EASTERN COUNTRIES’ GENDER AND SCIENCE: ANALYSIS AND META-ANALYSIS

NIKOLINA SRETENOVA

ABSTRACT:

The objective of this paper is to provide an insight into the current state-of-the-art of women academics and researchers in the Eastern countries with a particular focus on the scientific fields of ‘Natural Sciences’ and ‘Engineering & Technology’. By ‘Eastern countries’ we mean the former post-communist countries, which are at present the ‘new’ EU Member States + Croatia - which is currently in accession process for EU membership. The other objective of the paper is to illuminate the changing trends of the research on gender and science carried out in the Eastern countries for the time span 1980-2008, structured into eight preliminary defined topics: 1) horizontal segregation; 2) vertical segregation; 3) pay and funding; 4) stereotypes and identity; 5) science as a labour activity; 6) scientific excellence; 7) gender in research contents and 8) policies towards gender equality in research. The paper is based on the findings of the Eastern country-group study of the ‘Meta-analysis of gender and science research’ project (www.genderandscience.org).


1Institute for the Study of Societies and Knowledge, Bulgarian Academy of Sciences. e-mail: sretenova@hotmail.com; phone: + (359 2) 862 68 43
INTRODUCTION

The objective of this paper is to provide an insight into the current state-of-the-art of women academics and researchers in the Eastern countries with a particular focus on the scientific fields of ‘Natural Sciences’ and ‘Engineering & Technology’. By ‘Eastern countries’ we mean the former post-communist countries, which are at present the ‘new’ EU Member States + Croatia - which is currently in accession process for EU membership. The other objective of the paper is to illuminate the changing trends of the research on gender and science carried out in the Eastern countries for the time span 1980-2008, structured into eight preliminary defined topics: 1) horizontal segregation; 2) vertical segregation; 3) pay and funding; 4) stereotypes and identity; 5) science as a labour activity; 6) scientific excellence; 7) gender in research contents and 8) policies towards gender equality in research. The paper is based on the findings of the Eastern country-group study of the ‘Meta-analysis of gender and science research’ project (www.genderandscience.org).

The paper is structured into three parts as follows:

I. Statistics on women and science in the Eastern countries: Facts and Figures
II. Hot topics in the field of gender equality in science for Eastern countries
III. Research on gender and science in the Eastern countries

I. STATISTICS ON WOMEN AND SCIENCE IN THE EASTERN COUNTRIES: FACTS AND FIGURES

A look at the statistics: Where we are

The European Commission publications ‘She Figures 2003’, ‘She Figures 2006’ and especially ‘She Figures 2009’ are indispensible sources of statistical information for any analysis about the presence of women in science across R&D sectors and fields of science. They also provide invaluable information about their under-representation in the higher positions of the academic and research hierarchy as well as in decision-making positions. In addition they enable us to identify some trends using different indicators for the period 2001-2007 by comparing the data presented in these three ‘She Figures’ publications.

In this section we present the profile of the Eastern countries for the time span 2001-2006 by two kind of comparisons of the available statistical data: a) focusing on the differences among the countries of the Eastern group and b) focusing on the differences between the Eastern group as a whole (the ‘new’ EU member States) and the other (Western) European countries - the ‘old’ EU Member States, or EU-15.

Towards an academic career: female doctoral students in Eastern countries

The share of women students at the PhD level (ISCED 6) is an important indicator used in this paper as the PhD degree is more often than not a requirement for an
NIKOLINA SRETENOVA

academic career. ‘She Figures 2009’ tells us that in 2006 the proportion of female PhD graduates in all Eastern countries except the Czech Republic stands above the EU-15 average of 44 %. In six Eastern countries – Lithuania (59%), Estonia (57%), Bulgaria (53%), Latvia (51%), Slovenia (50%) and Poland (50%) the female PhD graduates either outnumber male PhD graduates or are at the same level (EC 2009a, p.49).

The table below shows some trends of women ISCED 6 graduates share by broad field of study for the time span 2001-2006.

**TABLE 1. PERCENTAGE OF ISCED 6 GRADUATES WHO ARE WOMEN, BY BROAD FIELD OF STUDY, 2001-2006**

<table>
<thead>
<tr>
<th>Country</th>
<th>Education</th>
<th>Humanities &amp; Arts</th>
<th>Health &amp; Social Services</th>
<th>Agriculture &amp; Veterinary</th>
<th>Social Sciences Business &amp; Law</th>
<th>Science, Mathematics &amp; Computing</th>
<th>Engineering, Manufacturing &amp; Construction</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulgaria</td>
<td>44</td>
<td>44</td>
<td>68</td>
<td>52</td>
<td>56</td>
<td>54</td>
<td>40</td>
<td>28</td>
</tr>
<tr>
<td>Croatia</td>
<td>-</td>
<td>64</td>
<td>-</td>
<td>-</td>
<td>48</td>
<td>-</td>
<td>-</td>
<td>28</td>
</tr>
<tr>
<td>Czech R</td>
<td>63</td>
<td>62</td>
<td>50</td>
<td>42</td>
<td>51</td>
<td>43</td>
<td>62</td>
<td>44</td>
</tr>
<tr>
<td>Estonia</td>
<td>-</td>
<td>100</td>
<td>36</td>
<td>77</td>
<td>65</td>
<td>68</td>
<td>100</td>
<td>52</td>
</tr>
<tr>
<td>Latvia</td>
<td>67</td>
<td>67</td>
<td>50</td>
<td>50</td>
<td>69</td>
<td>48</td>
<td>100</td>
<td>52</td>
</tr>
<tr>
<td>Lithuania</td>
<td>:</td>
<td>-</td>
<td>90</td>
<td>50</td>
<td>44</td>
<td>69</td>
<td>100</td>
<td>52</td>
</tr>
<tr>
<td>Hungary</td>
<td>61</td>
<td>61</td>
<td>42</td>
<td>49</td>
<td>38</td>
<td>39</td>
<td>44</td>
<td>38</td>
</tr>
<tr>
<td>Poland</td>
<td>-</td>
<td>:</td>
<td>90</td>
<td>50</td>
<td>44</td>
<td>69</td>
<td>100</td>
<td>52</td>
</tr>
<tr>
<td>Romania</td>
<td>-</td>
<td>30</td>
<td>-</td>
<td>47</td>
<td>49</td>
<td>-</td>
<td>-</td>
<td>30</td>
</tr>
<tr>
<td>Slovenia</td>
<td>45</td>
<td>37</td>
<td>66</td>
<td>54</td>
<td>47</td>
<td>-</td>
<td>-</td>
<td>38</td>
</tr>
<tr>
<td>Slovakia</td>
<td>81</td>
<td>54</td>
<td>51</td>
<td>46</td>
<td>58</td>
<td>65</td>
<td>69</td>
<td>38</td>
</tr>
<tr>
<td>EU-15</td>
<td>55</td>
<td>64</td>
<td>49</td>
<td>52</td>
<td>49</td>
<td>54</td>
<td>47</td>
<td>36</td>
</tr>
</tbody>
</table>


