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The use of NEP scale to evaluate the environmental worldview of the employees in the city of Kacanik in Republic of Kosovo

Ferdije Zhushi-Etemi[1] · Rushan Ceka[2] · Hazir Çadraku[3] · Pajtim Bytyqi[1] · Albona Shala-Abazi[4] · Osman Fetoshi[5] · Prespa Ymeri[6] · Murtezan Ismaili[7]

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Abstract
The tendency for higher economic development with the aim of increasing the citizens' standard of living has led many natural resources in Kosovo to be overused and degraded. This environmental degradation is nowadays presented in the form of air, water and soil pollution. To cope with environmental problems in a society, its citizens, especially the young generations, need environmental education which plays a very important role for development of environmental attitudes and beliefs, which should be friendly and protective for environment and natural resources. In our survey, we used 15-item NEP scale to evaluate the environmental worldview of three groups of employees in city of Kacanik, in order to see if they have pro-anthropocentric approach, Dominance Social Paradigm which declares that natural sources are eternal, so they can be broadly utilized to fulfill human demands, or pro-ecological view, New Environmental Paradigm (NEP) that expects the integral part of the ecosystem is human being and natural resources cannot be utilized without control because they are insufficient. Our results show that all groups of respondents have a high pro-NEP score, higher than 45%, which means that the citizens are conscious about environmental problems in their city and country in general; thus, they have environmental concerns and are ready to support environmental policies for a sustainable economic development.

Keywords New Environmental Paradigm (NEP) · Kosovo · Economic development · Anthropocentric · Ecological view

1 Introduction

One of the most important challenge confronting present and future generations is reducing the human impact on the planet. From that, educational programs have provided the foundations of environmental awareness and concern about human impact in an effort to shape the development of environmental behavior (Gigliotti 1990; Hungerford and Volk

✉ Rushan Ceka
rushanceka@hotmail.com

Extended author information available on the last page of the article

1990; Bogner 1998, 2004). A number of researchers support the idea of a strong relationship between behavior and attitude (Pooley and O'Connor 2000; Manoli et al. 2007). Environmental worldviews dictate how we interact with nature and our attitude toward how we use the natural resources it contains (Gillaspy 2015). There are many scales to measure environmental attitudes and concern (Weigel and Weigel 1978; Dunlap and Liere 1978a; Wiseman and Bogner 2003). The lack of a common instrument, however, and the use of unsound methodological practices, including work with no clear theoretical framework and/or without appropriate validity analysis, have contributed to the lack of agreement on the importance of environmental attitudes (Liere and Dunlap 1981; Gray and Weigel 1985; Armstrong and Impara 1991; Leeming et al. 1993; Bogner and Wilhelm 1996; Evans et al. 2007; Musser and Malkus 1994). A widely used measure of environmental worldview is Dunlap and Van Liere's New Environmental Paradigm (NEP) scale, first published in 1978. The scale was revised by Dunlap et al. (2000a; b) and became the New Ecological Paradigm Scale (Dunlap et al. 2000a; b). The revised NEP Scale appears to be an improved measuring instrument compared to the original version.

In most of the published papers with NEP scale, one of the commonly studied population groups in environmental studies are the students as they are very important segment of the society, that is expected to be working in various sectors of society in the near future and performing important works such as managers, teachers, businessmen, industrialists and the like.

The future quality and stability of life on our planet depend on youngsters developing the worldview necessary for making informed and sensitive decisions about the environment and becoming active participant in the creation of sustainable world (Erdogan 2009).

Many research works investigating worldviews and pro-environmental behaviors have been published in Europe, North America and further. The authors Roberts and Bacon (1997) in a research in USA used the NEP to examine the relationship between the subscales of the NEP measure and a variety of ECCBs—ecologically conscious consumer behavior. Correlations between the NEP and ECCB subscales indicated that each NEP subscale was correlated more highly with certain dimensions of ECCB than others. The results of this study emphasized the role of environmental knowledge in the performance of ECCBs, suggesting that educating the consumer on environmental issues will be important for encouraging ecologically conscious decisions making in the consumer marketplace.

The role of affinity towards diversity (ATD) as a sociopsychological driver of a pro-sustainability orientation and pro-environmental friendly behaviors was the topic of a study with 390 respondents from four cities in Italy, two in central part and two in southern (Bonnes et al. 2010). Affinity towards diversity (ATD) might support pro-environmental behavior and could be important component of pro-sustainability orientation. A set of sociopsychological factors are involved in human tendency to appreciate diversity in the physical and social environment and its engagement in pro-environmental behavior.

Due to the advantages the renewable energy sources have for the environment, in particular in reducing the use of fossil fuel, which are the major contributors to the greenhouse gas emissions and climate change, they are attracting investment in many countries. The investment in renewable energy resources may have many benefits in creating new jobs for the unemployed; they can decrease the unemployment scale in many countries, as well as can contribute to their economic development. The most common sources of renewable energy are wind, solar, geothermal, biomass, and hydropower.

