

# Motivation for Social Responsibility in Nuclear Power Plants

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## Abstract:

**Research Question (RQ):** What motivates owners and operators of Nuclear Power Plants (NPPs) for socially responsible acts?

**Purpose:** This research identifies the dominant motives for the social responsibility of owners and operators of NPPs.

**Method:** After reviewing the relevant literature of the presented field of interest, we included the owners and operators of the NPPs in the research. They are members of the international organization World Association of Nuclear Operators (WANO), with a regional centre in Paris. As an instrument for obtaining the information, we used a developed questionnaire. For the evaluation of data, we used descriptive and frequency statistics, the Mann-Whitney test, Wilcoxon rank test, and Kruskal-Wallis test.

**Results:** 43 representatives of operators and 3 owners of NPPs cooperated in the research. Motivational factors for socially responsible activities include intrinsic elements, in particular personal ethical and moral values and personal satisfaction. We did not find statistically significant differences in motivation between operators and owners. In most cases, these differences were not statistically significant, considering their function in the organization. Operators and owners of NPPs demonstrated a high willingness to meet the expectations of a wider society.

**Organization:** The results help NPPs in establishing and consolidating the positive image of a socially responsible organization.

**Society:** The wider society is aware that the owners and operators of the NPPs obviously demonstrate that they want to act socially responsibly. It affects the acceptability of the NPPs and the quality of life of individuals and different groups in modern society and the environment in which nuclear facilities are located.

**Originality:** This research is the first one as known to the author that is aimed at studying the motivational factors of the owners and operators of the NPPs for socially responsible actions. The results are directly applicable and relevant in Slovenia and other countries with NPPs. They contribute to a better understanding of the interactions between society and nuclear facilities.

**Limitations / further research:** The responsiveness of the owners of the NPPs was not as good as the responsiveness of the operators; therefore, the sample is less representative of the owners. This research also focused on the inspirations that influence the motivation for establishing partnership relations with the NPPs, of the external stakeholders of the NPPs (local communities, political public, NGOs, journalists and others).

**Keywords:** intrinsic and extrinsic motivational factors, coexistence with the nuclear power plant, social responsibility.

## 1 Introduction

The members of management in organizations play an important role in the implementation of social responsibility, as well as other individuals in organizations. Understanding and implementing the obligations of each individual, knowledge, responsibility, ethics and

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organizational capability of the management in organizations are a prerequisite for a socially responsible environment. Social norms more or less dictate the actions of the involved actors.

The following article focuses on the subject of the social responsibility of nuclear power plants (NPPs) – particularly the operators and owners of nuclear facilities. As operators, we are referring to people who directly handle with a nuclear power plant. The socially responsible actions of owners and operators of NPPs depend on their own personal motivation and their understanding of the influences of nuclear facilities on the wider society.

This research identifies the dominant motives for the social responsibilities of owners and operators of NPPs which significantly influences the understanding of the coexistence of external stakeholders with the NPP. It is important for NPPs and for the wider society.

Nuclear safety is in strong correlation with high safety culture standards and the fulfilment of social responsibilities. Today's understanding of the social responsibility of NPPs includes sustainable functioning and is based on safety culture as the highest value and behavioral pattern of operators and owners. It includes respect for ethical and moral principles, and considers the interests of wider society. An important condition for NPP's acceptance in society is trust that the organization creates through public relations, good business results, stable and safe operations, inclusion of the public, respect for international norms, ethical principles and regulatory obligations. (Simončič & Žurga, 2016, p. 658)

## **2 Theoretical framework**

### **2.1 The impact of social responsibility on the acceptability of NPPs and quality of life**

Organizations and governments already implemented various aspects of corporate social responsibility at the end of the 19<sup>th</sup> century and in some cases even earlier (ISO 26000, 2010, p. 29). Matten and Moon (2008, p. 405) note that the concept of social responsibility is not uniquely defined, something which we have recognised ourselves. We are referring to Štrukelj and Mulej (2017), that the social responsibility of organizations expresses the social and personal needs, this is why everyone takes into account their influence on people and nature, i.e. on the society. The search for a way out of the current global socio-economic crisis is supported by the fact that the guidelines for enforcing corporate social responsibility have been accepted by the International Organization for Standardization (ISO), with ISO 26000. The European Union (EU) has also endorsed it. The exposed properties indicate that it is the enforcement of systemic behaviour, since the three central concepts are responsibility, interdependence and integrity. Social responsibility is a serious and natural value for those with more long-term and comprehensive ideas, and for those with more short-term and one-sided ones it is an obstacle for profit. The direction a certain organization chooses depends on its business strategy (p. 292–303).

Document on Social Responsibility ISO 26000 (2010, p. 17) provides guidance for seven principles of social responsibility: accountability, transparency, ethical behaviour, respect for

stakeholder interests, respect for the rule of law, respect for international norms of behaviour and respect for human rights.