The identified trends are as follows: in 2006 in the field of ‘Science, mathematics and computing’ all Eastern countries except Latvia show a substantial increase (sometimes more than 10 percentage points) in women graduates’ share of this field of post-graduate/doctoral study in comparison with the respective figures for 2001. This is also true for the Czech female PhD graduates as well, who in 2006 comprised 39% (versus 24% in 2001) of all Czech PhD graduates in this field.2

The same trend is valid for the field of ‘Engineering, manufacturing & construction’ – in all Eastern countries except Slovenia and the Czech Republic an increase is observed in the percentage of women PhD graduates in comparison with the respective data for 2001. For example, in 2006 in the most masculinised field of ‘Engineering, manufacturing & construction’ eight Eastern countries had a

---

2The Czech case is singled out because by many indicators, the Czech Republic (and to some extent Slovenia) is a notable exception in the Eastern country-group, e.g. the share of women students at the level of PhD studies as well as in R&D sector in the Czech Republic is the lowest among the Eastern country-group.
considerable proportion of female PhD graduates above the EU-27 average of 25%, e.g. Estonia – 59%; Latvia – 43%; Lithuania – 40%; Croatia – 38%; Romania – 35%; Bulgaria – 33%; Slovakia – 33% and Hungary – 29%. Only three Eastern countries – Czech Republic (20%), Poland (24%) and Slovenia (22%) stand below the EU-27 average. One could even say that in Estonia engineering has become a feminized field of study.

Within the period 2001-2006 in the majority of the Eastern countries the annual growth rate in the numbers of female PhD graduates has been higher than that of male graduates in all fields of science, i.e. the trend is that the number of female PhD graduates is increasing more rapidly than numbers of male PhD graduates. A similar trend was identified within EU-15. A decrease in annual growth rate of both female and male PhD graduates in the period 2001-2006 was registered only in two Eastern countries – Estonia (-7.5 – women; -5.3 - men) and Latvia (-3.3- women; - 5.5- men).

Horizontal segregation: Gender distribution of researchers by main fields of science in Eastern countries

According to the European Commission’s ‘She figures 2009’ in 2006 the proportion of female researchers in all Eastern countries except the Czech Republic was above the EU-27 average of 30%. In top place is Lithuania (49%), followed by Latvia (47%), Bulgaria (45%), Croatia (44%), Estonia (43%), Romania (43%), Slovakia (42%), Poland (39%), Slovenia (35%) and Hungary (33%) (EC 2009a, p.28).

Analysis of the gender distribution of researchers across R&D sectors shows that in 2006 the research potential of almost all Eastern countries is concentrated in the Higher Education sector (HES). The highest proportion of researchers (women and men) is employed in the HES in Lithuania (76.9%); Poland (73%); Slovak Republic (71.2%); Latvia (70%); Estonia (64.8%) and Croatia (63.2%). The research potential of Bulgaria is still concentrated in the Government R&D sector (GOV R&D). In five Eastern countries a relatively high proportion of researchers are observed in the Business and Enterprise Sector (BES) – Czech Republic (33.9%); Slovenia (32.3%); Romania (26.8%); Hungary (23.3%) and Estonia (23.0%). This dissimilarity is indicative of the national specificities of the R&D sectors of the Eastern countries. There is to some degree a balance of the distribution of Czech researchers across BES, HES, and GOV R&D, but nevertheless the Czech HES remains the main employment sector for both female and male researchers.

The Table 2 below shows the distribution of researchers, including women researchers by main field of science.
TABLE 2. NUMBER OF RESEARCHERS (AND % OF WOMEN AMONG THEM) BY MAIN FIELD OF SCIENCE OF HES + GOV R&D IN THE EASTERN COUNTRIES IN 2006

<table>
<thead>
<tr>
<th>Country</th>
<th>Natural sciences</th>
<th>Engineering &amp; technology</th>
<th>Medical sciences</th>
<th>Agricultural sciences</th>
<th>Social sciences</th>
<th>Humanities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulgaria Researchers</td>
<td>3,169</td>
<td>2,884</td>
<td>850</td>
<td>1,078</td>
<td>1,369</td>
<td>1,052</td>
</tr>
<tr>
<td>% women</td>
<td>53.9%</td>
<td>26.9%</td>
<td>53.2%</td>
<td>49.8%</td>
<td>46.2%</td>
<td>61.9%</td>
</tr>
<tr>
<td>Czech Republic Researchers</td>
<td>6,250</td>
<td>6,901</td>
<td>5,088</td>
<td>2,458</td>
<td>4,058</td>
<td>2,873</td>
</tr>
<tr>
<td>% women</td>
<td>31.1%</td>
<td>23.4%</td>
<td>46.9%</td>
<td>37.3%</td>
<td>42.0%</td>
<td>41.6%</td>
</tr>
<tr>
<td>Estonia Researchers</td>
<td>1,629</td>
<td>859</td>
<td>423</td>
<td>231</td>
<td>809</td>
<td>1,109</td>
</tr>
<tr>
<td>% women</td>
<td>38.3%</td>
<td>29.5%</td>
<td>60.8%</td>
<td>48.0%</td>
<td>57.4%</td>
<td>65.1%</td>
</tr>
<tr>
<td>Hungary Researchers</td>
<td>4,486</td>
<td>3,881</td>
<td>4,024</td>
<td>1,613</td>
<td>4,708</td>
<td>6,433</td>
</tr>
<tr>
<td>% women</td>
<td>28.3%</td>
<td>18.7%</td>
<td>46.4%</td>
<td>35.3%</td>
<td>37.1%</td>
<td>48.4%</td>
</tr>
<tr>
<td>Latvia Researchers</td>
<td>1,662</td>
<td>1,073</td>
<td>449</td>
<td>588</td>
<td>1,448</td>
<td>987</td>
</tr>
<tr>
<td>% women</td>
<td>41.1%</td>
<td>27.5%</td>
<td>56.3%</td>
<td>50.3%</td>
<td>59.5%</td>
<td>67.3%</td>
</tr>
<tr>
<td>Lithuania Researchers</td>
<td>2,550</td>
<td>2,079</td>
<td>1,214</td>
<td>471</td>
<td>2,323</td>
<td>2,378</td>
</tr>
<tr>
<td>% women</td>
<td>45.2%</td>
<td>28.8%</td>
<td>54.5%</td>
<td>53.1%</td>
<td>62.0%</td>
<td>61.9%</td>
</tr>
<tr>
<td>Poland Researchers</td>
<td>17,026</td>
<td>18,426</td>
<td>15,537</td>
<td>7,347</td>
<td>16,951</td>
<td>9,555</td>
</tr>
<tr>
<td>% women</td>
<td>45.2%</td>
<td>28.8%</td>
<td>54.5%</td>
<td>53.1%</td>
<td>62.0%</td>
<td>61.9%</td>
</tr>
<tr>
<td>Romania Researchers</td>
<td>4,493</td>
<td>7,911</td>
<td>2,425</td>
<td>2,733</td>
<td>4,653</td>
<td>823</td>
</tr>
<tr>
<td>% women</td>
<td>50.2%</td>
<td>39.7%</td>
<td>55.3%</td>
<td>28.8%</td>
<td>50.6%</td>
<td>41.5%</td>
</tr>
<tr>
<td>Slovak Republic Researchers</td>
<td>4,205</td>
<td>4,143</td>
<td>2,342</td>
<td>1,308</td>
<td>4,201</td>
<td>1,018</td>
</tr>
<tr>
<td>% women</td>
<td>39.2%</td>
<td>32.3%</td>
<td>59.9%</td>
<td>41.7%</td>
<td>53.1%</td>
<td>46.5%</td>
</tr>
<tr>
<td>Slovenia Researchers</td>
<td>1,155</td>
<td>1,269</td>
<td>1,114</td>
<td>546</td>
<td>754</td>
<td>744</td>
</tr>
<tr>
<td>% women</td>
<td>34.7%</td>
<td>22.3%</td>
<td>50.2%</td>
<td>50.5%</td>
<td>45.9%</td>
<td>49.3%</td>
</tr>
<tr>
<td>Croatia Researchers</td>
<td>1,282</td>
<td>1,876</td>
<td>2,435</td>
<td>855</td>
<td>1,814</td>
<td>1,247</td>
</tr>
<tr>
<td>% women</td>
<td>46.2%</td>
<td>30.2%</td>
<td>51.6%</td>
<td>42.3%</td>
<td>46.6%</td>
<td>52.90%</td>
</tr>
<tr>
<td>Eastern countries – 11 Researchers</td>
<td>46,867</td>
<td>51,302</td>
<td>35,901</td>
<td>19,228</td>
<td>43,088</td>
<td>28,219</td>
</tr>
<tr>
<td>% women</td>
<td>39.4%</td>
<td>26.5%</td>
<td>52.9%</td>
<td>39.7%</td>
<td>47.8%</td>
<td>49.5%</td>
</tr>
</tbody>
</table>