The NEP scale was used to investigate the relation between ecological sensitivity and renewable energy acceptance in Evia, an island with high wind and solar potential, in Greece (Ntanos et al. 2017). The results showed a positive relation between the NEP

scale mean score and public perception on renewable sources contribution to environmental improvement. The NEP score indicates a pro-NEP orientation of the respondents (5.3 out of 7). In relation to contribution of renewable energy systems, 51% of respondents answered that renewable energy sources contribute to the improvement in living standards, whereas 65.5% answered that they contribute to environmental improvement. Statistical analysis revealed the existence of a positive relationship between ecological sensitivity and willingness to pay more for renewable energy. This study suggests that the evaluation of the ecological sensitivity between the residents of local communities, among other personality characteristics, may be useful in order to identify the degree of public acceptance to the investments in renewable energy. In another study conducted in Evia in Greece (Ntanos et al. 2019), the NEP scale is used as a unidimensional measure of environmental attitudes of citizens. The respondent's answers indicated a pro-ecological orientation and were found as environmentally sensitive. The respondents in rural areas have had a higher mean NEP score, which indicates an increased ecological sensitivity compared to those with a permanent residence in semi-urban and urban areas. It seems that people in rural and agricultural areas, who live close to the natural environment, appreciate it more as they are in direct contact with it. The NEP score was found to be correlated with respondents willingness to pay (WTP) for an expansion of renewables into the Greek energy mix. This correlation shows that the NEP score was more important in shaping WTP for renewable energy than respondents' income. The NEP principles have an important role in shaping the ecological consciousness toward the notion of environmental sustainability but also in shaping modern economic development, as there is already evidence for the correlation between renewable energy usage, environmental sustainability and broader socioeconomic development.

With increased interesting for investment in renewable energy sources, the studies in this field were oriented toward the sustainable use of the forest biomass for energy production. In a study in Grevena, in a mountainous region with significant amount of forest biomass, in Greece, the authors (Manolis et al. 2019a) studied the ecological restriction in forest biomass extraction due to the differences in nutrients allocation in the aboveground biomass parts.

Result of this study proved that the content of the macronutrients and the content of the micronutrients are distributed differently among the parts of the aboveground biomass. The foliage is the main carrier of the macronutrients, while the bark of the stem and the foliage are the main carriers of the micronutrients. As a conclusion, foliage extraction should be strictly prevented, whereas the stem should be extracted without the bark. According to this finding, the leaves and the stem bark are vital ecosystem's residues. This study reveals ecological restrictions in forest biomass extraction process which are crucial for the ecological balance of the forest ecosystems, and as such it is suggested to be embedded in environmental legislation as well as in forest management practices in Mediterranean countries.

The human activities in the process of bioenergy production from the forest biomass can cause changes in forest composition and formations which can be manifested as fragmentation of various habitats in forest landscape and the modification of habitat quality in forest (Angelstam et al. 2003). Geographic information system (GIS) and remote sensing are proven to be useful scientific tools in the planning process and in integrating the appropriate spatial limitations for an ecological forest biomass extraction in a rational bioenergy utilization framework in Grevena in Western Macedonia region, Greece (Manolis et al. 2018). The factors that influence the process of the sustainable biomass exploitation from forest ecosystems are the terrain, the ecological parameters, the forest management, and the landscape's heterogeneity and conservation. The

biodiversity and protected areas also play an important role in forest management strategy, and as such they should be protected by restrictions in biomass harvesting process. The GIS and the remote sensing are shown to be important tools that can contribute to evaluating spatial restrictions through an ecological and sustainable biomass exploitation process for bioenergy production. In this way, they can support the conservation of the biodiversity and the natural sources, and they can identify terrain limitations and the preservation of the protected areas. The geographic information system (GIS) is also proven to be a useful tool for assessment of the soil erosion risk and for the management of the protected areas of Natura 2000 in catchment area of artificial lake of Aoos Springs in the Northwest Greece (Manolis et al. 2019b). The desertification process of the soil in Mediterranean countries is one of the main threats for habitat degradation and diversity loss; therefore, a sustainable management, soil conservation and the systematic monitoring of natural ecosystems are required. GIS was applied together with Universal Soil Loss Equation to measure the risk of soil erosion in order to take prevention measures and avoid habitat degradation. The results of this study indicate the protective role of vegetation against the soil erosion in catchment area as well as the importance of the use of spatial information tools in soil erosion risk assessment for an effective soil erosion control and effective management of protected areas in Mediterranean countries.

Kosovo is a young developing country with plenty of social and economic needs, which experienced a war conflict in 1998–1999. The environmental problems caused by uncontrolled use of natural resources, deforestation, by lignite (coal)-based energy production as well as with no treatment of wastewaters, are a big concern for Kosovo citizens. High level of air pollution due to the use of coal for energy production and heating classified Kosovo's capital city Prishtina as one of the most polluted cities in the world in Winter 2017. Nowadays, the citizens' reaction to environmental degradation is becoming an important factor asking for solutions of accumulated problems and prevention of natural resources. However, studies to investigate environmental perception of different groups in Kosovo are in its early stage. The NEP scale was used to measure the environmental worldview of the students in a secondary school in the city of Malisheva (Bytyçi et al. 2017). The mean total NEP score of secondary school students was 63%, which indicates a pro-ecological orientation. The highest endorsement, 85.40%, was given to the item 3 of the NEP scale 'When humans disturb interfere with nature it often produces disastrous consequences.' However, the high endorsement, 62.40%, to the pro-DSP% item 'The balance of nature is strong enough to cope with the impacts of modern industrial nations' indicates that there is no clear understanding of young students for the concepts NEP and DSP. Another study in Kosovo used the NEP scale to measure pro-ecological views of Kosovar Teachers in three cities in Kosovo (Veselaj et al. 2019). The results of this study showed that teachers were highly supportive of the pro-NEP approach and eco-centric view. The pro-NEP item with the higher endorsement (97.7%) by the respondents was item 7 that plants and animals have as much right to exist as humans. The pro-anthropocentric (DSP) statement that the planet has enough resources, but humans have to use them wisely (Item 6), was supported by 96.6% of the respondents. These two papers were the first attempt to use the NEP scale to measure the environmental attitudes and behavior of citizens of Kosovo.

