COUNTRY REPORT

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Brain Drain in Belarus

The population of the Republic of Belarus (RB) is 10,2 million; 4,8 million are in labour force of which the share of those employed in science and technology is 1.12 percent.

Belarus has not yet chosen its strategy of socio-political development. Because of diffuse goals of market reforms, the country comes far behind the other transforming Eastern-European states. Estimations have been made that Belarus is 2 years behind Russia, 2 years behind Lithuania, 2,5 years behind Latvia, 3 years behind Estonia, 4 years behind the Czech Republic and Slovakia, 6 years behind Hungary, and 8 years behind Poland.

The problem of surviving

The socio-economic crisis has substantially reduced the possibilities of developing science in the country. Although there is no official policy against science, it is no longer considered to be a promoter of reforms. It is not even included in the priorities of social progress.

The situation is particularly problematic in the case of basic research. In 1993 the share research expenditure in the state budget was 2,5 %, whereas in 1994 the respective figure was only 1,8 %. In such a financial crisis, one can only speak of a struggle for survival.

The present situation has dramatically affected the status and the future of researchers. Research has become the most insecure of all professions in the RB. In the period of 1990–93, there was a decrease of 63 per cent in the number of scientific professionals. Along with the decline of the total number of the researchers, there have been changes in the status of the different scientific fields (Table 1.).

As a result of the transfer of the S&T organization of the former Soviet Union Ministries to the Republic of Belarus, the share of technical sciences increased in 1990–94 from 48 % to 52 %. The share of agricultural sciences increased from 2,7 % to 4,8 % and that of medical sciences from 2,6 % to 4,5%. This kind of restructuring can be seen to reflect a growing emphasis on socio-economic needs.

The total number of scientific personnel at the Academy of Sciences of Belarus (ASB) was curtailed by 27 % in 1990–93. There are

Table 1. Position of scientific fields in Belarus in 1994 by the number of R&D personnel and the rate of its change (1990 is 100).

Field	No of R & D personnel	(%)	Rank	Rate of change of R & D personnel 1993/1990	Rank
Natural sciences	8 734	22,4	2	90,1	3
Medicine	1 742	4,5	6	103,0	5
Agricultural sciences	2 010	5,2	5	101,7	4
Technical sciences	20 401	52,4	1	64,1	1
Humanities	2 999	7,7	3	130,2	6
Social sciences	2 695	6,9	4	72,2	2
Total	38 956	100,0			

Table 2. Relative change of the R&D personnel at the Academy of Sciences of Belarus in 1989–1993 by department; (in percent, 1989 is 100).

Departments	Total personnel	Total R&D personnel	Doctors	Candidates	Subsidiary personnel	Female res.
DPMIS	68	82	153	93	56	62
DPEPMBP	105	80	127	95	135	99
DCGS	84	82	127	89	90	87
DBS	89	96	129	91	81	89
DH	70	64	101	76	93	81
The whole Academy of Sciences	74	82	128	89	70	75
N = (1994)	12 848	5 085	442	2 251	7 693	6 656

Notes:
DPMIS, Department of Physics, Mathematics and Information Science
DPEPMBP, Department of Physico-Engineering Problems of Machine Building and Power
DCGS, Department of Chemical and Geological Sciences
DBS, Department of Biological Sciences
DH, Department of the Humanities

great differences in this process by scientific fields, reflecting indirect impacts of the priorities in S&T policy of the country (Table 2).

It is worth noting, that in spite of the diminishing number of R&D personnel, the number of doctors has still been growing (from 344 in 1989 to 442 in 1993). However, the professional base for educating the scientific elite is shrinking. The number of graduates in the ASB decreased from 723 in 1989 to 482 in 1993 and the number of candidates of sciences from 2540 to 2251, respectively. Cuts in the young inflow has made the problem of aging personnel more acute. Today the average age of the academicians is 65 years, of doctors of sciences, 58 years, and of candidates of sciences, 46 years.

If the present trend persists, the mechanism of the manpower reproduction will break down and whole scientific schools will disappear, especially in the fields with small numbers of scientists (chemistry and geology, many branches of social sciences and the humanities).