Source: Own calculation based on compilation of ‘She Figures 2009’ (EC 2009a) tables: Annex 2.4 and Annex 2.5 (p. 112-113)

In five Eastern countries the share of women researchers in the field of ‘Natural sciences’ is above the Eastern countries average of 39.4%, e.g. in Bulgaria (53.9%) followed by Romania (50.2%), Croatia (46.2%), Lithuania (45.2%) and Latvia (41.1%). In the field of ‘Engineering and technology’ Romania and Slovakia rate highest (39.7% and 32.3% respectively) followed by Croatia (30.2%) and Estonia (29.5%). In the majority of the Eastern countries female researchers outnumber male researchers in the field of ‘Medical sciences’, while in the fields of ‘Social Sciences’ and ‘Humanities’ there is to some degree a more balanced representation of the two sexes.
Vertical segregation: a slim chance of a career in science for Eastern women academics

The statistical data ‘Proportion of the female academic staff at the GRADE A (Full Professor) in 2007 in the Eastern countries could be divided into two subgroups: countries which stand above the EU-27 average of 19%: Romania – 32% (in 2004 - 29.1%), Latvia – 29% (in 2004 - 26.5%), Croatia (26%), Bulgaria – 24% (in 2004 - 18%), Slovakia – 20% (in 2004 - 13.5%), Poland – 20% (in 2004 - 19.5%), and Hungary – 19% (in 2004 - 15.4%). Close to this subgroup is Portugal – 21% (in 2004 - 20.9%) and Finland – 23% (in 2004 - 21.2%); the other subgroup stands below the EU-27 average and either at the level of EU-15 of 17% or below it. This smaller group includes: Estonia – 17% (in 2004 - 17.2%), Slovenia – 17% (in 2004 - 12.9%), Lithuania – 14% (in 2004 – 12.1%) and the Czech Republic – 13 % (in 2004 - 10.3%). According to these statistics the case of the Czech Republic is closer to that of countries like Austria, Germany, Denmark and the Netherlands. In terms of vertical segregation the most dramatic situation is charted in Lithuania. In 2006, 78.2% of Lithuanian female researchers are employed in the HES and their share in the HES is 50%. However despite these impressive figures, in 2007 the proportion of Lithuanian female academics at ‘Grade A’ was only 14% (in 2004 – 12.1%) due to the very thick ‘glass ceiling’ charted by the “Glass Ceiling Index”. Therefore Lithuania is an extreme case among the group of the Eastern countries. The situation of Lithuanian female academics as regards their promotion to higher academic positions is more difficult even in comparison with the case of the Czech Republic. The two countries have a comparable proportion of female academics at ‘Grade A’ (14% and 13% respectively) against significant differences in other indicators: 35% of HES researchers are women in the Czech Republic, 50% in Lithuania; 52.8% of Czech female researchers are employed in the HES; 78.2% for Lithuania).

There is some good and some bad news for Eastern academic women, which might be drawn from the identified trends for the time period 2001-2006 and recent statistics.

The good news is that in all Eastern countries, except Estonia the proportion of female academic staff at ‘Grade A’ (Full professor) has increased during the period 2004-2007 and it seems to be a stable trend.

The bad news is that in 2007 despite the existing large available pool of Eastern academic women at ‘Grade A’ in the majority of the Eastern countries (except Latvia, Estonia, Slovenia and Croatia) the proportion of female heads of universities and equivalent higher education institutions was less than 10%. No women have been appointed to these high-level decision making positions in neither Lithuania nor Hungary. In this regard the case of Romania is indicative. The proportion of academic women at ‘Grade A’ is impressive in Romania – 32% and by this indicator Romania ranks on top in both Eastern and Western countries. However in 2007 the female share among the heads of the Romanian universities was only 2% (EC, 2009a, p. 98).
In general the above statistics reveal a kind of paradox – on the one hand the proportion of female researchers in all Eastern countries (except the Czech Republic) is above the EU-27 average (30%); on the other hand the so-called ‘glass ceiling index’ (GCI) (which measures the gap between the progress of men and women in science careers) is thicker in the Eastern countries and stands above that of the EU-15. Indeed in 2007 (despite the observed decrease in the values of the ‘Glass Ceiling Index’ for 2004) in the majority of the Eastern countries the GCI was higher or equal to the EU-15 average of 1.9, e.g. Lithuania (3.0); Estonia (2.6); Czech Republic (2.2); Slovakia (2.1); Slovenia (2.0); Hungary (2.0) and Latvia (1.9). Only in four Eastern countries was the GCI below the EU-15 - Poland (1.8); Croatia (1.5); Bulgaria (1.5) and Romania (1.3) (EC 2009a, p.78). This means that the promotion of Eastern women researchers into higher positions is more difficult in the majority of Eastern countries in comparison with their female colleagues in the EU-15.

