the furniture sector showed a decline in the period 2000-2006.

The sector employs almost 1.5 million people Europe-wide, with Germany, Poland and Italy as the largest employers. Between 2000 and 2006 employment in the furniture sector overall in Europe increased marginally with 0.2 % per year. Although two-thirds of employment in furniture is still in the EU-15, employment in the sector shifted gradually but consistently from Western to Central and Eastern Europe over the last decade. Amongst the emerging economies the furniture industry in China showed the biggest increase, both in terms of value added and employment.

While most furniture companies in Europe are SMEs, the new Member States firms tend to be larger on average, with a share in the two largest firm categories being twice the EU-15 average. . The production in the EU-15 has moved to smaller series production, based on tailor-made production and mass customization using advanced design capabilities and specialty technologies, while most of the furniture production in the new Member States is based on mass production automated manufacturing exploiting scale economies.

The change of the trade balance is striking. In the EU-15 the trade balance deteriorated, as well in the overall EU, whereas in the new Member States the trade balance improved. With the growth figures of the GDP in mind, this indicated a shift of comparative advantage from the west to the east – and maybe to the rest of the world. The export of this industry in the new Member States grew faster than the imports.

Employment, state-of-play 2006 and changes 2000-2006

Furniture	Level 2006	Annual growth	Share in EU	Change in share
EU	1 461 206	0.2	100	0
EU 15	981 645	-1.4	67	-7
NMS	479 561	4.2	33	7

Source: Eurostat/TNO.

Most jobs in the furniture sector are in the categories wood treaters and all other craft and trades workers. In the New Member states the share of wood treaters is even larger than in EU-15, while at the same time showing a smaller share of managers, office clerks and secretaries. The general trend in the EU-15 countries is towards fewer handworkers and more supporting staff like managers; architects, engineers; other professionals and office clerks and secretaries. In the New Member States the share of wood treaters and textile, garment, pelt and leather treaters is increasing significantly.

In the EU-15, ageing is visible in the employment shares based on age. In the period 2000-2006, the share of employees younger than 40 decreased in favour of employees over 40 years old. In the New Member States this shift was not noticeable. The share of women in employment is quite low in both NMS and EU-15. Most workers in the furniture sector have medium education level, with 47% in the EU-15 and even 85% in the new Member States (see Table 3.5). The number of employees with a low education level is moderate to low, with 36% in the EU-15 and only 6% in the new Member States. The decrease in low educated has been 9% in the 2000-2006 period alone.

Employment trends by job function: shares (2006) and changes in shares (in%), 2000-2006

Gas, electricity, water	Shares, 2006			Changes in shares, 2000-2006		
	EU15	NMS	EU	EU15	NMS	EU
Managers	8	5	7	1	-1	1
Computing professionals	1	0	1	0	0	0
Architects, engineers	4	2	3	2	0	1
Business professionals	3	2	3	0	-1	0
Other professionals & technicians	5	4	5	2	-3	1
Office clerks and secretaries	10	4	8	1	0	1
Service workers	2	1	1	0	0	0
Extraction and building trades	6	4	6	0	-2	0
Metal. machinery workers	4	5	4	-1	-1	-1
Precision. handicraft. craft printing	6	4	6	-1	-2	-1
Food processing, wood treaters	22	32	25	-3	9	0
Textile, garment, pelt., and leather	6	11	8	-1	6	1
Assemblers, craft and related trade workers	4	5	5	0	1	0
All other craft and trades workers	11	12	12	0	0	0
Labourers	8	8	7	0	-6	-2

Source: Eurostat Labour Force Survey/TNO

SWOT analysis

SWOT Analysis	
Strengths	**Weaknesses**
o Mature and dynamic sector with high quality technology and design o Established markets within and outside of Europe o Prestiguous image among designers	o High labour costs in the EU-15 and growing labour costs in the NMS o Needed upgrade in training infrastructure o Ageing labour force o Poor innovation levels
Opportunities	**Threats**
o Increasing demand (in general and in high quality segment) with incomes rising o Increasing international demand in high-end furniture in emerging markets (BRIC) o New products in line with lifestyle changes and eco-furniture trends o Developing new business models and customer relation systems	o Need to adapt to competitive pressures, as this is an industry "in the throes of intense global competition" International outsourcing and, to a smaller degree, offshoring o However, protectionists tendencies o Further tightening of environmental and safety regulations o Increasing cost of raw materials (wood) o Purchasing power of retail