The results of a survey directed at the scientific personnel at the Academy of Sciences of Belarus (ASB) show that the scientific community has become more and more worried of the deteriorating human, material, and technical resources (Table 3). In this study, the responses of all categories of researchers from 2 or 3 institutes in large sci-

Table 3. Conceptions of the researchers at the ASB on the current situation (in 1992 and 1994, in per cent).

	1992	1994
The situation is normal	27	8
The intellectual core is retained but the situation is aggravating every day	46	79
Most of the productive personnel have already been lost	18	10
Cannot say	9	3
Total	100	100
N =	316	346

Table 4. The willingness of the R&D personnel at the ASN to change jobs (1992 and 1994, in per cent).

	1992	1994
Not going to change job	61	52
Plans to change, but no steps taken yet	32	33
Has made a firm decision and is seeking a new job	3	3
Cannot say	4	10
No answer	–	2
Total	100	100
N =	316	346

entific fields were analyzed (physics, technical sciences etc.; the size of the sample was 316 in 1992 and 346 in 1994).

The researchers views seem to flunctuate greatly. In the period of 1992–94 the share the R&D personnel who thought the situation is normal, diminished from 27% to 8%. Similarly, 79% of those seeing the future as highly insecure grow from 46% to 79%. The worst conditions seem to be in the institutes of physics and technical sciences, which have been most severely affected by conversion and disintegration of economic links between the ex-USSR republics. Accordingly,in 1994 65% of the respondents from these institutes were afraid of losing their jobs because of the reduction of government financing, whereas in the humanities this figure was 32%.

Internal migration

Today the level of potential internal migration of scientists is high. The results of our study imply that most members of the scientific community plan to change jobs in the near future (Table 4).

When analyzing the motives of internal migration, it becomes evident that the rank order of the characteristics of the motives reflect the on-going drop of prestige of scientific activities and research in the country. Uncertainty of scientists about their future and of their chances of self-realization are growing. Although salary is the most important motive (52% of the respondents), the other motives follow close behind (uncertain future of academic science (45%); drop of professional and social prestige of research work (42%)).

In the internal migration of the scientific personnel, the role of such a factor as dismissal at one's own request is increasing. For example, at at the Academy of Sciences of Belarus the percentage of the scientific personnel dismissed at their own request rose from 32% in 1992 to 47% in 1993. This can increase the brain drain from science to other spheres irrespective of the funding allocations. The situation is dangerous not only because of its scale, but also because, in most cases, researchers leave science for activities having no relation to research. Eventually, society will lose trained and educated scientists and teachers for ever.

There are no official statistics of the internal migration of scientists into other spheres of activity. However, there is a survey of 38 higher educational establishments and scientific research institutes of the Ministry of Education of the RB. Its results show that in 1993 the number of scientists and scientific-pedagogical personnel who left their job was about 530 people, which is 17% less than in 1992. Nevertheless, there was an increase of the internal migration of the candidates of sciences, their share among those who left their job rose from 22% in 1992 to 29% in 1993. The trend has been as follows:

- 19% of those who left their job in 1993 went to other universities and research institutes;
- 4% went to industry;
- 8% selected state administration;
- 24% left for commercial enterprises.

Similar trends were found in a survey of 26 institutes of the Academy of Sciences of Belarus. In 1993, 2700 employees left their job including 550 researchers. The share of candidates of sciences was 43%. The most popular destinations are commercial units, the least popular, the industrial sector.

According to the results of the study, effective research activity in scientific organizations is becoming practically impossible because of the low level of financial, material and technical resources. The situation is deteriorating every year. This situation is reflected in the responses of the R&D personnel at the Academy of Sciences (Table 5).

The impossibility of profound scientific work because of lack of financing, modern laboratory and experimental basis of research, materials and information service force the scientists to choose: either to stay in science and 'imitate' the research work, abandoning the hope for important scientific achievements; or to leave scientific activity and choose other spheres for the application of their intellectual abilities. Yet one alternative is to take the chance of connecting the scientific activity with emigration.

Table 5. The level of institutional provision by the R&D personnel at the ASB (in 1992 and 1994; in per cent).

