

## Article

# Social Capital in Energy Enterprises: Poland's Case

Elżbieta Jędrych <sup>1</sup>, Dariusz Klimek <sup>2,\*</sup>  and Agnieszka Rzepka <sup>3</sup> 

<sup>1</sup> Faculty of Business and International Relations, Vistula University, 02-787 Warsaw, Poland; e.jedrych@vistula.edu.pl

<sup>2</sup> Faculty of Management and Production Engineering, Lodz University of Technology, 90-924 Lodz, Poland

<sup>3</sup> Faculty of Management, Lublin University of Technology, 20-618 Lublin, Poland; a.rzepka@pollub.pl

\* Correspondence: [dariusz.klimek@p.lodz.pl](mailto:dariusz.klimek@p.lodz.pl)

**Abstract:** Social capital is currently perceived as one of the basic factors of economic development and economic success of enterprises. However, while there is already much research on social capital in enterprises, there has been little such research in the energy industry. The aim of the publication is to fill the gap in this regard. The basic question that the authors try to answer is whether there is a higher level of capital in energy companies compared to other industries, and if so, what the reasons are for this. Apart from answering this question, the authors present their own method of measuring the level of this capital. The first part of the article presents the results of a study on the level of social capital in Polish energy companies, whereas the second part compares the levels of social capital in energy companies and industrial companies in other sectors. According to the study, energy companies generally have higher levels of social capital than companies in other industries. It has been found, however, that individual forms of capital that comprise social capital differ. The most significant differences were observed in relational capital, followed by cognitive capital at a lower value and structural capital at the lowest. The survey also revealed that there is a difference in social capital levels among the researched professional groups: management, administration, and production.

**Keywords:** social capital; energy industry; energy companies; energy efficiency



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## 1. Introduction

In recent years, one of the main problems in social and economic sciences has been social capital, as well as related business practices in many countries. It has been mentioned as the factor that helps in significant ways to develop the economic and social structure. Innovations, competitiveness, and, in general, economic success or failure depend on the quality of social capital. Furthermore, the importance of vision, determination, and technical capabilities suggests that social and human capital resources within community energy leadership are of paramount importance, both for the development of groups and of the sector more broadly. This is confirmed by the results of research on social capital in Europe and around the world, although their number is not large [1].

The research performed in Poland shows the social capital deficit. It is seen on a micro scale regarding economical organizations and at the macro scale of society. Based on analysis of social capital factors, Poland is evaluated as being at the end of the list of European countries. Such a low index should be a concern. Many experts and economic scientist claim that in the last 20–30 years, human and financial capital has the motor of development in poor countries, as its predominant feature. The situation changes after a better level of wealth is achieved, after which social capital takes on a more significant role. According to researchers, Poland has just started this reality where low social capital will support the growth of economy. This feature corresponds to the development of both the business side and the social side [2]. Analyses of social capital on a micro scale (in enterprises) performed in Poland are rare. The conclusions, published recently, point out a

negative impact of a lack of social capital in organizations, which confirms that this issue is more and more seen and recognized by management of companies and business leaders [3].

We can define social capital as the resource of unities, groups and organizations created by systems of public relations, values, and norms and adjust them and make it possible to improve the positive effects of cooperation. Confidence between people is the basis of social capital. There is practical sense of social capital to recognize and highlight the values that contribute more effective usage of other capital (e.g., human, real, structural, and market capital). To summarize, we can confirm that social capital can be treated as the link between these societies, creating the unity that facilitates efficient and effective cooperation based on confidence.