Source: TNO-SEOR-ZSI

Main drivers of change

Drivers of change have been identified using a systematic approach which addresses trends in Demography, Economy, Society, Technology, Environment and Politics (DESTEP). Starting with a long list of possible drivers the most relevant drivers for this sector have been selected in consultation with an expert panel using an instrument (presented in the table below) that scores possible drivers on a number of criteria: relevance for the sector, uncertainty, expected impact on the volume of employment, on the composition of employment, and on skills and competences – and if so when and where. The following drivers have been identified as most relevant to the furniture sector.

	Main drivers of change											
Category	Driver	Is this driver relevant for the sector? Y / N	How relevant is this driver for the sector? Scale 0-10	How uncertain is this driver for the sector? Scale 0-10	Are substantial impacts expected on the volume of employment? Y/N	Are substantial impact expected on employment composition? Y/N	Are substantial impacts expected on new skills? Y/N	Short, medium or long run impact? S	M	L	Are substantial differences expected between (groups of) countries? Y / N	Are substantial differences expected between subsectors? Y / N
Ageing / demographics	Population growth (birth and migration)	Y	7	2	Y	N	N	N	N	Y	Y	N
Economic	Income per capita and household	Y	7	3	Y	N	N	N	Y	Y	Y	Y
Globalisation	Outsourcing & offshoring	Y	10	3	Y	Y	Y	Y	Y	Y	Y	Y
	Increasing global competition	Y	7	3	Y	Y	Y	Y	Y	Y	Y	Y
Institutional / Political	Global / regional production networks (dispersed production locations, transport)	Y	9	4	Y	Y	Y	Y	Y	Y	Y	Y
	Counter-trend regionalism / protectionism	Y	8	5	Y	Y	Y	N	Y	Y	N	Y
Cultural values	Increasing market segmentation (tailor made production, mass customization)	Y	10	2	Y	Y	Y	Y	Y	Y	Y	Y
Technology, R&D and product and process innovation	Other (sector specific): Innovation through application of new materials and design	Y	8	5	N	Y	Y	Y	Y	Y	Y	Y
Natural resources	Availability and price of other natural resources	Y	8	8	Y	N	N	Y	Y	Y	N	Y
Institutional / Political	Environmental regulation	Y	8	3	Y	Y	N	Y	Y	Y	Y	N
	Security and safety regulation	Y	8	3	Y	Y	N	Y	Y	Y	Y	Y

Source: TNO-SEOR-ZSI

Scenarios and implications for employment

Four future scenarios have been constructed: 1) ***Local mass production,*** 2) ***Global mass production***, 3) ***Local customisation*** and 4) ***Global design and customisation*** (as presented in the figure below). The scenarios depict plausible and credible futures for the furniture sector in Europe by 2020. Rather than wishful pictures ('dreams', 'crystal ball gazing') of the future, scenarios are based on drivers and trends observed and are derived in a logical and deductive way.

Four future scenarios for furniture sector and main underlying drivers

Endogenous, sector specific drivers:
- Environmental, health and safety regulations
- Market segmentation, customisation, different consumer types and life styles
- New services and business models

Full customisation

Exogenous drivers:
- Environmental, health and safety regulations
- Globalisation: competition, emerging markets
- Outsourcing and off-shoring
- International production networks
- Technology: new materials (hi-tech furniture, ICT)

Local:			Global:
Slow growth Low importance Small Slow growth	**(3)** **Local customisation**	**(4)** **Global design and customisation**	Fast growth High importance Large Rapid growth
	(1) **Local mass production**	**(2)** **Global mass production**	