Considering that there is a big lack of studies on Kosovo citizens' worldview, attitude and concerns for environmental issues, the aim of this research organized with employees of municipality of Kacanik is to find out what is their perception on environmental issues and how they will behave toward the environmental problems they face in their city, such as river, air and soil pollution and deforestation.

We examined whether these citizens, with different age, different education, employed in different institutions, held beliefs consistent with pro-ecological concept or pro-anthropocentric.

2 Material and methods

The study was conducted during the year 2018 in the city of Kacanik in Kosovo, with about 50,000 inhabitants, located in the southeastern part of the country, on the border with Republic of North Macedonia. Due to the fact that through Kacanik passes the main roadway, recently replaced with a new highway, which connects capital of Kosovo, Prishtina, with that of North Macedonia, Skopje, as well as the railway Thessaloniki, Fushe, Kosove, the city of Kacanik is considered as an important strategic economic point. In addition to this, in this city there are two border crossings with the country of North Macedonia.

Although a small city surrounded by beautiful Sharri Mountains, Kacanik is continuously facing environmental pollution problems that affect the life quality of its citizens, as the main source of environmental pollution in the city is air pollution caused by the work of the Sharrcem cement processing plant in Han i Elezit. In addition to this, non-treated wastewaters and pollution of the Nerodime River by the Silkapori brick plant are also another problem for the citizens. However, the exploitation of gravel and the cutting of trees are considered as the major environmental problems in the Municipality of Kacanik. All of these environmental problems that citizens are constantly confronted with have contributed to raising public awareness about environmental issues and also concerns for the future of young generations.

The sample consisted of 504 citizens from 25 to 64 years, employed in nine different institutions, most of them in public sector. The respondents were grouped in three groups:

1. BPZ (Water supply company, city cleaning and firefighters);
2. KKP (Municipality administration, energy distribution and post-telecom);
3. QPGJ (Center for social work, police and court).

To each group, 168 questionnaires were distributed. The institutions were chosen for reasons of diversity of the education levels and qualifications as well as for their willingness to cooperate. The NEP scale used in this study consisted of 15 items. Participants responded to the NEP items using 5-point Likert-type scales (1 = strongly disagree, 5 = strongly agree). The NEP score is calculated as the responses contributing to pro-ecological conceptions for each item: For ecological items, this is the sum of the categories ‘strongly agree’ and ‘agree,’ and for anthropocentric items ‘disagree’ and ‘strongly disagree.’ Due to this nature of the instrument, scoring high on any item contributes to a higher NEP score; scoring high on an ecological item means the studied group agrees with the item, whereas scoring high on an anthropocentric item means that it does not. In general, a NEP score above 45 indicates pro-ecological conceptions (Boeve-de Pauw and Petegem 2012). The NEP score was calculated as the summary of the positive response frequency for each item: ‘SA’ + ‘A’ for the ecological items (1, 3, 5, 7, 9, 11, 13, 15); ‘D’ + ‘SD’ for the anthropocentric items (2, 4, 6, 8, 10, 12, 14). We used simple random sampling, as we visited the institution and distributed the questionnaire to those who were willing to answer. All analyses were carried out with SPSS 24. By using the framework of NEP, we applied descriptive analysis: percentage and mean in order to calculate the NEP score and its dimensions, followed by Table 2 where we used one-way ANOVA; taking into consideration five conceptual NEP dimensions, we

analyzed the significance of differences between institutions and gender; then, we used factor analysis, Varimax rotation with eigenvalue greater than 1; and in the second step we chose fixed number of factors which were two (NEP and DSP) to figure out how many dimensions we will have based on responses. While using principal component analysis in missing values window, we selected the option exclude cases list-wise.

3 Results

The NEP score (Table 1) was calculated as the summary positive response frequency for each item: 'SA' + 'A' for the ecological items (1, 3, 5, 7, 9, 11, 13, 15) and 'D' + 'SD' for the anthropocentric items (2, 4, 6, 8, 10, 12, 14). The NEP scale used in this study consisted of 15 items.

Table 1 shows the response frequency distribution in terms of percentage of institutions choosing each response, the total NEP score for all three data sets, as well as the NEP scores for the five dimensions. From the results of NEP score in percentage, we found out that the total pro-NEP score was: BPZ = 58.25% (NEP = 71.56, DSP = 43.03), KKP = 55.41% (NEP = 69.63, DSP = 39.16) and QPGJ = 59.51% (NEP = 72.13, DSP = 46.90).