It is worth mentioning that social capital was used for the first time a hundred years ago by Hanifan [4]; nevertheless, the first systematic analysis was performed by Bourdieu. He established social capital as the group of resources (existing ones and potential ones) that should belong to an individual unity or to a group based on relations (more or less institutionalized systems) of trust, contacts, and reliability for another people [5]. A Third researcher, Mr. Coleman, is considered the author of basic classical definition known for a whole, systematic presentation of social capital seen from the economic perspective (theory of rational acting). According to Coleman, the quintessence of social capital comes down to the capacity of society to work in groups and in companies. There is also another classic definition of social capital created by Mr. Putman. He defined it as the value/features of social life-norms, confidence, trust, networks that simplify the work, and coordination in order to achieve common advantages [6]. Trust was highlighted as the most important element. Nevertheless, it was not considered as the unity feature to be defined “worth of trust” but was pointed out as an “atmosphere of work” perceived as trust of society. Social capital is treated as the engine for well-developed economies in the world, and economists evaluate it as a stimulator for higher growth. The power of social capital is connected to trust, which helps to negotiate and stimulate the knowledge spread, enhance engagement and entrepreneurship, bond groups together, and decrease the abuse of welfare [7,8]. Empirical methodologies have effectively documented the strong connection between this capital and social welfare [9–13].

According to social capital theory, interpersonal relationships provide resources for individuals that can be used to achieve desired outcomes. This effect has been evidenced by various research results that specify potential benefits that businesses can achieve when they increase their levels of this capital. Researchers have discovered that a business’s social capital is a hidden source of efficiency and development [14,15]. Moreover, it has a significant bearing on whether or not the business survives [16], proves to be profitable [17], and is able to innovate [18]. Studies have also shown that a high level of social capital can lead to better environmental management [19–21]. It has been argued by some that social capital plays a significant role in determining an organization’s strategy [22].

Having examined dozens of studies to synthesize the relationship between social capital and employment, remuneration, and work at the workplace [23], P. S. Adler and S. W. Kwon found that social capital influences career success and executive compensation; helps workers find jobs and creates a richer pool of recruits for firms; facilitates interunit resource exchange and product innovation; reduces turnover rates; and strengthens supplier reactions.

It is important that social capital has been observed to influence other forms of capital, especially human capital [24]. This has also been identified in the age of Industry 4.0 [25]. Many of the benefits attributed to higher levels of social capital motivate managers to practically apply the knowledge gained from social capital research more frequently and willingly. Yet, research on social capital and the attempts to put research results into practice are often fraught with difficulty. There are several reasons for this:

- Social capital in an organization is hard to define. Consequently, it is difficult to conduct research on it. A single definition of social capital does not exist, and the phenomenon is typically defined differently depending on the scientific discipline and

the purpose of the given research. Due to the difficulty in defining it in a universal way, social capital has seen various theories regarding its sources, typology, and ways of measuring it. Thus, social capital is weakly used in economic and social practice. It is widely believed that the widespread interest in social capital began with the theoretical systematization of this concept by four authors—P. Bourdieu (1980, 1985) [26,27], J. Coleman (1988) [24], R. Putnam (1995, 2001) [28,29], and F. Fukuyama (1995, 2001) [30,31]—at the beginning of the twentieth century. However, precise definitions are uncommon. Social capital in organizations is continually changing. Based on various research findings, it is believed that companies may be able to achieve better performance when their members repeatedly adapt the configuration of their social capital to changing resource demands, while inertia turns a firm’s social capital into a liability [32].

- A large group of researchers study intellectual capital as a whole as opposed to examining its components such as human capital, organizational capital (structural), and social capital individually. In fact, they have demonstrated the positive effect of intellectual capital on companies’ results, innovation, motivation, etc. [33]. However, this approach has limitations: the concept of intellectual capital is too general and aggregate to be effectively managed in practice. Firstly, it is not known which of the components of intellectual capital is the weakest and requires managers to take action in order to improve its level. Secondly, measuring the level of intellectual capital as a whole makes it impossible to determine how effective one’s actions within the individual three types of capital have been.
- Social capital is divided into two main categories: [14] intra-organizational capital, which illustrates the relationships between members of staff, or between employees, managers, and company owners, and [15] external social capital, which illustrates the relationships between employees from various organizations, groups of organizations, clients, etc. [34–36]. Such a distinction is critical because it describes different and not necessarily correlated relationships. In the literature, both external and internal social capital is thought to be important to a firm’s performance [15]. The problem is that it is difficult to measure either of them [15,37]. On a positive note, attempts have been made to measure social capital qualitatively in the form of a level (e.g., high, medium, and low) but also in the form of monetary values [38].
- It seems that the biggest problem related not only to research itself but to the practical application of various research results is the well-established and irrefutable preference for profit to be the primary economic indicator, as many economists believe to be the case. Nevertheless, the new theories of the so-called sustainable capital management and the new measures of efficiency that take social capital into consideration in determining their results are still too new and are only in the pilot stage [39–42].

