

Izabela **WIELEWSKA** • Marzena **KACPRZAK** • Agnieszka **KRÓL** • Artur **CZECH**
• Dagmara K. **ZUZEK** • Katarzyna **GRALAK** • Renata **MARKS-BIELSKA**

GREEN HUMAN RESOURCE MANAGEMENT

Izabela **Wielewska** (ORCID: 0000-0002-1721-6890) – *Bydgoszcz University of Science and Technology, Faculty of Agriculture and Biotechnology*

Marzena **Kacprzak** (ORCID: 0000-0002-0680-8241)
– *Warsaw University of Life Sciences-SGGW, Institute of Economics and Finance*

Agnieszka **Król** (ORCID: 0000-0002-5685-7578)

Artur **Czech** (ORCID: 0000-0003-4854-1466)
– *Management Academy of Applied Sciences in Warsaw, Faculty of Management and Technical Sciences*

Dagmara K. **Zuzek** (ORCID: 0000-0002-7620-1621) – *Agricultural University in Krakow, Department of Economics and Food Economy*

Katarzyna **Gralak** (ORCID: 0000-0001-7317-7833) – *Warsaw University of Life Sciences-SGGW, Department of Development Policy and Marketing*

Renata **Marks-Bielska** (ORCID: 0000-0001-7319-1918) – *University of Warmia and Mazury in Olsztyn, Department of Economic Policy, Faculty of Economic Science*

Correspondence address:

Kaliskiego Street 7, 85-796 Bydgoszcz, Poland

e-mail: wielewska@pbs.edu.pl

ABSTRACT: Green human resource management means taking action and shaping and promoting pro-ecological attitudes in the working environment. The purpose of this study is to investigate the role of green Human Resource Management (HRM) and green corporate policies in environmental sustainability. Research in this area was carried out among 346 employees employed in enterprises from various industries in Poland in 2021. An online questionnaire was used in the study. The obtained results were subjected to statistical analysis; a logistic regression model was applied using the Statistica computer package. The conducted research showed that the employees' awareness of green competencies and the employer's activities in environmental training and education are statistically significant. Still, employers should emphasise the environmental education of employed staff in conjunction with their job position.

KEYWORDS: green human resource management (GHRM); pro-environmental activities of enterprises; the ecological context of HR; logistic regression model; green jobs and green competences

Introduction

In today's world, people and the natural environment are the most critical resources on a global scale. Attempting to combine the two current key management concepts, i.e. environmental management and human resources management, has become not only a necessity but also a real challenge for the organisation.

A green approach to human resource management comes down to taking action and shaping and promoting pro-ecological attitudes in the work environment (Peng et al., 2020). In this context, the need for Human Resources (HR) processes in organisations to be based on the principles of sustainable development is of particular importance. More and more frequently, the ecological context can be seen in the practice of enterprises, at least in the personnel decisions made or in the employees' behaviour. Pro-environmental solutions are implemented primarily in large international corporations but are not limited to those.

From an economic point of view, this allows companies to lower organisational costs, increases employee motivation and opens up new markets. It enables support for long-term changes in the mentality and behaviour of employees, which impact the sustainability process in enterprises (Wu Vienna, 2022).

As a leading strategic element of modern organisations, human capital should also become their "green energy", which is a real challenge, particularly for the managerial staff (Tang et al., 2020). Currently, Green Human Resource Management (GHRM) is seeing a noticeable upward trend in implementing the assumptions of this concept around the world, with the pandemic in the background, hence the authors' interest in this topic.

This study aims to investigate the role of GHRM and companies' environmental policies in environmental sustainability.

The issues of GHRM have not been thoroughly researched empirically (Andjarwati et al., 2019). Therefore, the authors of this paper try to pay attention to the aspects of indicating the level of "green" awareness in companies and good practices, as well as formulating conclusions and recommendations for employers in this area.

On the one hand, a thesis was adopted that GHRM practices are related to the ecological behaviour of employees and the increase in their awareness of the need for green jobs and green skills. On the other hand, the increase in the number of green jobs depends on the degree of the enterprise's commitment to the implementation of the principles of sustainable development through environmental education and employee training.

The carried out research is based on both in-depth literature studies and the results of a two weeks internet survey addressed to employees in different sectors of the Polish economy. As the statistical analysis tool, the econometric logistic regression model was implemented.

The literature review

Sustainable development in human resource management

The literature review proved that as a basis of GHRM is considered the phenomenon of sustainable development. It is defined as socio-economic development, in which the process of integrating political, economic and social activities occurs. Furthermore, it preserves the environmental balance and durability of fundamental natural processes in order to guarantee the possibility of satisfying the basic needs of individual communities or citizens of both the current generation as well as future generations (Act, 2001; Wielewska, 2018; Wielewska et al., 2017). Due to unfavourable changes that result from civilisation development, including the destruction of the natural environment, entrepreneurs are somehow forced to pay more and more attention to activities in the area of sustainable development and the implementation of its principles (Hu et al., 2021). It is currently one of the critical factors determining the company's image. The following tendency is also noticeable: the "richer" a society, the greater its emphasis on ecological activities.

One of the pioneering definitions of sustainable Human Resource Management (HRM) is presented by Zaugg et al. (2001). They based the concepts of HRM on three pillars, i.e. maintaining a balance between work and family life, remaining "attractive" in the labour market and increasing the independence and autonomy of employees in connection with their competencies (Zaugg et al., 2001; Zalesna & Wyrzykowska, 2017). The mentioned areas of HRM and their relationships are presented in Figure 1.

Somewhat later, the definition above began to be developed to include minimising the adverse effects of enterprises' activities on the natural, work and social environments (Kramar, 2014). A slightly different approach to sustainable HRM was presented by Pabian (2015). He claims that companies should focus their activities first on the recruitment process. Then, focus on selecting the right tools for influencing the employees so that they can help achieve economic, environmental and social goals most effectively while affecting the balance of intergenerational needs. Pfeffer (2010) approached the concept of sustainable development differently. He is linking HRM practices primarily with their impact on the physical and mental health of the employees and their life expectancy, which is presented in Figure 2.

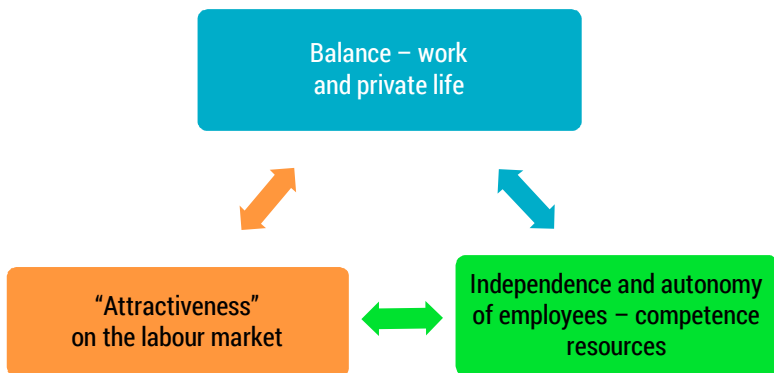


Figure 1. Three pillars of HRM

Source: authors' work based on Zaugg et al. (2001).

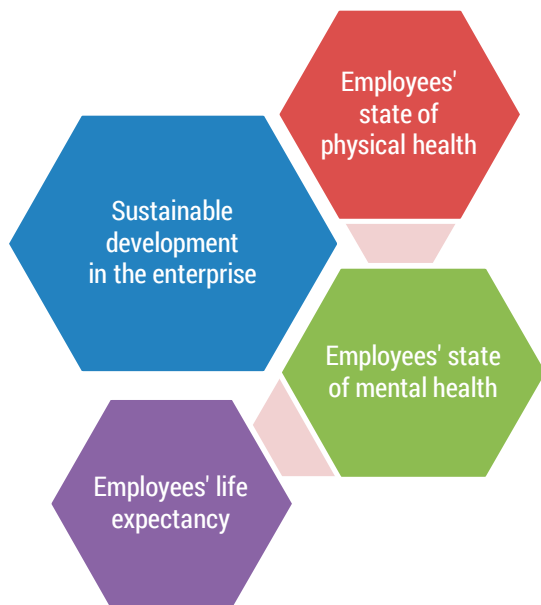


Figure 2. Sustainable management of human resources

Source: authors' work study based on Pfeffer (2010).