According to the International Atomic Energy Organization (IAEA, 2019) there were 452 nuclear reactors operating in the world, in 31 countries, with a total installed capacity of 399.354 MW in May 2019, while 54 NPPs were under construction. Nuclear energy remains a reality in many countries even after the event in Fukushima NPP in Japan, in 2011 (Afgan, 2013, p. 308–309; Goodfellow, Dewick, Wortley, & Azapagic, 2015, p. 72; Horvath & Rachlew, 2016, p. 38; Kato, Takahara, Nishikawa, & Homma, 2013, p. 818; Raja, Pesic, & Misra, 2015, p. 1; Shadrina, 2012, p. 78; Truelove & Greenberg, 2013, p. 386). Program Harmony (2017), managed by the World Nuclear Association, supports climate change mitigation efforts to limit warming below 2 °C. Nuclear energy could be part of the solution to problems of air pollution and climate change. This requires a large increase of all low-carbon energy sources, of which nuclear is an important part. Achieving this means nuclear energy generation must triple globally by 2050. According to the European Commission, nuclear energy is expected to remain an important component of the EU's energy mix in the 2050 horizon (European Commission, 2017, p. 11).

International organizations manage the operation of the NPPs and try to achieve unification of safety, technical and ethical standards at a global level. International organization World Association of Nuclear Operators (WANO, 2013) states that the safety culture in the NPPs is defined as a fundamental value. It originates from the collective commitment of leaders and individuals to ensure the safety of people and the protection of the environment, with the emphasis on safety while meeting the set goals. Nuclear safety is the collective responsibility of each NPP. The concept of nuclear safety culture therefore applies to every employee in a nuclear organization, from top management to all individual employees in the organization (p. 6–11).

The successful and stable operation of the NPP depends on the trust of a wider society in a nuclear facility. Owners and operators of the NPPs have to meet the expected obligations towards society and the environment. Respect for the interests of the wider society is a key precondition for successful coexistence and acceptance of NPPs. Trufanov (2013) states that organizations are influenced by different stakeholders in various fields. The importance of individual interests differs for individual groups. (p. 931) Matuleviciene and Stravinskiene (2015, p. 599) cite two basic factors that influence the trust of stakeholders, namely the reputation of the organization and its credibility (organizational reliability). The principle of respecting the interests of stakeholders involves cooperation with local communities and other stakeholders. Bowen, Newenham-Kahindi and Herremans (2010) explore when, how and why companies use different community strategies of integration. They set out three strategies of engagement and cooperation with communities: transactional, transitional and transformational. These actions have a long-term effect (p. 297).

Respect for the stakeholder interests of NPPs is one of the important socially responsible principles, which can be demonstrated by owners and operators. Simončič and Žurga (2019, p. 199–200), using the SEM (*Structural Equation Modelling*) method, showed the hypothesis that respecting the interests of stakeholders is a prerequisite for the acceptability of the NPPs in society and the environment and strengthens the quality of their coexistence. Figure 1 shows the main variables (grouped into 3 factors) of the structural model and relationships among the three latent constructs, as a basis for the hypothesis test and interactions between them. In general, 63 % of the quality of coexistence is explained by the acceptability of the NPPs in the environment. The influence of respecting the interests of stakeholders (as part of the social responsibility of the NPP) on the quality of coexistence is evident, and (even greater) on the acceptability of the NPP in society.

