

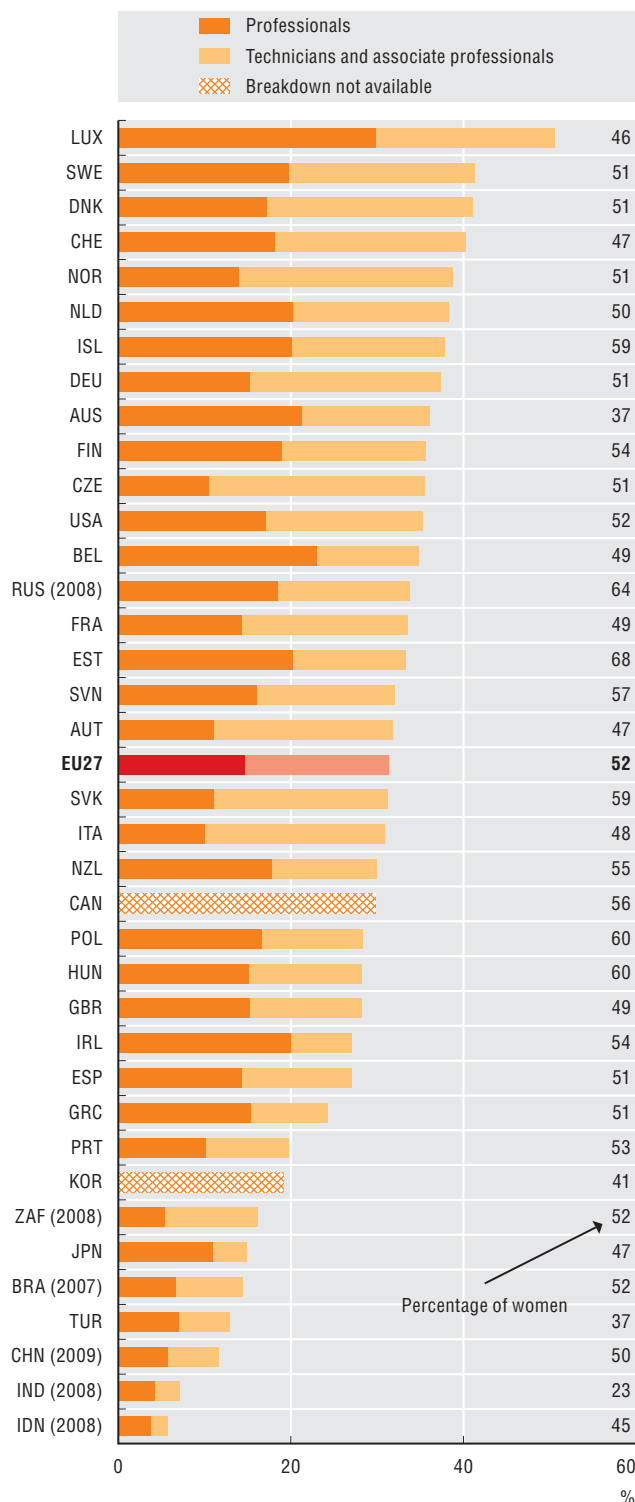
## 2. BUILDING KNOWLEDGE

### 3. Science and technology occupations

A corrigendum has been issued for this page. See: <http://www.oecd.org/dataoecd/26/8/48742541.pdf>

#### HRST occupations, 2010

As a percentage of total employment



Source: OECD, calculations based on EU Labour Force Survey; US Current Population Survey; Australian, Canadian, Japanese and New Zealander labour force surveys; Korean Economically Active Population Survey; China Labour Statistical Yearbook 2010; Indian National Sample Survey; and ILO, Laborsta Database, May 2011. See chapter notes.

StatLink <http://dx.doi.org/10.1787/888932485842>

Human resources in science and technology (HRST) play a key role in innovation. In most OECD countries, they represented more than a quarter of total employment in 2010. The share was over 40% in Luxembourg, Sweden, Denmark and Switzerland; in India and Indonesia, HRST workers accounted for less than 10% of total employment. The split between professionals and technicians differs across countries.

A particular characteristic of HRST employment is the increasing share of women. In the majority of countries, women are now more numerous than men among HRST employees. In Estonia, the Russian Federation, Poland and Hungary, more than 60% of HRST in 2010 were women.

The industry structure of employment shows that HRST employees are more concentrated in services than in manufacturing. In 2008, the share of professionals and technicians in services varied between 19.3% (in Japan) and 46.9% (in Luxembourg) and it is mostly concentrated in community, social and personal services, as well as business services; in manufacturing it was around 20% on average in OECD countries for which data were available.

