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Some observations on the career orientations, mobility and expectations of professionals in the nuclear sector

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Some Observations on the Career Orientations, Mobility and Expectations of Professionals in the Nuclear Sector

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1 Background

In recent years, several studies (e.g., OECD 2000 [1]; Simonovska & von Estorff 2012 [2]) produced by international organizations have raised the concern about a possible lack of human resources in the nuclear energy sector. According to these studies, three main factors would determine such shortage of human resources: 1) the construction of new Nuclear Power Plants (NPPs) planned for the near future; 2) the retirement of the older generation of nuclear experts; 3) and the demand of (nuclear and non-nuclear) engineers from the upcoming sustainable energy sector. Stakeholders from the nuclear energy sector should, thus, understand how to attract new employees. This requires a better knowledge of the expectations and constraints of the nuclear workforce.

With the aim of increasing such knowledge, the European Human Resource Observatory for the Nuclear energy sector (EHRO-N) [3] of the European Commission (DG Joint Research Centre Institute for Energy and Transport) and the recruitment agency CareersInternational launched a survey in 2010. This “Survey on career orientations and expectations of nuclear engineering students and young professionals in the nuclear sector in Europe and beyond” [4] was linked to a Career Event for junior nuclear engineers which took place in December 2010.

Later, in 2012, EHRO-N, in collaboration with the European Nuclear Society (ENS) [5] and the recruitment agency Thomas Thor Associates [6], prepared a similar survey on career orientations and expectations of nuclear professionals. This online survey was composed of 18 questions and distributed to the networks of stakeholders of EHRO-N, ENS and Thomas Thor Associates. The objective of this survey was to collect data from the professionals of the nuclear sector about their career orientations and expectations. EHRO-N, ENS and Thomas Thor have representative databases of nuclear stakeholders. Particularly, EHRO-N periodically monitors the major trends of nuclear Human Resources (HR). The survey reached around 10,000 potential respondents, with approximately 1000 responses received through the third quarter of 2012. The response rate was higher than in the survey of 2010, although still too low for a sound representativeness. It is also difficult to compare the results as this time the survey was sent to the whole spectrum of nuclear experts and not only to starters as in 2010.

2 Analysis of the results

2.1 Characterization of the respondents

About 25% of the respondents were in the starting phase of their nuclear career (i.e. up to 5 years of experience), 32% had between 5 and 15 years of professional experience, 25% were professionals with 15-30 years of experience and 18% had worked in the nuclear field for more than 30 years (see figure 1). Most of the respondents (i.e. 82%) were employed as ordinary staff members of their organization in comparison to a minor share of freelance or fixed-term contract staff.

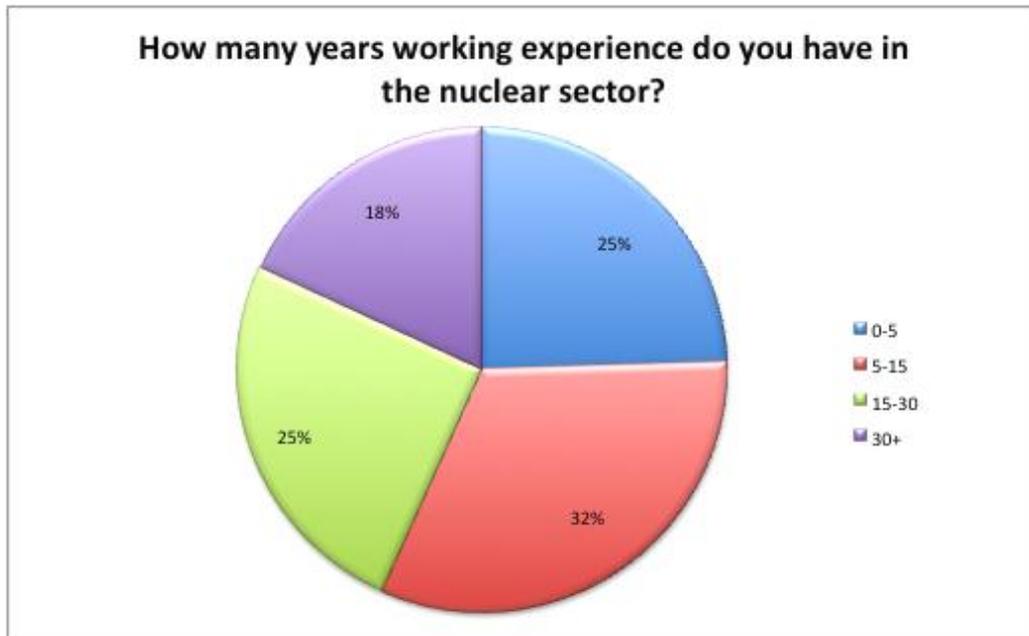


Fig 1: Nuclear working experience of respondents

At the time of the survey, more than three quarters of the respondents were working in project management (24.01%), safety and licensing (27.68%) and engineering (27.77%). About 10% of the respondents are working, respectively, in project control and business development (see figure 2).