If we analyze the NEP scores per 15-item scale (Table 1), it can be seen that the highest NEP scores (80.2–82.5%) had the items 3, 7, 9 and 5, indicating high pro-ecological worldview, whereas the item 8 (nature is strong enough to handle the bad effects of modern developed countries) had the highest endorsement score among the items with odd numbers (BPZ = 55.3%), which indicates a pro-anthropocentric attitude.

In regard to validity of the completed questionnaires, among 504 questionnaires, 464 were valid and 40 were not considered valid, meaning that the completion rate was 92.1% (Table 2). After testing the significance with one-way ANOVA, we found out that there are no significant differences between institutions for the five dimensions, but according to sex using *T* test there is a significant difference in dimensions: limits, nature balance and exceptionalism between male and female where males had higher score $p < 0.05$, while in other dimensions there are no significant differences between them. The mean scores on the NEP subscales of the three respondents groups in Table 2 show that the NEP facets nature balance, limits and eco-crisis were the most endorsed, whereas the NEP facet anthropocentrism had the lowest level of endorsement.

4 Questions of NEP separated by dimensions according to Dunlap

In Table 2, results show that there are no significant differences between institutions for the five dimensions, but according to sex using *T* test there is a significant difference in dimensions: limits, nature balance and exceptionalism between male and female where males had higher score $p < 0.05$, while in other dimensions there are no significant differences between male and female.

The mean scores on the NEP subscales of the three respondents groups in Table 2 show that the NEP facets nature balance, limits and eco-crisis were the most endorsed, whereas the NEP facet anthropocentrism had the lowest level of endorsement.

Table 1 Percentage and mean distribution of NEP items ($N = 504$)

	Institution	SD	D	AnD	A	SA	NEP score
Reality of limits to growth BPZ = 50.37% KKP = 47.20% QPGJ = 47.27%							
1. We are getting close to having too many people on earth	BPZ	5.9 (10)	10.1 (17)	18.9 (32)	40.2 (68)	24.9 (42)	65.1
	KKP	7.2 (12)	10.8 (18)	22.9 (38)	36.1 (60)	22.9 (38)	59
	QPGJ	4.8 (8)	9.5 (16)	31.1 (52)	38.7 (65)	16.1 (27)	54.8
6. Plants and animals have as much right as humans to live	BPZ	11.8 (20)	18.8 (32)	9.4 (16)	24.1 (41)	35.9 (61)	30.6
	KKP	6.6 (11)	12.0 (20)	7.8 (13)	39.2 (65)	34.3 (57)	18.6
	QPGJ	11.3 (19)	16.7 (28)	10.7 (18)	22.6 (38)	38.7 (65)	28
11. The earth is like a spaceship with very limited room and resources	BPZ	4.2 (7)	9.5 (16)	31.0 (52)	36.9 (62)	18. 5 (31)	55.4
	KKP	6.7 (11)	9.8 (16)	19.5 (32)	50.6 (83)	13.4 (22)	64.0
	QPGJ	7.1 (12)	10.1 (17)	23.8 (40)	41.7 (70)	17.3 (29)	59.0
Anti-anthropocentrism BPZ = 58.27% KKP = 49% QPGJ = 61.43%							
2. Humans have the right to change the natural environment to fit their needs	BPZ	23.4 (39)	28.7 (48)	9.0 (15)	25.7 (43)	13.2 (22)	52.1
	KKP	15.7 (26)	19.3 (32)	14.5 (24)	34.3 (57)	16.3 (27)	35
	QPGJ	25 (42)	26.8 (45)	9.5 (16)	16.1 (27)	22.6 (38)	51.8
7. Plants and animals have as much right as humans to live	BPZ	1.8 (3)	9.4 (16)	15.9 (27)	31.8 (54)	41.2 (70)	73
	KKP	8.0 (13)	17.9 (29)	14.2 (23)	35.8 (58)	24.1 (39)	59.9
	QPGJ	1.2 (2)	3.0 (5)	15.5 (26)	41.7 (70)	38.7 (65)	80.4
12. Humans were meant to rule over the rest of nature	BPZ	28.4 (48)	21.3 (36)	20.1 (34)	18.3 (31)	11.8 (20)	49.7
	KKP	16.1 (26)	36.0 (58)	21.1 (34)	21.7 (35)	5.0 (8)	52.1
	QPGJ	23.0 (38)	29.1 (48)	18.8 (31)	18.8 (31)	10.3 (17)	52.1
Fragility of nature's balance BPZ = 67.83% KKP = 65.27% QPGJ = 64.87%							

Table 1 (continued)