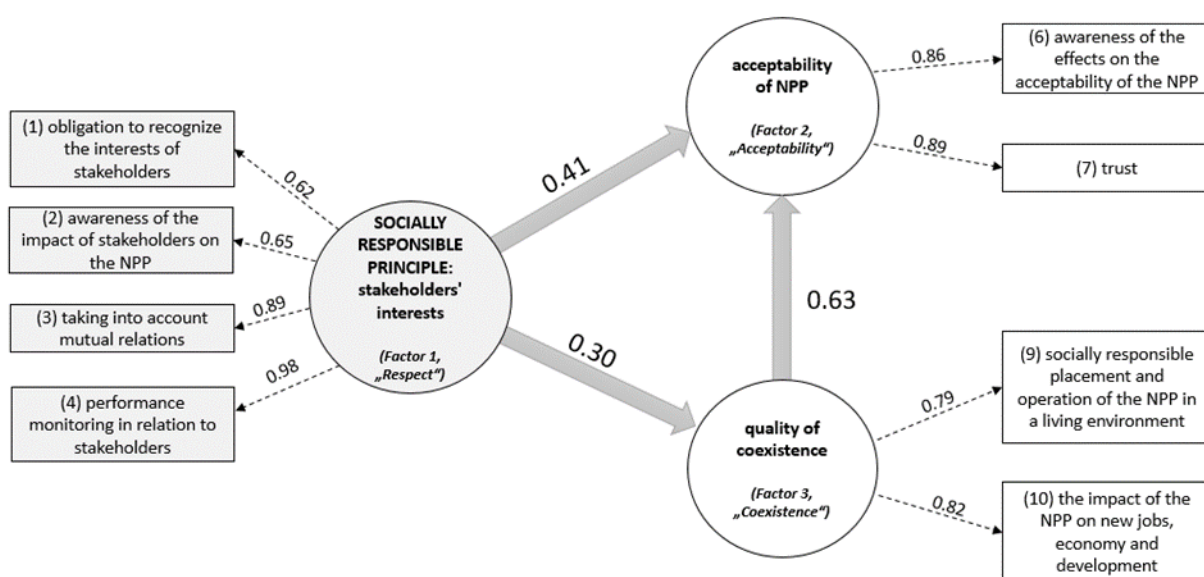


Figure 1. Structural model for NPPs, relationships among the three latent constructs. Summarized by »Successful Co-Existence of Nuclear Power Plants with Their External Stakeholders.«, M. Simončič & G. Žurga, 2019, *Atw - International Journal for Nuclear Power*, 64(4), p. 200.

## 2.2 Motivation for social responsibility

Based on the analysis of 38 articles from the field of social responsibility, we can highlight the essential advantages of socially responsible organizations: increasing trust in organizations and products / services it offers, competitive advantage, long-term reputation, efficiency, incentive for innovation, customer satisfaction / user satisfaction and the personal satisfaction of those who carry out socially responsible actions. (Simončič, 2015, p. 122) The above facts could be an important incentive for managers and other individuals in organizations, even in NPPs.

To be motivated means to be moved to do something, said Ryan and Deci (2000).

With motivation, the organizations promote work efficiency. The purpose of motivational theories is to study the motives that people need. These theories are, for example, the theory of Abraham Maslow (1954), McClelland (1961) and Herzberg's theory (1959). Process

motivational theories are studying processes that influence the way people work in a given way in given situations. Among these theories are known: the theory of Vroom (1964), Adams (1965) and Lawler's theory (1973). (Bexheti & Bexheti, 2016, p. 382)

In the Self-Determination Theory Ryan and Deci (2000) distinguish between different types of motivation based on the different reasons or goals that give rise to an action. The most basic distinction is between intrinsic motivation, which refers to doing something because it is inherently interesting or enjoyable, and extrinsic motivation, which refers to doing something because it leads to a separable outcome. Intrinsic motivation is defined as the doing of an activity for its inherent satisfactions rather than for some separable consequence. When intrinsically motivated a person is moved to act for the fun or challenge entailed rather than because of external prods, pressures, or rewards, summarized by White (1959). Although intrinsic motivation is clearly an important type of motivation, most of the activities people do are not, strictly speaking, intrinsically motivated. (p. 54–60) Hetty, Schreus, Cuyper, Jawahar and Peeters (2012, p. 113) argue that extrinsic motivation focuses on the results of an organization, work is carried out by employees in order to achieve the goals of the organization, in anticipation of the prize, and not because they would enjoy it or it seemed interesting to them.

People often assume that socially responsible acts are conditioned primarily by financial motives (Orlitzky, Schmidt, & Rynes, 2003, p. 424; van Beurden & Goessling, 2008, p. 419). Simcic Brønn and Vidaver-Cohen (2009, p. 96) with research study in Norway to demonstrate that social responsibility can also significantly stimulate a different motivation. Graafland, Mazereeuw and van der Schouten (2012) analyzed extrinsic and intrinsic motives that affect their social responsibility on a sample of 473 executives in Germany, to take responsibility for the labour, environmental and social aspects of their business. Financial incentives have been identified as extrinsic as intrinsic ethical and moral incentives. The estimation results show that for social aspects, executives are significantly more driven by intrinsic motives than by the extrinsic motive. Further, for the environmental aspects of social responsibility intrinsic motives provide stronger stimulus than extrinsic motives. (p. 377)

### **2.3 Basic research question and hypotheses**

The development of social responsibility in different environments depends on the nature of the participating local and global stakeholders and their interactions. Avetisyan and Ferrary (2012, p. 130) state that differences in motivational factors in many organizations were found between some countries. Ivanko and Stare (2007, p. 96) note that national culture influences organizational culture, which was among the first to prove Hofstede. Reason (1998) emphasized the cultural influences in the emergence of the accident, in the Chernobyl NPP, in 1986.

Given the extraordinary responsibility of NPPs to the wider society, we expect that the owners and operators of NPPs, are motivated to perform socially responsible actions (that is, there are no differences in understanding and readiness for such actions). This must apply regardless of the geographical or cultural environment in which they are located.

In this study, we present the basic research question: »*What motivates owners and operators of NPPs for socially responsible actions?*». We developed the following two-part hypothesis: “*Motives which encourage the owners and operators of NPPs in different countries, to implement social responsibility, are not different. The main motivation for the social responsibility of owners and operators of the NPP are intrinsic factors.*”

### **3 Method**

#### **3.1 Data collection**

NPPs represent owners and operators. They are members of the International Organization of the World Association of Nuclear Operators (WANO), in four regional centres. Representatives of 147 nuclear reactors are members of the Regional Centre in Paris (also among them the Krško NPP). They are owned by 14 organizations in 13 countries. The management of WANO, a regional centre in Paris, enabled us to invite the NPPs to participate in the survey through their internal information system.