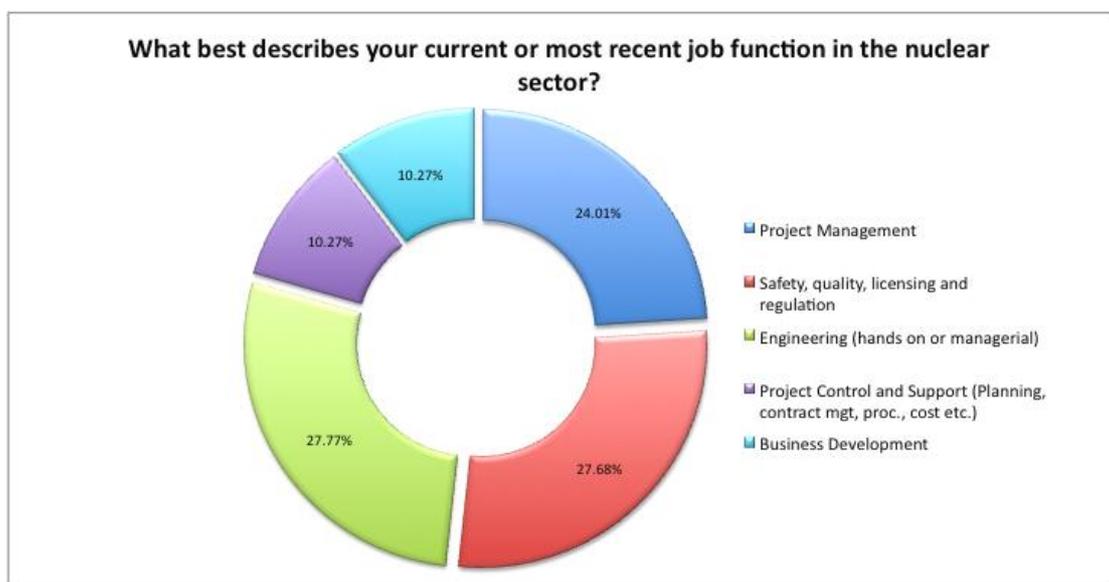


Fig.2: Assessing respondents' present job functions

The scope of the survey was the nuclear workforce in Europe. Accordingly, most of the respondents (73%) were nationals of EU Member States (MSs). More precisely responses came from 25 of the 27 MSs. For the remaining 27% of respondents with non-EU nationality, most had a Ukrainian passport (i.e. nearly 15% of all respondents). A significant number of replies also came from Russia, Switzerland, Norway and Turkey (see figure 3).

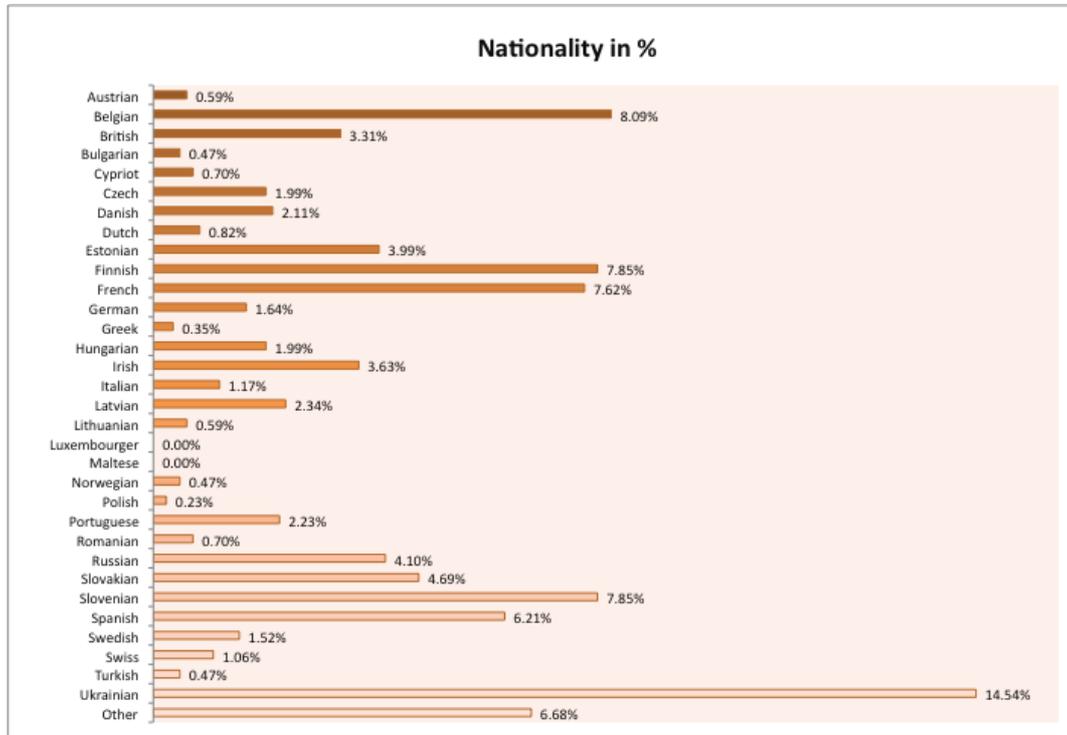


Fig. 3: Division of respondents by nationality

With regard to the place of employment, a vast majority of respondents (95%) worked in the EU, mainly in UK (17%), Spain (11.14%), France (10.8%) and Belgium (9.73%) (see figure 4). Only 0.2% of the respondents were working in Ukraine.