However, in the face of the COVID-19 pandemic, it is worth mentioning that corporate social responsibility is of particular importance. This is because enterprises face new challenges that allow them to authenticate their image by engaging in pro-health and pro-environmental activities which support society at this challenging time (Kacprzak et al., 2021).

As an integral part of sustainable human resource management, its green concept can be considered, i.e. Green Human Resource Management (GHRM). Therefore, GHRM is considered a subset of sustainable human resource management (Wagner, 2013). This is because some scientists have combined human resource management with environmental management (Renwick et al., 2013). Therefore, the term GHRM is still in the spotlight of environmental management research and is now considered a hot topic in the latest studies (Al-Ghazali & Afsar, 2020). Going further, it is worth quoting a few of its definitions. Generally, it can be considered the process of making employees green by implementing green human resources policies and practices. It ought to benefit the individuals, society, community and the whole planet (Opatha & Arulrajah, 2014). This concept integrates environmentally friendly human resource management initiatives and practices for the sustainable use of resources. It results in increased efficiency, reduced waste and improved work attitude.

Therefore, GHRM is an integral part of the concept of sustainable human resource management, as are activities in the area of corporate social responsibility (CSR). The main goal of the GHRM is to shape ecological sensitivity among the company's employees, to create a pro-ecological work and climate environment, and to transfer ecologically responsible attitudes and behaviour of employees to their private lives (Muster & Schrader, 2011; Datta, 2015; Regas et al., 2017). Other scientific works also included these aspects (Shalafei et al., 2020; Dumont et al., 2017; Pham et al., 2019).

Researchers who study GHRM, especially green jobs and green competencies, emphasise that these are systematically growing from year to year. Therefore, there is a real need to conduct systematic research that would enable the identification of factors that favour or inhibit the development of this area. This is particularly important from several perspectives. Firstly, the development of GHRM is conducive to improving activities for the natural environment and the surroundings in which we live and function. Secondly, it has a positive effect on shaping employees' desired attitudes and behaviours. Thirdly, it improves the image of enterprises. Fourthly, it is an essential and effective tool in combating unemployment. Therefore, further analysis of "green" development factors is legitimate. GHRM is a combination of good pro-ecological practices in the area of HRM with CSR activities in order to implement a coherent strategy of the organisation by creating a "green" culture in the organisation. The impact of pro-ecological HRM practices on the development of green organisational culture and on the environmental performance of companies has been demonstrated in the research of Roscoe et al. (2019). In such a culture, the fundamental values are primarily attitudes and behaviours aimed at active, committed activities of the organisation's

members to improve the condition of the natural environment and society's quality of life.

"Green" practices in human resource management

HR strategies based on sustainable HRM and green HRM must include not only the achievement of economic goals but primarily environmental and social goals. According to the literature, green HRM practices can be categorised into five primary groups, i.e. resource planning, recruitment of employees, employees' development, motivating, and management of employee performance.

The abovementioned areas include considering the ecological aspects, e.g. job descriptions, ethics codes of enterprises, HRM procedures, competency profiles (green competencies, ecological awareness of employees), and education. It is essential in the process of training on shaping and promoting pro-environmental attitudes and behaviours, motivational (WLB programmes, well-being, wage motivators, etc.) or employee evaluations (assessment of the level of commitment to sustainable development) (Róžańska-Bińczyk et al., 2020).

Research shows that GHRM practices are also becoming more and more popular in companies in Poland. For the most part, their activities are limited to implementing ecological elements in various types of HRM procedures and instructions, in ethical codes, and in promoting the ecological image of the company in the labour market. Employers fare much worse when it comes to the incentive systems and tools used in companies as well as the management of employees' performance in the ecological aspect (Róžańska-Bińczyk et al., 2020). Some examples of good green practices in the field of HRM are presented in Table 1.

It is worth mentioning that they should be promoted among as many companies as possible worldwide. This is due to the benefits that it brings, not only for the organisation itself but primarily because of the benefits for the natural environment.

Examples of practices presented in Table 1 are but a few selected activities from an extensive range, which should be adapted individually to the realities of a given company and the environment. One of the abovementioned examples of encouraging employers and employees is to use green transport forms. This is because transport and mobility are considered as one the main elements of sustainable development, especially in the EU transport policy (Czech et al., 2021).

Nevertheless, it must be remembered that various types of activities can be initiated and integrated when organisations need to turn towards green practices (Figure 3).

Table 1. Selected good environmental practices in HRM

Selected areas of HRM	Examples of good practices
Employment planning	Creation of green jobs or modification of existing ones as well as procedures, regulations, codes of ethics in terms of green competencies and a green work environment.
Selection of employees	Preference for green competencies in the recruitment and selection process of employees, including attitudes, behaviour, knowledge, skills and pro-environmental activity.
Motivating and engaging employees	Rewarding green competencies of employees (pay and non-pay incentives), green collar satisfaction survey, WLB programs, well-being programmes supporting employees' health (preventive examinations, additional insurance, multisport cards, healthy nutrition courses, etc.).
Development	Trainings to increase pro-ecological awareness among the staff, promoting patterns of attitudes and pro-environmental behaviours of the management, initiating and engaging employees in ecological initiatives/projects, competitions, considering green competencies in the promotion process.
Assessment	An assessment system related to the system of motivating and developing green employees, an assessment of involvement in activities based on sustainable development.
Organisational culture	Employee participation; appreciating employees' initiatives, their creativity and innovation in the area of green solutions and improvements; environmental education for employees and external and internal stakeholders and local communities; building a green image of the organisation; implementing activities in the area of corporate social responsibility; increasing quality standards and conduct towards employees and customers.
Work environment, working conditions	Pro-health and pro-environmental solutions, e.g. using recycled paper, ecological toners, encouraging the use of ecological forms of transport, setting creativity zones, electronic document circulation, purchasing bottles with filters for employees (reducing plastic), flexible working hours, hybrid work.

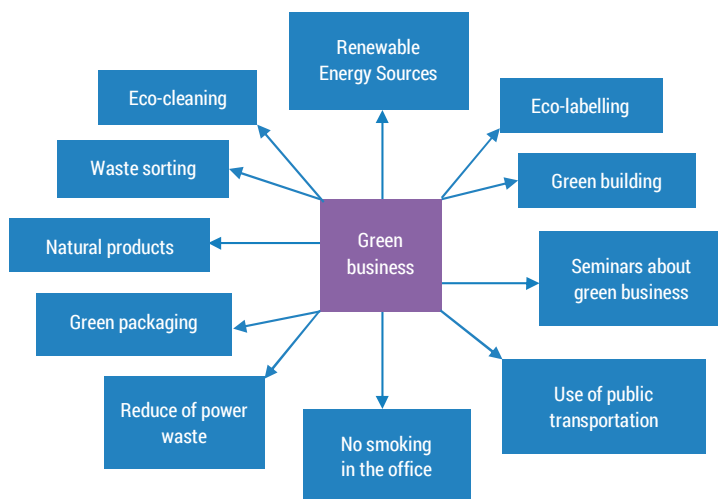


Figure 3. The most commonly used green business practices

Analysing the above-mentioned graphical presentation of a wide range of environmental activities, employers and employees should remember that the goals of the green company are usually achieved very slowly.

Green jobs and green competencies and barriers of GHRM implementation

The twentieth century saw the terms “white” (Xie et al., 2021; Elsadek et al., 2019) and “blue” (Almeida-Santos et al., 2010; Lips-Wiersma et al., 2016) collars being coined about the office and manual workers respectively, as a result of the ubiquitous changes that took place in the “brown” economies (those that exploit and ruin the natural environment) and on labour markets worldwide. As a result of the dominant pro-ecological trends and transformation towards a “green” (environmentally friendly) economy, the term “green collars” or “green workers” (Mustar & Schrader, 2011) has recently been coined about people who do work which saves the natural resources and wildlife, natural ones are preserved and renewed – but here the sense of the previous categorisation by the type of work done disappears.

