

Women in Nuclear Energy – Motivation and Prospects at Kozloduy NPP Report

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Abstract. The report presents part of the study of the staff motivation at Kozloduy NPP plc, which is performed annually.

A total of 25 factors have been considered, and for 8 of them the internal motivation characteristics have been discussed, while the remaining 17 factors determine the satisfaction from external motivation stimuli: positive ones (remuneration, bonuses, awards, etc.), as well as negative (little lead time, sanctions, punishments, excessive control in the performance of tasks, etc.).

Women in the nuclear industry contribute to the unique image of nuclear organisations and are an especially valued asset. In the selection of staff for vacancies there is no sex discrimination, and it is increasingly becoming evident from the number of women employed in jobs considered until recently as typically male.

The satisfaction from the measured Internal motivation factors concerning the women working at Kozloduy NPP is presented in this work.

Keywords: women in nuclear industry, WiN, personnel, motivation factors

1 Introduction

The data in this report form part of the study of the personnel motivation at Kozloduy NPP plc (KNPP), which has been performed annually since 2006. The methodology of the study was developed in the Psycho-physical Laboratory at Kozloduy NPP following cooperation with DTI (UK) in 2005 as per Project DTI NSP B29 - Development of an Action Plan to Support Personnel Motivation in View of the Forthcoming Shut-down of Power Units and during their Decommissioning.

2 Study Objectives

Assessment and use of the results from the study on the motivation in an organisation such as Kozloduy NPP is a task of exceptional significance as it:

- provides an exhaustive and credible measurement of the degree of impact on the employees' behaviour of twenty-five motivation factors included in the opinion poll;
- outlines the motivation profile of the personnel at Kozloduy NPP plc., which is directly related to the psychological assurance and professional reliability of the staff;
- tracks and analyses the level of satisfaction with the factors showing a declining trend or tending to turn into de-motivating factors;
- provides a snapshot of the current situation and a possibility to forecast eventual problems as well as proposals for actions to prevent them;
- Last but not least, motivation is an important element of the safety culture.

3 Work Motivation – Intrinsic and Extrinsic Motivation Factors

Bearing in mind that *work motivation* is a combination of inner psychic and external processes, they were covered by separate items that comprise the factors and included in the opinion poll. Eight of the factors measured were used to analyse inner motivation characteristics (the need for autonomy and self-determination, or of team work, the way in which the line manager contributes to the personal satisfaction of the employee with his/her performance, self-assessment and performance appraisal, satisfaction with one's own achievements). The remaining seventeen factors determine the satisfaction with the outside motivation incentives: positive ones (remuneration, bonuses, awards, etc.), as well as negative (short lead time, sanctions, punishments, excessive control of the performance of tasks, etc.). Subjective characteristics such as gender, age, education, occupational and social experience, the adopted organisational culture, etc. also have their own impact and significance.

The internal psychic processes form an integral part of one's internal disposition. They are related to the specific interests of an individual, and underlie his/her behaviour within the organisation. This is the so-called **intrinsic motivation**, in which both the initiating and the regulating factors stem from the individual. These characteristics are very stable and hard to change under the influence of external conditions.

Measuring the level of satisfaction is indicative of the desire for working at the position currently held, the possibility to take autonomous decisions, and the loyalty to the team. Another item measured was the level of satisfaction regarding the relationship of trust, support and justice