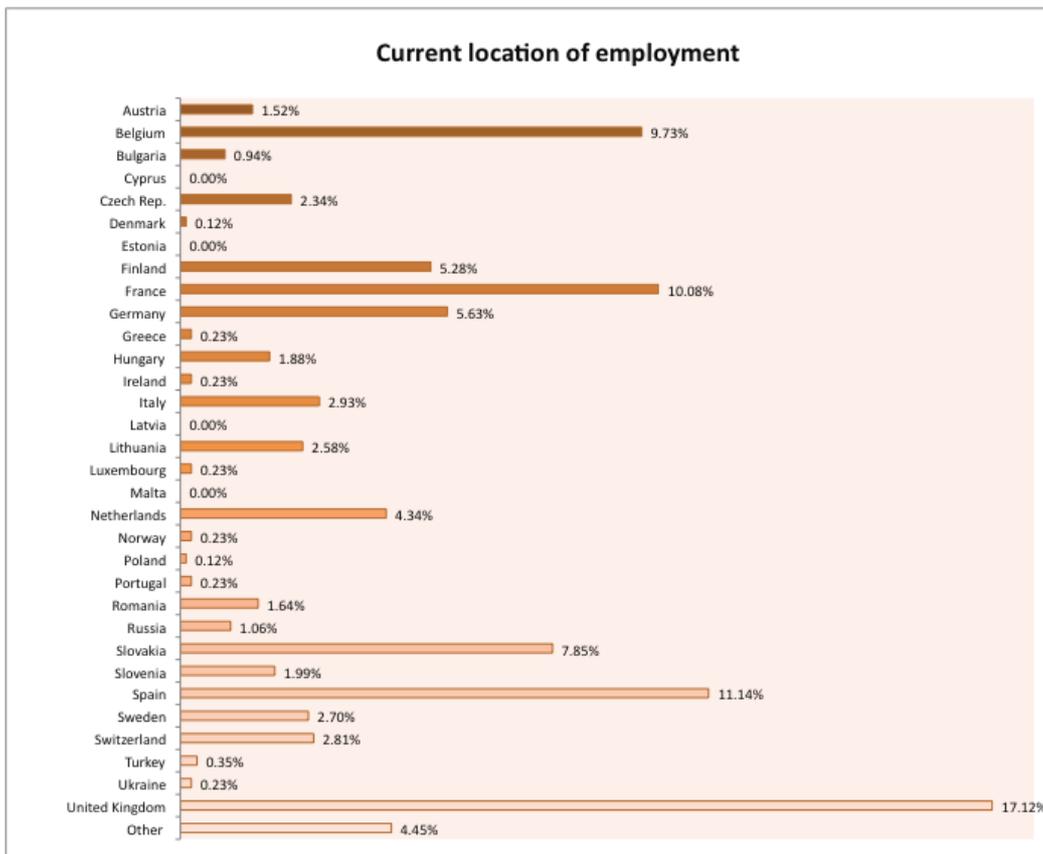


Fig. 4: Division of respondents by current location of employment

A question on language skills was also included in the questionnaire. With 40% of the respondents, English is the most spoken language. Other languages, such as French, German and Spanish, scored relatively high (see figure 5); this result may mirror the distribution of the nationalities of the respondents (see figure 3). The result concerning the use of the English language deserves further reflection in the nuclear energy sector, whether 40% of a common language at business level is sufficient for the purpose of international mobility. Indeed, 82% of the respondents are willing to learn another language to enhance their professional opportunities.