“Green” workers must have specific competencies necessary for green workplaces. Those “green competencies” of employees result from their knowledge and skills in applying pro-environmental solutions in the enterprise (Kozar, 2017). This involves soft and hard competencies, which can be shaped by various types of training, engaging in practical activities and pro-environmental initiatives, or learning from others.

Competencies arise as a result of integrating skills mastered efficiently and consciously in order to be able to take action in a free, reflective and responsible way (Budniak, 2018). Green competencies should be noticed, appreciated, promoted and gratified by employers. Employees should use them professionally as well as in their private lives while contributing to the improvement of the quality of life of local communities and the restoration of the natural environment resources. Therefore, the critical green competencies will primarily include the creativity and innovation of employees.

The definition of green jobs adopted by the European Commission in 2012 is as follows: “any jobs dependent on the natural environment or created, converted or transformed (in terms of ecological qualifications, working methods, job profiles) in the process of turning towards a greener economy” (Kryk, 2014; Urząd Publikacji Komisji Europejskiej, 2013). Nevertheless, there is no unanimous agreement to a singular definition of green jobs (Bowen et al., 2018). In general, green jobs can be perceived in two ways, i.e. quantitatively and qualitatively (Rutkowska & Sulich, 2020). Firstly, it is considered a sector approach which relays on econometric model construction based on quantitative variables. The last is to classify green jobs distinguishing hard and soft skills specific to that area (Maclean et al., 2018).

Going further, green jobs can be divided into two ways (Kryk, 2014). On the one hand, companies manufacture products or provide services which benefit the environment and conserve natural resources. On the other hand, they create more environmentally friendly production processes or use fewer natural resources. Thus, green jobs can, directly and indirectly, relate to environmental protection.

According to research on labour markets, the number of green professions in the world is growing significantly. The literature studies provide a wide range of professions such as farmer/breeder, designer/engineer of green cars, water quality technologist, environmental researcher, biologist, recycling worker, etc. (Fazlagić, 2019; NIST, 2022). This list also indicates the critical economic sectors from the point of view of implementing pro-ecological activities and creating green jobs.

Green jobs and the implementation of green human resource management principles in companies are justified by many different premises and benefits for the enterprise, its employees, its environment, and its associates (Molina-Azorin et al., 2021). Undoubtedly, the GHRM predominantly affects the improvement of the employer's image. Companies with a "green" image find it easier to attract and retain competent employees, loyal customers, consumers and contractors. This is due to their active involvement in solving problems of local communities, supporting pro-environmental initiatives, raising the quality standards of the offered products and services, or standards of dealing with external and internal stakeholders. All this translates into the company's value, profits, competitiveness and finally achieved success.

Despite the growing interest in the concept of GHRM, there are still many obstacles to its implementation. The popularity of GHRM is determined by a particular paradox: on the one hand, it is a good image gimmick, and on the other hand, there is still much opposition from the management and employees, as well as difficulties in transforming cultures towards "green organisations".

As noted by Bombiak (2020), specific trends can be noticed in terms of critical barriers to implementing the GHRM concept in enterprises based on the results of empirical research conducted among Polish managers. Firstly, these include financial constraints, which largely determine subsequent barriers, i.e. the lack of an appropriate incentive system, lack of incentives in enterprises, low level of competencies of the managerial staff in the field of GHRM and low level of popularisation of GHRM tools. The surveyed managers also pointed out that organisations are dominated by cultures based on economic values rather than green cultures, which are based primarily on intangible values. Various world studies also indicate resistance from the managerial staff, lack of sufficient leadership support or a "good" GHRM

implementation plan, barriers resulting from the complexity of green technologies (lack of appropriate infrastructure, technical support), cultural conditions (lack of clear green values), resistance from employees, low green awareness, lack of staff competencies in the area of implementing green practices, or mismatching HR structures.

Viswanathan (2014) also pointed to the two types of barriers to implementing GHRM – internal (lack of appropriate organisational resources) and external (legal regulations and policies of a given country).

To sum up, the barriers to implementing the GHRM concept will always exist. This is due to the different degrees of adaptability and innovativeness of organisations and the individuality and diversity of their cultures. Nevertheless, every effort should be made to minimise those barriers for the good of society and the natural environment.

Materials and methods

The literature studies proved that GHRM had been put under scientific investigation by implementing different methods. Generally, there are three methodological approaches, i.e. quantitative, qualitative and mixed (Hosna & Kaoutar, 2022a). First, adopted quantitative methods for examining the factors influencing GHRM where structural equation models were implemented. The second qualitative approach explores factors related to GHRM implementation to understand and analyse companies' green initiatives and practices. The last, the mixed approach, introduces mixed methods in the research process on GHRM. It is worth mentioning that such researches are very limited.

Therefore, the third approach was implemented into the research process combining the results of the carried-out surveys and the econometric logistic model as a quantitative tool.

The basis of the analysis carried out in the paper is the subjective assessment of employees on the impact of their awareness of the need for green jobs and green competencies in selected enterprises. The survey was conducted in Poland in 2021. The study used an online questionnaire filled out by 346 employees who work in enterprises operating in various industries in sixteen Provinces of Pol. and. The obtained results were analysed statistically. The analysis used the Statistica computer package (Luszniewicz & Słaby, 2008).

The statistical analysis in the form of a model was preceded by a study of the structure of the distribution of responses, which enabled the assessment of the strength of the impact of four selected factors on the existence of green jobs in the surveyed enterprises. These factors include:

- 1) undertaking actions by the employer in the field of environmental education and training in this area,
- 2) a set of crucial employee competencies, including green competencies,
- 3) the existence of positions for sustainable development in the surveyed company,
- 4) the company's incentive system for the pro-ecological activity of the employees.

The tool used to assess the influence of independent variables on one dependent variable in the situation of subjective assessments is the logistic regression, referred to as bimodal. Its application enables the analysis of the influence of several diagnostic features on a dichotomous variable. In contrast, independent variables (factors) can be qualitative and quantitative. An additional advantage of logistic regression is the ability to quickly interpret the results like the classical regression analysis methods (Stanisz, 2007; Stanisz, 2016; Menard, 2009; Hyeoun-Ae, 2013; Hibe, 2015).

The logistic regression model has already found application in economic sciences for assessing the quality of life in Polish households in the social cohesion survey conducted by Statistics Poland (GUS, 2013; GUS, 2017). Work was also carried out in relation to the marginalisation and social exclusion of the elderly (Kot & Słaby, 2013; Słaby, 2014; Słaby, 2016). Further work was also carried out in the area of quality of life in the spatial aspect, including regional aspects (Czech, 2017; Czech & Słaby, 2018; Czech & Słaby, 2021).

In addition to the areas covered by the study, this tool is perfectly applicable in various types of questionnaire surveys based on the measurement of features with weak measurement scales. In this study, it was therefore decided to use the logistic regression in order to deepen the analysis by getting to know the direction and strength of the impact of individual factors on the subjective employees' opinion of green jobs. In the model used for the analysis, the employee's subjective assessment of the presence of green jobs and green competencies in his company was implemented as a dependent variable. The respondent's opinion took the form of a binary feature. The value of one was assigned to the respondents who determined that there are green jobs in the employed enterprise and zero otherwise, which was reflected in the following provision:

$Y = 1$ – a dichotomous dependent variable for the respondents who chose “yes” in the given questionnaire,

$Y = 0$ – a dichotomous dependent variable for the answer “no”.

The two survey questions were classified into independent variables called factors. The first consisted of one independent variable with the following two levels of responses: “yes” or “no”. The second constituted three questions with answers measured on the following three levels: “yes”, “no”, and “no opinion”.

It should be noted that the implementation of logistic regression requires the presentation of qualitative features in the form of sets of binary features. This type of transformation is so performed that $m-1$ binary variables represent a feature having m variants. In fact, one survey question from a group of factors with two levels of response (“yes” or “no”) was represented by one artificial diagnostic variable. However, the other three questions (factors) with three levels of answers were represented by two artificial explanatory variables, resulting in seven diagnostic features. This type of procedure, which replaces a quality feature with its artificial equivalents, is called coding or parameterisation and requires the definition of the so-called reference category. The reference category consisted of individuals who answered “no” to particular questions. It should be noted that there are also other parameterisation methods in the form of effect-type, ordinal, polynomial or orthogonal coding (Książek, 2013).