	Institution	SD	D	AnD	A	SA	NEP score
3. When humans disturb nature it often produces terrible results	BPZ	1.2 (2)	4.8 (8)	13.8 (23)	35.9 (60)	44.3 (74)	80.2
	KKP	0 (0)	10.9 (18)	7.3 (12)	45.5 (75)	36.4 (60)	81.9
	QPGJ	4.2 (7)	6.5 (11)	8.3 (14)	37.5 (63)	43.5 (73)	81
8. Nature is strong enough to handle the bad effects of modern developed countries	BPZ	30.0 (51)	25.3 (43)	20.6 (35)	18.2 (31)	5.9 (10)	55.3
	KKP	23.6 (39)	27.3 (45)	20.6 (34)	21.2 (35)	7.3 (12)	50.9
	QPGJ	33.9 (57)	19.0 (32)	22.6 (38)	16.1 (27)	8.3 (14)	52.9
13. Nature is very delicate and easily harmed	BPZ	9.0 (15)	7.8 (13)	15.1 (25)	36.1 (60)	31.9 (53)	68
	KKP	6.8 (11)	11.7 (19)	18.5 (30)	45.7 (74)	17.3 (28)	63
	QPGJ	6.5 (11)	6.0 (10)	26.8 (45)	34.5 (58)	26.2 (44)	60.7
Rejection of exceptionalism BPZ = 51.30% KKP = 51.13 QPGJ = 54.03							
4. Human cleverness and skill will make sure that we do NOT ruin the Earth	BPZ	17.2 (29)	17.8 (30)	23.7 (40)	22.5 (38)	18.9 (32)	35
	KKP	16.4 (27)	17.0 (28)	13.9 (23)	30.3 (50)	22.4 (37)	33.4
	QPGJ	13.3 (22)	25.9 (43)	19.3 (32)	19.9 (33)	21.7 (36)	39.2
9. Even with our special abilities humans must still obey the laws of Nature	BPZ	1.2 (2)	5.4 (9)	13.1 (22)	40.5 (68)	39.9 (67)	80.4
	KKP	0.6 (1)	6.2 (10)	14.4 (23)	53.8 (86)	25.0 (40)	78.8
	QPGJ	0.6 (1)	4.8 (8)	16.9 (28)	42.8 (71)	34.9 (58)	77.7
14. Humans will someday learn enough about how nature works to be able to control it	BPZ	17.2 (29)	21.3 (36)	15.4 (26)	30.8 (52)	15.4 (26)	38.5
	KKP	20.6 (34)	20.6 (34)	14.5 (24)	25.5 (42)	18.8 (31)	41.2
	QPGJ	25.6 (43)	19.6 (33)	17.9 (30)	25.0 (42)	11.9 (20)	45.2
Possibility of an eco-crisis BPZ = 63.47% KKP = 64.47% QPGJ = 69.97%							
5. Humans are greatly mistreating the environment	BPZ	1.2 (2)	10.1 (17)	11.8 (20)	36.1 (61)	40.8 (69)	76.9
	KKP	4.2 (7)	7.9 (13)	12.1 (20)	45.5 (75)	30.3 (50)	75.8
	QPGJ	1.8 (3)	3.6 (6)	12.1 (20)	47.3 (78)	35.2 (58)	82.5

Table 1 (continued)

	Institution	SD	D	AnD	A	SA	NEP score
10. The so-called environmental crisis facing humans has been blown out of proportion (exaggerated)	BPZ	21.2 (36)	18.8 (32)	30.6 (52)	21.2 (36)	8.2 (14)	40.0
	KKP	17.8 (29)	25.2 (41)	23.3 (38)	29.4 (48)	4.3 (7)	43.0
	QPGJ	17.3 (29)	29.2 (49)	21.4 (36)	23.2 (39)	8.9 (15)	46.5
15. If things continue as they are going, we will soon experience a major environmental disaster	BPZ	2.9 (5)	8.2 (14)	15.3 (26)	30.6 (52)	42.9 (73)	73.5
	KKP	4.8 (8)	7.3 (12)	13.3 (22)	37.6 (62)	37.0 (61)	74.6
	QPGJ	5.4 (9)	4.8 (8)	8.9 (15)	35.1 (59)	45.8 (77)	80.9

Mean total pro-NEP % BPZ = 58.25% (NEP = 71.56, DSP = 43.03), KKP = 55.41% (NEP = 69.63, DSP = 39.16), QPGJ = 59.51% (NEP = 72.13, DSP = 46.90)

Table 2 Mean comparison between the BPZ, KKP and QPGJ for the five dimensions

	BPZ	KKP	QPGJ	Female	Male	Mean scores
Limits (1, 6, 11)	$3.59^{a} \pm 0.61$	$3.64^{a} \pm 0.65$	$3.55^{a} \pm 0.73$	$3.43^{a} \pm 0.79$	$3.64^{b} \pm 0.76$	3.59 ± 0.66
Anthropocentrism (2, 7, 12)	$3.14^{a} \pm 0.82$	$3.11^{a} \pm 0.76$	$3.21^{a} \pm 0.90$	$3.02^{a} \pm 0.76$	$3.19^{a} \pm 0.84$	3.15 ± 0.83
Nature balance (3, 8, 13)	$3.45^{a} \pm 0.60$	$3.42^{a} \pm 0.72$	$3.41^{a} \pm 0.70$	$3.29^{a} \pm 0.69$	$3.46^{b} \pm 0.66$	3.42 ± 0.67
Exceptionalism (4, 9, 14),	$3.42^{a} \pm 0.85$	$3.41^{a} \pm 0.92$	$3.31^{a} \pm 0.87$	$3.23^{a} \pm 0.89$	$3.42^{b} \pm 0.87$	3.38 ± 0.88
Eco-crisis (5, 10, 15)	$3.61^{a} \pm 0.66$	$3.54^{a} \pm 0.71$	$3.65^{a} \pm 0.68$	$3.66^{a} \pm 0.74$	$3.58^{a} \pm 0.66$	3.60 ± 0.68