Focusing on the above, the authors of this article made an attempt to measure the level of social capital in selected companies of the energy industry and to compare this level with other industrial enterprises. However, in order to achieve the main goal, it was first necessary to develop and verify a methodology for researching the level of this capital.

## 2. Research Methodology

The research was carried out in several stages:

- The first stage was the development of a research tool (questionnaire) and its verification (Section 2);
- The second stage was the study of the level of social capital in enterprises not belonging to the energy industry (Section 3.2);
- The third stage was to measure the level of social capital in 4 energy companies (Section 3.1);
- The fourth stage was the comparison of the results in energy companies and other enterprises, statistical analysis of the results, and development of conclusions.

It should be added that only the level of internal capital was examined. The external level of social capital has not been studied.

This study used a questionnaire to assess the level of social capital. The questionnaire scale was constructed in four stages:

- Formulating a large number of statements aimed at identifying employees with very high, high, low, and very low levels of social capital.
- Evaluating these statements by a group of experts (post-graduate management students) for the statements' accuracy and diagnostic value. The statements selected by at least 80% of the experts were considered accurate and comprised a group of 65 statements included in the questionnaire.
- Developing a manner of responding to the statements. The scale used in the questionnaire included the response system developed by R. Likert where the categories of answers are evenly distributed across the continuum of social capital intensity. The version of the questionnaire with 65 statements was administered to 80 employees at production companies. The objective of this study was to single out the statements that best illustrated the intensity of different social capital levels. Upon statistical analysis, the final 40 statements spotlighted two extreme groups of social capital in a statistically significant way, i.e., social capital at high and very high levels, and social capital at low and very low levels.
- Analyzing the scale's reliability. The Alpha Cronbach coefficient indicated a high level of reliability (0.97). We also tested the consistency of the scale two more times using the test-retest method: the correlation coefficient of both tests was 0.71. Moreover, we calculated the discriminating power of individual scale items expressed as the correlation coefficient between an item and the overall result; a score of 0.48 to 0.78 was recorded for each item. Consequently, all of the above-mentioned parameters confirmed the scale could be employed to measure the intensity of social capital.

Since social capital is a multidimensional and interdisciplinary concept, it was important to develop a model of social capital (ingredients) that would describe the substantive scope of the study and serve as the basis for the construction of the research tool.

We assumed that a company's social capital can be measured using three dimensions:

- Relational (relational capital), which describes the quality and the type of contacts between employees, trust, credibility, and employees' tendency to share their knowledge and experience;
- Cognitive (cognitive capital), which describes norms and values shared by employees and the company, shared recognition of the company's problems, usage of vocabulary that can be understood by everyone, and so forth;
- Structural (structural capital), which describes social capital from the perspective of the company's organizational structure, the kind of organizational structure that fosters employee cooperation within and across units, and the company's communication system—employees' access to information and necessary knowledge as well as managers' attitudes towards activities that foster cooperation.

To measure the dimensions of social capital cited above, 9 main indicators and 17 detailed indicators were assigned, including 3 main and 6 detailed indicators to relational capital, 3 main and 7 detailed indicators to structural capital, and 3 main and 4 detailed indicators to cognitive capital, as seen in Table 1.