Mass production

Source: TNO-SEOR-ZSI

- **Scenario I: Local mass production**. This scenario is essentially a continuation of the status quo. The importance of globalization in this scenario is not very high as result of measures to protect the position of EU producers. European producers (many of them small- and medium-sized enterprise [SMEs]) continue to produce along traditional lines. In high labour cost countries like the EU-15 further mechanisation and automation will diminish the labour factor. Due to higher costs of mechanisation this process will continue in large firms, but will later also be introduced in SMEs. Although there is some protection for EU producers, this scenario will result in closure of firms and reduced employment because the industry fails to renew itself and will not be able to cater to the demands of an increasingly segmented market, consisting of a large number of small niches.
- **Scenario II: Global mass production**. This scenario maintains the traditional approach to furniture design and manufacturing, but open markets speed up the processes of delocalization, outsourcing and the growth of global furniture value chains. Global mass production will be controlled by a few large companies who are not necessarily producing furniture themselves, but will concentrate on design, logistics, integration of the production chain and marketing. The production will take place in low wage labour countries, or will be done in high wage labour countries in furniture firms with a high degree of

mechanisation, automation and robotisation. Implications for EU employment are mixed with reductions in the EU-15 and possible gains in the NMS based on lower labour cost. Eventually, as labour costs in the NMS rise, production will shift to lower wage countries or will remain in Europe with a high degree of automation and will therefore offer limited employment.

- **Scenario III: Local customisation**. This scenario combines the two trends of relatively low levels of international competition and a much more important role of consumers in design and customisation. The EU furniture industry tailors its production to an increasingly segmented market of different types of consumers (young and old, middle class and up-market, etc.). Customers themselves become involved in design and adaptation, using web-based tools. Shops provide advice to customers on design and help with practical support. This scenario emphasizes, high-value, high-quality production, tailored to a wide range of different customers. It requires the development of new systems of production organisation like lean manufacturing and mass customisation. The involvement of users in product design becomes important and and helps to learn from specific local customer demands. Production of wood based on local products can offer a new value added in the growing niche-market of regional products.
- **Scenario IV: Global customisation**. The process of mass customisation and catering to the demands of very different types of consumers is extended to the global level in this scenario. Due to different customer life styles and market segmentation, a wider variety of customers will be served through mass customisation at global scale. Chinese and other Asian companies who started producing cheap furniture for the mass market are following the example of European producers and increasingly provide tailor-made designs for individual consumers. Conversely, up-market European companies will start to cater to the demands of increasingly affluent upper and middle classes in the emerging market countries. Internet, web-based design tools, advanced logistics and systems of quality control allow customers to order tailor-made designs directly from companies across the globe at very competitive prices. New production processes include rapid manufacturing, virtual prototyping and a higher degree of mechanisation and robotisation that make mass-customisation possible. Although at the moment in the furniture industry already a reasonable high degree of freedom is possible for the customer, in this scenario the customer is given even more freedom in customisation. Customers may want a greater choice in use of different materials, different colours, customizing all sizes and combining different materials in different shapes. Also the application of customer designs, patterns or pictures in furniture development (textile, table, glass, doors, etc.) offers additional value added. In the Global customisation scenario, customers have a higher degree of freedom in customising their furniture, while the production of furniture will be at the same speed as mass-production, which prevents a higher delivery time to the customer.

Implications of scenarios for jobs, skills and knowledge by job function

In almost all scenario's job volume effects for the total furniture sector in Europe is expected to maintain current levels or show a decrease. Only in the 'global customisation' scenario a small increase in employment in the furniture industry is expected, due to a strong focus on customisation in a globalised economy in which Europe is expected to be competitive. In both mass production scenarios a decrease in labourers and skilled handicraft workers is foreseen, the last job function has the largest share of employment in the furniture industry. For mass customisation (both local and global) many more and different skills are required, leading to an increase in many different job functions. The automation and robotisation required for mass customisation will be at the expense of labourers and to a lesser extent the skilled handicraft workers. For the local customisation scenario the competition will be less fierce and more local oriented. A better understanding of the local customer is needed as well as a stronger orientation on local suppliers of materials. The global customisation scenario will require a slight increase in the number of jobs, in almost all job functions. This will be fostered by the increase in material use, the different regulations, languages and cultures in both supplier markets as in consumer markets.