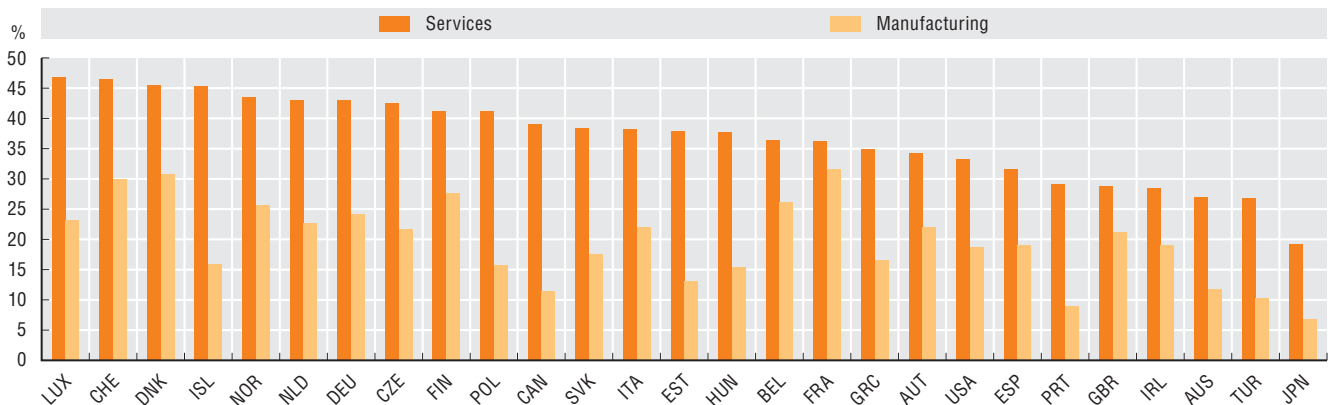
Over 1998-2008, HRST occupations increased more rapidly than total employment in most OECD countries. In services, their average annual growth rate has always been positive, ranging from 1.2% (in Japan) to 6.3% (in Iceland). However, in manufacturing, the share of professionals and technicians decreased by an average annual rate of more than 1% in Luxembourg (-2.3%) and Japan (-1.3%).

#### Definitions

Human resources in science and technology (HRST) are defined according to the *Canberra Manual* (OECD and Eurostat, 1995) as persons having graduated at the tertiary level of education or employed in a science and technology occupation for which a high qualification is normally required and the innovation potential is high. While tertiary level graduates give a measure of supply, demand for HRST is better gauged by occupations. Professionals (ISCO Group 2) includes: physical, mathematical and engineering science professionals; life science and health professionals; teaching professionals; and other professionals. Technicians and associate professionals (ISCO Group 3) includes: physical and engineering science associate professionals; life science and health associate professionals; teaching associate professionals; other associate professionals.

**HRST employees by industry, 2008**

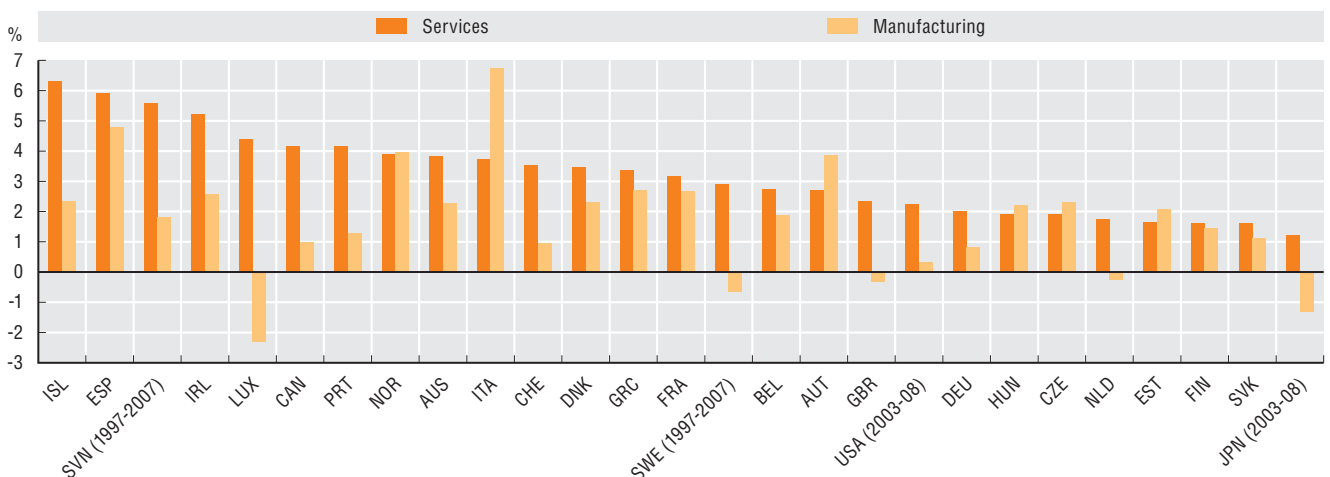
As a percentage of all employees in the industry



Source: OECD, ANSKILL Database (internal use only), June 2011. See chapter notes.

StatLink <http://dx.doi.org/10.1787/888932485861>**HRST growth by industry, 1998-2008**

Average annual growth rate



Source: OECD, ANSKILL Database (internal use only), June 2011.

StatLink <http://dx.doi.org/10.1787/888932485880>**Measurability**

Human resources in science and technology (HRST) are defined on the basis of both educational attainment and occupations. Cross-tabulations of both variables are available from labour force surveys. However, when the industry dimension is added to the breakdown, sample sizes become smaller and the representativeness of the data can be weakened. The use of labour force survey tabulations with the unique occupation dimension is mainly motivated by the availability and comparability of such data across countries. Human resource indicators can also be built from administrative data such as linked employer and employee surveys.

On the basis of earlier work by the OECD and Eurostat in the framework of the “Manual on the Measurement of Human Resources Devoted to S&T”, the *Canberra Manual*, a new dataset, namely ANSKILL, was developed at the OECD. Its main objective is to add a “skill” dimension to the STAN Database for Structural Analysis at the industry level. Differences in national sources limit the ability to produce detailed sectoral breakdowns. ANSKILL covers European countries, Australia, Canada, Japan and the United States over 1997-2008.



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