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EHRO-N 2014 Annual Activity Report

Massimo Flore, Ulrik von Estorff

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EHRO-N

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Abstract

The report summarises the activities that were conducted in 2014 by the European Human Resource Observatory for the Nuclear Energy Sector (EHRO-N).

After a short introduction on the mission and structure of EHRO-N, the report presents the main activities done during the year.

The most important decisions and conclusions delivered by the SAG meetings are reported, as well as the participation to major events in the nuclear sector to promote EHRO-N among interested stakeholders. The report explains also the studies and reports carried on during the year and EHRO-N contribution to the Second Situation Report on Education and Training in the Nuclear Energy Field in the European Union.

EHRO-N 2014 Annual Activity Report

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INTRODUCTION



The European Union has been building up its nuclear knowledge base since the 90s. The Chernobyl accident in 1986 turned public opinion perspective against nuclear energy exploitation, leading some member states to a gradual phase out. Younger generations' interest in nuclear studies decreased dramatically and nuclear education was abandoned by many engineering faculties. Meanwhile the first generation of senior nuclear experts started to retire with a resulting gap between incoming and outgoing flows of experts.

The idea of a European Human Resources Observatory for the Nuclear Energy Sector (EHRO-N) emerged within the European Nuclear Energy Forum (ENEF), which was launched by the European Commission's Directorate General for Energy (DG ENER). The setting up of EHRO-N began in October 2009. The European Commission's Joint Research Centre (JRC) – more specifically its Institute for Energy and Transport (IET) – was charged with its implementation and day-to-day management. On 16 September 2011, the European Commission (EC) published its "First situation report on education and training in the nuclear energy in the European Union", mentioning EHRO-N as "the central information source" for all nuclear stakeholders in the EU interested in the optimization of the initiatives taken.

This report summarizes the most important features of EHRO-N and presents the activities that have been carried out in 2014.

MISSION AND OBJECTIVES

The mission of EHRO-N is to provide qualified data on the needs for human resources in the nuclear field in the EU. EHRO-N also provides high-level expert recommendations on E&T for the European nuclear field. In order to fulfill this mission, EHRO-N pursues the following objectives:

- To produce and regularly update a quality-assured database on the short-, medium-, and long-term needs for human resources for the different stakeholders in nuclear energy and nuclear safety;
- To Identify gaps and deficiencies in the European nuclear education and training (E&T) infrastructure and elaborate recommendations for remedial actions and optimization;
- To play an active role in the development of a European scheme of nuclear qualifications and mutual recognition;
- To communicate by conventional and electronic means relevant data to the Member States' governmental, academic, and private organizations involved in nuclear E&T;
- To provide information and recommendations to the European Commission that could be used to report to the European Parliament and the Council.

ACTIVITIES

In line with its mission and objectives, EHRO-N carries out a series of activities:

- Surveys and analyses on the human resource (HR) situation related to nuclear energy and radiation protection, with emphasis on nuclear safety and security;
- Studies on European nuclear E&T infrastructure;
- Workshops on several topics, such as the implementation of ECTS (for academic education) and ECVET (for professional development);
- Communication, publications and participation to relevant European political debates (e.g., European qualification schemes for lifelong learning and cross border mobility).

MANAGEMENT

The management of EHRO-N consists of two bodies: the Operating Agent and the Senior Advisory Group.

Operating Agent

The Operating Agent is the JRC's Institute for Energy and Transport (IET). The IET is one of the 7 scientific Institutes of the Joint Research Centre (JRC) of the European Commission. The IET is based both in Petten (the Netherlands) and Ispra (Italy), and has a multidisciplinary team of around 300 academic, technical and support staff. It provides EHRO-N with the necessary infrastructure, networking and long term stability. Its activities focus on the setting up and maintenance of a database and the carrying out of regular analyses, reviews, compilations and specifications. The activities also include the tendering of specific studies, the production and the distribution of regular communications, the organization of workshops and meetings, the establishment and maintenance of close links with several organizations (ENEN, SNE-TP, ENEF, IAEA, OECD-NEA, ENS, etc.) and the provision of co-ordination and support to the Senior Advisory Group. The team is composed by Massimo Flore, Ulrik von Estorff and Roberto Brancucci.

Senior Advisory Group

The Senior Advisory Group (SAG) is composed of highly-qualified experts, who meet twice a year and focus on providing general guidance on conceptual issues. These could be, for example, the type of data and data quality required, the analysis to be performed, the endorsement of reports on the nuclear HR and the preparation and execution of communication campaigns



ACTIVITIES OF EHRO-N IN 2014

Senior Advisory Group (SAG) meetings

The two SAG meetings were held in Amsterdam in April and September, taking advantage of brand new conference venues in the city. Three new members were welcomed:

- ❖ Izabela Kulpa - PGE Polska Grupa Energetyczna
- ❖ John Roberts - University of Manchester
- ❖ Zdravko Špirić - OIKON Ltd.