#### **3.2 Questionnaire and data analysis**

We have provided an objective measurement instrument, which is in function of the variables we measure. For the purpose of this study, a questionnaire with closed type questions (statements) was developed. It was consistent and would produce comparable results in repeated measurements. Our purpose was to find the importance of the six motivational factors. As intrinsic, we defined: personal ethical and moral values, personal satisfaction and the need for charity. As extrinsic, we defined: recognition or praise, financial and other material incentives and better career opportunities. In a pilot study, the Human Resources Manager at the Krško NPP, as a representative of the management structure of the NPP, participated. Owners and operators of NPPs expressed their impact of all six motivational factors: 1-insignificant, 2-slight impact, 3-possible impact, 4-large impact or 5-very large impact. For basic analysis, descriptive statistics methods were used. For analyzing the completed questionnaires, we used descriptive statistics, the Mann-Whitney test, Kruskal-Wallis test and the Wilcoxon signed-rank test.

#### **3.3 Time frame of the survey**

Web based surveys were conducted in October 2017. The research was carried out at a time when the next European concept of electricity supply was primarily oriented towards low-carbon sources. The EU wants to provide technological leadership in the nuclear domain, including the development of fusion through the International Thermonuclear Experimental Reactor (ITER), so as not to increase energy and technology dependence, and to provide European companies with business opportunities. This will in turn support EU growth, jobs and competitiveness. (European Commission, 2017, p. 10–11)

This was also six years after the accident at the Fukushima NPP in Japan, which affected the confidence in NPPs on a global scale.

## 4 Results

### 4.1 Structure of participants and descriptive statistics

In figure 2 the number and structure of the responding respondents are evident. There were 43 representatives of the NPP and 3 owners of them. Considering their function in the organization, the majority of representatives were members of the top management, what we wanted to achieve.

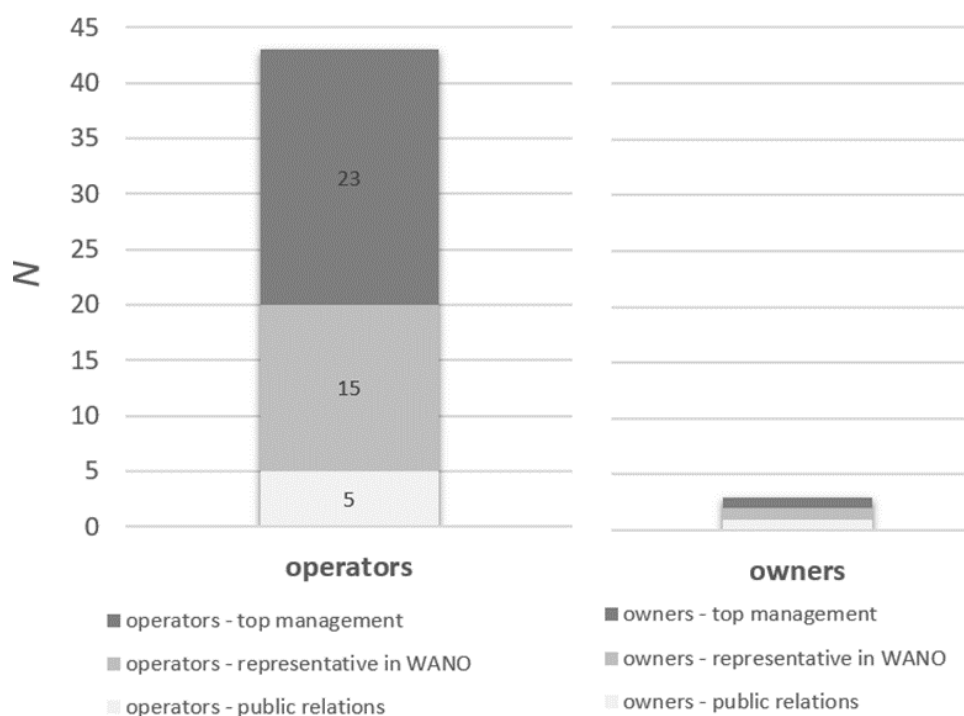


Figure 2. Number of participating members, and organizational function of respondents.

Table 1 summarizes some descriptive statistics for all six motivational factors. Owners and operators have expressed great importance for “Personal ethical and moral values”, also for “Need for charity” and (especially operators) “Personal satisfaction”.

Table 1. Descriptive statistics for six motivational factors.