**Table 1.** Social capital indicators.

Relational capital	<b>Trust</b> <ul style="list-style-type: none"> <li>• trust in colleagues</li> <li>• trust in superiors</li> <li>• trust in the company</li> </ul>	<b>Relational reciprocity</b> <ul style="list-style-type: none"> <li>• willingness to share information</li> </ul>	<b>Motivation to cooperate</b> <ul style="list-style-type: none"> <li>• positive attitude to work</li> <li>• satisfaction with working with others</li> </ul>
Cognitive capital	<b>Norms and values</b> <ul style="list-style-type: none"> <li>• shared norms and values between employees and the company</li> <li>• attitude toward diversity</li> </ul>	<b>Proactivity</b> <ul style="list-style-type: none"> <li>• voluntary actions designed to benefit the company</li> </ul>	<b>Shared language</b> <ul style="list-style-type: none"> <li>• understandable communication and common terminology</li> </ul>
Structural capital	<b>Company structure</b> <ul style="list-style-type: none"> <li>• the manner in which cooperation is organized</li> <li>• communication within the organization</li> <li>• assessment of one's cooperation with superiors</li> </ul>	<b>Relationship status within the company</b> <ul style="list-style-type: none"> <li>• knowledge of other people's competences</li> <li>• types of contacts within the department</li> <li>• types of contacts with employees</li> </ul>	<b>Employee status</b> <ul style="list-style-type: none"> <li>• appreciation of employees</li> <li>• influence on other employees</li> </ul>

Source: own research.

In the next step, a detailed characterization of the indicators was created, which was then used to develop the nearly 40 questions in the questionnaire, as shown in Table 2.

**Table 2.** Characteristics of individual indicators.

		Relational Capital
Trust	in colleagues	<ul style="list-style-type: none"> <li>• colleagues and coworkers in a department are trusted</li> <li>• department members have good knowledge of their colleagues' behaviors</li> <li>• there are colleagues who can be counted on in difficult professional and personal situations</li> <li>• workplace confidence is boosted by personal contacts among employees</li> </ul>
	in superiors	<ul style="list-style-type: none"> <li>• direct superiors are trusted</li> </ul>
	in the company	<ul style="list-style-type: none"> <li>• at work, there is a sense of security</li> <li>• the company is a friendly place to work</li> <li>• opinions can be expressed without fear</li> </ul>
Reciprocity in contacts with others		<ul style="list-style-type: none"> <li>• employees are happy to share information and knowledge about their jobs</li> <li>• it is expected that employees will reciprocate according to the principle of equality: "I do it for you, and I expect you to do it for me when I need it"</li> </ul>
Motivation to cooperate	positive attitude to work	<ul style="list-style-type: none"> <li>• employees put a lot of energy into their work</li> </ul>
	satisfaction with working with others	<ul style="list-style-type: none"> <li>• the attitude of the employees is that "we are a team"</li> </ul>

Table 2. Cont.

		Cognitive Capital
Standards and values	shared norms and values	<ul style="list-style-type: none"> <li>the values and goals of the company are communicated to all employees in a clear and understandable way</li> <li>company policy encourages a friendly work environment</li> </ul>
	attitude toward diversity	<ul style="list-style-type: none"> <li>cooperation with employees of different views, ages, and sexes does not cause problems</li> </ul>
Shared language		<ul style="list-style-type: none"> <li>employees know the company's history and important facts about its past</li> <li>employees use similar vocabulary and terminology, which facilitates cooperation</li> </ul>
Proactivity		<ul style="list-style-type: none"> <li>employees are selflessly active in the workplace</li> <li>employees participate in meetings outside of working hours</li> </ul>
		Structural Capital
Company structure	the manner in which cooperation is organized	<ul style="list-style-type: none"> <li>making decisions and solving problems is done by a team</li> <li>in the company, teamwork is encouraged</li> <li>cooperation among employees in different departments facilitates work and makes it more efficient</li> </ul>
	communication within the organization	<ul style="list-style-type: none"> <li>employees are kept informed about work-related issues</li> <li>employees from various departments are free to contact each other for work-related matters because the company's structure is not overly formalized</li> <li>the company has well-organized business contacts</li> </ul>
	assessment of one's cooperation with superiors	<ul style="list-style-type: none"> <li>superiors show their appreciation for their employees' efforts and treat them with kindness and respect</li> <li>superiors support their employees in difficult situations</li> </ul>
Relationship status within the company	knowledge of other people's competences	<ul style="list-style-type: none"> <li>employees know and value each other's expertise and experience</li> <li>other people's work is not underappreciated</li> </ul>
	contacts within the department	<ul style="list-style-type: none"> <li>employees of a given department have contacts outside of the workplace</li> <li>in solving professional problems, you can count on colleagues in the department for assistance</li> </ul>
	contacts outside the department	<ul style="list-style-type: none"> <li>business contacts with other departments are good</li> <li>contacts with managers of other departments are good</li> <li>good relationships with employees from other departments are considered an employee's capital</li> </ul>
Employee status	appreciation of employees	<ul style="list-style-type: none"> <li>at work, employees feel needed, appreciated, and respected</li> </ul>
	influence on other employees	<ul style="list-style-type: none"> <li>co-workers often ask for opinions or help at work</li> </ul>