As a result of the presented method of transformation of individual diagnostic features (factors), the following set of artificial diagnostic variables was obtained:

- $X_1 = 1$ – dichotomous independent variable, in which the respondent assessed: “yes”, ecological education is provided in the enterprise; $X_1 = 0$ – “no” (reference group),
- $X_2 = 1$ – the respondent said “yes”, the competencies of the company’s employees include green competencies; $X_2 = 0$ – for the remaining answers,
- $X_3 = 1$ – the respondent stated “I have no opinion” in the question whether the competencies of employees include green competencies; $X_3 = 0$ – for the remaining answers,
- $X_4 = 1$ – the respondent said “yes”, there is a position for sustainable development in the company where he or she works; $X_4 = 0$ – for the remaining answers,
- $X_5 = 1$ – the respondent stated “I have no opinion” in the question of whether there is a position for sustainable development in the company where he or she works; $X_5 = 0$ – for the remaining answers,
- $X_6 = 1$ – the respondent stated “yes”, in the company where he or she is employed, there is an incentive system that considers gratification for pro-ecological activity; $X_6 = 0$ – for the remaining answers,
- $X_7 = 1$ – the respondent stated, “I have no opinion” whether there is an incentive system in the company where he or she is employed that considers gratification for pro-ecological activity; $X_7 = 0$ – for the remaining answers.

Thus, a prepared set of diagnostic features was the basis for diagnosing factors influencing the existence of the so-called green workplaces.

The logit transformation is based on the transformation of the probability $P = P(Y = 1)$, which is expressed by the following formula (Stanisz, 2016):

$$\ln \frac{P(A)}{1-P(A)} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k. \quad (1)$$

The natural logarithm of the expression $\frac{P(A)}{1-P(A)}$ is called the logit. It forms a linear function of the independent variables X_1, X_2, \dots, X_k . Therefore, the selected parameter β_j is interpreted as the increase in the logarithm of the quotient caused by the increase of the selected exogenous variable by one unit with the controlled stability of the remaining diagnostic variables included in the constructed model.

The hypothesis about the lack of influence of the selected diagnostic feature $H_0: \beta_j = 0$ is tested based on Wald statistic in the form of the following expression:

$$W = \left(\frac{\hat{\beta}_j}{S(\hat{\beta}_j)} \right)^2, \quad (2)$$

where:

$\hat{\beta}_j$ – the estimated parameter value,
 $S(\hat{\beta}_j)$ – standard error of the estimate.

If the null hypothesis is true, the Wald statistic has the form of the distribution with one degree of freedom. High values of Wald statistic weaken the null hypothesis, and the critical level of significance is estimated as:

$$p = p(\chi_{(1)}^2 \geq W).$$

In interpreting the test results using logistic regression, the main emphasis is on the expression of the odds ratio. It can be seen that there are three main situations about this type of expression. In the first one, if the odds ratio is below one. This type of situation indicates that the chance of occurrence of the studied event is lower in the analysed group than in the reference group. In the second case, when the odds ratio takes the value of one, it means that the risks of the analysed group and the reference group are equivalent. However, in the third case, when the odds ratio is above one, the chance of occurrence in the analysed group is higher than in the reference group.

Research results and discussion

The impact of various management activities that contributed to the name “green enterprise” influenced the differentiation of employees’ responses to the question: “Are there green jobs in the company where you work? An in-depth statistical analysis in the form of a logistic model was preceded by a study of the structure of the distribution of responses, which allowed for the assessment of the strength of the impact of individual factors on the existence of “green” jobs in the surveyed enterprises. The highlighted main question in the further analysis took a closed form, including two types of answers in the form: “yes” or “no”. The dichotomous distribution of the responses on this issue is presented in Figure 4.

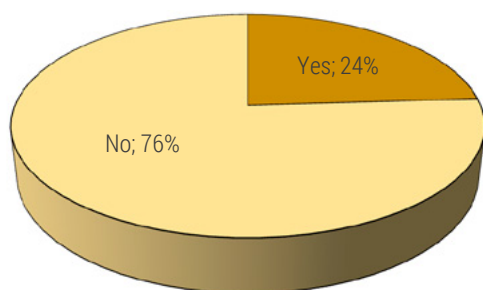


Figure 4. The existence of green jobs in the workplace, according to the surveyed

The analysis of the graphic presentation shows that only 24% of the respondents gave a positive answer to the research question. When considering the number of positive responses, it can be noted that eighty-three people employed in enterprises from various industries accounted for less than a quarter of all responses compared to the surveyed sample.

Regarding searching for the situation’s determinants, a set of four selected questions taken from the research questionnaire was used. When carrying out the substantive analysis, potential issues are taken into account that may have a tangible impact on its development and a positive subjective employee’s assessment of the existence of green jobs and green competencies in the enterprise. The first question was a closed-ended question of a dichotomous type, in which the respondent could answer “yes or “no” to the question about the employer’s activity in environmental education and training. The distribution of the answers given by the surveyed respondents is shown in Figure 5.

The conclusions drawn from the graphic presentation indicate that in over two hundred cases, there was a negative answer regarding the possibility of participating in educational training, which accounted for more than

half of the total answers provided. This may prove that the employer puts too little emphasis on the environmental education of the employed staff.

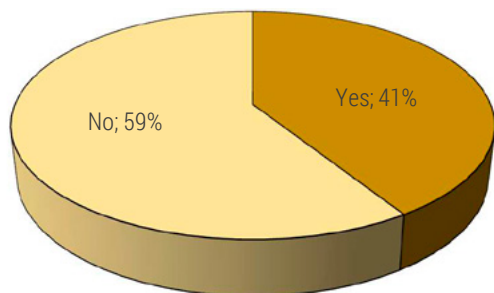


Figure 5. Environmental education and training conducted by the employer, according to the respondents

Further factors that determine the occurrence of the so-called green jobs also took the form of closed-type questions with the following three levels of answers: “yes”, “no”, and “I have no opinion”.

The second factor conditioning the presence of green jobs in a given enterprise was the question about the employee’s opinion on the set of their key competencies. In this question, the existing collection has been extended to the so-called green competencies. The distribution of the answers for the entire tested sample is shown in Figure 6.

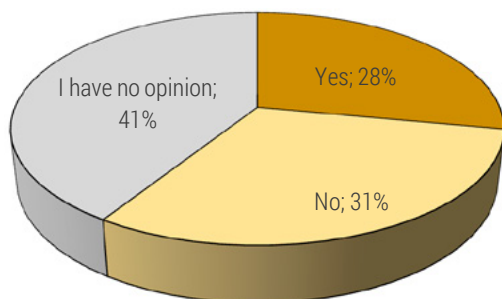


Figure 6. The opinion of the respondents indicating whether the critical competencies of the company’s employees also include green competencies

The analysis showed that only 28% of the answers given the “yes” variant were obtained, i.e. this group was composed of ninety-seven respondents. On the other hand, there were one hundred and seven employee responses in the area of negative responses. The last and the most numerous group were uncertain about recognising the so-called green competencies as key. This group included as many as one hundred and forty-two respondents, accounting for 41% of the total answers. Such a large group of undecided people may indicate a lack of knowledge of environmental (ecological) issues that could be associated with the positions held and, thus, the lack of appropriate education in this field.

The existence of sustainable development positions in a given company was assumed as the third-factor conditioning the presence of green jobs. The obtained results for the three response levels in the form of structure indicators are presented in Figure 7.