Motivational factors	Affiliation	N	M	SD	Mdn	Mo
Recognition or praise	Operators	43	3,02	0,636	3,00	3
	Owners	3	3,33	1,155	4,00	4
Financial and other material incentives	Operators	43	2,42	0,879	2,00	3
	Owners	3	2,67	0,577	3,00	3
Personal ethical and moral values	Operators	43	4,67	0,522	5,00	5
	Owners	3	4,67	0,577	5,00	5
Personal satisfaction	Operators	43	4,60	0,583	5,00	5
	Owners	3	3,67	1,155	3,00	3
Need for charity	Operators	43	3,88	0,793	4,00	4
	Owners	3	3,67	2,309	5,00	5
Better career opportunities	Operators	43	2,37	1,001	3,00	3
	Owners	3	2,33	1,155	3,00	3

Note. N= total number of responses; M=sample mean; SD=standard deviation; Mdn=median; Mo=mode.

We illustrated the median values graphically in figure 3.

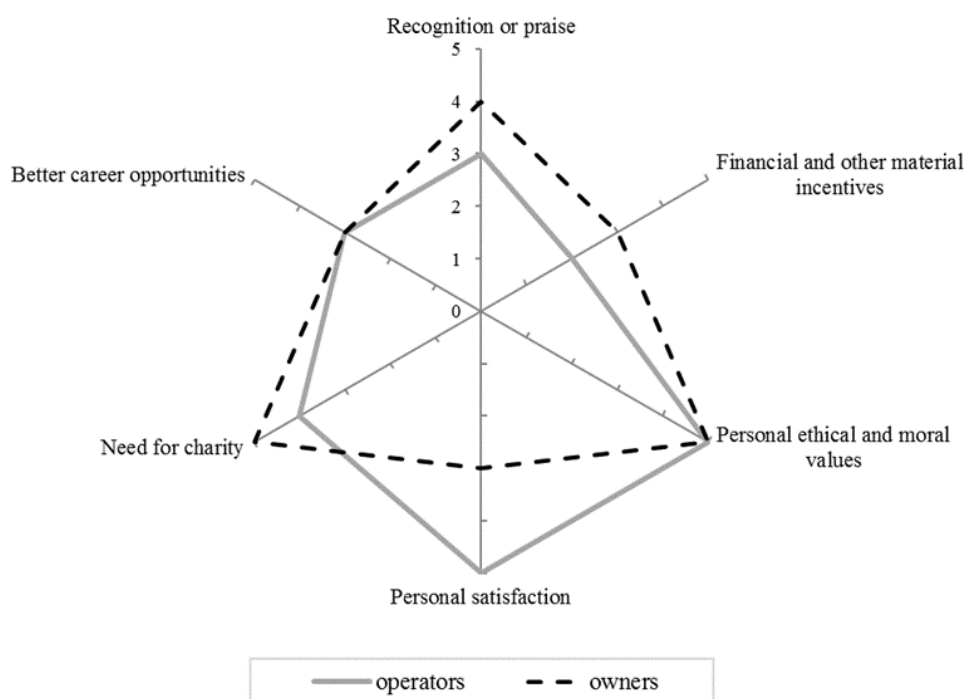


Figure 3. Median values, impact of motivational factors for operators and owners.

## 4.2 Test of hypotheses

The first part of the hypothesis (“The motives which encourage the owners and operators of NPPs in different countries, to implement social responsibility, are not different.”) tested by the Mann-Whitney and Kruskal-Wallis tests. The results of both tests were summarized in tables 2 and 3.

Table 2. Mann-Whitney test, operators and owners of NPPs.

Motivational factors	Affiliation	N	Average rank	U	p
Recognition or praise	Operators	43	23,12	48,000	0,411
	Owners	3	29,00		
Financial and other material incentives	Operators	43	23,24	53,500	0,603
	Owners	3	27,17		
Personal ethical and moral values	Operators	43	23,53	63,000	0,934
	Owners	3	23,00		
Personal satisfaction	Operators	43	24,28	31,000	0,080
	Owners	3	12,33		
Need for charity	Operators	43	23,21	52,000	0,550
	Owners	3	27,67		
Better career opportunities	Operators	43	23,50	64,500	1,000
	Owners	3	23,50		

Note. N= total number of responses; U= Mann-Whitney test statistics; p=statistical significance ( $p < 0.05$  means statistically significant difference).



Table 3. Kruskal-Wallis test, function in organization (top management, representative in WANO, public relation).

<b>Motivational factors</b>	<b>df</b>	<b>H</b>	<b>p</b>
Recognition or praise	2	0,397	0,820
Financial and other material incentives	2	5,075	0,079
Personal ethical and moral values	2	0,090	0,956
Personal satisfaction	2	0,809	0,667
Need for charity	2	0,207	0,902
Better career opportunities	2	8,828	0,012

Note. *df*=degrees of freedom; *H*= Kruskal-Wallis test statistics; *p*= statistical significance (*p* <0.05 means statistically significant difference).

We confirmed that the differences in the motives for carrying out socially responsible actions among owners and operators are not statistically significant. At the same time, in most cases (5 of 6), there are no statistically significant differences in the motives for performing socially responsible acts. We took into account the function of the organization.