Source: own research.

### 3. Results of the Study on Social Capital Levels

#### 3.1. Results of the Study on Social Capital Levels in Energy Companies

The study was conducted in 2021 in four energy companies, two of which belong to Polski Koncern Naftowy ORLEN S.A. (PKN ORLEN), and two of which belong to Polskie Górnictwo Naftowe i Gazownictwo S.A. (PGNiG S.A.). All four of the companies were involved in the production of fuel and electricity. The companies researched were of medium size from the point of view of their employee count and were part of a larger

group of companies that belonged to the two corporations. Their employee counts ranged from 350 to 1100. In each company, the questionnaire was distributed to three groups: managers, administrative staff, and production workers. The study included a total of 1056 respondents. In order to ensure, at least in part, a similar number of respondents in each group studied, almost all of the managers were included in the study, but the administrative and production staff numbers were lower than what would normally be found in these departments. Participants included 224 managers (21.21% of respondents), 387 administrative employees (36.65%), and 445 production staff (42.14%). As the differences between companies are relatively small, their results have been presented jointly in this article.

Based on the results of the study, the energy companies surveyed have highly developed social capital among their employees—as much as 72% of the respondents rated their social capital as very high or high. An analysis of the level of relational, structural, and cognitive capital shows that the largest force lies in the employees' relational capital (76.5% indicated a very high and high level), such as a high degree of trust and good relationships among employees and a willingness to share knowledge (Table 3).

**Table 3.** Social capital levels in energy companies surveyed (in %).

Type of Social Capital	Social Capital Level			
	Very High	High	Low	Very Low
Total capital	37.1	34.9	17.3	10.7
Relational capital	40.1	36.4	13.8	9.8
Cognitive capital	35.8	33.4	18.0	12.8
Structural capital	35.3	34.9	20.2	9.6

Source: own research.

The level of social capital is highest in the group of managers, while it is similar but lower in the group of administrative and production staff. It is markedly characteristic that the level of relational capital was similar in all three groups: managers, administration, and production. The greatest differences occurred in the levels of cognitive and structural capital; this is especially true for production workers, who had a relatively high level of cognitive capital (a shared language, attitude to diversity, shared standards and values, and so on), and the lowest level of structural capital (appreciation, influence, contacts, knowledge of others' skills, etc.) (Table 4).

The following regularities can be observed in relational capital:

- The respondents rated trust higher than reciprocity in relationships or motivation to cooperate.
- The highest level of trust in coworkers (89.8% of indications at very high and high) and the company (88.8%, respectively) was observed for managers. Only 78.6% of the respondents in this group rated their trust in employees as very high or high. Workers in the production department had the lowest levels of trust. Workers usually rated their level of trust in their superiors as low and very low (31.4%), but rated their level of trust both in colleagues (85.4%) and in the company (83.1%) very highly.
- Our definition of reciprocity in relationships is primarily that it is the willingness to share one's knowledge with others. There was, however, a tendency for respondents to interpret sharing knowledge as providing training to other employees, which was evidenced by the higher response rates for managers (83% very high or high ratings) compared to administrative staff (71.6%) and production staff (70.3%).
- Motivation to cooperate is defined as a positive attitude toward work and satisfaction from working with others. The third relational capital indicator received the lowest ratings, indicating a clear difference between a positive attitude and satisfaction from working with others. Positive attitudes toward work were rated very highly and highly (75.9%) compared to their level of satisfaction working with others (67.8%).