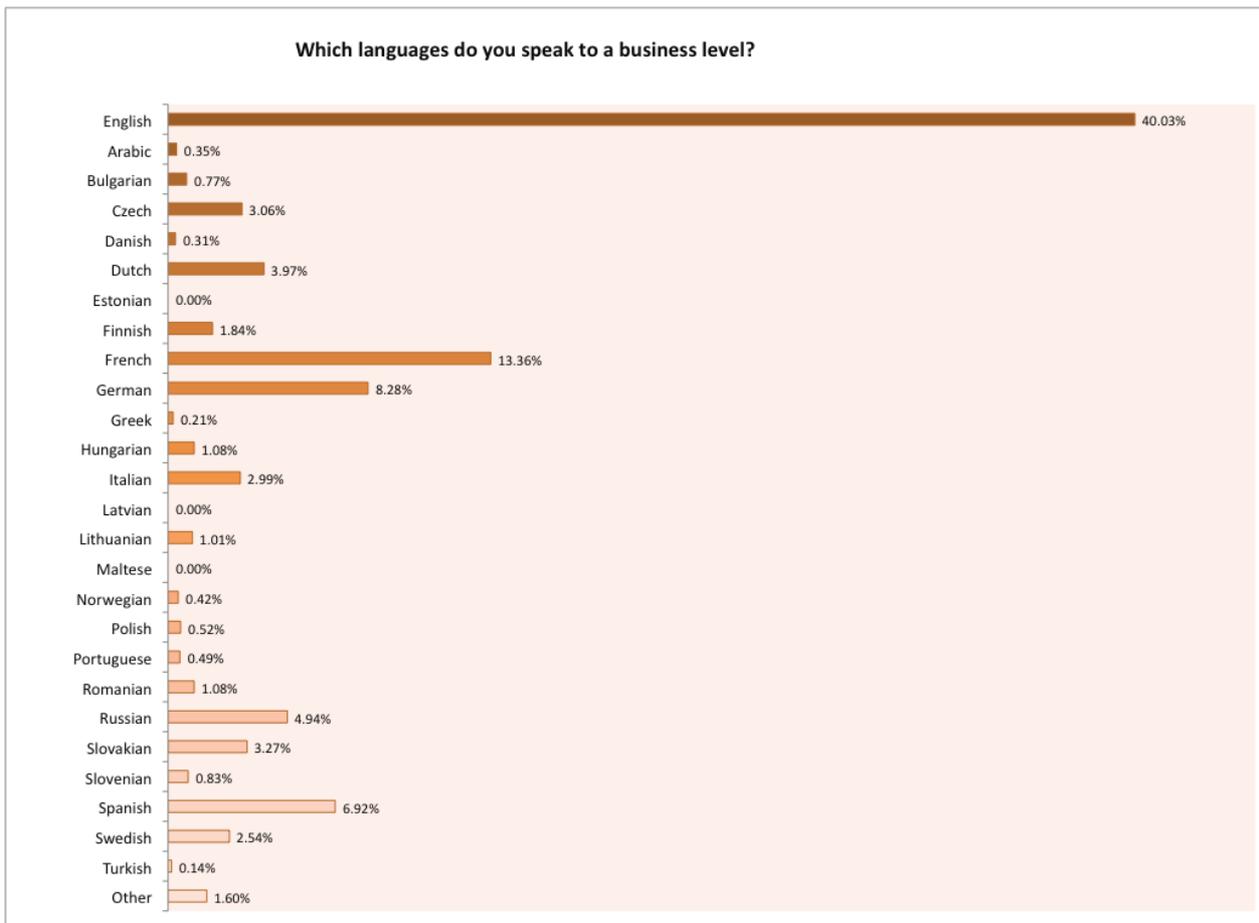


Fig. 5: Respondents' language knowledge at business level

2.2 Geographical mobility of the respondents

Nearly half of the respondents had moved at least once away from their home country for a work opportunity (see figure 6). Moreover, half of the respondents had a clear idea about the countries where they would work. About a third would be ready to work anywhere in the world; the rest would rather relocate within Europe (see figure 7).

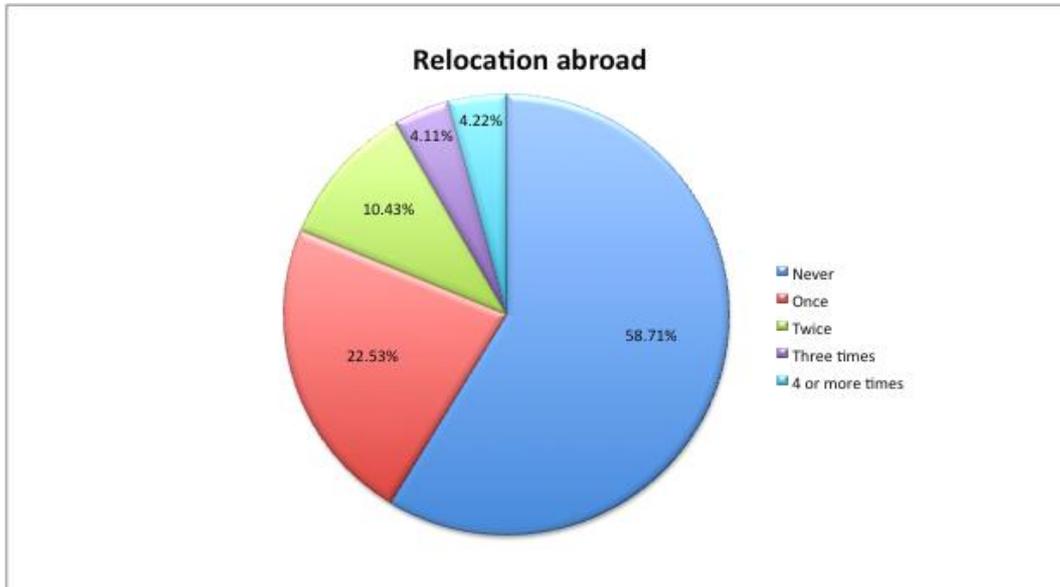


Fig. 6: Mobility to another country

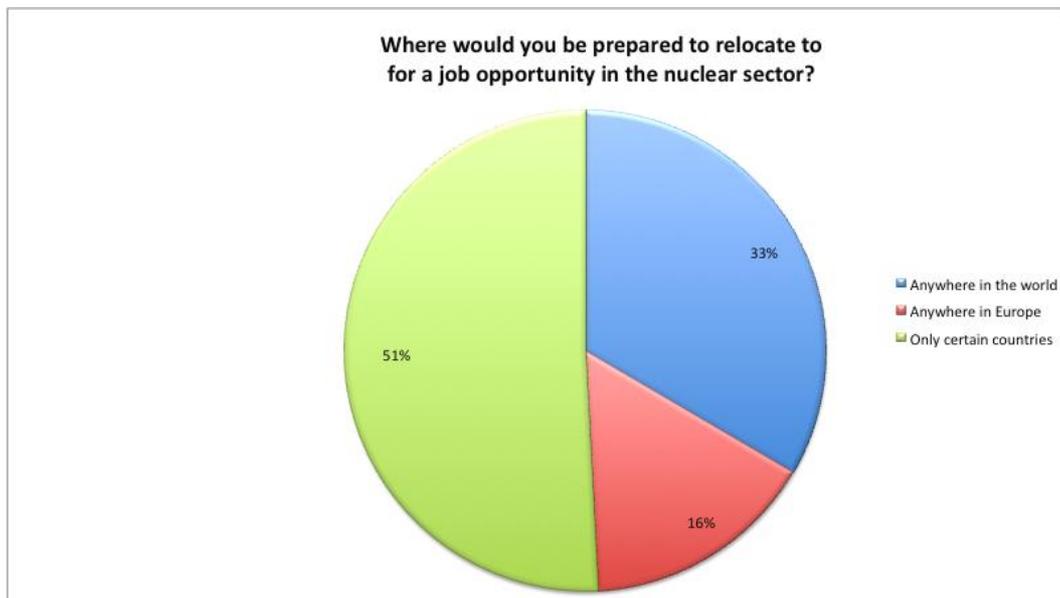


Fig.7 Readiness to move to certain countries for work

A similar trend characterizes mobility within the respondent's home country; half of the respondents had moved at least once for a job opportunity within their own country (see figure 8).