The second part of the hypothesis (“The main motivation for socially responsible actions for owners and operators of the NPP are intrinsic factors.”) was tested by the Wilcoxon signed-rank test. From the two new variables median (*Mdn*) were determined, one for intrinsic and one for extrinsic motivational factors. We summarized the results of the test in table 4.

Table 4. Wilcoxon signed-rank test, intrinsic& extrinsic factors.

<b>Motivational factors</b>	<b>N</b>
Extrinsic_ <i>Mdn</i> < Intrinsic_ <i>Mdn</i>	41
Extrinsic_ <i>Mdn</i> > Intrinsic_ <i>Mdn</i>	0
Extrinsic_ <i>Mdn</i> = Intrinsic_ <i>Mdn</i>	5

Note. *N*=total number of responses.

The difference between the two types of factors is statistically significant ( $Z = -6,247, p < 0.001$ ). In motivating socially responsible actions for owners and operators, personal ethical and moral values, personal satisfaction and the need for charity are predominant.

## 5 Discussion

We can be socially responsible in various ways - as individuals in society or in various organized groups, including organizations. The social responsibility of organizations promotes competitiveness, existence and enables sustainable development.

According to the great responsibility of NPPs to the wider society, we expect that the owners and operators of the NPPs were highly motivated to perform socially responsible actions. In this research to determine the motivational factors that dominate the implementation of social responsibility, we included several operators of NPPs and their owners, taking into account geographical and cultural diversity. We have shown that owners and operators of the NPPs are motivated for socially responsible activities, regardless of the geographical and cultural environment. Differences in the motives for carrying out socially responsible actions between

owners and operators are not statistically significant. In most cases, there are no differences in motives, considering the function in the organization (top management, representatives in WANO or public relations).

It is also expected that the main motivation of the owners and operators of the NPPs for social responsibility derives from their personal ethical and moral values, personal satisfaction and the need for socially responsible actions. This means that a material incentive in the form of salaries or rewards, public praise and career goals (extrinsic motives) for owners and operators of the NPPs are not a dominant motivational factor. We have confirmed the high motivation for carrying out socially responsible actions of the owners and operators of the NPPs. Personal ethical and moral values, as well as personal satisfaction (intrinsic factors), dominate.

Taking into account the above facts and based on the presented results, we confirmed the hypothesis.

Motivation for social responsibility supports the appropriate working environment which contributes to the organizational culture. The organizational culture represents the values and behaviour of employees in the nuclear industry. This is closely linked to the personal development of each individual in NPPs. The development of the organizational and safety culture in the NPPs is significantly influenced by international organizations, in particular the WANO organization, which places special importance on this field. WANO organization participated indirectly in the research; with its support (use of internal communication process) we persuaded and invited participants to the survey. In this way, WANO demonstrated their social responsibility and understanding of the issues we have been researching.

Coexistence with NPPs depends on the trust of stakeholders into the NPP, the perception of their quality of life, the awareness of the impacts on coexistence, and the willingness to respect the interests of stakeholders of NPPs, which the power plant should implement with socially responsible practices. ISO 26000 (2010) addresses impacts, interests and expectations; it requires that the organization must take into account and understand the three types of relationships between the organization and society, between the organization and its stakeholders, and between stakeholders and society (p. 49).

NPPs want to meet the challenges ahead. They want to co-create a trusted environment, which enables them to operate in the long term and achieve their economic goals. Motivational factors that we have found confirm that owners and operators of NPPs, besides the economic, are also aware of ethical responsibilities to the wider society. In a constantly changing and critical environment, NPPs can only provide its existence with an effective response in the electricity market together with respect of different stakeholders. In this way, it is possible to establish a partnership with the wider community and trust in a nuclear facility. The coexistence with NPPs depends on the respect, consideration and response of owners and operators to the interests of their stakeholders.

The social responsibility of NPPs is an important part of competitive electricity supply and the quality of life for wider society.

## **6 Conclusion**

In this research, 46 participating WANO members in regional Paris group were identified, as the owners or operators of the NPPs. At the time of survey, 147 nuclear reactors were included in the group, owned by 14 organizations from 10 European, one Asian and two South American countries (WANO, 2017). Assuming that we have captured the probability sample of the owners and operators of the JE, we have confirmed that there were no statistically significant differences in the motives for carrying out socially responsible actions between owners and operators, irrespective of the geographical or cultural environment. Taking into account their function in the organization (top management members, representatives in WANO and public relation personnel) we confirmed the same. Participating owners and operators of the NPPs clearly expressed the dominance of intrinsic motivational factors. They have proven their ethical responsibility and a pattern of behaviour that seeks to contribute to a socially responsible contribution to general well-being of wider society.

The results help NPPs in establishing and consolidating a positive image of a socially responsible organization. Owners and operators are able to consider aspects and challenges of the new paradigms of shared coexistence and are aware of the positive effects of socially responsible actions.