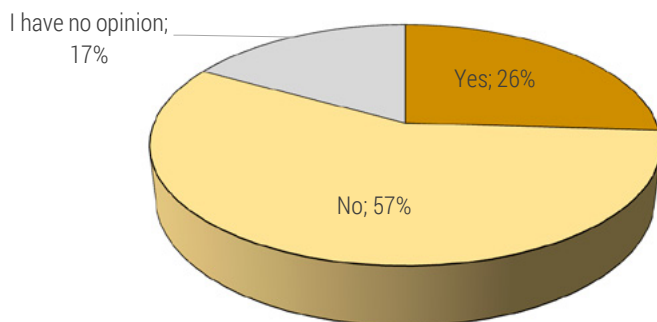


Figure 7. Existence of a position/positions for sustainable development in their workplace, according to the respondents

When doing the analysis, it can be concluded that the most numerous group were negative responses. Almost two hundred respondents were in this group, constituting 57% of the entire sample. The second group consisted of people who had no opinion on this issue. The most minor numerous group were the respondents who gave a positive answer regarding the existence of a position for sustainable development in their company.

The fourth (and last) question, which was classified as a potential determinant of the presence of green jobs and green competencies, concerned the company's motivation system. A graphic presentation, including three types of responses on the subject of consideration by the employer of gratifications for pro-ecological activity, is presented in Figure 8.

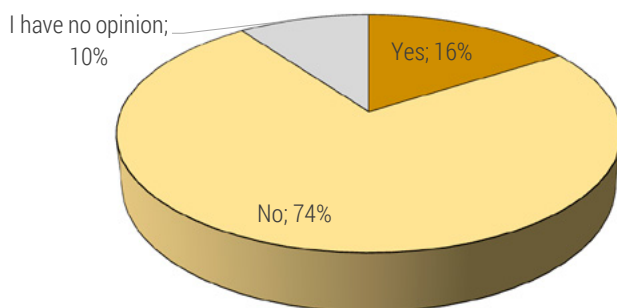


Figure 8. Including gratification for pro-ecological activity in the incentive system, according to the respondents in their workplace

As indicated by the survey results, two hundred and fifty-seven employees gave a negative answer and thirty-three people could not express an opinion on this issue. Only fifty-six respondents answered “yes”, which constituted 16% of the total answers. The analysis of the distribution of responses to selected questions included in the questionnaire gave a general view of green jobs, green competencies and the factors that determine their presence in enterprises.

Table 2. Stages of logistic model estimation in the assessment of green jobs for n=346 respondents

	X_1	X_2	X_3	X_4	X_5	X_6	X_7
The first stage							
p	0.000	0.004	0.005	0.092	0.163	0.044	0.015
$e^{\hat{\beta}_i}$	15.019	3.403	0.194	2.058	2.231	0.397	0.214
D	5.517	1.471	0.061	0.889	0.722	0.162	0.062
G	40.885	7.877	0.611	4.763	6.893	0.975	0.740
The second stage							
p	0.000	0.007	0.002	*	*	0.055	0.036
$e^{\hat{\beta}_i}$	19.316	3.116	0.165	*	*	0.435	0.281
D	7.403	1.370	0.052	*	*	0.186	0.086
G	50.400	7.087	0.522	*	*	1.017	0.921
The third stage							
p	0.000	0.006	0.004	*	*	*	0.108
$e^{\hat{\beta}_i}$	13.694	3.136	0.194	*	*	*	0.402
D	5.679	1.391	0.063	*	*	*	0.132
G	33.022	7.071	0.594	*	*	*	1.222
The fourth stage							
p	0.000	0.001	0.008	*	*	*	*
$e^{\hat{\beta}_i}$	11.707	3.851	0.223	*	*	*	*
D	4.985	1.778	0.074	*	*	*	*
G	27.491	8.342	0.670	*	*	*	*

Explanations: * – statistically insignificant, p – critical significance level, $e^{\hat{\beta}_i}$ – odds ratio, D – lower limit of the confidence interval for the odds ratio, G – upper limit of the confidence interval for the odds ratio

Unfortunately, the analysis results did not show the impact of individual factors and the levels of answers given in the questions asked. Moreover, apart from the direction of its influence, it is also worth knowing its strength. A logistic regression model was used to assess the influence of independent variables on the dependent variable in the situation of subjective assessments. The results of the logistic regression analysis in the evaluation of green jobs are presented in Table 2.

It should be noted that the study of the relationship between individual factors and the subjective assessment of the employee regarding the existence of the so-called green workplaces was carried out in four stages. The final set of diagnostic variables was considered in the first stage. Then, statistically insignificant variables were removed, and the model was re-estimated. The re-estimation process was performed until only statistically significant factors were identified. It should also be noted that the threshold of acceptable statistical significance was set at 0.05.

In the first step, the following two diagnostic variables were removed: X_4 and X_5 . The elimination of these variables proves that the position for sustainable development has no impact on the subjective opinion of the company's employees regarding the existence of green jobs. In the third and fourth stages, the following variables were eliminated: X_6 and X_7 , which were related to the question about the existence of an incentive system in the enterprise which would reward pro-ecological activities. It also proves the lack of influence of this kind of feature on the employees' opinions regarding the existence of green jobs.

In the fourth and final stage of the analysis, two main factors were identified that caused the employee to identify the so-called green posts.

The first factor is that the company conducts environmental education. When interpreting the odds ratio for this feature, it can be stated that for the respondents who said "yes", environmental education is conducted in the enterprise, compared to people with the answer "no", the value of the odds ratio was elevated to over eleven. This means that in the respondents who stated that ecological education is conducted in their enterprise, the probability of a subjective assessment of the existence of the so-called green jobs increases more than eleven times compared to the reference group (respondents with "no" answers).

The last factor which played an important role was the qualification of the green versions of competencies in the basic competency set. In the case of the X_2 feature, the value of the odds ratio oscillated below the level of four. It can therefore be concluded that in the case of employees who stated that the essential competencies include the so-called green competencies, the probability of identifying the existence of green jobs has increased by over 280 percent. On the other hand, in the case of the respondents who stated

“I have no opinion” about the perception of green competencies as basic by the employee, the odds ratio was much below the value of one. This means that the probability of the respondent identifying the existence of the so-called green jobs in their workplace decreased by more than 70 percent.

Going further, the literature studies confirmed that the research problems mentioned above in green human resources management have already been put under scientific investigation (Dimitrov, 2021; Diri & Elisha, 2021). For example, there was proven that employee perceptions of a company's environmental performance are vital (Dechant & Altman, 1994). Researchers discovered that effective implementation of green practices in the company requires environmental awareness of the employees. These companies' aims can be achieved by integrating green practices with training and development (Fernandez *et al.*, 2003). Moreover, employees' understanding of pro-environmental initiatives in the workplace may be raised mainly by so-called a green training (Boiral, 2002). This state of affairs confirms the stand already indicated in the literature that well-designed green training, which constitutes a vital resource, may increase innovation and create values, thus allowing individuals to carry out their work in such a way that they can reduce the negative impact of their work on the environment (Siyambalapatiya *et al.*, 2018). Going further, some literature studies proved that training and development programs might be implemented to raise knowledge in the area of waste management, energy consumption, and carbon footprint reduction in order to reduce pollution and provide a sustainable living environment (Mehta & Chugan, 2015). For example, Yong *et al.* (2019) proved that training plays a crucial role in developing environmental knowledge and awareness, motivating creativity for green innovation, strengthening green commitment, and improving environmental performance. All in all, promoting green training, i.e. educating and raising employees' awareness of environmental issues and developing new skills, can be considered the main factor of green human resource management. This factor was proved in the constructed logistic model as the strongest one, which has the most significant impact on considering the existence of green jobs by employees.

The second factor, which was indicated in the research, is connected with the green competencies as a part of the key competencies in the company. This issue is strongly combined with the green recruitment, selection and hiring of personnel which is considered an important area of green human resource management. This type of recruiting with knowledge, skills, attitudes and behaviours supports green organisations' management systems (Ullah, 2017). The abovementioned skills ensure that potential employees possess personality and attributes which would allow the company to avoid producing waste and implement innovative ideas in their work in relation to the natural environment (Mwita & Kinemo, 2018; Tang *et al.*, 2018; Shah,

2019). Nevertheless, green recruitment is not considered an interesting practice. This is because assessing environmental awareness is not the recruiters' priority (Hosna & Kaoutar, 2022b). All in all, the carried out research, implementing logistic regression, proved that green competencies are the second-factor influencing employees to consider the existence of green jobs in their workplace. Similar research results were obtained by Law et al. (2017).