We argue that the identified ‘good news’ for Eastern women academics, i.e. the visible positive trend towards the improvement of gender equality in HES and GOV R&D does not originate from the adoption of a new organizational culture in the respective scientific organizations (universities and research centers) and/or from implementation of gender equality policies in these sectors. Generally speaking the above statistics are more likely to reflect the current economic situation in the Eastern countries and the poor image of science and scientists in Eastern societies than the emergence of a new organizational culture for gender equality in scientific research. Therefore the above statistical data should be interpreted at the interface of science and the economy. We assume that when a profession becomes low-paid and unattractive, as a rule it tends to become feminized whilst reciprocally a feminized labour sector might also reduce the payment level of the sector itself.

In short the statistics show that despite some progress made during the last decade gender inequality in science is a persistent phenomenon in both Eastern and Western countries, although the proportion of female professors is slightly higher in the Eastern countries than in the Western countries. At the same time women’s share in decision-making positions was marginal.

II. HOT TOPICS IN THE FIELD OF GENDER EQUALITY IN SCIENCE FOR EASTERN COUNTRIES

To date not all EU Member States have expressed commitment to the EU policy of gender mainstreaming in scientific research by adopting official strategic policy documents in which the reference to gender mainstreaming is present. As far as the ‘new’ EU Member States are concerned, the governments of the majority of Eastern countries (except Bulgaria, Hungary, Poland and Romania) have committed to the EU policy of gender mainstreaming in science. Despite this commitment the respective financial and administrative resources necessary for implementation have not been forthcoming. If we ‘follow the money’ we can say that the implementation of gender mainstreaming in science is not prioritised in the Eastern countries due to the scarcity of financial resources to address this issue. In addition the European Commission target of 40% is still not fully met throughout the EU Framework Programs with a notable exception of the Marie Curie Fellowships. There are no
enforced deadlines nor implementation mechanisms proposed for achieving the recommended targets of 25% for women’s share in leading positions (‘Grade A’) by 2010 and 33% - for female new recruitments at the national level of the EU Member States (EC 2005b, p. 13).

Problems and issues at the stake for Eastern countries

The preparation for EU membership was worked out in the Eastern countries during the so-called ‘accession period’ in which the Candidate countries had to harmonize their national legislations with that of the EU in order to be able to assume the obligations of membership, i.e. the legal and institutional framework, known as the _acquis communautaire_, by means of which the European Union implements its objectives. With regard to this process, at the beginning of the 2000s all Eastern countries adopted Equal Treatment Legislation under the forms of anti-discrimination laws or other relevant legal documents. Therefore legal and direct discrimination on the basis of sex is prohibited in the ‘new’ EU member states including Croatia (which currently is in the process of negotiation for EU membership). Furthermore all Eastern countries have set up the institution of ‘Ombudsman’ to deal with the cases of all kinds of possible discrimination – be it by sex, ethnicity, religion, etc. As a result national policies for ‘non-discrimination by sex’ in all fields of social activities, including teaching and research have been developed in all Eastern countries and embedded in the respective normative documents and regulations of their HE and the Government R&D sectors. However there are differences across the Eastern countries in terms of the stage of implementation of gender equality policies embedded in the Equal Treatment Legislation in their HE and the Government R&D sectors. Here we make an important distinction between the ‘policy of non-discrimination by sex’ in higher education and research (which is present in all Eastern countries) and its further development as a ‘policy of gender mainstreaming in science’ (which is lacking in almost all of the Eastern countries). The EU policy of gender mainstreaming assumes gender balance in the organizational structures of higher education and research institutions at all levels, including decision-making bodies and the definition of a set of equality measures and targeted funding of these measures which in the long-run might lead to achieving a gender balance in scientific research. In this regard some of the Eastern countries (following the recommendation of the Helsinki group on Women and Science) established national

---

3During the socialist period gender equality was an official state politics. However this proclaimed equality was formal and replete with discriminatory practices, e.g. the regime forbade the existence of any women’s movements and networking for about half a century in the Eastern countries of the Soviet Bloc (Bulgaria, Czechoslovakia, Hungary, Poland and Romania). The notable exception was former Yugoslavia, as it did not form part of the Soviet Bloc. The universal formal/legal equality orientation of socialist public policies meant that it was easy to disregard less visible underlying problems. In the worst cases, the universal equality orientation of public policies even led to the neglect of specific gender equality issues. For example in the Eastern countries the gender equality question was not perceived to be an issue at all, either within society at large or the academic communities. In the fields of HES and R&D, in particular, it was believed that the matter of gender equality was treated fairly. Because of this belief many women scientists from the Eastern countries did not reflect on the issues like ‘vertical segregation’, ‘glass ceiling’, etc.
committees for women and science (e.g. Poland, Czech Republic, Slovenia, Bulgaria, etc.) but specific resources for gender mainstreaming were not allocated in all of these countries. Other countries set up units for ‘women and science’ at the institutional level of their Ministries of Education and Research, again without the allocation of national resources for gender mainstreaming.

**Achieving gender balance in scientific research and leadership (women’s representation in decision-making positions in science)**

We argue that the described situation of women and science fundamentally points to the issue of organizational culture of scientific institutions (universities and research centers) which are in need of deep structural change and modernization. This claim implies a shift in the lens through which the ‘puzzle’ of women in science is viewed. Instead of encouraging women scientists to fit into the existing scientific institutional system we should aim to achieve a more gender-sensitive system. In our view the concept organizational culture could be operationalised through a ‘3Rs-dimension’ model. The three Rs are: Recruitment – Retention – Recognition.

**Recruitment** – the crucial topic here is the transparency of selection and appointment procedures and practices at the level of scientific organizations (universities and research centers). ‘Gender Action Plans’ and/or ‘Programmes for gender equality in science’ and an office/unit in charge of monitoring recruitment procedures and setting-up and implementing gender equality programmes are basic requirements. This unit should be located in the Human Resources department of the scientific organization and promote gender mainstreaming in science tracking progress made towards an adequate gender balance at all levels of the academic hierarchy. We believe that the management of gender equality should be considered as an integral part of quality management at the level of scientific institutions.

In 2005 DG Research of the European Commission published the document ‘The European Charter for Researchers & The Code of Conduct for the Recruitment of Researchers’. Among the provisions of this document is the issue of ‘gender balance’:

‘Employers and/or funders should aim for a representative gender balance at all levels of staff, including at supervisory and managerial level. This should be achieved on the basis of an equal opportunity policy at recruitment and at the subsequent career stages without, however, taking precedence over quality and competence criteria. To ensure equal treatment, selection and evaluation committees should have an adequate gender balance’ (EC 2005b).

However this important document has the legal status of a recommendation to the EU Member States which are supposed to take it into account but are not obliged to implement it.