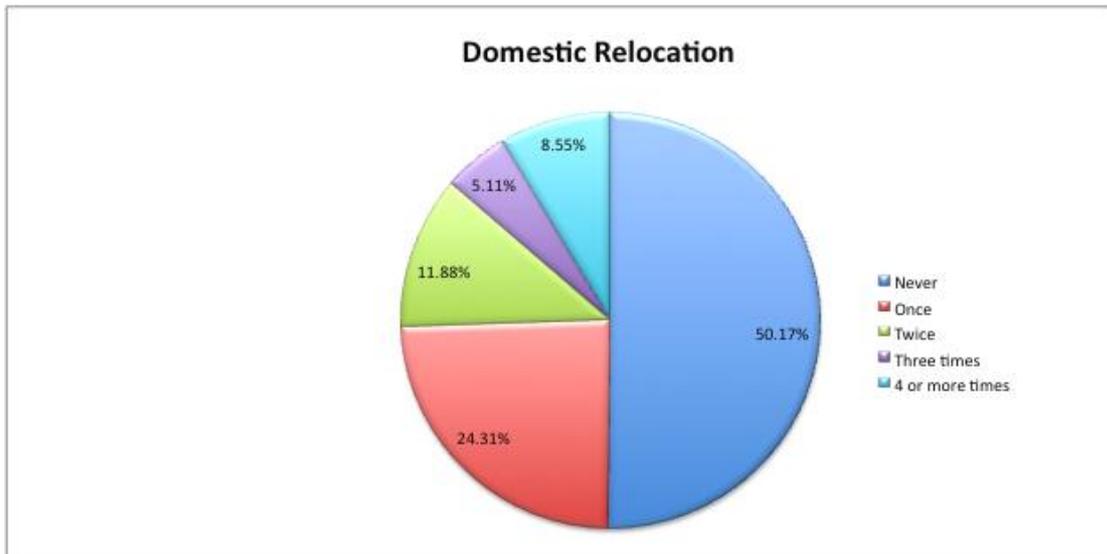


Fig. 8: Mobility within respondent's country

Regarding the change of employer, the tendency is similar as with the mobility. Slightly more than half of the respondents had changed at least once employer during their careers (see figure 9).

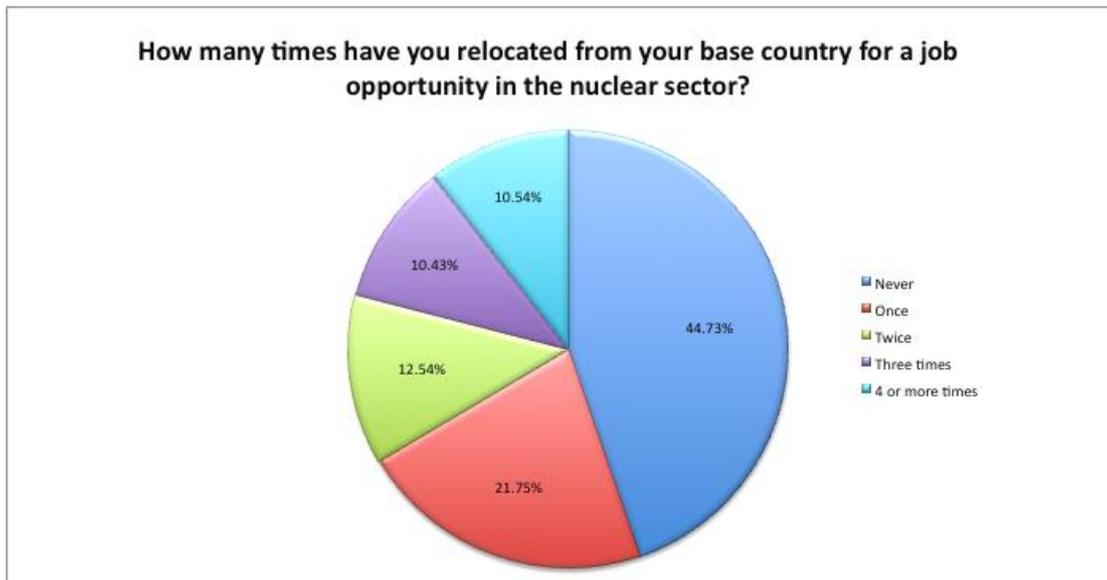


Fig. 9: Employer changes during respondent's career

When it comes to the preparedness to travel, i.e. working not at the place of employment, more than a third of the respondents would accept to travel for 25% of their working time, a quarter would accept 50% and a fifth would accept 100%. Only 10% of the respondents would not accept to travel for work (see figure 10).