The wider society is aware that owners and operators of the NPPs obviously demonstrate that they want to act in a socially responsible manner. This is a good starting point for the choice and implementation of appropriate strategies of non-governmental organizations, the organization of local communities, political parties and other stakeholders, and for responding to expressed environmental issues and sustainable development. It affects the acceptability of NPPs and the quality of life of individuals and different groups in modern society and the environment in which nuclear facilities are located.

The responsiveness of the owners of the NPPs was not as good as the responsiveness of the operators; therefore, the sample is less representative for the owners. It would also make sense that further research focus on the inspirations that influence the motivation for establishing partnership relations with the NPPs, of the external stakeholders of the NPPs (local communities, political public, NGOs, journalists and others).

## References

1. Afgan, N. H. (2013). Sustainable nuclear energy dilemma. *Thermal Science*, 17(2), 305–321. doi: 10.2298/TSCI121022214A
2. Avetisyan, E., & Ferrary, M. (2012). Dynamics of stakeholders' implications in the institutionalization of the CSR field in France and in the United States. *Journal of Business Ethics*, 115(1), 115–133. doi: 10.1007/s10551-012-1386-3
3. Bexheti, L., & Bexheti, A. (2016). The Impact of Herzberg's Two Factor Theory and Efficiency at Work. *European Journal of Multidisciplinary Studies*, 1(2), 379–386.
4. Bowen, F., Newenham-Kahindi, A., & Herremans, I. (2010). When suits meet roots: The antecedents and consequences of community engagement strategy. *Journal of Business Ethics*, 95, 297–318. doi: 10.1007/s10551-009-0360-1
5. Goodfellow, M. J., Dewick, P., Wortley, J., & Azapagic, A. (2015). Public perceptions of design options for new nuclear plants in the UK. *Process Safety and Environmental Protection*, 94, 72–88. doi: 10.1016/j.psep.2014.12.008
6. Graafland, J., Mazereeuw, C., & Van der Schouten, D. (2012). Motives for corporate social responsibility. *De Economist*, 160(4), 377–396. doi: 10.1007/s10645-012-9198-5
7. Hetty, I. J., Schreus, B., Cuyper, N., Jawahar, I. M., & Peeters, M. C. (2012). The route to employability. *Career Development International*, 17(2), 104–119.
8. Horvath, A., & Rachlew, E. (2016). Nuclear power in the 21st century: Challenges and possibilities. *Ambio*, 45(1), 38–49. doi: 10.1007/s13280-015-0732-y
9. IAEA. (2019, maj 10). *International Atomic Energy Agency*. Retrieved from International Atomic Energy Agency: <http://www.iaea.org/PRIS/>
10. Ivanko, Š., & Stare, J. (2007). *Organizacijsko vedenje*. Ljubljana: Fakulteta za upravo, Univerza v Ljubljani.
11. Kato, T., Takahara, S., Nishikawa, M., & Homma, T. (2013). A case study of economic incentives and local citizens' attitudes toward hosting a nuclear power plant in Japan: Impacts of the Fukushima accident. *Energy Policy*, 59, 808–818. doi: 10.1016/j.enpol.2013.04.043
12. Matten, D., & Moon, J. (2008). “Implicit” and “explicit” CSR: A conceptual framework for a comparative understanding of corporate social responsibility. *Academy of Management Review*, 33(2), 404–424.
13. Matuleviciene, M., & Stravinskiene, J. (2015). Identifying the factors of stakeholder trust: a theoretical study. *Procedia - Social and Behavioral Sciences*, 213, 599–604. doi:10.1016/j.sbspro.2015.11.456
14. Orlitzky, M., Schmidt, F. L., & Rynes, S. L. (2003). Corporate social and financial performance: a meta-analysis. *Organization Studies*, 24(3), 403–441. doi: 10.1177/0170840603024003910
15. Raja, K. S., Pesic, B., & Misra, M. (2015). *Nuclear Energy and Environmental Impact*. New York: Springer Science+Business Media. doi: 10.1007/978-1-4614-6431-0\_30-2
16. Reason, J. (1998). Achieving a safe culture: theory and practice. *Work & Stress*, 12(3), 293–306.
17. Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: classic definitions and new directions. *Contemporary educational psychology*, 25(1), 54–67. doi: 10.1006/ceps.1999.1020
18. Shadrina, E. (2012). Fukushima fallout: gauging the change in Japanese nuclear energy policy. *International Journal of Disaster Risk Science*, 3(2), 69–83. doi: 10.1007/s13753-012-0008-0
19. Simcic Brønn, P., & Vidaver-Cohen, D. (2009). Corporate motives for social initiative: legitimacy, sustainability, or the bottom line? *Journal of Business Ethics*, 87, 91–109. doi: 10.1007/s10551-008-9795-z