The **Retention** dimension refers to issues like: work-life balance, dual careers (and mobility), gender pay gap and researchers’ remuneration, child-care facilities and flexibility.
- **Work-life balance** means achieving a balance between the professional and private lives of R&D personnel. An adoption of gender-sensitive policy on this topic would enable women to pursue a scientific career on an equal footing with their male counterparts. Such policy assumes measures like: flexible working hours, temporary possibilities for part-time working, distance working/teleworking, special funds dedicated to women returning to science after career breaks (resources for returnees) as well as the necessary financial and administrative provisions for governing such arrangements.

- **Dual careers (and mobility)** mean scientist couples, in which both partners, usually within an academic institution, show a high commitment regarding their professional career, and at the same time attach importance to the care of their partnership and/or family. It is a very sensitive issue especially for early stage researchers in their thirties. At this time they usually have ‘a nomadic’ life style switching from one post-doc fellowship to another across different European countries. Studies show that women are more likely than men to move for their partners’ careers. The consequences are a decrease in women’s scientific production rates, delays in their career promotions, etc. The presence of adequate Dual Career services at the scientific organization (e.g. nurseries and kindergarten for R&D staff) and support for mobile scientist couples are preconditions for equal opportunities in careers’ building.

- **Child-care facilities in the Eastern countries**: The market orientation of the Eastern countries’ economies affected previously well developed childcare facilities - after the political change there became a shortage of available places in public nurseries and kindergartens. At the same time a number of private kindergartens as well as private primary schools were established. However the monthly costs for children’s enrolment in these new private establishments exceeds the average monthly income of an academic couple. The monthly costs of public kindergartens are indeed low and affordable but the demand for public childcare places far exceeds supply. The same is true of care facilities for elderly people. The quality of services in the public homes for senior people is low whilst the newly established private homes for people in the third age are extremely expensive and unaffordable for an academic couple. These developments are of crucial importance for female researchers building careers at the early career stage but also for experienced female researchers. The first group of women as childcare givers and the second group – as care givers for senior parents and relatives. Many professional women have had to cope with this new situation and have had to find a solution.

At the Barcelona Summit in 2002, some explicit conclusions and targets were defined with regard to the provision of childcare services. Confirming the goal of full employment, the European Council agreed that Member States should remove disincentives to female participation in the labour market and strive to provide childcare by 2010 to at least 90 % of children between 3 years old and the mandatory school age and for at least 33 % of children under 3 years of age. The importance of these targets has been reaffirmed as recently as 2008 in the employment guidelines (2008–10) adopted by the Council. A recent EU Report (EC 2009c) gives insight into the provision of childcare services across Europe through a comparative review of 30 European countries. The Table below (reproduced from this report) highlights the situation in the Eastern countries.
TABLE 3. THE PROVISION OF CHILDCARE SERVICES IN THE EASTERN COUNTRIES

<table>
<thead>
<tr>
<th>Country</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BG</td>
<td>Limited supply of (and demand for) childcare services for the youngest children.</td>
</tr>
<tr>
<td>CZ</td>
<td>The demand for childcare facilities far exceeds supply, especially for the youngest age category. There is also a shortage of pre-school facilities for children below 5 years.</td>
</tr>
<tr>
<td>EE</td>
<td>There is a shortage of childcare places for almost all age categories, but especially for children under 3 years.</td>
</tr>
<tr>
<td>LV</td>
<td>There is a severe shortage of places in public kindergartens. On average, about 60% of children attend kindergartens.</td>
</tr>
<tr>
<td>LT</td>
<td>The availability of childcare services is limited. In addition, there is an insufficient number of places in public kindergartens in most urban and rural areas.</td>
</tr>
<tr>
<td>HU</td>
<td>Coverage of nurseries is small and falls far short of meeting the demand of working parents. Supply of kindergarten facilities is more or less adequate, except for smaller rural settlements.</td>
</tr>
<tr>
<td>PL</td>
<td>Coverage of nurseries and pre-school arrangements is small and falls far short of meeting the demand of working parents.</td>
</tr>
<tr>
<td>RO</td>
<td>Very low coverage. In addition the quality of the services causes problems.</td>
</tr>
<tr>
<td>SL</td>
<td>Limited provision of (and demand for) childcare facilities for the youngest children. There are, after a period of decline, the coverage rate for pre-school arrangements is increasing and is more or less at the level of 1989.</td>
</tr>
<tr>
<td>SK</td>
<td>There is a growing inclusion of young children in childcare services. There are, however, large differences between towns and between urban and rural areas.</td>
</tr>
</tbody>
</table>

Source: The provision of childcare services. A comparative review of 30 European countries (EC 2009c, p.40)

Gender pay gap and researchers’ remuneration

The equal pay legislation built on the principle ‘equal pay for the work of equal value’ was introduced in the Eastern countries since the very beginning of the communist period and in the Western countries since 1970s onwards. However, despite the existing equal pay legislation and regardless of the visible increase (over the course of time) of the overall rate of female employment - the gender pay gap was and still is present in all European countries (Eastern and Western). It is determined by multifaceted underlying factors which seem to shape this stable trend for example: concentration of women and men into different segments of the labour market with different remuneration, vertical segregation of women and men into different positions in the respective organizational hierarchies, difference between female and male appointments to part-time and full-time positions, education and training, transparency of the pay systems and last but not least an uneven division between women and men’s share of domestic work (Smith 2010). Any sign of reversing the existing trend of gender pay inequality across European countries, i.e. of its narrowing has not been evidenced. In the course of time, the European Commission (from 2007 onwards) has introduced multiple initiatives at the European level aiming to address the issue of the gender pay gap, for example the Commission’s (2007b) Communication on ‘Tackling the pay gap between men and women’; the harmonization of the methodology for calculating the gender pay gap across the European countries in order to make the national data comparable; the use of the ‘Structure of Earnings Survey’ as a harmonized source of data, etc. In connection with this scope of activities two important EC Reports were published. One was prepared by the European Network of Experts on Employment and Gender Equality issues (EGGE) and was commissioned by the European Commission DG for Employment, Social Affairs and Equal opportunities (Smith 2010). It was
published in February 2010 and provides an insight into the gender pay gap across the labour markets of the European countries. The other was commissioned by the European Commission DG for Research and appeared in 2007: it is the Study on the Remuneration of researchers in the Public and Private Commercial Sectors (EC 2007a), which addresses the issue of researchers’ remuneration and the gender pay gap across the European countries, associated countries and other countries.

**Recognition** dimension refers to issues like: career path, leadership, support for mobility, scientific excellence, peer review system, access to research funding, etc.