Means that do not share a letter are significantly different

5 The calculation of percentage on five dimensions

5.1 Limits of growth

This dimension includes items 1, 6 and 11. It is based on the growth of human population on earth and supply with goods from natural resources. Among three respondents groups, the BPZ has the strongest endorsement, 65.1% for the item 1, we cannot control the increase in human population growth, 16% of the respondents from this group disagreed and 18.9 were unsure about this. Two other groups had lower NEP score for this item: KKP = 59% and QPGJ = 54.8%. The item 11 had a pro-NEP score from all three respondent groups: 55.4% BPZ, 64.0% KKP and 59.0% QPGJ. The item 6 earth has plenty of natural resources if we just learn how to develop them and strongly suggests anti-pro-ecological attitude. 60.7% of the respondents from BPZ, 73.5% from KKP and 61.3% of QPGJ agreed with this statement; 30.6% from BPZ, 18.6% from KKP and 28% from QPGJ disagreed and 9.4% from BPZ, 7.8% from KKP and 10.7% from QPGJ were unsure.

The total pro-NEP score for this dimension is BPZ = 50.37%, KKP = 47.20% and QPGJ = 4 7.27%.

5.2 Anti-anthropocentrism

This dimension has two items (2 and 12) with strong support of anthropocentric belief that the human has control over the nature and can adjust it to its needs. However, more than 50% from BPZ and QPGJ (52.1% and 51.8%, respectively) and 35% from KKP sample disagreed with item 2, whereas 38.9% of BPZ, 50.5% of KKP and 38.7% of QPGJ respondents endorsed it and 9.0–14.5% were not sure. Based on these scores, employees in BPZ and QPGJ rejected the pro-anthropocentric view, whereas it was supported from KKP. Regarding the item 12 humans were meant to rule over the rest of nature, 49.7% respondents from BPZ and 52.1% from each KKP and QPGJ disagreed. This view was endorsed 30.1% by BPZ, 26.7% from KKP and 29.1% from QPGJ employees; uncertain were 18–21%. The item 7, plants and animals have as much right as humans to live, was supported by 73% of the BPZ sample, 59% of KKP and the highest endorsement, 80, 4% was given by QPGJ. While 11.2% of BPZ respondents, 25.9% of KKP and 4.2% of QPGJ disagreed on this item, 15% in each group were unsure.

The dimension itself had the pro-NEP score BPZ = 58.27%, KKP = 49% and QPGJ = 61.43.

5.3 Balance of nature

Items 3 and 13 in this dimension are endorsed by the belief that nature is easily harmed, and it can produce terrible results if humans disturb it. Item 3 had the highest endorsement from all three groups of respondents: BPZ endorsed it 80.2%, KKP 81.9% and QPGJ 81%. Item 13 had lower endorsement level compared to item 3. The highest support score was 68% (BPZ). The item 8 in this dimension is supported by the DSP or pro-anthropocentric belief that the nature is strong enough to handle the bed effects from developed countries. 55.3% of respondents in BPZ, 50.9% from KKP and 52.9% of QPGJ rejected this view and 20–22% were unsure, whereas 24.1% of BPZ, 28.5% of KKP and 24.4% of QPGJ agreed with this item. The total pro-NEP score for this dimension is 67.8% BPZ, 65.2% KKP and 64.8% QPGJ.

5.4 Rejection of exemptionalism

It is supported by beliefs that humans are exempt from the limitations of nature. Based on items 4 and 14 in this dimension, humans are clever not to ruin the Earth and one day they will be able to control the nature. 35% of BPZ, 33.4% of KKP and 39.2% of QPGJ have disagreed with this statement and have anti-exemptionalist opinion in item 4. The highest endorsement to this view was given by KKP respondents with the score 52.7%. The item 14 was supported from 46.2% of the respondents with exemptionalist belief in BPZ group, while 45.2% of respondents from QPGJ disagreed with this item due to anti-exemptionalist view. Item 9 which is supported by the idea that human have to obey the laws of nature is supported by all three groups of respondents with pro-NEP scores ranging from 77.7 to 80.4%. About 15% among three respondent groups had uncertain opinions, and the rest 6% were not sure. The total pro-NEP score of this dimension ranges from 51.30% KKP up to 54.03% QPGJ.

5.5 Possibility of an eco-crisis

This dimension is based on two items (5 and 15) which rely on the idea that humans are mistreating the environment and if this is going to continue, we will soon experience a major environmental disaster. The item 5 had a high support from all three respondent groups: BPZ-76.9%, KKP-75.8% and QPGJ-82.5%; it was rejected by 11.3% respondents of BPZ, 12.1% of KKP and 5.4% of QPGJ. About 12% of respondents in each group of employees were unsure on this item. The idea that we will soon experience a major environmental disaster if the mistreating of the environment goes on (item 15) had the highest support, 80.9% from QPGJ employees, while the two other groups also supported it with more than 50% (73.5 BPZ and 74.6 KKP). About 11.1% of employees in BPZ, 12.1% in KKP and 10.2 in QPGJ disagreed on this item and around 12.5% were unsure. The opinions from these two items (5 and 15) were rejected by 40.0% of PBZ. 43.0% of KKP and 46.5% of QPGJ employees support the idea that environmental crisis has been exaggerated (item 10). About 30.6% of BPZ, 23.3% KKP and 21.4% QPGJ were uncertain, whereas the total pro-NEP score of this dimension was BPZ = 63.47%, KKP = 64.47% and QPGJ = 69.97%