20. Simončič, M. (2015). Zakaj in kako biti družbeno odgovoren? *Revija za univerzalno odličnost*, 4(3), 110–129.
21. Simončič, M., & Žurga, G. (2016). Social responsible communication of nuclear power plant with external stakeholders. *Atw - International Journal for Nuclear Power*, 61(11), 653–659.
22. Simončič, M., & Žurga, G. (2019). Successful Co-Existence of Nuclear Power Plants with Their External Stakeholders. *Atw - International Journal for Nuclear Power*, 64(4), 197–202.
23. Slovenski standard SIST ISO 26000:2010. (2010). Ljubljana: Slovenski inštitut za standardizacijo.
24. Štrukelj, T., & Mulej, M. (2017). Strategija podjetja in družbena odgovornost. *Revija za univerzalno odličnost*, 6(3), 292–307.
25. Truelove, H. B., & Greenberg, M. (2013). Who has become more open to nuclear power because of climate change? *Climatic Change*, 116, 389–409. doi: 10.1007/s10584-012-0497-2
26. Trufanov, V. V. (2013). Modeling development options of electric power systems in conditions of multiple stakeholders. *Thermal Engineering*, 60(13), 931–937.
27. Van Beurden, P., & Goessling, T. (2008). The worth of values - A literature review on the relation between corporate social and financial performance. *Journal of Business Ethics*, 82(2), 407–424. doi: 10.1007/s10551-008-9894-x
28. WANO. (2013). *Traits of a healthy nuclear safety culture*. Atlanta-London&Hong Kong-Moscow-Paris-Tokyo: WANO.
29. WANO. (21. 9. 2017). WANO. Retrieved from WANO, Members: <http://www.wano.info/en-gb/members/members>
30. White, R. W. (1959). Motivation reconsidered. *Psychological Review*, 66, 297–333.
31. World Nuclear Association. (2017, 05 30). *World Nuclear Association*. Retrieved from The Harmony programme: <http://world-nuclear.org/getattachment/Our-Association/What-we-do/The-Harmony-programme/2017-05-Harmony.pdf.aspx>

## **Povzetek:**

### **Motivacija za družbeno odgovornost v jedrskih elektrarnah**

**Raziskovalno vprašanje (RV):** Kaj lastnike in operaterje jedrskih elektrarn (JE) motivira za izvajanje družbeno odgovornih dejanj?

**Namen:** Z raziskavo ugotoviti prevladujoče motive za družbeno odgovornost lastnikov in operaterjev JE. Ugotoviti, kako so pripravljeni zadovoljevati pričakovanja širše družbe.

**Metoda:** Po pregledu relevantne literature predstavljenega interesnega področja, smo v raziskavo vključili lastnike in operaterje JE, tj. članice mednarodne organizacije World Association of Nuclear Operators (WANO), regionalnega centra v Parizu. Kot instrument za pridobivanje potrebnih informacij uporabljamo smo za ta namen razvili vprašalnik. Za vrednotenje podatkov, poleg opisne in frekvenčne statistike, smo uporabili Mann-Whitneyev test, Wilcoxonov test predznačenih rangov in Kruskal-Wallisov test.

**Rezultati:** V raziskavi se sodelovalo 45 predstavnikov operaterjev in trije lastniki JE. Glavna motivacija za družbeno odgovorna dejanja so za lastnike in operaterje JE intrinzični dejavniki, predvsem osebne etične in moralne vrednote ter osebno zadovoljstvo. Dokazali smo, da se motivi, ki lastnike in operaterje JE motivirajo za izvajanje družbene odgovornosti, statistično značilno ne razlikujejo. V večini primerov te razlike niso bile statistično značilne, niti upoštevajoč funkcijo v organizaciji. Izkazali so visoko pripravljenost za zadovoljevanje pričakovanj širše družbe.

**Organizacija:** Za JE rezultati krepijo vzpostavitev in utrjevanje pozitivne podobe družbeno odgovorne organizacije.

**Družba:** Širša družba se seznani, da lastniki in operaterji JE izkazujejo jasno namero, da želijo delovati družbeno odgovorno. Vpliva na sprejemljivost JE in na kakovost življenja posameznikov ter različnih skupin v sodobni družbi in okolju, v katerega so umeščeni jedrski objekti.

**Originalnost:** Izvedena raziskava je prva, ki je ciljno usmerjena v proučevanje motivacijskih dejavnikov, ki lastnike in operaterje JE nagovarjajo k družbeno odgovornim dejanjem. Rezultati so neposredno uporabni in relevantni v slovenskem in mednarodnem prostoru. Prispevajo k boljšemu razumevanju interakcij med družbo in JE.

**Omejitve/nadaljnje raziskovanje:** Odzivnost lastnikov JE ni bila tako dobra kot odzivnost operaterjev, zato je za lastnike vzorec manj reprezentativen. Raziskave je smiselno usmeriti tudi na dejavnike, ki vplivajo na motivacijo za vzpostavitev partnerskega odnosa z JE na strani zunanjih deležnikov JE (različnih interesnih skupin - od lokalnih skupnosti, politične javnosti, nevladnih organizacij, novinarjev in drugih).

**Ključne besede:** sobivanje z jedrsko elektrarno, družbena odgovornost, intrinzični in ekstrinzični motivacijski dejavniki.

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