Implications of scenarios: job volume changes by function, 2009-2020

	Mass Production		*Customisation*	
	Local	**Global**	**Local**	**Global**
Managers	M	M/I	I	I
ICT professionals	M/I	I	M	I
Industrial designers	M	M/I	I	I
Production managers	M	I	M	I
Accounting & Finance	M	M/I	M	M
Sales & marketing	M/I	I	I	I
Supply chain managers	I	I	M/I	I
Administrative support staff	M	M	M	M
Plant and machinery maintenance and repair staff	M/I	I	M/I	I
Skilled handicraft workers	D	D	M/D	M/D
Machine operators	M	M	M/I	M/I
Labourers	D	D	D	D
Overall	***D***	***M/D***	***M***	***M/I***

Source: TNO-SEOR-ZSI. Note: D =decrease, I=increase, M=maintain. I/M indicates "slight increase to stabilization of work force expected." Similarly M/D indicates indicates "stabilization to slight decrease of work force expected", etc.

Identification of emerging competences, skills and knowledge needs

By taking the scenarios and drivers as a starting point, logical inferences ('guestimates') of skills and knowledge needs were made for each of the identified job functions. *Skills* refer to the ability to apply knowledge and use know-how to complete tasks and solve problems. In the context of the European Qualification Framework (EQF), skills are described as cognitive (involving the use of logical, intuitive and creative thinking) or practical (involving manual dexterity and the use of methods, materials, tools and instruments). *Knowledge* refers to the outcome of the accumulation of information through learning. It is the body of facts, principles, theories and practices that is related to a field of work or study. In EQF context, knowledge is described as theoretical and/or factual. *Competences* refer to the proven ability to use knowledge, skills and personal, social and/ or methodological abilities, in work or study situations and in professional and personal development. Competences thus defined come actually close to what is generally understood nowadays as 'soft skills'. In EQF context, competences are described in terms of responsibility and autonomy. In the practical elaboration of future skills and knowledge needs for the purpose of this study, both have been further 'disentangled' to result into six clusters of similar and related skills and knowledge needs (see table).

Future skills and knowledge needs by job function

Across all job functions soft skills will become increasingly important, especially so for high skilled professional job functions. The general trend of up-skilling across job functions is bound to continue in the coming years. Due to the changing nature of jobs, predefined technical knowledge capabilities will become somewhat less important while skills to adapt and learn new competences and life-long learning will be put at a premium. Certain knowledge – notably e-skills – will become more important. Emerging competences of higher skilled jobs mostly refer to *how* to learn, communicate, interact and adapt to changing environments in addition to a high quality education. Emerging competences in medium-educated job functions that mostly execute defined tasks and processes refer mostly to specific knowledge sets that can be taught through learning.

Overview of skills and knowledge needs identified for each job function and scenario
Knowledge ('hard skills')
• Legislative / regulatory knowledge (environmental / safety / labour / contracting); Language; e-skills; Marketing skills; Technical knowledge; Product knowledge; Product development
Social Skills • Team working skills; Social perceptiveness (listening / understanding); Communication; Networking; Language; Intercultural
Problem-solving Skills • Analytical skills; Interdisciplinary; Initiative, Multi-skilling; Creativity
Self-management Skills • Planning; Stress and time management; Flexibility; Multi-tasking
Management skills • Strategic & visionary; Coaching and team building; Change management; Project management; Process optimizing; Quality management; People skills crucial for collegial management style
Entrepreneurial skills • Supplier and customer relationship / understanding; Business understanding / development; Trend setting / trend spotting
Source: TNO-SEOR-ZSI

Key emerging skills and knowledge needs for the most important job function categories can be described as follows[1]:

Managers - Global mass production and global customisation are the most challenging scenarios for managers, necessitating more creativity, planning abilities and marketing skills. In the customisation scenarios, customer relations skills will become very important, while in both global scenarios social and (inter)cultural skills will become more important. The local mass production scenario is more-or-less business as usual, requiring few additional skills and competences.

ICT professionals – For the customisation scenarios the functioning of a user-friendly website that is adapted for customers to indicate their preferences is necessary for a good functioning business. This requires skills in understanding suppliers and customers, necessary e-skills and in the global customisation scenario also intercultural skills. In the mass production scenarios a further decrease of delivery time will become an increasing factor for competitiveness and will require an integration of software systems. Planning, process optimizing and quality

[1] For expected changes in main skills and knowledge clusters, see tables below. More extensive and detailed accounts on future skills and knowledge needs can be found in the main report, with further differentiations made by scenario.

management are important skills in the global mass-production and customisation scenarios.