It is worth mentioning that besides the above factors, the existence of positions for sustainable development in the workplace was included in the econometric model. The position for sustainable development in the workplace turned out to be not significant. The employees do not consider it as necessary. Moreover, the literature studies do not pay direct attention to the point of view of GHRM. Despite the respondent's opinions and the lack of influence of this variable on the constructed logistic model, it is worth noting the role of leadership in the organisation. The problem leadership seems very important, especially in its ethical form. This is due to the fact that ethics in leadership focus on acting by such universal values as honesty, respect and trust, which influence behaviour and attitudes (Ren et al., 2020).

Furthermore, it can be seen that spiritual values are needed to take responsible, ethical, and sustainable actions (Samul, 2020). It seems that leaders of this type determine who the employees are and how they cope by undertaking various types of educational activities in the organisation. As a result, they can shape their pro-ecological attitudes and effectively transform organisations into more sustainable ones.

The last factor, i.e. gratification for pro-ecological activity in the incentive system, was also included in the constructed model. According to literature studies, green rewards and compensations are considered valuable tools to increase employees' motivation and commitment to the environment (Halawi & Zaraket, 2018). However, these rewards can be either financial or non-financial. Therefore, organisations should pay spatial attention to rewards and compensation systems as key factors in reinforcing employees' positive green mindset and behaviour (Diri & Elisha, 2021). Despite the literature proving that green rewards can be valuable, the constructed econometric model did not show their significance in indicating to the employees if green jobs exist in their workplace.

Summing up, it can be noticed that three artificial variables of the binary type, which corresponded to the two questions included in the questionnaire, turned out to be final and statistically significant from the potential set of diagnostic features. The first concerned the employer's activities in the field of environmental training and education, which more developed enterprises with high culture are already undertaking. The second and last are related to the employee's awareness of their essential competencies in the organisation they are a member of.

Conclusions

The analysis of the carried-out research, based on both in-depth literature studies and the carried-out survey, proved that the adopted thesis was confirmed. On the one hand, green HRM practices are related to the ecological behaviour of employees and the increase in their awareness of the need for green jobs and competencies. On the other hand, the increase in the number of green jobs depends mainly on the company's involvement in the principle's implementation of sustainable development through employees' environmental education and training.

The carried our research delivered some further conclusions in the area of literature studies and the constructed logistic regression model.

Firstly, in light of the in-depth analysis of the subject literature, it can be concluded that the GHRM concept is relatively new and appears in contemporary organisations in a not fully formalised form. The pro-ecological undertaken activities are not always thoroughly planned. Moreover, they are often spontaneous or "forced" by the circumstances. In general, they do not always create a coherent system but implement its elements. Nevertheless, this situation is undoubtedly systematically improving as the awareness of employers and employees in this area increases, and "green" organisations often act as a magnet when it comes to internal and external stakeholders. One of the factors that will undoubtedly affect the development of GHRM is the COVID-19 pandemic. It caused a change in the existing value systems of a part of society and its sensitivity to health and environmental problems.

Secondly, based on the logistic regression model, it was indicated that both the employees' awareness of green competencies and the employer's activities in environmental training and education turned out to be statistically significant. It should be emphasised, however, that employers should emphasise the environmental education of their employees in conjunction with the position they occupy. The employees' opinion of the surveyed enterprises from various sectors of the Polish economy on the existence of green jobs was not influenced by the existence of a sustainable development position in the company or an incentive system.

To sum up, it can be assumed that in the near future, the most desirable employees in the labour market will be those with green competencies. This is because it will be possible to prevent and solve various significant inter-generational and civilisation problems and to influence the generation of economic benefits. Therefore, it is necessary to develop model tools supporting the implementation of the assumptions of the GHRM concept in enterprises and to promote good practices in this area.

The contribution of the authors

Conceptualisation: I. Wielewska, M. Kacprzak, A. Król, A. Czech. Methodology: I. Wielewska, M. Kacprzak, A. Król, A. Czech. Software: I. Wielewska, M. Kacprzak, A. Król, A. Czech, D. K. Zuzek. Validation: I. Wielewska, M. Kacprzak, A. Król, A. Czech, D. K. Zuzek, K. Gralak, R. Marks-Bielska. Formal analysis: I. Wielewska, M. Kacprzak, A. Król, A. Czech, D. K. Zuzek, K. Gralak, R. Marks-Bielska. Investigation: I. Wielewska, M. Kacprzak, A. Król, A. Czech, D. K. Zuzek, K. Gralak, R. Marks-Bielska. Resources: I. Wielewska, M. Kacprzak, A. Król, A. Czech, D. K. Zuzek, K. Gralak, R. Marks-Bielska. Data curation: I. Wielewska, M. Kacprzak, A. Król, A. Czech, D. K. Zuzek, K. Gralak, R. Marks-Bielska. Writing-original draft preparation: I. Wielewska, M. Kacprzak, A. Król, A. Czech, D. K. Zuzek, K. Gralak, R. Marks-Bielska. Writing-review and editing: I. Wielewska, M. Kacprzak, A. Król, A. Czech, D. K. Zuzek, K. Gralak, R. Marks-Bielska. Visualisation: I. Wielewska, M. Kacprzak, A. Król, A. Czech. Supervision: I. Wielewska, M. Kacprzak. Project administration: I. Wielewska, M. Kacprzak. Funding acquisition: I. Wielewska, M. Kacprzak, A. Król, A. Czech, D. K. Zuzek, K. Gralak, R. Marks-Bielska.

All authors have read and agreed to the published version of the manuscript.

References

- Act of 27 April 2001. Environmental Protection Law. Journal of Laws 2001, no. 62, item 627, as amended.
- Al-Ghazali, B. M., & Afsar, B. (2020). Green Human Resource Management and Employees' Green Creativity: The Roles of Green Behavioral Intention and Individual Green Values. *Corporate Social Responsibility and Environmental Management*, 28(1), 1-18. <https://doi.org/10.1002/csr.1987>
- Almeida-Santos, F., Chzchen, Y., & Munford, K. (2010). Employee Training and Wage Dispersion: White and Blue Collar Workers in Britain. *Research In Labor Economics*, 30, 35-60. <https://www.iza.org/publications/dp/4821/employee-training-and-wage-dispersion-white-and-blue-collar-workers-in-britain>
- Andjarwati, T., Budiarti, E., Audach, A. K., Khouri, S., & Rębilas, R. (2019). The Impact of Green Human Resource Management to Again Enterprise Sustainability. *Polish Journal of Management Studies*, 20(2), 93-94. <https://doi.org/10.17512/pjms.2019.20.2.08>
- Boiral, O. (2002). Tacit Knowledge and Environmental Management. *Long Range Planning*, 35(3), 291-317. [https://doi.org/10.1016/S0024-6301\(02\)00047-X](https://doi.org/10.1016/S0024-6301(02)00047-X)
- Bombiak, E. (2020). Barriersto Implementing the Concept of Green Human Resource Management: The Case of Poland. *European Research Studies Journal*, 23(4), 66-81. <https://doi.org/10.35808/ersj/1672>
- Bowen, A., Kuralbayeva, K., & Tipoe, E. L. (2018). Characterising Green Employment: The Impacts of 'Greening' on Workforce Composition. *Energy Economics*, 72, 263-275. <https://doi.org/10.1016/j.eneco.2018.03.015>
- Budniak, A. (2018). Zielona szkoła w kształtowaniu kompetencji środowiskowych uczniów klas początkowych. *Chowanna*, 1, 179-198.
- Czech, A. (2017). Ocena jakości życia polskich gospodarstw domowych – ujęcie wojewódzkie. In E. Frątczak, T. Panka & T. Słaby (Eds.), *Paradygmaty badawcze jakości*