6 Reliability and dimensionality

A test of reliability was conducted to measure the internal consistency of the full NEP scale, and a Cronbach's alpha value of 0.77 was obtained. Researchers have suggested that confirmatory factor analysis should be used to verify the hypothesized relationships between the five facets of the NEP, especially in such contexts as that of the current study (Amburgey and Thoman 2012). The NEP scale items were designed to tap into five hypothesized facets of an ecological worldview. These include the reality of limits to growth (1, 6, 11), anti-anthropocentrism (2, 7, 12), the fragility of nature's balance (3, 8, 13), rejection of human exemptionalism (4, 9, 14) and the possibility of an eco-crisis (5, 10, 15) (Dunlap et al. 2000a; b). In the study, we used a principal components factor analysis (PCA) with varimax rotation, showing four dimensions (Table 1). This four-dimension model with eigenvalues greater than 1 explained a total of 54.67% of the variance in results obtained. The Kaiser–Meyer–Olkin verified the adequacy of the sample size (KMO = 0.833) and Bartlett's test of sphericity approx. Chi-square 1567.8 ($p < 0.01$) revealed that the correlations between the scale items were sufficient for principal component analysis. Factor loadings on each component after rotation are presented in Table 3. Similar to findings in previous studies, most of the NEP items cross-loaded on more than one component, and there was no evidence to support the

Table 3 Principal component analysis of NEP items with varimax rotation

	Component				Corrected item–total correlation	Cronbach's alpha if item deleted
	1	2	3	4		
N6	**.776**	.143	−.144	.114	.576	.733
N14	**.747**	.038	−.204	.127	.486	.743
N4	**.730**	.086	−.205	.051	.484	.743
N8	**.699**	−.081	.217	.009	.492	.743
N2	**.696**	.141	.158	−.048	.558	.735
N10	**.688**	−.054	.139	.016	.475	.745
N12	**.649**	.075	.068	−.077	.460	.746
N15	.205	**.689**	.261	.157	.449	.749
N5	−.017	**.667**	.184	−.027	.213	.767
N11	.103	**.622**	−.193	.300	.258	.764
N7	−.027	**.547**	.314	−.311	.155	.772
N3	.030	.082	**.712**	.241	.211	.767
N9	−.035	.178	**.668**	−.131	.137	.771
N13	.121	.269	**.464**	**.363**	.299	.761
N1	−.003	.067	.130	**.836**	.146	.773
Eigenvalues	3.81	2.27	1.08	1.03	–	–
Total variance	25.4	15.16	7.2	6.9	–	–
Cronbach's alpha	0.84	0.55	0.49	0.34		

Extraction method: principal component analysis

Four components extracted

The values with bold give a correlation of more than 0.300

theoretical structure of the NEP among the samples (Ogunbode 2013; Amburgey and Thoman 2012; Dunlap et al. 2000a, b).

From Table 3, we can see that the items are loaded on a different extent to those identified by Dunlap and Liere (1978b); lower Cronbach's alpha values were found in treating NEP as unidimensionality 0.77 and multi-dimensionality 0.34–0.84; we can conclude that the scale was uncertain in these applications. Hence, the scale has been supposed to have a two-factor structure (one factor covering items which support NEP view and one factor covering items which support DSP view, considered against NEP); we can find similar results in the study of Atav et al. (2015). Explanatory factor analysis was repeated to define the distribution of the items among two-factor structure. This type of structure explained 40.6% of the variance. We can see that eigenvalues spectrum was between 1.03 and 3.81. Distribution of the items and factor loadings is presented in Table 4 (Fig. 1).

From the primary component analysis, we find that the items of odd numbers in the scale were distributed to support the new ecological paradigm, while the items of the even numbers were distributed to support DSP but with higher reliability against NEP. It is worth considering that in this case two items, 1 (0.385) and 11 (0.323), were less loaded to the dimension they belong (Table 4). There are two options in this case, either to treat it as two-dimensional, provided that the NEP dimension of these items has more clarity for the respondents, or to be considered one-dimensional as the alpha is also high 0.77.

7 Conclusion

Based on our results, we can conclude that all three groups of respondents endorse pro-ecological beliefs. The employees in group QPGJ had the highest pro-NEP worldview, and the employees in P.B.Z. had the lowest pro-NEP worldview. We concluded that the items

Table 4 Distribution of items of the new ecological paradigm scale and their factor loadings

	Component		Corrected item–total correlation	Cronbach's alpha if item deleted
	DSP	NEP		
N6	**.798**	−.039	.675	.804
N14	**.771**	.073	.634	.811
N4	**.751**	.057	.622	.813
N2	**.680**	−.201	.587	.819
N8	**.670**	−.094	.549	.824
N10	**.667**	−.064	.553	.823
N12	**.636**	−.088	.522	.828
N15	−.226	**.703**	.526	.564
N5	.001	**.592**	.360	.612
N3	.016	**.585**	.359	.612
N13	−.116	**.582**	.399	.600
N9	.097	**.541**	.318	.623
N7	.049	**.528**	.305	.626
N11	−.173	**.385**	.274	.634
N1	−.046	**.323**	.201	.654
Cronbach's alpha	0.84	0.65	–	–