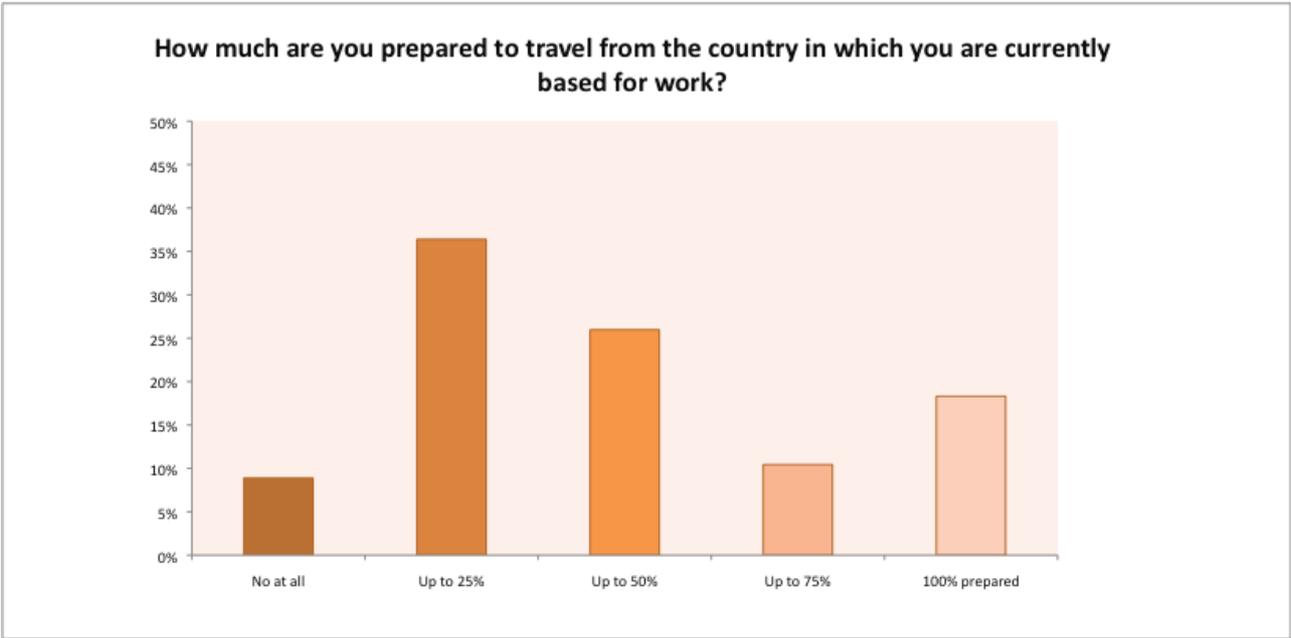


Fig. 10: Respondent's acceptance towards travel

2.3 Interest of the respondents in certain sectors

Respondents were asked about their field(s) of interest; each respondent could select more than one option. The highest field of interest was nuclear new build (65% of respondents). This field was followed by plant decommissioning (including nuclear waste management) (39%), reactor safety and security (37%), NPP operation and maintenance (35%), and nuclear policies, economics and human resources (27%) (see figure 11).

Respondents had to choose also among different types of nuclear stakeholders for which they would like to work. More than one choice was again possible. In order of preference, the stakeholders were: international institutions (IAEA, OECD, European Commission, etc.) (59%); nuclear operators (51%); nuclear research organisations (45%); systems suppliers (44%); national regulatory bodies and TSOs (38%); energy providers (32%); and services providers (31%) (see figure 12).

Respondents could finally choose their preferred sectors or departments for pursuing their nuclear career. They could select more than one sector/department. In order of preference, the sectors were chosen as follows: management (59%); engineering (46%); safety and licensing (34%); research and development (33%); project control and support (31%); education and training (27%); strategy and policy development (26%). The other sectors received less than 20% of response (see figure 13).