**Scientific excellence**

The EU Report ‘Gender and Excellence in the Making’ (EC 2004) suggests that existing systems of defining and evaluating scientific excellence are not as gender neutral as they are claimed to be. The scientific community acts as if excellence was obvious and agreed by all participants in the scientific enterprise what scientific excellence means. It behaves as if scientific excellence is an uncontested terrain, and that the procedures and criteria that lead to the selection of the top layer of scientists, who are considered excellent, were given, known, and unproblematic. From a more critical perspective excellence is a set of practices functional to the governance of the scientific community, i.e. to the allocation of resources and decision-making power within the scientific community. Therefore excellence is procedural, not substantive. Excellence does not exist per se, independent from the practices that create it. What we need is a *critical reflection on the procedures and criteria leading to recognized excellence*.

**Access to research funding**

Gender differences are clearly visible in research funding. For example the recruitment procedures for peer reviewers are not always transparent. Sometimes the eligibility criteria fail to take into account the constraints of family demands (maternity and child care). The recent EU Report ‘The Gender Challenge in Research Funding: Assessing the European National Scenes’ (EC 2009b) illuminates the gendered access to research funding across Europe.

The recent reforms of Eastern countries’ R&D are focused on further developing competitive research funding of the already established national grant agencies and relevant grant awarding bodies. The vision is that all R&D funding should become entirely competitive. The move is towards the *internationalisation of the evaluation/review procedure*. The national grant agencies in the majority of the Eastern countries revised their evaluation rules and use of associate foreign experts in peer reviews of submitted projects. In the recent EU Report (EC 2009b) all Eastern experts claimed that their national agencies are not engaged either with gender equality planning or with gender equality monitoring in all aspects of their activities. For example gender is not taken into account in the selection and recruitment of evaluators both national and international, the success rate by gender of applicants is not monitored and any positive measures for the promotion of women scientists under the form of specific programmes, calls and target funding are lacking.
Generally speaking in Eastern but also in the Western countries the applications of female scientists to the respective national grant agencies seems to be less numerous in comparison to those of their male counterparts whilst they usually apply for smaller grants. The share of projects with a female coordinators/principle investigator of the awarded grants is also low.

What might be the impact of the current process of ongoing reforms in R&D funding systems on the future prospects of Eastern women scientists? In spite of the fact that gender is not taken on board and any explicit positive measures for achieving gender balance among the grants’ beneficiaries were not applied in the recent reforms of the national grant agencies women scientists could still profit from the following developments in this area:

- The age group of young scientists (under 35 years old) is a set priority in all Eastern countries’. This is achieved by National grant agencies either announcing specific calls for young scientists or through offering ‘bonuses’ to submitted projects that involve young scientists amongst other ways (EC 2009b). The competitive project-based financing in the majority of the Eastern countries is based on a kind of ‘young scientists mainstreaming’ policy. The current aim is to reach a balance by age and not a balance by gender in the research projects supported by the national grant awarding bodies. However young women scientists as they form part of the privileged target group of young scientists could profit from the current situation.

- Eastern researchers working abroad form another target group. All Eastern countries’ national grant agencies usually announce specific calls for reintegration grants being addressed to their nationals who have scientific careers abroad (EC 2009b). Young as well as experienced female researchers with excellent scientific records form a part of this privileged target group and could thereby profit from this policy.

- Some winds of change can be detected in the new practice developed within some national grant agencies to take into account parental leave in the evaluation of the eligibility of applicants for research grants (EC 2009b). This new measure was introduced in the Slovenian, Estonian and in the Czech grant awarding bodies from 2006 onwards and in Hungary – has been operating since 2009. These are examples of good practice for the other Eastern countries.

Mobility

Since 2000 onwards researchers’ mobility within the EU is considered a priority in terms of skills improvement. However, scientists who move from country to country around Europe face different obstacles, e.g. lack of a pension transfer system and suitable social security schemes. In the majority of EU countries (with the exception of the UK to some degree) permanent academic positions are rarely given to foreigners which subsequently strongly affects their career paths (Jiménez 2010). Mobile researchers find it almost impossible to build an academic career abroad. The research environment needs more flexibility in order to encourage mobility and improve the attractiveness of research careers.
Academic migration and the brain drain issue: a sensitive problem for Eastern countries

We think that inserting the gender dimension of the ‘brain drain’ issue will provide a more nuanced and contextualized understanding of the brain drain phenomenon e.g. we value the importance of the wider family context and the life-course in the process of academic migration. Studies show a new trend towards the feminization of academic migration. The very process of academic migration therefore incorporates a gender dimension that has been highly neglected and under-researched in mainstream research on the brain drain issues. Do the female ‘brains’ from Eastern countries face the same problems as their male counterparts living and working in the foreign environment? Although we do not know the answer to this question we assume that gender plays a crucial role at each stage of the academic migration process – at the decision-making stage as to whether to emigrate, at the stage of immigrating to the receiving country and at the stage of possible return back to the home country.

The ENWISE report (EC 2003b) reveals that women scientists in Central and Eastern European countries and the Baltic States, facing difficult economic situations are inclined to accept a job below their qualification and in general to work for lesser wages, which is rarely the case with their male counterparts. This flexibility of attitude towards the labour market in fact makes them prospective emigrants. In regard to academic migration the situation varies across the Eastern countries and over the course of time. For example the Czech Republic and Slovenia are countries that have not faced any brain drain problem.

In order to understand the female brain drain the following questions might be asked:

- What are the specific push and pull factors that motivate highly qualified women scientists and engineers in the Eastern countries to emigrate?
- Are they accepting jobs under their qualifications in the host country?
- If the female scientists are on the move, what are the effects of this nomadic life style on their families and children? (It is not difficult to imagine that a child who is accompanying his/her mother on the move has to grow up and be educated in several different countries with different cultural milieu and traditions. It is also not difficult to imagine that it is the female scientist whom will have to return when elder members of the family, who have stayed in the country of origin, need help.)
- How are problems related to the so-called ‘dual academic career’ (i.e. both partners are scientists) managed within the academic migration process?

III. RESEARCH ON GENDER AND SCIENCE IN THE EASTERN COUNTRIES

A summary of the meta-analysis of the academic research on gender and science carried out in Eastern countries during the period from 1980 to 2008
The experiences of other countries across Europe and worldwide reveal that they have passed through a similar *three-stage pattern* in the initial stages of academic research on gender and science. The pattern is depicted as following:

**First stage:** women’s movements from the 1960s and 1970s; **Second stage:** institutionalisation of Women’s Studies as a distinct academic discipline within the university setting, accompanied by the establishment of feminist journals (in the early 1980s); **Third stage:** academic research on gender and science as part of the already established Women’s Studies/Gender Studies university units and/or centres (the period covered by the ‘Meta-analysis of gender and science research’ project: 1980-2008).