Industrial designers – In general the role of industrial designers will be different, depending on the scenarios. For the global mass-production scenario, the creativity of the designers will be very important for creating unique and distinctive designs for furniture, while for mass-customisation creativity is needed to make designs that are adaptable for customers. Creativity is interpreted as the skills to create unique, distinguishing and innovative designs. In the customisation scenarios a stronger service orientation will become more important. In the global scenarios the social and language skills will gain importance. In the customisation scenarios, a close co-operation with the customers will become necessary to establish a workable concept that takes into account individual freedom and the translation into doable products.

Production managers – In all scenarios the shift from handicraft to machine and robot manufacturing will ask for a different input from the production manager, who needs to understand the characteristics of new manufacturing processes in order to make a detailed work plan based on the design from the commercial designer. Since the production manager needs to communicate well with designers and production employees (machine operators and skilled handicraft people), this person needs to have communication, networking and team working skills, also to have a better the understanding of the customer. With more attention paid in all scenarios towards the production time and efficiency, additional management skills like project management, process optimizing and quality management will become more important for the project manager. Also the e-skills will become very relevant in each scenario since production managers will increasingly use computer-based systems to execute their planning.

Accounting and finance professionals – Communication with suppliers and customers will become more important in both the global and customisation scenarios. Also the use of more sophisticated software for administration and invoicing will need advanced e-skills in all scenarios. .

Sales & marketing – The sales and marketing employees will in the different globalisation scenarios require entrepreneur skills and self management skills, in order to anticipate on the globalising sales market. In the mass-customisation scenarios, the sales and marketing employees require additional social skills for better understanding of each individual customer. In all scenarios product knowledge is essential for understanding the technical understanding of the products and the ability to communicate and explain these to customers. Furthermore e-skills will in all scenarios be needed for doing e-business and handling of IT software for managing client relationships and communication.

Supply chain managers – The supply chain manager increasingly in all scenarios will need social skills in order to organise the supply chain, which increasingly will become more fragmented. Additional technical knowledge about a wider range of materials will be needed in order to assess the quality of raw materials. Furthermore, stricter environmental and social regulations concerning the use of natural resources will require from the supply chain manager up-to-date legislative and regulatory knowledge. E-voicing, administration and e-business require necessary e-skills in all scenarios.

Administrative support staff – The communication with other staff makes social skills essential for administrative support staff. More self-management skills will be required in the future for more independent work organisation. In the global scenarios additional language and inter-cultural social skills will become necessary.

Plant and machinery maintenance and repair workers - In the future more sophisticated machines and robots will be used in the furniture industry, which will be operated based on advanced software. This requires more advanced e-skills, and ICT knowledge. In general, machinery will become more multifunctional and complex, necessitating higher technical and analytical skills.

Skilled handicraft workers; machine operators and labourers - In the future, the borders between handicraft workers and machine operators may blur, requiring from the handicraft workers multi-skilling capabilities and more e-skills. For skilled handicraft workers, the use of more sophisticated and automated tools to facilitate their handicraft will increase, asking for more different technical skills in operating these tools. Due to an expected further increase in the use of alternative materials, handicraft workers need to broaden their knowledge about materials to many new materials and applying interdisciplinary skills.

Main strategic choices to meet skill and knowledge needs

In order to meet future skills and knowledge needs, apt and timely solutions – referred to here as strategic choices - are required (see table below). Strategic choices refer and relate to the medium- and longer term, even though emerging skills and knowledge needs in practice may also apply to the now and tomorrow. Essential in seeking appropriate solutions is to keep this longer time perspective in mind. Rather than focusing on one single solution, a set of linked strategic choices will in most cases be the best strategy to follow. Prioritising both in time (what first, where to follow up) and in allocation of resources (including budgetary focus) followed by further fine-tuning is a clear necessity to guarantee that skills needs are targeted and solved. Skill needs can be identified at various levels, ranging from assessments at the national or even European sector level to more precise assessments at the regional and company level. Increasingly the identification of skills and knowledge needs but also the search for adequate solutions will have to become an integral part of an overall longer-term business strategy, also for SMEs. Some solutions will be found within the company itself, e.g. through reorganising functions within or between plants, by offering (re)training trajectories or by active global sourcing of personnel. For SMEs and especially for micro-enterprises such longer-term, more strategic human resource management often will be more difficult to organise and operationalise.

