Investing in the Future of Jobs and Skills. Scenarios, implications and options in anticipation of future skills and knowledge needs for the Computer, Electronic and Optical Products Sector. Policy Summary

The computer, electronic and optical products sector includes three main sub-sectors: office equipment and computers; audio, video and telecom equipment; and medical, optical and precision instruments. All three are characterised by short product life cycles, strong global competition and a comparatively strong emphasis on R&D and innovation. Increasing attention for consumer preferences in design and product development, collaboration with customers and increasing miniaturisation have changed the business, as have international competition, relocation of production and the emergence of global value chains. The sector accounts for about 134,000 enterprises, employing 2.1 million people or 0.94% of overall EU employment. New Member States (NMS) account for 18% of EU sector employment. 53% of employment is in medical and optical products, 40% in audio, video and telecom, and 17% in office equipment and computers. Employment growth varies markedly between the sub-sectors, with a modest 1% annual growth in medical and optical, and modest (NMS) to strongly negative (EU15) growth in the other two during the period 2000-2006. A notable positive exception is office equipment and computers in the NMS (+1.7% annually). The workforce is dominated by medium-educated (51%) and high-educated (33%). Low-educated have lost share considerably (minus 6% points). More than half of all employees is younger than 40 years, up to even 58% in the NMS. The recent shift in skills structure also reflects an apparent shift in specialisation across Europe, with Central and Eastern Europe specialising in production and assembly activities, and Western Europe concentrating on the R&D-intensive, higher value segments. Sector strengths include strong clusters, a strong science base, strong value chain orchestrating capacity by European firms, strong brands, high purchasing power and a large home market. Megatrends of energy/environment, security and health/ageing offer important future market opportunities. Weaknesses include concentration of R&D in globally mobile players, weak IPR protection in third countries, lack of standardization and limited job mobility across Europe.

A number of recommendations apply in order to better prepare and anticipate future skills and knowledge needs in the sector. These include: 1) Fostering the collaboration between all stakeholders and different political-geographical levels; 2) Developing and cherishing successful regional clusters; 3) Diversifying the personnel base and recruitment scope; 4) Increasing the flexibility in work organization; 5) Increasing the intra- and intersectoral as well as transnational mobility and promote international and intersectoral acknowledgement of certificates; 6) Promoting the intra-sectoral, intersectoral and transnational acknowledgement of IT skills by introducing an IT driver's licence; 7) Providing better career guidance for those in search of a job, supported by skills assessment schemes; and 8) Increasing co-operation to improve the information systems on skills and knowledge needs and job opportunities.

More flexible and apt education and training is indispensable in order to address the future needs of both employers (firms) and employees. The following recommendations specifically address education and training needs in the sector: 1) Adapt and modernise vocational education and training (VET) and general education systems on a *national* basis; 2) Enhance the flexibility in education and training by promoting modularization; 3) Stimulate targeted facilitation of Life-Long Learning (LLL); 4) Strengthen collaboration between vocational training institutes and industry; 5) Strengthen knowledge networks in higher education; 6) Build on existing know-how transfer and establish learning networks along the value chain; 7) Enhance flexibility in learning forms – e-learning and blended learning; 8) Foster a culture of learning, innovation, openness and tolerance; 9) Strengthen basic skills early on and improve the quality of primary education; 10) Promote the natural sciences and mathematics in schools and improve the image and visibility of technical and scientific job careers; 11) Supply special courses dedicated to sector characteristics: supply change management, design engineering, nano-electronics and nano-optics; 12) Supply special courses for older workers; 13) Pay more attention to interdisciplinary and multidisciplinary studies; 14) Foster multi-skilling.