Intrinsic motivation

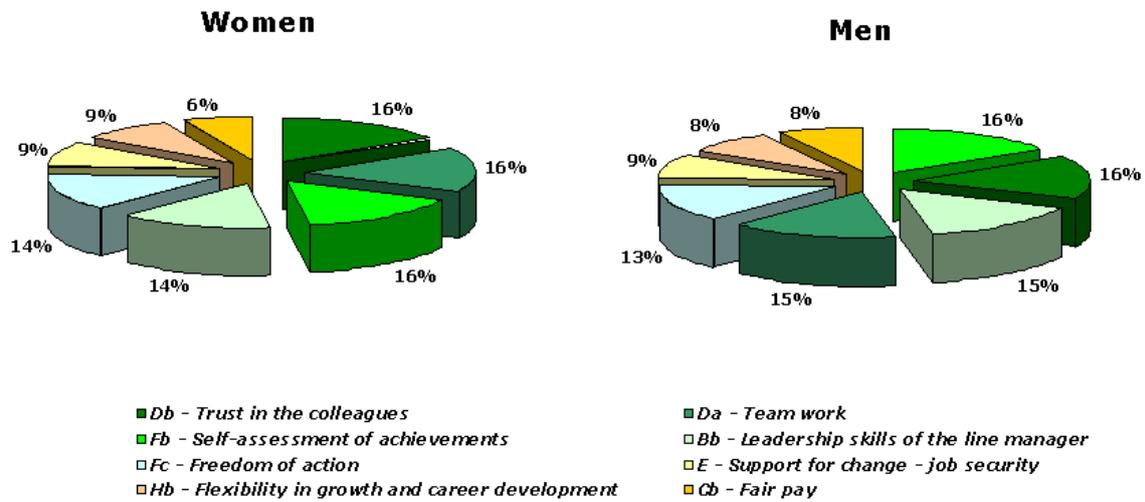


Figure 1. Comparison between the intrinsic motivation factors of women and men in 2014.

between a line manager and an employee, and how this relationship contributes to the personal satisfaction with one’s performance. If the employees have high personal motivation, this in turn means that the personnel recruitment policy is successful.

Extrinsic motivation is determined by the processes – social, organisational, public, etc. – that occur outside and independently of a particular individual and are related to the needs of this individual. In terms of this, the behaviour regulators may include positive incentives (payment, bonuses and awards) and negative incentives (tight schedules, sanctions, punishments, excessive control of job performance). Unlike the intrinsic motivation, the extrinsic motivation process is variable in nature namely because it is dependent on the exogenous factors mentioned.

Measuring the satisfaction with the extrinsic motivating factors provides information on the effectiveness of the adopted management strategies, such as: salaries; awards and bonuses; punishments; control of the employees’ performance; creating adequate conditions for good training of the personnel; improvement of working conditions, etc.

The study was conducted over the period from 05 through 25 November 2014. The representative sample included 560 employees, selected randomly. The statistical processing covered the questionnaires of 468 individuals, 164 of which were women. The sample is comprehensive and the results refer to the plant personnel.

General data regarding women show that:

- 30% of the employees at Kozloduy NPP plc are women;
- 65% of them hold a higher education degree, and 35% have graduated secondary schools;
- 28% of the women working at KNPP are aged up to 39, and 72% – over 40;

- 19% of KNPP management positions are held by women;
- women with work experience of up to 5 years are 19%, of up to 15 years – 27%, and over 16 years – 54%;
- 15% belong to operating personnel, 14% – to maintenance, 29% to engineering and 67% – to administrative personnel.

4 Motivation of Women Working at Kozloduy NPP plc:

Intrinsic motivators are directly related to the psychological assurance and professional reliability of the personnel. Regarding the women employed at Kozloduy NPP, the following results for the level of satisfaction with the respective factors was measured in 2014 is shown in Table 1.

Table 1. Women employees’ satisfaction with intrinsic motivators, data for 2014

Db – Trust in the colleagues	89%
Da – Team work	89%
Fb – Self-assessment of achievements	86%
Bb – Leadership skills of the line manager	80%
Fc – Freedom of action	76%
E – Support for change - job security	50%
Hb – Flexibility in growth and career development	48%
Cb – Fair pay	35%