In order to address the identified future skills and knowledge needs in an encompassing and timely manner, appropriate joint action is needed by all stakeholders, including the industry (firms, sector organisations and social partners), training and education institutes, intermediary organisations and, last but not least, government at all levels (EU, national, regional and local). Collaboration is needed in order to agree on and implement a package of feasible solutions. Timely, targeted and reliable information to make decisions – i.e. adequate monitoring and analysis - is an essential prerequisite.

Short-cut strategic options decision tool.

The Short-cut strategic option decision tool presents a short summary of the relevant future changes for a specific job –function. Additionally it presents different possible policy measures, indicating the viability of each policy measure and identifying which actors should be involved in the policy measure. An example is presented for the job-function of Managers in the next table.

Example. Strategic Options Decision Tool -- job function: Managers		
1. What is the maximum volume effect? 2. What is the maximum change in skills? 3. Do SME's play a large role? 4. Is the sector national/EU/global? 5. Is the workforce old? 6. Is the workforce low educated?	Increase (longer term maintain in GMP) 16 Yes Global (except LMC) Yes (in EU-15); younger in EU-12 Yes	
Option	**Is this option viable?**	**Actors[1]**
A. Recruiting workers from other sectors	Yes, mainly for generic managerial skills (GMP and GC), Less viable for LC (more specific managerial skills needed)	C, S, I
B. Recruiting workers from other Member States	Yes, mainly in GMP and GC, less viable in LC; often language barrier	C, E, G, I
C. Recruiting workers from Non-Member States	Yes, mainly in GMP and GC, less viable in LC; often language barrier	C, E, G, I
D. Recruiting unemployed with or without re-training	Only in rare cases	C, I
E. Recruiting young people from the education system	Yes, e.g. through apprenticeships	C, S, E
F. Training and re-training employed workers	Yes, in-house promotion and further training in the firm	C, S, E
G. Changing work organisation	Yes, GC mainly ICT & logistics driven (Supply Chain Management)	C
H. Outsourcing and offshoring	Yes, only for large companies in GMP and GC.	C
I. Changing vocational education	Yes, networking, communication, language and intercultural management	S, E
J. Designing and offering new courses	Yes, networking, communication, language, intercultural management, also e-skills and logistics (SCM). In GMP and GC knowledge regarding foreign regulation and legislation.	C, S, E
K. Providing information about emerging skills	Yes, to inform (new) employees about the required skills	C, S
L. Improve the image of the sector	Yes, needed to recruit employees	C, S, E, U, G, I
M. Stronger cooperation between stakeholders	Yes, including stronger cooperation with all stakeholders	C, S, E, U, G, I

Notes: C (company), S (sector organisations and chambers of commerce), U (trade unions), E (education & training), G (governments), I (intermediary organisation).* Taking the most extreme scenario.

Conclusions

Implications, conclusions and recommendations have been made at two distinct levels: the individual job function (micro) level focusing on options by function and those, more generally, aimed at sectoral stakeholders (including education and training) and policy-makers (meso-level). The former are summarised in the table below. At the meso-level a further distinction has been made between education and training and 'other' main conclusions and recommendations.

Conclusions and recommendations on education and training

1) Adapt and modernise vocational education and training (VET) and general education systems
2) Introduce sector-specific skills at an early stage in vocational training
3) Strengthen cooperation in sector-specific training measures
4) Enhance flexibility and modularisation in education
5) Support joint training networks to foster apprenticeships in the sector
6) Establish joint teaching facilities for all: keep vocational teaching up to date
7) Develop e-learning and blended learning
8) Focus continuing vocational training on multi-skilling, re-training and up-skilling
9) Establish joint continuing vocational training networks and special courses for older workers
10) Facilitate training co-operations between SMEs
11) Enhance transparency of the quality of training as well as improving the trans-national recognition of vocational qualifications
12) Include interdisciplinary and multidisciplinary approaches in education

Main other conclusions and recommendations

1) Improve the image of the sector
2) Career guidance for labour market entrants and employees
3) Improve co-operation to improve information regarding skills needs and job opportunities
4) Intensify collaboration between all stakeholders
5) Keep older workers longer in employment
6) Review and monitor the role of new technologies and their implications for employment in the furniture sector

The table on the following pages gives a short summary of the implications of the different scenarios on the different job functions including quantitative change, the total amount of expected changes in skills, new emerging skills and finally the most important solutions and the actors who are identified as the bodies who could initiate the presented solutions.