Fig. 11: Assessing respondents' sector interests

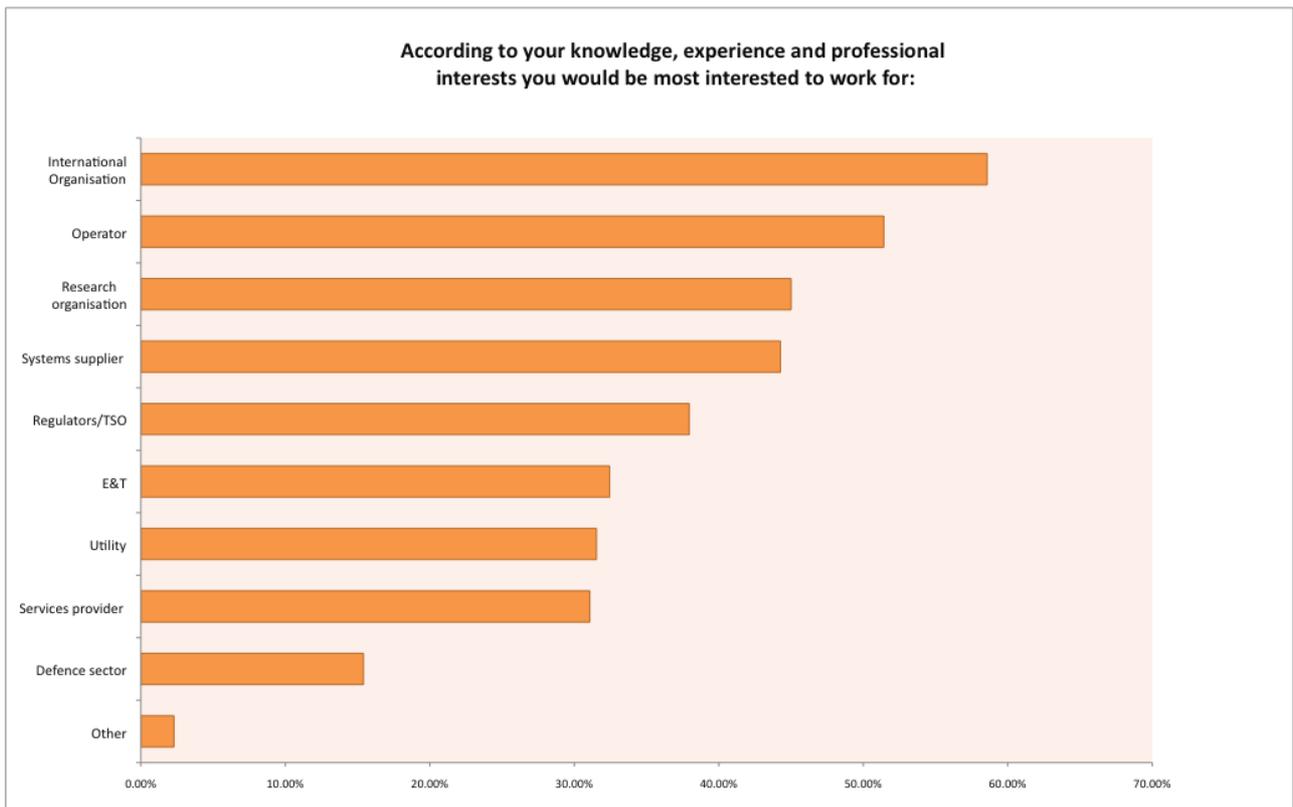


Fig. 12: Assessing respondents' interests for the different nuclear stakeholders

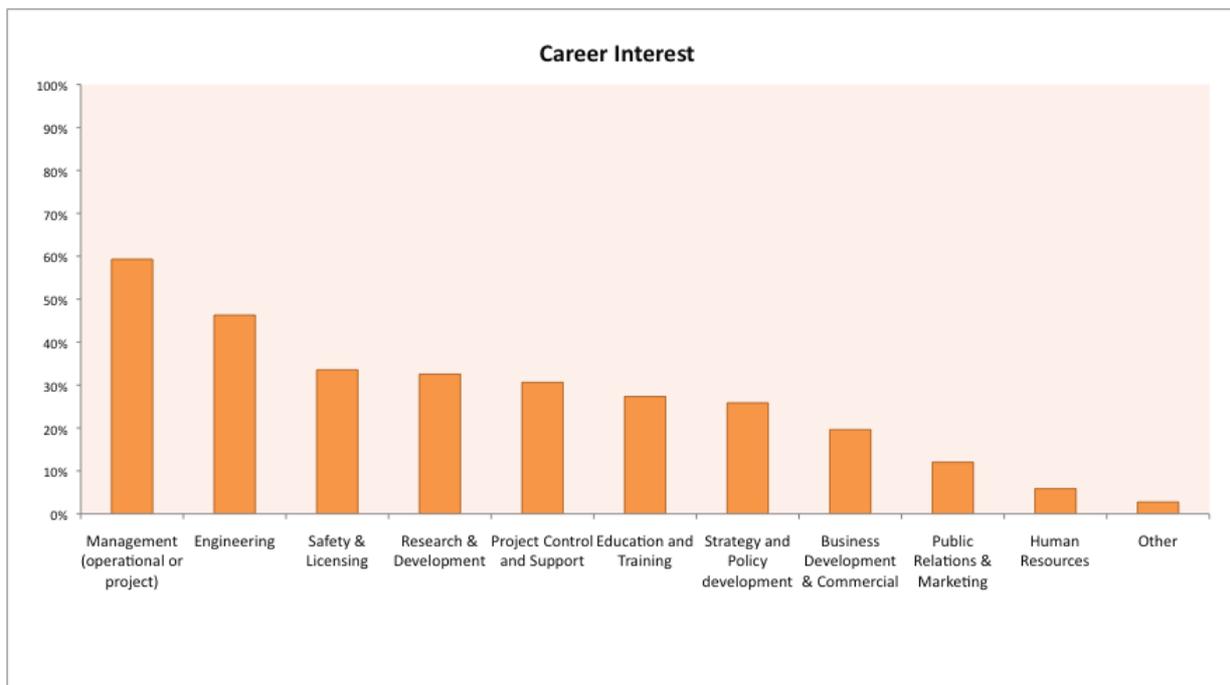


Fig. 13: Assessing respondents' preference of a particular sector within the organisation where they would work/are working

A final question concerned the willingness of the respondents to work within or outside the nuclear sector. Only one of the three possible statements could be selected. Two groups of similar size (slightly less than 50%) declared 1) that they preferred to continue within the nuclear sector and 2) that they were flexible about the sector. A third, smaller group (less than 6% of respondents) was thinking about working outside the nuclear sector (see figure 14).