The major shares, or $\frac{3}{4}$, were allocated among factors concerning: trust in the colleagues, preference for team-work, high self-assessment of performance achievements, good relationship with line-managers, and the opportunity to act freely. The remaining $\frac{1}{4}$ was taken by factors such as support and job security, flexibility in growth and career development, fair pay for work completed. Insufficient (below 50%) was the satisfaction with the flexibility in growth and career development; however, only 30%

Extrinsig motivation

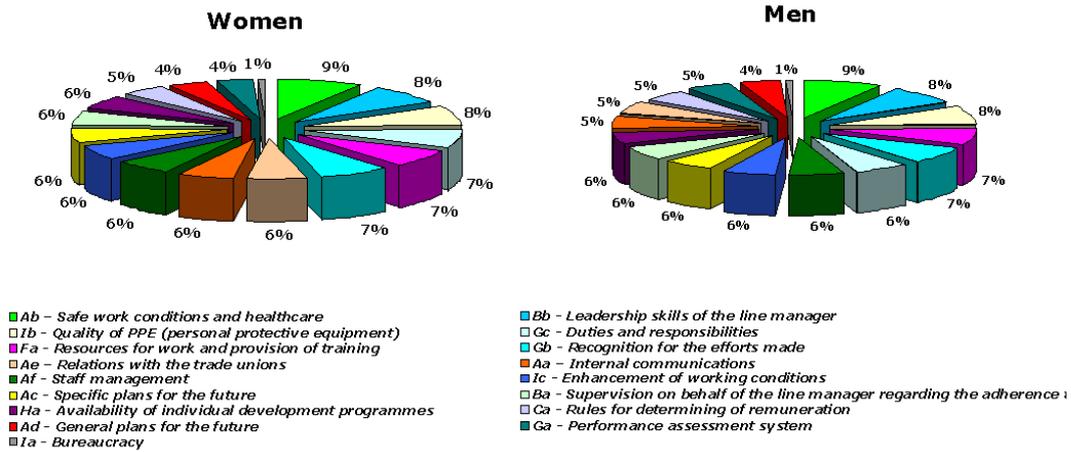


Figure 2. Comparison between the extrinsic motivation factors of women and men in 2014.

of women respondents said they would change their work place, and only for another position within KNPP. The attitude to pay indicates insufficient satisfaction, but in this case, due to the low discrimination coefficient, it is not correct to analyse this factor.

The intrinsic motivation profiles of women and men show some differences: while women place priority on trust in colleagues and team work, men consider self-appraisal for achievement and trust in colleagues as the leading incentives.

As is evident from the diagrams in Figure 1, the comparison of both profiles did not demonstrate any significant differences for the intrinsic motivation between men and women.

Regarding the extrinsic motivators, women respondents gave the following data for their satisfaction with them in the Table 2.

Table 2. Women employees' satisfaction with extrinsic motivators, data for 2014

Ab – Safe work conditions and healthcare	84%
Bb – Leadership skills of the line manager	73%
Ib – Quality of PPE (personal protective equipment)	73%
Gc – Duties and responsibilities	69%
Fa – Resources for work and provision of training	68%
Gb – Recognition for the efforts made	67%
Ae – Relations with the trade unions	58%
Aa – Internal communications	57%
Af – Staff management	56%
Ic – Enhancement of working conditions	55%
Ac – Specific plans for the future	53%
Ba – Supervision on behalf of the line manager regarding the adherence to the safety rules	53%
Ha – Availability of individual development programmes	53%
Ca – Rules for determining of remuneration	43%
Ad – General plans for the future	40%
Ga – Performance assessment system	34%
Ia – Bureaucracy	8%

It is evident that the leading extrinsic motivators of women are: safe work conditions and healthcare; leadership skills of the line manager; quality of PPE (personal protective equipment); duties and responsibilities; resources for work and provision of training; recognition for the efforts made.

The lowest percentage of approval scored the elements that define bureaucracy. Below 50% was also the satisfaction level with factors such as “Performance assessment system”, “General plans for the future”, and “Rules for determining of remuneration”. Therefore, this is where adequate corrective measures have to be directed, however, following a detailed analysis of the causes.