Summary of job volumes, skills changes, strategic choices and main players for anticipatory action by scenario					
		Mass Production		*Customisation*	
		Local	**Global**	**Local**	**Global**
Managers	1. Employment volume change	M	M/I	I	I
	2. Skills changes counted	1	16	7	10
	3. Emerging skills needs		Social, Entrepreneurship	Entrepreneurship	Social, Entrepreneurship
	4. Most important solutions	changing work organisation , new courses	changing work organisation , new courses, outsourcing and off-shoring	changing work organisation , new courses	changing work organisation , new courses, outsourcing and off-shoring
	5. Most important actors	C, S, E	C, S, E	C, S, E	C, S, E
ICT professionals	1. Employment volume change	M	M/I	I	I
	2. Skills changes counted	5	10	11	14
	3. Emerging skills needs	Social	Social, Problem solving, Management, Knowledge	Social, Problem solving, Knowledge, Entrepreneurship	Social, Problem solving, Entrepreneurship, Knowledge
	4. Most important solutions	Recruiting workers from other sectors	Recruiting workers from other sectors and (non)-Member States	Recruiting workers from other sectors	Recruiting workers from other sectors and (non)-Member States
	5. Most important actors	C, S, I	C, S, E, G, I	C, S, I	C, S, E, G, I
Industrial designers	1. Employment volume change	M	M/I	I	I
	2. Skills changes counted	6	6	5	8
	3. Emerging skills needs	**Knowledge**	**Knowledge**	**Knowledge**	**Knowledge**, Entrepreneurship
	4. Most important solutions	Recruiting workers from other sectors and (non)-Member States, outsourcing	Recruiting workers from other sectors and (non)-Member States, outsourcing	Recruiting workers from other sectors and (non)-Member States, outsourcing	Recruiting workers from other sectors and (non)-Member States, outsourcing
	5. Most important actors	C, S, E, I	C, S, E, I	C, S, E, I	C, S, E, I
Production managers	1. Employment volume change	M	I	M	I
	2. Skills changes counted	10	23	20	24
	3. Emerging skills needs	Self management, Management, **Knowledge**	Social, Problem solving, Self management, Management, **Knowledge**	Social, Problem solving, Self management, Management, **Knowledge**	Social, Problem solving, Self management, Management, **Knowledge**
	4. Most important solutions	Recruiting workers from (non)-Member States	Recruiting workers from (non)-Member States	Recruiting workers from (non)-Member States	Recruiting workers from (non)-Member States
	5. Most important actors	C, G	C, G	C, G	C, G

