

EMPLOYMENT AND SOCIAL AFFAIRS

ENCOURAGING STEM STUDIES FOR THE LABOUR MARKET

BACKGROUND

In its resolution on *How can the European Union contribute to creating a hospitable environment for enterprises, businesses and start-ups to create jobs?* of 15 April 2014,¹ the European Parliament stresses that Member States should invest more in human capital, be more responsive to labour market needs and create variable transition schemes from education to the labour market. Furthermore, it calls for a partnership approach with a particular view to STEM (Science, Technology, Engineering, Mathematics) subjects and further training of workers, above all of those with low or obsolete skills.



FOCUS OF THE STUDY

This study on **Encouraging STEM Studies for the Labour Market**, prepared by Policy Department A at the request of the **Committee on Employment and Social Affairs**, provides an up-to-date overview of the labour market situation in STEM occupations and analyses European as well as national approaches to encourage STEM uptake in relation to these labour market needs. The aim is to identify practices which help to increase the supply of STEM skilled labour.

KEY FINDINGS

1. Labour market situation in STEM-related jobs

According to the study, in the European Union employment of STEM skilled labour is increasing in spite of the economic crisis and **demand is expected to grow**. At the same time, high numbers of STEM workers are approaching retirement age: Around 7 million job openings are forecast until 2025.

Employment prospects in STEM-related sectors differ. Demand is expected to rise in professional services and computing, whilst no employment growth is forecast in the pharmaceutical sector.

Demand for STEM skills requires both upper-secondary and university graduates. **Medium-level qualifications are required for almost half of STEM occupations** and this trend is expected to persist.

The **unemployment rate** for STEM skilled labour has been **very low** and well below the total unemployment rate since the beginning of the 2000s, even in countries particularly hit by the crisis.

The majority of Member States have experienced **recruitment difficulties** in relation to STEM skilled labour in recent years. Shortages are more pronounced for **technological occupations** (Engineering and ITC) and for **professionals**.

2. Policy approaches to encourage STEM

- **Developing attractive STEM curricula and teaching methods**
Success factors: Inquiry-based education, greater contextualisation (practices from LT, PT, FI)
- **Improving teacher education and professional development**
Success factors: Integration as objective in strategic framework for encouraging STEM studies, formal activities for teachers by science centers (practices from DK, IE, UK)
- **Guiding young people**
Success factors: Motivation projects and campaigns, effective cooperation with employers, links between pupils and professionals in the workplace, career guidance (practices from FR, DE, BE, PT, NL)

3. Initiatives at European and at national level and achievements

Initiatives have been designed, implemented and funded by a **wide range of bodies** including the European Commission, Member States, public authorities, professional associations and networks of interesting stakeholders.

Several **European initiatives** attempt to chart the practices pursued in Member States and provide a platform to facilitate knowledge exchange, such as [Scientix](#), [inGenious](#), [STELLA](#). European coordination and funded research has provided a **collection of good practices**.

In spite of national diversity in the European Union, common policies and programmes have been pursued in the **Member States**. Most countries use a mix of policy approaches with the majority of policies and initiatives being undertaken in the educational sphere.

Since the mid-2000s, the **share of STEM university graduates has increased in 15 Member States and at European level**. In 2012, the share was highest (> 25 %) in Germany, Greece, France, Austria, Finland and Sweden and lowest (15 %) in Luxembourg and in the Netherlands. In particular countries in the South and East of Europe (e.g. Croatia, Cyprus, Latvia, Hungary, Malta, Portugal, Romania, Slovenia) experienced a significant rise. At the same time, many Member States are confronted with a **decline in the share of STEM VET graduates** from vocational education and training.

RECOMMENDATIONS

- to **promote a positive image of science**, raise awareness of science, make improvements in school based science teaching and learning, increase student's interest in science and aim for gender balance.
- to take account of the **labour market and industry settings** when building up school-industry partnerships
- to further develop **active labour market policies in the field**, providing targeted further training to unemployed to tackle STEM shortages. This could be accompanied by an increased emphasis on VET.
- to foster **systematic evaluation** of the different types of initiatives and their impact on STEM uptake.



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