In the Eastern country-group, a kind of ‘*socialist state feminism*’ was at work for half a century—proclaiming the universal equality of rights between the two sexes in all fields of public affairs. Accordingly, the gender equality question was not perceived to be an issue at all, either within society at large or in the academic communities. In the fields of higher education and research, in particular, it was believed that the matter of gender equality was treated fairly. But was this really the case? In practical terms, many women scientists from the Eastern countries never thought about gender issues as a problem. Some of them still believe that it is a nonexistent problem that is being imported from the Western countries. The careful analysis of horizontal and vertical segregation carried out in the first part of this paper however reveal that there are some similarities between the under-representation of Eastern and Western female academics and researchers in terms of under-representation in senior positions in Higher Education (HE) and public research (GOV R&D), and in the respective decision-making bodies. However, a specific kind of *gender blindness* (deeply ingrained in minds for a half century) precludes reflection on this issue. Hence, the Eastern countries have faced a difficult start and still have a long way to go in terms of gender mainstreaming in scientific research. The same is true for their production of literature in the field of gender and science. Nevertheless, due to the formation of women’s movements and NGOs from the beginning of 1990s to the millennium, units for Women’s Studies/Gender Studies were established in the university settings of all countries of the Eastern group. Thus, the second stage of the identified *three-stage pattern* in terms of an initial period of developing research on gender and science in the Western European countries was completed in the Eastern countries in 2000, i.e. lagging behind the other countries by twenty years. It is also noteworthy that the newly launched units for Women’s Studies/Gender Studies are not necessary engaged with research in the field of gender and science. It is more likely that, at the very beginning of their institutionalisation, activities have been focused on knowledge transfer from the established Western Centres and/or university units for Gender Studies, as well as engaging in the quest for shaping their own research profiles. The process of shaping the distinctive academic discipline of ‘Women’s Studies’, along with its institutionalisation, occurred at different paces across the Eastern countries. In this regard, it should be acknowledged that European Commission policy of gender mainstreaming in scientific research, as well as the financial support provided from the FP5, FP6 and the current FP7 programmes for different activities in the field of gender and science were a driver and catalyst both for the institutionalisation of the discipline and for the framing of research in gender and science agendas in the
countries of the Eastern group. The case of the Czech Republic is very instructive here.

In response to the European Commission’s policy of gender mainstreaming in scientific research in 2001 the Czech Ministry of Education, Youth and Sport, funded the establishment of the National Contact Centre for Women in Science (NCCWS). The NCCWS was founded and exists to the present day on the basis of a project at the Gender and Sociology Department at the Institute of Sociology of the Czech Academy of Science. In 2002, Kontext, a journal on science and gender was launched. The journal was discontinued in 2009 due to the fact that there is growing pressure to publish in peer-reviewed, impact-factored journals, especially those of Anglo-American origin. We focus attention on this Centre because it is the sole institutionalised structure dealing with the issues of gender and science, not only at the national level in the Czech Republic but also at the regional level of the Eastern country-group. This is to say that the field of gender and science has not been institutionalised in any other country of the Eastern group. In the course of time, the Czech Republic has gradually become a regional leader within the countries of the Eastern group in terms of research activities focused on gender and science. The NCCWS, provides an innovative hub of research on women and science, and is presently a source of inspiration among the countries of the Eastern group. In the Gender and Science Database (GSD) of ‘Meta-analysis of gender and science research’ project the Czech entries exceed 100 out of the total number of 445 publications published in the Eastern countries, i.e. the Czech Republic contributed to about 25% of the total entries of the Eastern country-group to the GSD. We identify a direct connection and positive correlation between the institutionalisation of the ‘gender and science’ field in a given country and the respective number of publications on the topics defined in gender and science research agendas. This claim is empirically verified by the GSD. The bulk of publications produced in the countries of the Eastern group are from the period under discussion (2000-2008) and the greatest share among them belongs to the Czech NCCWS. A similar positive link could be identified between the rate of the Eastern countries’ participation in the FP-supported projects on women and science and the numbers of their entries in the GSD. For Eastern women scholars, participation in these projects was a learning experience, namely ‘learning by doing’. This participation was also the inspiration for initiating academic research in the field, within the national scenes of the Eastern countries. The process is still at the very beginning but we feel obliged to acknowledge the role of the European Commission as a driver and catalyst for the bulk of publications identified for the countries of the Eastern group as entries in the GSD.

Some of the most important preliminary and pioneering work carried out at the initial stages of academic research on this theme was carried out by Eastern European women scholars in the fields of ‘Social sciences’ and ‘Humanities’. They invested time and effort in creating a new conceptual language and notions in their own native languages in order to facilitate the ongoing processes of knowledge transfer. For example, notions like the leaky pipeline, glass ceiling, sticky floor and many others - which had never before been articulated among the respective academic communities of the Eastern countries - needed adequate metaphors in the native languages of the Eastern countries. This was indeed a challenging and
NIKOLINA SRETENOVA

creative formative activity which set the scene for meaningful debate on women and science issues.

The developments outlined above suggest that the year 2000 should be considered as a turning point for the countries of the Eastern group with regard to undertaking academic research on gender and science issues. During the days of ‘socialist-state feminism’, some sporadic literature produced both inside and outside academia was developed on the defined topics. This literature could be mainly characterised as of a general introductory nature in which all issues were discussed within the framework of a single publication. The most prominent research topics at the time were ‘Horizontal and vertical segregation’ and ‘Science as a labour activity’ and, in particular, the issue of work-life balance. The issue of scientific excellence was discussed only in terms of female and male scientific production. The majority of these publications were imbued with ideological rationale rather than academic arguments. For example, some of them, developed within the framework of directives issued from the ruling communist party, discussed the role of women in building a fully-fledged socialist society and stated the advantages that women in socialist societies have in comparison with women in capitalist societies, in the fields of higher education and the socialist economy (e.g. the labour market). The publications of this period approached topics such as ‘Horizontal and vertical segregation’ and ‘Science as a labour activity’ from the point of view of emancipation and human rights and not from the contemporary standpoint of the ‘loss of human potential’. More advanced research at the regional level of the Eastern countries was carried out in Croatia and Slovenia during this period. For example, in Croatia, at the beginning of 1980s, some quantitative and qualitative research was conducted, applying different methods like the time-budget diary, surveys, interviews, and so on (Golub 1985). One should also note that, in the mid-1980s, publications appeared inside academia, offering critical reflections on the formal gender equality politics and policies under socialism. (Domozetov, 1985). It is no accident, therefore, that very few entries from the socialist period are present in the GSD.

Concluding lines on meta-analysis, by topic

Horizontal and vertical segregation

After the change of regime, a new historical trend shaped the production of literature on this topic (as well as on other topics). This historical shift in research interest in gender and science came to fill the existing knowledge gap on the national scenes of the Eastern country-group. A considerable number of publications focused on the period between the end of the 19th century and 1940, carrying out a historical investigation of women’s access to higher education, narratives of the life stories and career building of distinguished women scientists in the different national settings and documentary studies on the history of women’s movements and women’s cultural contributions. In some countries, during the period 2000-2008 (e.g. Croatia and Lithuania), the research focus was a single scientific field – medical science – while in others (e.g. Romania and Bulgaria) research interest was more drawn to the Natural Sciences, Engineering and Technology and Agricultural sciences. In Slovakia some research has been done on women in decision-making...
positions. The main lacuna related to this topic seems to be a lack of representative, quantitative empirical studies along with an absence of longitudinal studies on gender and scientific careers in terms of horizontal and vertical segregation in the Eastern country-group’s research literature.