The profiles illustrating the extrinsic motivation of women and men working at Kozloduy NPP show considerable similarities (Figure 2).

For both genders safe work conditions and healthcare are of primary importance, followed by leadership skills of the line manager, quality of PPE (personal protective equipment); high responsibility and corresponding duties; ensured resources for work and training; and recognition for the efforts made.

The greatest differences between women and men were noted in their respective evaluation of the factors “Performance assessment system” and “Rules for determining of remuneration”. While half of the men respondents were satisfied, only 34% of the women considered their performance assessment fair and objective. Regarding the rules for determining of remuneration, women’s approval was by 10% lower than that of men.

On the basis of all the above considerations, it can be argued that no other considerable differences were found on comparing of the motivation profiles of both genders.

Generally, the KNPP personnel motivation measured is high and this level has been maintained since 2007 (or from the start of the project for investigation of the personnel motivation).

5 Outlook for Women Working at Kozloduy NPP plc

Apart from high level of motivation, the women working in the company have exceptionally good outlook for successful self-actualisation, career development, qualification enhancement, job security, and opportunities for a fulfilling social life even in a small town such as Kozloduy.

Let's, for example, consider the time period 2012-2014 when a total of 520 workers and employees were appointed, 164 of who were women, i.e. equal to 32% (the total percentage of women at the plant is 30%). Of these:

- 55% were up to 39 years of age (generally for the plant, 28% of the women are aged up to 40);
- 78% held a higher education degree (while the total percentage for women in the plant 65%);
- of these new appointments 79% were for the administrative personnel, 13% - operating personnel, 7% - engineering, and 1% - maintenance personnel.
- Also, over the same time period, a total of 452 women workers or employees were relocated to new job positions, 21 of whom were transferred from analytical to managerial positions or other ones.
- The KNPP policy for recruitment of young people does not differentiate between genders. In this respect we can supply the following data:
- The project of the Employment Agency "A New Beginning - from Education to Employment", which is part of the operative programme "Human Resources Development", 43 young people were appointed in 2012 and 2013 aged up to 29 years. Of these 19 were women, which makes 44%;
- In 2014, following an amendment to the Labour Code, it became possible to place internship employment contracts with individuals up to 29 years of age. Thus, 22 persons were employed, of which 2 women.

All this provides grounds to believe that the number of women in the Kozloduy NPP team is growing.

The ladies employed by Kozloduy NPP are extremely active not only at their working places, but also allocate a great portion of their spare time for social commitments and charity initiatives. The association of women in nuclear industry, WIN - Kozloduy Chapter, has been engaged in a long-lasting activity for promoting safety of operation at Kozloduy NPP, and the environmental benefits of nuclear energy. It has been working towards enhancement of public confidence and attracting young generation to its ideas. This will guarantee that future generations will be interested in technical education, and willing to work with nuclear technologies.

Also, women participate in various sports teams, and win prizes in national and international workers' competitions.

The House of the Power Worker is a place where women can express their artistic talents through acting in the theatre group, or setting exhibitions of their works.

6 Conclusion

The world needs nuclear technologies as they generate clean energy, adhere to exceptionally strict safety measures, and are an alternative of all environmentally destructive power generation methods. Only good professionals in this industry sector can put their efforts towards making this process better, safer and more efficient, and women in nuclear contribute a greater share of it.

Women in the nuclear industry contribute to the unique image of an organisation and are an especially valued asset. In the selection of staff for vacancies there is no gender discrimination, and it is increasingly becoming evident from the number of women employed in jobs considered until recently as typically male.

The future of women working at Kozloduy NPP is extremely favourable and outlines optimistic forecasts for their increasingly significant role in the nuclear energy.

Aknowledgements

The methodology of the study is developed in the Psychophysical Laboratory at Kozloduy NPP as per Project DTI NSP B29.