During the meetings the results of the modelling scenarios studies on LTO were presented, which received widely positive comments. In order to ensure a more effective action of EHRO-N, a complete revision of the Terms of Reference, focusing on the new challenges on the energy market, has been considered necessary. It has been carried out and will be completed next year. Guests at the meetings were invited Mr. Chuck Goodnight (Goodnight Consulting), who provided the audience with a deep overview of the nuclear HR system in the United States of America; and Mr. Callum Thomas (Thomas Thor Associates), who provided a clear image of what the industries are looking for in the market.



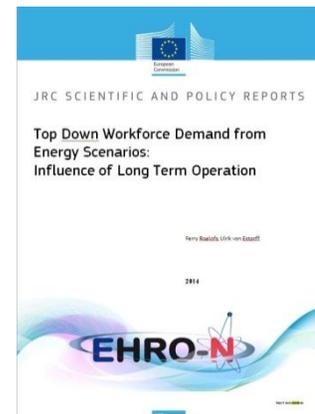
EHRO-N Post Fukushima Report

This report is a follow-up of the one published in 2012 ("Putting into perspective the supply of and demand for nuclear experts by 2020 within the EU-27 Nuclear Energy Sector") in which a new survey was conducted with the aim of following the developments in the nuclear energy labour market after the Daiichi-Fukushima accident of 2011. First, an overview of the actual nuclear energy sector in the EU-28 is shown. It then presents a comparison and analysis of both surveys, obtaining market tendencies on the demand & supply of nuclear experts in Europe.

Top down workforce demand from energy scenarios: Influence of Long Term Operation¹

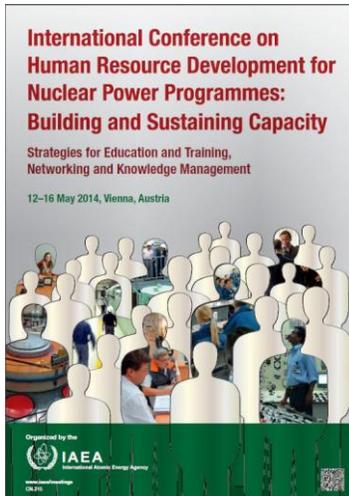
Complementary to the bottom-up approach taken by the EHRO-N team at JRC-IET, a top-down modeling approach has been taken by Roelofs and Von Estorff (2013). In the current work, a similar top-down approach was taken with respect to a selected nuclear energy demand scenario to determine the influence of long term operation (LTO) on the HR requirements in the EU28 and enlargement and integration countries.

The selected '20% nuclear electricity' scenario from the EC Energy Roadmap 2050 shows a moderate growth of nuclear energy production in the EU28 countries including the integration and enlargement countries. The influence of LTO is assessed by comparing scenarios in which no LTO is assumed to scenarios in which LTO is assumed.



¹ <http://ehron.jrc.ec.europa.eu/news/top-down-workforce-demand-extrapolation>

EHRO-N participation to the IAEA's International Conference on Human Resource Development for Nuclear Power Programmes



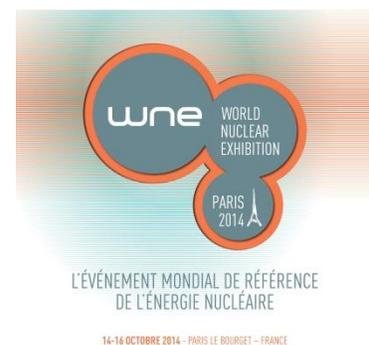
The conference focused on the global challenges of capacity building, HRD, education and training, nuclear knowledge management and the establishment of knowledge networks, including the themes reflected in the IAEA Action Plan on Nuclear Safety. EHRO-N was officially presented the second day. Many officers from non-EU countries showed their interest about the methodology used and the scope of EHRO-N, as they are facing similar issues regarding the monitoring of HR in the nuclear field. In particular Asians officers from Japan, China and Korea were interested in the method, as well as Russians who are developing their own knowledge management tool since 2012. African participants were particularly interested in implementing EHRO-N methodology for their new-born nuclear energy sector, with particular attention to knowledge and resources management, together with the monitoring of the supply side from their national universities and their scientists who completed their studies in Europe or United States.

The American participants were also interested in EHRO-N, as they are also facing similar issues regarding the scarcity of HR, in particular about the high rate of drop-outs related with the Life Time Extension and decommissioning of nuclear power plants.