- życia w ekonomii, zarządzaniu i psychologii* (pp.49-64). Wrocław: Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu.
- Czech, A., & Słaby, T. (2018). Ocena determinant jakości życia gospodarstw domowych województwa kujawsko-pomorskiego. In M. Geise, D. Piotrowski & J. Oczki (Eds.), *Zrównoważony rozwój województwa kujawsko-pomorskiego. Bariery i wyzwania* (pp. 49-64). Wrocław: NBP, PTS.
- Czech, A., & Słaby, T. (2021). Factors Affecting the Quality of Life of Urban Households in Poland, excluding Households Located in Capitals Of Voivodeships. In W. Okrasa & D. Rozkrut (Eds.), *Community, cohesion, well-being and local development* (pp. 104-118). Warsaw: Statistical Research Papers.
- Czech, A., Gralak, K., Kacprzak, M., & Król, A. (2021). Quantitative Analysis of Sustainable Transport Development as a Support Tool for Transport System Management: Spatial Approach. *Energies*, 14(19), 6149. <https://doi.org/10.3390/en14196149>
- Datta, M. A. (2015). Green Work-Life Balance: A New Concept in Green HRM. *International Journal of Multidisciplinary Approach and Studies*, 2(2), 83-89.
- Dechant, K., & Altman, B. (1994). Environmental Leadership: From Compliance to Competitive Advantage. *Academy of Management Executive*, 8(3), 7-27. <https://doi.org/10.5465/ame.1994.9503101163>
- Dimitrov, K. (2021). Green Human Resources Management: Linking and Using Green Practices for Sustainable Business Organizations. *Trakia Journal of Sciences*, 19(1), 276-281. <https://doi.org/10.15547/tjs.2021.s.01.040>
- Diri, T. V., & Elisha, O. D. (2021). Green Human Resource Management: A Catalyst for Environmental Sustainability. *Nigeria Journal of Global Ecology and Environment*, 11(3), 9-27.
- Dumont, J., Shen, J., & Deng, X. (2017). Effect of Green HRM Practices on Employee Workplace Green Behaviour: The Role of Psychological Green Climate and Employee Green Values. *Human Resource Management*, 56(4), 613-627. <https://doi.org/10.1002/hrm.21792>
- Elsadek, M., Sun, M., Sugiyama, R., & Fujii, E. (2019). Cross-Cultural Comparison of Physiological and Psychological Responses to Different Garden Styles. *Urban Forestry & Urban Greening*, 38, 74-83. <https://doi.org/10.1016/j.ufug.2018.11.007>
- Fazlagić, J. (2019). Tworzenie zielonych miejsc pracy jako wyzwanie dla polskich samorządów. *Opinie i Analizy*, 46, 2-4.
- Fernandez, E., Junquera, B., & Ordiz, M. (2003). Organizational Culture and Human Resources in the Environmental Issue: a review of literature. *The International Journal of Human Resource Management*, 14(4), 634-656. <https://doi.org/10.1080/0958519032000057628>
- GUS. (2013). *Jakość życia, kapitał społeczny, ubóstwo i wykluczenie społeczne w Polsce. Studia i Analizy Statystyczne*. <https://stat.gov.pl/obszary-tematyczne/warunki-zycia/dochody-wydatki-i-warunki-zycia-ludnosci/jakosc-zycia-kapital-spoeczny-ubostwo-i-wykluczenie-spoeczne-w-polsce,1,1.html>
- GUS. (2017). *Jakość życia w Polsce w 2015 r. Wyniki Badania Spójności Społecznej*. https://stat.gov.pl/files/gfx/portalinformacyjny/pl/defaultaktualnosci/5486/4/2/1/jakosc_zycia_w_polsce_w_2015_roku.pdf
- Halawi, A., & Zaraket, W. (2018). Impact of Green Human Resource Management on Employee Behavior. *Journal of Applied Business Research*, 6(1), 18-34.
- Hibe, J. M. (2015). *Practical Guide to Logistic Regression*. London: Taylor & Francis Group.

- Hosna, H., & Kaoutar, E. (2022a). Green Human Resource Management: A Systematic Literature Review. *Revue de Management et Cultures (REMAC)*, 1(7), 1-29. <https://doi.org/10.48430/IMIST.PRSM/remac-n7.31914>
- Hosna, H., & Kaoutar, E. (2022b). Green Human Resource Management: An Exploratory Study from Moroccan ISO 14001 Certified Companies. In M. Sarfaz (Ed.), *Corporate Social Responsibility*. <https://doi.org/10.5772/intechopen.105565>
- Hu, W., Zhao, F., Zhang, Y., & Lu, T. (2021). Green Human Resources Practice and Team Innovation Performance: Role of Team Boundary-Spanning Behaviour and Responsible Leadership. *The Quest for Transforming and Improving the Business Environment*, 20(3C), 585-604.
- Hyeoun-Ae, P. (2013). An Introduction to Logistic Regression: From Basic Concepts to Interpretation with Particular Attention to Nursing Domain. *Journal of Korean Academy Nursing*, 2(43), 154-164. <https://doi.org/10.4040/jkan.2013.43.2.154>
- Kacprzak, M., Milewska, A., Kacprzak, A., & Król, A. (2021). Corporate Social Responsibility in the Era of the COVID-19 Pandemic on the Example of Companies from Poland, Belgium, and Ukraine. *European Research Studies Journal*, XXIV(3B), 547-562. <https://doi.org/10.35808/ersj/2481>
- Kot, M. S., & Słaby, T. (2013). Quality of Life of Emerging Higher Class in Poland. *Śląski Przegląd Statystyczny*, 11(17), 209-227.
- Kozar, Ł. (2017). Kształtowanie zielonych kompetencji pracowników w gospodarce ukierunkowanej na zrównoważony rozwój. *Zarządzanie Zasobami Ludzkimi*, 6, 55-67.
- Kramar, R. (2014). Beyond Strategic Human Resource Management: Is Sustainable Human Resource Management the Next Approach? *The International Journal of Human Resource Management*, 25(8), 1069-1089. <https://doi.org/10.1080/09585192.2013.816863>
- Kryk, B. (2014). Czas na zielone kołnierzyki. *Ekonomia i Środowisko*, 3, 10-20.
- Książek, M. (2013). Analiza danych jakościowych. In E. Frątczak (Ed.), *Zaawansowane metody analiz statystycznych*. Warszawa: SGH.
- Law, M. M. S., Hills, P., & Hau, B. (2017). Engaging Employees in Sustainable Development – a Case Study of Environmental Education and Awareness Training in Hong Kong. *Business Strategy and the Environment*, 26(1), 84-97. <http://dx.doi.org/10.1002/bse.1903>
- Lips-Wiersma, M., Wright, S., & Dik, B. (2016). Meaningful Work: Differences Among Blue-, Pink-, and White-Collar Occupations. *Career Development International*, 21(5), 534-551. <https://doi.org/10.1108/CDI-04-2016-0052>
- Luszniewicz, A., & Słaby, T. (2008). *Statystyka z pakietem komputerowym STATISTICA PL. Teoria i zastosowania*. Warszawa: C.H. BECK.
- Maclean, R., Jagannathan, S., & Panth, B. (2018). Conceptualization of Green Jobs and Green Skills. In R. Maclean (Ed.), *Educational Skills for Inclusive Growth, Green Jobs and the Greening Economy in Asia. Case Study Summaries of India, Indonesia, Sri Lanka and Viet Nam* (pp.19-40). Springer.
- Mehta, K., & Chugan, K. P. (2015). Green HRM in pursuit of environmentally sustainable business. *Universal Journal of Industrial and Business Management*, 3(3), 74-81.
- Menard, S. (2009). *Logistic Regression: From Introductory to Advanced Concepts and Applications*. SAGE Publications, Inc.
- Molina-Azorin, J. F., López-Gamero, M. D., Tarí J. J., Pereira-Moliner, J., & Pertusa-Ortega, E. M. (2021). Environmental Management, Human Resource Management