The values with bold give a correlation of more than 0.300

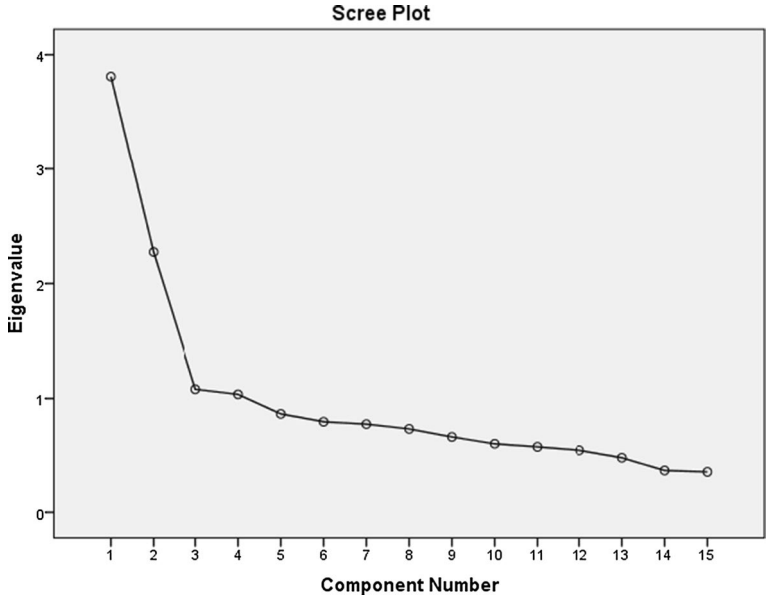

Fig. 1 Four factors extracted by factor loadings

3, 5, 7 and 9 had the highest pro-NEP score, whereas item 6 had the lowest score, which indicates a strong pro-anthropocentric worldview, against pro-NEP belief. The mean scores on the NEP subscales of the respondents groups have shown that the NEP facets nature balance and eco-crisis were the most endorsed, whereas the NEP facet limit to growth had the lowest level of endorsement.

Similar study with secondary school students in the city of Malisheva in Kosovo (Bytyçi et al. 2017) has shown a pro-ecological orientation of the respondents; however, the high endorsement, 62.40% of the pro-DSP% item 'The balance of nature is strong enough to cope with the impacts of modern industrial nations,' indicates that there is no clear understanding of young students for the concepts NEP and DSP; therefore, additional environmental education that will help young generations to better understand the environmental problems is necessary. In his study, Veselaj et al. (2019) measured the pro-ecological view of teachers in three cities in Kosovo and concluded that the teachers had pro-ecological view; however, still 52.3% of the respondents believe that humans are meant to rule the rest of nature. Our results show that the endorsement level of NEP items and five facets differs among groups. In relation to this, it should be noted that all three groups of employees involved in this survey represent a high heterogeneity in terms of age, education level, professions, place of residence (rural and urban), socioeconomic status, working experience and environmental knowledge. According to Hawcroft and Milfont (2010), pro-environmental attitudes rise and fall with current events and vary with age, gender, socioeconomic status, nation, urban–rural residence, religion, politics, values, personality, experience, education and environmental knowledge. We can conclude that distribution of the responses to the NEP items shows support of employees from Kacanik to pro-ecological orientation and rejection of anthropocentrism, indicating the increased awareness of the citizens for environmental problems. In our opinion, the factor that has influenced most the environmental belief of employees of Kacanik is their everyday confrontation with

environmental problems in the city. Since not only the city of Kacanik but the whole state of Kosovo is facing many environmental problems and challenges to solve them, we consider that the further studies should be oriented toward the measurement of the NEP relationship with other attitudes and behavior, such as sustainable environment management, renewable energy, climate change, sustainable forest management as well as sustainable economic development.

8 The novelty of the study

This study for the first time measures the environmental attitudes and behavior of employees in nine different public institutions in Republic of Kosovo.

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Affiliations

Ferdije Zhushi-Etemi[1] · Rushan Ceka[2] · Hazir Çadraku[3] · Pajtim Bytyqi[1] · Albona Shala-Abazi[4] · Osman Fetoshi[5] · Prespa Ymeri[6] · Murtezan Ismaili[7]

1 Department of Biology, Faculty of Mathematics and Natural Sciences, University "Hasan Prishtina", Prishtina Str. George Bush nn, Pristina 10000, Kosovo

2 Faculty of Technical Science, "Mother Teresa" University, Scopje, Macedonia

3 Faculty of Civil Engineering and Infrastructure, UBT-Higher Education Institution, Prishtina, Kosovo

4 Faculty of Management in Tourism, Hotels and the Environment, University "Haxhi Zeka", Pejë, Kosovo

5 Faculty of Tourism and Environment, University of Applied Sciences, Ferizaj, Kosovo

6 Doctoral School of Management and Business Administration, Szent István University, Gödöllő 2010, Hungary

7 South East European University, Tetovo, Macedonia