EHRO-N participation at the World Nuclear Exhibition

The World Nuclear Exhibition - organized by AIFEN, the French nuclear industry association - is the leading event for the nuclear energy sector. It covers all nuclear industry activities. The programme included six round tables and several workshops, along with 495 exhibition spaces for companies coming from all over the world, 7,200 visitors from 71 countries, almost 50 ministers - like France's Prime Minister, Manuel Valls - junior ministers, secretaries of state and senior officials.

The event was important for the development of EHRO-N, as it offered the possibility to get in contact to long-time partners, re-establish contacts with the new management of important companies and to introduce EHRO-N, its methodology and activities to a vast audience that would have been hard to contact from afar.



CONFERENCE PAPERS AND JOURNAL ARTICLES

THE FOUNDATIONS FOR THE IMPLEMENTATION OF ECVET IN THE NUCLEAR ENERGY SECTOR²

During the recent decades, several instruments have been developed at European level in order to increase the quality, transparency and harmonization of the national education systems and facilitate the cross-border mobility. The European Credit System for Vocational Education and Training (ECVET) was established with the Recommendation in 2009 of the European Parliament and the Council (11), which invited the Member States to start progressive ECVET implementation in the national qualification schemes.

THE JRC ROAD MAP FOR ECVET IMPLEMENTATION IN THE NUCLEAR ENERGY SECTOR

As part of its support to the introduction of ECVET in the nuclear energy sector, the Institute for Energy and Transport (IET) of The Joint Research Centre (JRC), European Commission (EC), through the ECVET Team of the European Human Resources Observatory for the Nuclear energy sector (EHRO-N), developed in the last five years a strategy and a road map for ECVET implementation in the nuclear energy sector. This article describes the process that led to the JRC road map for ECVET implementation in the nuclear energy sector.

EHRO-N PROJECT AND THE HUMAN RESOURCES DEMAND FOR THE NUCLEAR ENERGY SECTOR

The focus is on the match between the demand and supply of highly skilled workforce in the nuclear field at present and in the future. The process of data collection and analysis also benefited from the co-operation with EHRO-N's Senior Advisory Group (SAG), which brings together the representatives of research organizations, industry and international organizations involved in nuclear energy across Europe. Finally, the paper compares the demand/supply of nuclear experts and possible future areas of intervention to a top-down modelling study on HR needs based on the EU 2050 Energy Road map.

² <http://www.euronuclear.org/events/enc/enc2014/transactions.htm>

STUDIES AND REPORTS

TOP-DOWN WORKFORCE DEMAND EXTRAPOLATION BASED ON AN EC ENERGY ROADMAP SCENARIO³

In this top-down modelling approach, the number of nuclear power plants that are in operation and under construction is derived as a function of time from 2010 up to 2050 assuming that the current reactor park will be replaced by generic third generation reactors of 1400 MWe or 1000 MWe. Depending on the size of new build reactors, the analysis shows the number of new reactors required to fulfil the demand for nuclear energy. Based on workforce models for operation and construction of nuclear power plants, the model allows an extrapolation of these respective workforces. Using the nuclear skills pyramid, the total workforce employed at a plant is broken down in a nuclear (experts), nuclearized, and nuclear aware workforce. With retirement profiles for nuclear power plants derived from the bottom-up EHRO-N survey, the replacement of the current workforce is taken into account.

SUPPLY OF AND DEMAND FOR NUCLEAR EXPERTS IN THE EU BY 2020: EHRO-N REPORT⁴

A report from EHRO-N (European Human Resource Observatory of the Nuclear Energy Sector) published in 2012:

1. Determines that the supply of employees with specific educational background and competences, called nuclear experts, does not correspond to the demand for the same employees in the EU by 2020, and that
2. It is useful to put the data on the supply of and demand for nuclear experts in the EU in perspective, using available statistical data on supply of STEM (science, technology, engineering, mathematics) graduates in EU and data on the employed HRST (human resources in science and technology) in the EU labour market.

For more refined and accurate data that can determine policy directions, the most effective way would be to conduct regular nuclear human resource monitoring exercises in the EU in the future.

This paper is a summary of the first findings as well as of the lessons learnt.

³ <http://ehron.jrc.ec.europa.eu/news/top-down-workforce-demand-extrapolation>

⁴ http://www.kernenergie.de/kernenergie-en/service/fachzeitschrift-atw/hefte-themen/2014/jun/04_Experten-fuer-die-Kerntechnik-in-der-EU-bis-2020.php

EHRO-N Contribution to the Second Situation Report on Education and Training in the Nuclear Energy Field in the European Union⁵

In 2008 The Commission responded to the need to ensure the necessary skills in the nuclear field by establishing the "European Human Resources Observatory in the Nuclear Energy Sector" (EHRO-N). The report states that for the coming decades, not only the nuclear power sector but also those industrial and medical applications making use of ionizing radiations as well as fusion energy research will continue to require highly educated personnel with very specific knowledge, skills and competences. The main EU tool to foster Education and Training, as well as developing and monitoring nuclear skills and competences at EU level is the Horizon 2020.