- and Green Human Resource Management: A Literature Review. *Administrative Sciences*, 11(2), 1-17.
- Muster, V., & Schrader, U. (2011). Green Work-Life Balance: A New Perspective for Green HRM. *Green Journal of Human Resource Management*, 24(2), 140-156. <https://doi.org/10.1177/239700221102500>
- Mwita, M. K., & Kinemo, S. M. (2018). The Role of Green Recruitment and Selection on Performance of Processing Industries in Tanzania: A Case of Tanzania Tobacco Processors Limited (TTPL). *International Journal of Human Resource Studies*, 8(4), 35-46. <https://doi.org/10.5296/ijhrs.v8i4.13356>
- NIST. (2022). <https://www.nist.gov.pl/>
- Opatha, H. H., & Arulrajah, A. A. (2014). Green Human Resource Management: Simplified General Reflections. *International Business Research*, 11(7), 101-112. <https://doi.org/10.5539/ibr.v7n8p101>
- Pabian, A. (2015). Zrównoważone zarządzanie zasobami ludzkimi – zarys problematyki. *Zeszyty Naukowe Politechniki Częstochowskiej*, 17, 7-16.
- Peng, J., Yin, K., Hou, N., Zou, Y., & Nie, Q. (2020). How to Facilitate Employee Green Behaviour: The Joint Role of Green Transformational and Green Human Resources Management Practice. *Acta Psychologica Sinica*, 52(9), 1105-1120. <https://doi.org/10.3724/SPJ.1041.2020.01105>
- Pfeffer, J. (2010). Building Sustainable Organizations: The Human Factor. *Academy of Management Perspective*, 24(1), 37-40. <https://doi.org/10.5465/amp.24.1.34>
- Pham, N. T., Tučková, Z., & Jabbour, C. J. C. (2019). Greening the Hospitality Industry: How Do Green Human Resource Management Practices Influence Organizational Citizenship Behaviour in Hotels? A Mixed-Methods Study. *Tourism Management*, 72, 386-399. <https://doi.org/10.1016/j.tourman.2018.12.008>
- Regas, S. F. P., Flora, M. A. T., Lorraine, J. C. C., & Sunio, C. M. C. (2017). Green Lifestyle Moderates GHRM's Impact on Job Performance. *International Journal of Productivity and Performance Management*, 66(7), 857-872.
- Ren, S., Tang, G., & Jackson, S. E. (2020). Effects of Green HRM and CEO Ethical Leadership on Organizations' Environmental Performance. *International Journal of Manpower*, 42(6), 961-983. <https://doi.org/10.1108/IJM-09-2019-0414>
- Renwick, D. W. S., Redman, T., & Maguire, S. (2013). Green Human Resource Management: A Review and Research Agenda. *International Journal of Management Reviews*, 15(1), 1-14. <https://doi.org/10.1111/j.1468-2370.2011.00328.x>
- Roscoe, S., Subramanian, N., Jabbour Charbel, J. C., & Chong, T. (2019). Green Human Resource Management and the Enablers of Green Organisational Culture: Enhancing a Firm's Environmental Performance for Sustainable Development. *Business Strategy and the Environment*, 28(5), 737-749. <https://doi.org/10.1002/bse.2277>
- Różańska-Bińczyk, I., Matejun, M., & Matusiak, B. E. (2020). Praktyki Green HR we współczesnych przedsiębiorstwach. In J. Cewińska, A. Krejner-Nowecka & S. Winch (Eds.), *Zarządzanie kapitałem ludzkim – wyzwania* (pp. 80-83). Warszawa: Oficyna Wydawnicza SGH.
- Rutkowska, M., & Sulich, A. (2020). Green Jobs on the Background of Industry 4.0. *Procedia Computer Science*, 176, 1231-1240. <https://doi.org/10.1016/j.procs.2020.09.132>
- Samul, J. (2020). Spiritual Leadership: Meaning in the Sustainable Workplace. *Sustainability*, 12(1), 1-16. <https://doi.org/10.3390/su12010267>

- Shah, M. (2019). Green human resource management: Development of a Valid Measurement Scale. *Business Strategy and the Environment*, 28(5), 1-15. <https://doi.org/10.1002/bse.2279>
- Shalafei, A., Nejati, M., & Mohd Yusoff, Y. (2020). Green Human Resource Management: A Two-Study Investigation of Antecedents and Outcomes. *International Journal of Manpower*, 41(7), 1041-1060. <https://doi.org/10.1108/IJM-08-2019-0406>
- Siyambalapitiya, J., Zhang, X., & Liu, X. (2018). Green Human Resource Management: A Proposed Model in the Context of Sri Lanka's Truism Industry. *Journal of Cleaner Production*, 201(10), 542-555. <https://doi.org/10.1016/j.jclepro.2018.07.305>
- Słaby, T. (2014). The Quality of Life of the Aboriginal Rural People 60+ in Poland. Selected research results. *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, 435, 84-97.
- Słaby, T. (2016). *The Quality and Dignity of Life as the Symptoms of Social Exclusion of Aboriginal Rural Population Added 60+ in Poland*. Warsaw: Warsaw School of Economics.
- Stanisz, A. (2007). *Przystępny kurs statystyki z zastosowaniem STSTATISTICA PL na przykładach z medycyny. Tom 2. Modele liniowe i nieliniowe*. Kraków: Stat Soft.
- Stanisz, A. (2016). *Modele regresji logistycznej. Zastosowanie w medycynie, naukach przyrodniczych i społecznych*. Kraków: StatSoft.
- Tang, G., Chen, Y., Jiang, Y., Paille, P., & Jia, J. (2018). Green Human Resource Management Practices: Scale Development and Validity. *Asia Pacific Journal of Human Resources*, 56(1), 31-55. <https://doi.org/10.1111/1744-7941.12147>
- Ullah, M. (2017). Integrating Environmental Sustainability into Human Resource Management: A Comprehensive Review on Green Human Resource Management. *Maghreb Review of Economics and Management*, 4(1), 6-22. <https://doi.org/10.12816/0037717>
- Urząd Publikacji Komisji Europejskiej. (2013). Zielone miejsca pracy a bezpieczeństwo i higiena pracy: Przewidywanie nowych i pojawiających się zagrożeń związanych z najnowszymi technologiami w perspektywie do roku 2020. Raport. Luksemburg.
- Viswanathan, V. (2014). Sustainable Green HRM – Importance and Factors affecting successful implementation in Organisations. *International Journal of Innovative Knowledge Concepts*, 2(8), 77-85.
- Wagner, M. (2013). Green Human Resource Benefits: Do They Matter As Determinants Of Environmental Management System Implementation. *Journal Of Business Ethics*, 114(3), 443-456. <https://doi.org/10.1007/s10551-012-1356-9>
- Wielewska, I. (2018). Corporate Social Responsibility of Agribusiness Companies in the Context of Sustainable Development. *Proceedings of the International Scientific Days 2018: Towards Productive, Sustainable and Resilient Global Agriculture and Food Systems*, Nitra, 1357-1369. <https://doi.org/10.15414/isd2018.s5.17>
- Wielewska, I., Gliniak, M., Sobczyk, W., & Prus, P. (2017). Ecological Education for Sustainable Development of Rural Areas. *Economic Science for Rural Development. Proceedings of the International Scientific Conference, Integrated and Sustainable Regional Development Production and Co-operation in Agriculture*, Jelgava, 45, 250-257.
- WU Vienna. (2022). *What's Green HRM about?* Wirtschafts Universität Wien Vienna University of Economics and Business. <https://www.wu.ac.at/en/persm/green-hrm/green-hrm>

- Xie, X., Zhou, H., Gou, Z., & Yi, M. (2021). Spatiotemporal Patterns of the Use of Green Space by White-Collar Workers in Chinese Cities: A Study in Shenzhen. *Land*, 10(10), 1006. <https://doi.org/10.3390/land10101006>
- Yong, J. Y., Yusliza, M., Ramayah, T., Jabbour, C. J. C., Sehnem, S., & Mani, V. (2019). Pathways Towards Sustainability In Manufacturing Organizations: Empirical Evidence on the Role of Green HRM. *Business Strategy and The Environment*, 29(1), 212-228. <https://doi.org/10.1002/bse.2359>
- Zalesna, A., & Wyrzykowska, B. (2017). Zrównoważone zarządzanie zasobami ludzkimi w praktyce polskich przedsiębiorstw. *Organizacja i kierowanie*, 1(175), 151-165.
- Zaugg, R., Blum, A., & Thom, N. (2001). *Sustainability in Human Resource Management. Evaluation Report: survey in European companies and institutions*. Berne: IOP-Press.