		Mass Production		*Customisation*	
		Local	**Global**	**Local**	**Global**
Accounting & Finance	1. Employment volume change	M	M/I	M	M
	2. Skills changes counted	5	10	6	10
	3. Emerging skills needs	Knowledge	Social, Knowledge	Knowledge	Social, Knowledge
	4. Most important solutions	Improve image, recruiting workers from other sectors	Improve image, recruiting workers from other sectors and (non)-Member States, recruiting workers from other sectors	Improve image, recruiting workers from other sectors	Improve image, recruiting workers from other sectors
	5. Most important actors	C, S, E, I	C, S, E, I	C, S, E, I	C, S, E, I
Sales & marketing	1. Employment volume change	M/I	I	I	I
	2. Skills changes counted	7	17	10	15
	3. Emerging skills needs	Entrepreneurship, Knowledge	Social, Self management, Entrepreneurship, Knowledge	Entrepreneurship, Knowledge	Social, Self management, Entrepreneurship, Knowledge
	4. Most important solutions	training and re-training employed workers, Outsourcing and off-shoring, Improve image	training and re-training employed workers, Outsourcing and off-shoring, Improve image	training and re-training employed workers, Outsourcing and off-shoring, Improve image	training and re-training employed workers, Outsourcing and off-shoring, Improve image
	5. Most important actors	C, S, E, U, G, I	C, S, E, U, G, I	C, S, E, U, G, I	C, S, E, U, G, I
Supply chain managers	1. Employment volume change	I	I	M/I	I
	2. Skills changes counted	11	14	11	15
	3. Emerging skills needs	Social, Knowledge	Social, Knowledge	Social, Knowledge	Social, Knowledge
	4. Most important solutions	Recruiting young people from the education system, Training and re-training employed workers	Recruiting young people from the education system, Training and re-training employed workers	Recruiting young people from the education system, Training and re-training employed workers	Recruiting young people from the education system, Training and re-training employed workers
	5. Most important actors	C, I, E	C, I, E	C, I, E	C, I, E
Administrative support staff	1. Employment volume change	M	M	M	M
	2. Skills changes counted	4	9	4	9
	3. Emerging skills needs	Social	Social, Self management	Social	Social, Self management
	4. Most important solutions	Recruiting young people from the education system	Recruiting young people from the education system	Recruiting young people from the education system	Recruiting young people from the education system
	5. Most important actors	C, E	C, E	C, E	C, E

		Mass Production		*Customisation*	
		Local	**Global**	**Local**	**Global**
Plant and machinery maintenance and repair staff	1. Employment volume change	M/I	I	M/I	I
	2. Skills changes counted	7	10	7	10
	3. Emerging skills needs	Self Management, Knowledge	Social, Self Management, Knowledge	Self Management, Knowledge	Social, Self Management, Knowledge
	4. Most important solutions	Training and re-training employed workers	Training and re-training employed workers , outsourcing	Training and re-training employed workers	Training and re-training employed workers , off-shoring
	5. Most important actors	C, E	C, E	C, E	C, E
Skilled handicraft workers	1. Employment volume change	D	D	M/D	M/D
	2. Skills changes counted	10	14	14	16
	3. Emerging skills needs	Social, Problem solving, Management, Knowledge	Social, Problem solving, Management, Knowledge	Social, Problem solving, Management, **Knowledge**	Social, Problem solving, Management, **Knowledge**
	4. Most important solutions	Training and re-training employed workers	Training and re-training employed workers, outsourcing	Training and re-training employed workers	Training and re-training employed workers, offshoring
	5. Most important actors	C, S, E, U	C, S, E, U	C, S, E, U	C, S, E, U
Machine operators	1. Employment volume change	M	M	M/I	M/I
	2. Skills changes counted	9	11	11	13
	3. Emerging skills needs	**Problem solving**, Self management, Management, **Knowledge**	Social, **Problem solving**, Self management, Management, **Knowledge**	Social, **Problem solving**, Self management, Management, **Knowledge**	Social, **Problem solving**, Self management, Management, **Knowledge**
	4. Most important solutions	Recruiting young people from the education, recruiting workers from other sectors and (non)-Member States	Recruiting young people from the education, recruiting workers from other sectors and (non)-Member States, outsourcing	Recruiting young people from the education, recruiting workers from other sectors and (non)-Member States	Recruiting young people from the education, recruiting workers from other sectors and (non)-Member States, offshoring
	5. Most important actors	C, E, U	C, E, U	C, E, U	C, E, U
Labourers	1. Employment volume change	D	D	D	D
	2. Skills changes counted	2	5	6	8
	3. Emerging skills needs		Social	Self management, Knowledge	Social, Self management, Knowledge
	4. Most important solutions	Recruiting young people from the education, recruiting workers from other sectors and (non)-Member States	Recruiting young people from the education, recruiting workers from other sectors and (non)-Member States, outsourcing	Recruiting young people from the education, recruiting workers from other sectors and (non)-Member States	Recruiting young people from the education, recruiting workers from other sectors and (non)-Member States, offshoring
	5. Most important actors	C, E, U	C, E, U	C, E, U	C, E, U

C=Companies; S=Sectoral organisations, U=trade Unions; E=Education and training institutes; G=Government (EU, Member State, regional, local).