⁵ http://ehron.jrc.ec.europa.eu/sites/ehron/files/documents/public/act_fetchdocument.pdf

CONCLUSION

EHRO-N has progressed in the last five years and positioned itself in the European Nuclear Energy Education and Training field, thus promoting its methodology also to non-EU countries, in order to achieve a global mutual recognition system. This has proven to be effective in creating awareness of HR scarcity in new nuclear countries and support long-time ones in more efficient management of the existing resources.

The complementary studies (bottom-up and top-down) and the comparison of the nuclear Human Resources situation before and after Fukushima have led to valuable information to the nuclear stakeholders. Being mentioned in several EC policy documents, EHRO-N has proven to be a central initiative in the nuclear HR and Education & Training field.

ANNEXES

European Human Resource Observatory in the Nuclear Energy Sector

9th Senior Advisory Group

Agenda

Amsterdam (NL) – 7/8 April 2014

The EYE – Film Museum Amsterdam

Date: 07 April 2014

13h00 Arrival of participants

14h00 Welcome

U von Estorff

14h10 Minutes and Actions

M Flore

14h20 News from ENEF Sub-WG E&T and 2nd EC Comm.

N Palomaki

14h30 News from SNE-TP ETKM

J Roberts

14h45 News from ENEN and DG RTD

P Porras/G van Goethem

15h00 News from IAEA KM

M Sbaffoni

15h30 Coffee

16h00 News from ENS

G Parker

16h10 News from Foratom

G Parker

16h20 News from YGN

E Radde

16h30 EHRO-N Website News

A Giachnis

16h45 Modeling Study - Life Time Extension

F Roelofs

17h00 EHRO-N TOR Review

U von Estorff

17h30 Closure

Date: 08 April 2014

<i>09h30 Sector Skill Alliances Estorff</i>	<i>G van Goethem/U von</i>
<i>09h50 European Sector Skill Councils</i>	<i>M Ceclan</i>
<i>10h10 Discussion on a proposal for a change of TOR of EHRO-N</i>	<i>L Turpin</i>
<i>11h00 Coffee</i>	
<i>11h30 FUSENT Presentation</i>	<i>N Cardozo</i>
<i>11h45 ECVET Seminars and Promotion (Implementation)</i>	<i>M Ceclan</i>
<i>12h00 ECVET Job Taxonomy Status</i>	<i>C Chenel Ramos</i>
<i>12h15 NKMI Nuclear competences center</i>	<i>Y Yanev</i>
<i>12h30 Lunch</i>	
<i>14h00 EHRO-N Annual Report</i>	<i>M Flore</i>
<i>14h15 EHRO-N Survey 2013 – Status</i>	<i>M Flore/R Brancucci</i>
<i>14h30 Road Map 2020 EHRO-N</i>	<i>U von Estorff</i>
<i>14h45 Discussion on Enquiries/Studies to make in 2014/2015</i>	<i>U von Estorff</i>
<i>15h00 Summary of Actions</i>	<i>U von Estorff</i>
<i>15h15 Next Meeting (Tentative: 24/25 September 2014)</i>	<i>M Flore</i>
<i>16h30 Closure</i>	

European Human Resource Observatory in the Nuclear Energy Sector

10th Senior Advisory Group

Agenda

25-26 September 2014

The Hub

(Haarlemmerweg 10C, 1014 BE Amsterdam)

Date: 25 September 2014

13h00 Arrival of participants

14h00 Welcome

U von Estorff

14h15 Minutes and Actions

M Flore

14h30 News from ENS and FORATOM

G Parker

14h45 News from ENEN and DG RTD

G van Goethem

15h00 Break

16h00 Top-down Study on LTO Scenario 2050

F Roelofs

16h30 KWS Standard T4F Process

H Otte

17h00 Proposal for a revision of TOR of EHRO-N

U von Estorff

17h30 Closure

Date: 26 September 2014

09h30 HR Situations in the USA

C Goodnight

10h00 E&T Situation in Poland

I Kulpa

10h30 EHRO-N TOR Revision

M Flore

11h30 Break

12h00 ECVET implementation in the nuclear energy sector

M Ceclan/C Ramos/G

Van Goethem

12h30 UK National Skills Academy Nuclear Overview

T Austin

13h00 Lunch

14h15 EHRO-N Survey 2013 – Status

R Brancucci

14h45 Retain Critical Competences

U von Estorff

15h15 Discussion on Enquiries/Studies to make in 2015/2016

U von Estorff

15h30 Summary of Actions

U von Estorff

15h45 Next Meeting (Tentative: 20-21 April 2015)

M Flore

16h00 *Any Other Business*

16h30 Closure

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Stimulating innovation
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