**Pay and funding**

This topic is under-researched in the countries of the Eastern group. In general, it has been discussed either within the broader framework of the gender pay gap that exists in all public spheres of activities (i.e. without any particular focus on higher education and research), or connecting the topic with vertical and horizontal segregation, stereotypes, and so on. The notable exception is the Czech Republic. Research on gendered access to research funding is currently one of the priorities of the Czech NCCWS. The practice of the two national grant agencies was studied in order to address the possible gender bias of research grant distribution and eligibility criteria, and the possible non-transparency of evaluation processes for the projects submitted (if any). On the basis of these assessments, the NCCWS has been working to change some of the discriminatory practices operating within the Czech grant system. In Hungary, only a single publication was detected, which directly addressed the issue of ‘pay and funding’ meanwhile, in the rest of the Eastern countries, no publications focusing on this topic as a separate issue have been identified. One has to bear in mind, however that this matter is at the cutting edge of research in all country-groups, i.e. throughout the regions of Europe and Europe +4. Hence, we do not believe that the production of literature on this topic in the Eastern countries is lagging behind in comparison to other country-groups.

**Stereotypes and identity**

Within the topic of ‘Stereotypes and identity’, despite the numerous publications detected, the issues of feminist epistemology of science and feminist criticism of power relations in the process of science construction are still rather scantily covered. Some important work in the field has been done in Slovakia at the Gender Studies Centre, which is university-based, and at the educational institution at the Faculty of Philosophy at Comenius University in Bratislava. One might consider that Slovakia is a regional leader in research on this topic. In connection to this, we should like to remind readers that these issues were imported into Western Europe from the USA, and it would seem obvious that they have not yet reached the Eastern European countries.

**Science as a labour activity**

The same historical trend (that was identified in the theme of Horizontal and vertical segregation) could be identified in research on Science as a labour activity as well. A large amount of the literature addresses the life stories of known female scientists, as well as historical analysis of women’s admission to higher education

---

*Here ‘Europe+’ means wider Europe, i.e. European countries that are not members of the European Union.
and the research profession, the obstacles they met in their career building, and so on. In every country of the Eastern group one can find documentary analysis of different sources of historical studies: exhaustive research of documents in national or private archives from the end of 19th century and the beginning of the 20th century, as well as documents in university archives, data from annals of statistics and reports from institutions of higher education; documents from parliamentary archives (on legislative decisions taken during the particular historical period); surveys of public discussions in the printed media and specialist journals from the end of the 19th century in support of women’s access to higher education and the scientific profession, and so on.

As regards gaps, most biographical research in the Eastern countries appeared in the form of qualitative, empirical studies applying techniques such as interviews, observation and case studies. However, the use of software for analysis of qualitative studies is relatively new in this region of Europe. Furthermore, there is a distinct lack of large-scale empirical studies which address the institutional practices of research organisations and universities in terms of work organisation, working conditions and working time, and their impact on work-life balance and female scientific careers; no indepth case studies on work-life balance in relation to childcare facilities; lack of analysis on provision of facilities for elderly people, in the case of those female scientists who have to take care of parents and relatives.

Scientific excellence

This is one of the least researched topics in the literature surveyed from the countries of the Eastern group (together with the issue of ‘Pay and funding’). Some studies addressing female and male scientific productivity have been identified in Croatia, Hungary, Poland and Bulgaria. An attempt to look back in history and to estimate female and male literary production has even been made. This topic has gained recent prominence (as of 2008) at the NCCWS due to the gendered outcomes of the Czech R&D reform and research assessment.

There is a real lack of either theoretical or empirical studies which address the definition of excellence and/or peer-revew practices of evaluation across all institutional sectors and fields of science in general, and from the gender perspective, in particular. The ‘masculine’ model of success in science and the building of a scientific career have only recently appeared as specific subjects for study.
Gender in research contents

This topic appeared only as a by-product of scholars working in the fields of the social sciences and humanities, in particular in sociology, economics, population studies, philosophy, ethnography, and so on. Some researchers in these fields (both female and male) tend to include and consider the gender dimension of their particular research topic. These publications could be considered as ‘examples of good practice’ in the fields of Economics (labour market) and Sociology, Cultural studies, Medicine, and so on. The topic is non-existent as a separate subject of academic research.

Policies towards gender equality in science

There are various introductory studies aimed at acquainting the national academic communities with the European Commission’s policy of gender mainstreaming in scientific research. Some studies discuss the applicability of the specific gender equality measure in the specific national context. In this regard, some controversial stands are identified in relation with the possible reimplementation of the ‘gender quota’ equality measure within the Eastern country-group.

In short, the countries of the Eastern group are still at the threshold of research activities on the defined topics (the bulk of publications appear after 2000) and have a long way to go in order to catch up with the other country-groups.

Some conclusions

- The analysis of available statistics shows that gender inequality in science is a persistent phenomenon in both Eastern and Western countries. However different stories lay behind the numbers when framing the analysis within the economic and social contexts of the countries. We need further research on the story behind the numbers in order to get a true and nuanced understanding of the phenomenon.
- The meta-analysis of academic research on gender and science by defined topics carried out in Eastern countries reveals numerous lacunas that may offer opportunities for Eastern researchers. In addition some new and sensitive research topics emerge like the issue of unemployment among highly educated women – academics and scientists, in particular - among young women with university degrees; the issue of the feminization of academic migration and the female brain drain from Eastern countries, etc.
- Neoliberal market values and orientation have affected the HES and GOV R&D sectors in both Western and Eastern countries. The focus revolves around competition both at the institutional and individual level and their ability to attract research funding outside of the allocated state budget subsidies. Scientific excellence tends to be measured in terms of this wider context. These new developments do not imply that greater attention will be given to the implementation of gender equality in scientific research. For example the current reforms in the mechanisms of R&D funding ongoing at different paces across the Eastern countries do not suggest that any kind of gender equality issue or gender balance have been taken or would be taken into account.
• An urgent need to complement the current ‘policy of non-discrimination by sex’ in the R&D sectors with a ‘policies of gender mainstreaming in scientific research’ through modernization of the organizational culture at the national level of scientific organizations.

• Male scientists should participate in the debate on gender equality in science at all levels.
REFERENCES


European Commission, Directorate-General for Research, 2008a. Mapping the Maze: Getting more women to the top in research, Luxembourg: OPOCE.


European Commission, Directorate-General for Research, 2009a. She Figures 2009 - Women and Science; Statistics and Indicators, Luxembourg: OPOCE.


European Commission, Directorate-General for Employment, Social Affairs and Equal Opportunities, 2009c. The provision of childcare services. A comparative review of 30 European countries, Luxembourg: OPOCE.