	1992	1994
High (allows to conduct research on an international level)	0	0
Satisfactory (allows to maintain research on quite a high level)	15	4
Low (allows only to conserve scientific potential of the institute)	70	62
Creative activity impossible	13	32
Cannot say	2	2
Total	100	100
N =	316	346

External migration

There is empirical evidence that the migration potential of researchers in Belarus is high. However, as can be seen from the Table 6, the motive for permanent migration is very weak.

In recent years the R&D personnel at the Academy Sciences of Belarus has began to understand the realities of emigration. The number of scientists not planning to go abroad is increasing (19% in 1992, 34% in 1994). The number of those wishing to work in a foreign scientific institution or with some firm under temporary contract has decreased almost by 10%, and the number of scientists going to settle abroad has decreased by more than a half.

Evidently, emigration plans are more pronounced among the young researchers at the age of 25–30, while the older ones are the most stationary. Post and qualification seem to have little effect on emigration plans, whereas the scientific field is an important factor. Thus, in 1992 13% and in 1994 34% of the physicists and mathematicians had no plans to leave. For the representatives of the social sciences and the humanities, the corresponding figures are 45% and 55%. Among the researchers dealing with phys-

Table 6. The motives for external migration at the ASB (in 1992 and 1994, in per cent).

	1992	1994
Is not planning to leave	19	34
Wishes to leave for a temporary contract	63	52
Wants to leave for settling	5	2
Cannot say	7	11
No answer	6	1
Total	100	100
N =	316	346

ics and mathematics, 76% wanted to work under a provisional contract in 1992, in 1994 such people constitute 50%. In the humanities, the respective figures are 48% and 30%.The results indirectly confirm the competitiveness of physics and mathematics in Belarus and, in contrast, the crisis suffered by the social sciences in the post-communist period.

This study also reveals the structure of the motives for external intellectual migration. In the hierarchy of motives, the most important is "the intention to improve one's living conditions". Thereafter are "looking for better conditions of scientific work", and the "wish to realize one's scientific ideas". The intention to provide a worthy future for one's children turned out to be significant as well. However, other motives which might have a paramount importance in Belarus, were not presented among the main motives, i.e. the fear of political instability, unfavorable ecological situation in the region (first of all the consequences of Chernobyl disaster), the wish to reunite with one's relatives, and to leave for one's ethnic motherland.

One of the factors that hinder the 'brain drain' from Belarus is researcher's insufficient knowledge of foreign languages. Only 13% of our respondents said that they had a good command of a foreign language, while 34% estimated their capability as poor. It should be stressed that young scientists do not display any change for the better in respect to the general sample.

On the basis of our analysis, we have every reason to believe that large scale 'brain drain' from Belarus is hardly probable. As the data of the Department of Visas of Registration in the Interior Ministry of the RB show, emigration flows of the population (not scientists!) from Belarus reached their peak in 1990 (34.1 thousand people). The following years were characterized by much lower emigration: in 1991 22 thousand; in 1992 9.7 thousand; in 1993 5.6 thousand people. The number of emigrant "white collars" decreased within the period from 1991 to 1993 almost 2.5 times and made up 1.6 thousand people.

The low rate of brain drain in Belarus becomes also evident in a survey of 38 universities and research units. Accordingly, as few as 30 researchers and teachers, including 2 doctors and 13 candidates of sciences, left these organisations in 1993 for permanent residence. For the duration of more than one month, 285 people went abroad; of them only 41 worked under contracts, while the others either studied (33 people) or went for training (211).

Despite this kind of empirical evidence, there are problems with the brain drain. Firstly, intellectual migration has a destructive effect not only because of the number of scientist leaving the country, but also because of the quality of the remaining scientific activities. Only a few persons may leave, but if they are the key figures in the national science, their departure will mean an irreparable loss. Secondly, up to now there has been ethnic emigration in Belarus. It is only now that the classic model of brain drain is being formed, because the emigration is caused by professional and not by the ethnic factors.

Evidently Belarus is not yet ready to react in an adequate way to brain drain issues. Information is limited (there is no appropriate statistical data). There are no sufficient normative and legislative acts on intellectual migration. The socio-economic aspects are also unclear. Therefore government programs are necessary in order to envisage the measures required to remove the negative consequences of internal and external brain drain.

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