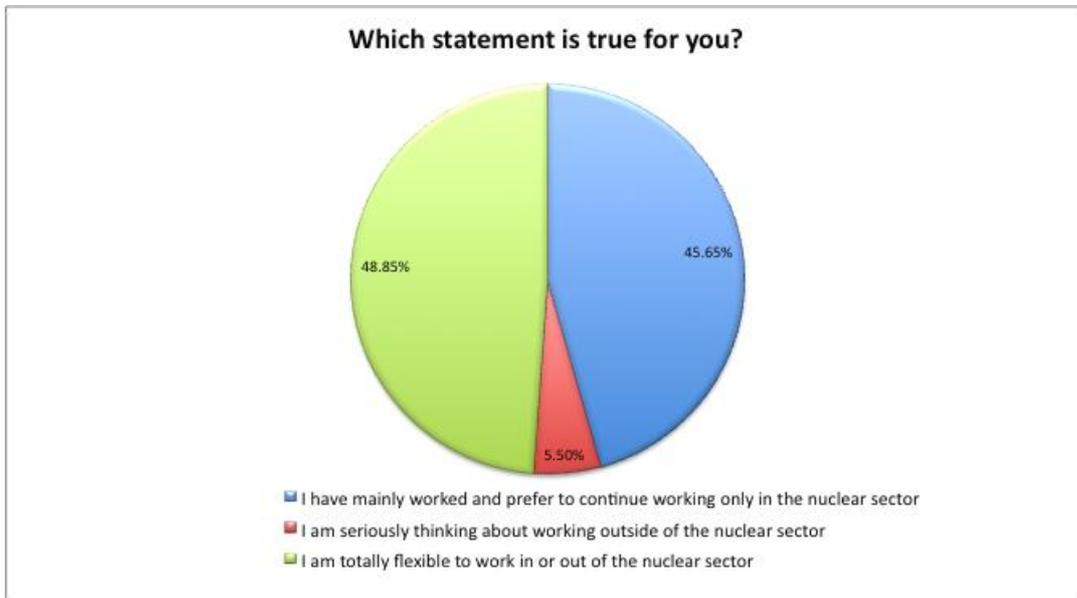


Fig. 14: Assessing respondents' preparedness to work inside/outside the nuclear sector

3. Conclusions and Recommendations

The main results and conclusions of the survey are summarized here.

1. The Survey jointly prepared by EHRO-N, ENS and Thomas Thor Associates received all together around 1000 return responses (response rate of ca. 10%), which can lead to an idea, but not to a sound representativeness.
2. The responses show a very high mobility of the respondents as 33% of them are prepared to work anywhere in the world and 15% anywhere in Europe, which shows that half of the respondents are mobile and flexible. Additionally, half of the respondents had moved at least already once for career reasons out of their country of origin. Also half of the respondents had moved at least once within their country. The same is valid for employer changes. Half of the respondents had changed employer at least once.
3. The most preferred field of work is: *New Build* (65%). Other fields are far behind as their popularity was concerned. This would suggest that delays in New Build projects will cause people to leave the industry. A recommendation to the industry would be to promote the interesting nature of work outside new build to prevent skilled people from exiting the nuclear industry.
4. The preferred nuclear stakeholders where the respondents would like to work are *International Organizations* (59%) followed by *Operators* (51%) and *Research Centres* (44%).
5. The preferred sector is *Management (incl. Project management)* with the highest percentage (59%) of all respondents followed by *Engineering* with 46%.
6. Somewhat less than half of the respondents prefer to work in the nuclear sector. About the same amount of respondents declared no preference for working within or outside the nuclear sector. Just a small group of less than 6% was seriously thinking to leave the nuclear sector.
7. English and French are the most spoken languages of the respondents, while 82% declared that they would learn another language, if needed for the employment.
8. More than 50% of the respondents are open to or strongly considering moving to another sector. This may worsen the skill shortage in the future unless the nuclear industry can retain these people.
9. The willingness of professionals in the nuclear industry to relocate as well as their willingness to learn new languages presents an opportunity to organizations willing to hire from the international market. (We cannot draw any conclusion from our survey on the amount of people willing to relocate that have not already relocated. This would be useful information as it would indicate the size of the 'untapped' talent pool that is ready for relocation now)
10. It is difficult to compare the results from the 2010 and the 2012 survey, keeping in mind, that the first survey was dedicated mostly to nearly or newly graduates and the second survey to the whole age span of nuclear employees. But they can be set against and the could be observed in certain questions:
 - a. Only 33% of the 2012 respondents against 60% of the 2010 respondents would be willing to work anywhere in the world. But, on the other hand, 51% of the 2012 respondents against 12% of the 2010 respondents would work in certain countries. This could be an effect of the two age groups answering. Students and junior professionals may be more flexible than settled experts.

- b. 'New Build' remains the most wanted section, where nuclear employees would like to work, but 'Decommissioning/Waste' has gone up before 'Reactor Safety and Security', compared to 2010
- c. Regarding the interest to work for certain stakeholders, 'International Organisations' (which were second in 2010) are mostly mentioned (instead of 'Research Organizations' in 2010, which are now third). 'Operators' are the second most wanted employers, compared to the third from the 2010 survey.
- d. The career interest is identical from 2010 to 2012, i.e. 'Management' (incl. projects) as first priority, followed by 'Engineering'
- e. The wish of 45% of the respondents to stay working in the nuclear sector was lower than in the 2010 survey, where 60% of the respondents wanted to stay in the nuclear sector. The flexibility to work outside the nuclear sector was a possibility for 49% of the respondents, compared to 31% in the 2010 survey.

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Abstract

Several International Organizations, such as the IAEA, OECD-NEA and the EC have raised concerns regarding a possible shortage of skilled people in the Nuclear Energy Sector in Europe. Apart from measures undertaken by International Communities and several EU-Member States it is vital to know how to attract potential employees.

The three organizations a) EHRO-N, the European Human Resources Observatory in the Nuclear Energy Sector, operated by the Joint Research Centre of the European Commission, b) ENS, the European Nuclear Society and c) Thomas Thor Associates jointly prepared a survey on career orientations and expectations of nuclear professionals.

The web based Survey of 18 questions was distributed to the network of EHRO-N, ENS and Thomas Thor Associates, guaranteeing data protection rules. The survey could therefore reach around 10.000 potential respondents.

A summary and analysis of the responses of the survey are presented in this report.

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