For production workers, the ratings were completely opposite, as they were more likely to rate satisfaction with working with others (74.6%) at a very high or high level than a positive attitude toward work (67.0%). In the case of administrative staff, such differences did not arise (Table 5).

**Table 4.** Social capital levels in surveyed energy companies by employee groups (%).

Type of Social Capital	Employee Group	Social Capital Level			
		Very High	High	Low	Very Low
Total	Managers	39.7	36.8	14.1	9.4
	Administrative	36.7	34.8	17.5	11.3
	Production	36.2	33.9	19.1	10.9
Relational capital	Managers	40.8	40.0	10.7	8.6
	Administrative	40.1	35.9	13.8	10.3
	Production	39.7	35.1	15.3	9.9
Cognitive capital	Managers	35.8	31.1	20.3	12.7
	Administrative	34.3	33.5	18.9	13.3
	Production	37.1	34.4	16.1	12.3
Structural capital	Managers	42.5	39.3	11.4	6.9
	Administrative	34.8	35.1	19.8	10.3
	Production	31.7	32.1	25.8	10.4

Source: own research.

**Table 5.** Social capital levels among surveyed energy companies according to *relational capital* indicators per employee groups (%).

Relational Capital Indicators	Social Capital Level			
	Very High	High	Low	Very Low
<b>Managers</b>				
Trust	45.8	39.9	7.4	6.8
in colleagues	46.0	43.8	5.8	4.5
in superiors	37.5	41.1	11.2	10.3
in the company	54.0	34.8	5.4	5.8
Reciprocity in relationships with others	41.5	42.0	12.9	3.6
Motivation to cooperate	32.8	39.1	14.5	13.6
Positive attitude to work	33.5	42.4	13.4	10.7
Satisfaction with working with others	32.1	35.7	15.6	16.5
<b>Administration</b>				
Trust	45.3	35.4	10.3	9.0
in colleagues	42.4	34.4	11.4	11.9
in superiors	39.5	37.0	11.4	12.1
in the company	54.0	34.9	8.3	2.8
Reciprocity in relationships with others	34.1	37.5	20.9	7.5
Motivation to cooperate	35.1	35.8	15.4	13.7
Positive attitude to work	34.4	35.9	18.1	11.6
Satisfaction with working with others	35.9	35.7	12.7	15.8

Table 5. Cont.

Relational Capital Indicators	Social Capital Level			
	Very High	High	Low	Very Low
<b>Production</b>				
Trust	41.0	38.0	12.1	8.9
in colleagues	48.3	37.1	6.5	8.1
in superiors	33.9	34.6	18.4	13.0
in the company	40.9	42.2	11.2	5.6
Reciprocity in relationships with others	36.6	33.7	18.4	11.2
Motivation to cooperate	39.3	31.5	18.5	10.7
Positive attitude to work	33.7	33.3	25.6	7.4
Satisfaction with working with others	44.9	29.7	11.5	13.9

Source: own research.

Respondents' responses regarding cognitive capital show much larger differences than responses regarding relational capital. Regularities found include:

- Whether understood as shared norms and values or as attitude toward diversity, the norms and values indicator showed a significantly high level of cognitive capital. Shared values and norms between employees and the company are typically regarded as the highest indicator of a high level of social capital. In the group of managers, 91.9% of respondents indicated a high or very high level of this indicator, whereas for administrative staff, the percentage was 84.5, and for production workers, it was 88.1. The attitude toward diversity indicator scored slightly lower at 69.6%, 64.1%, and 68.1%, respectively.
- Compared to all social capital indicators, the proactivity indicator, which represents several types of employees' selfless activities as part of their job or attendance at meetings scheduled outside of working hours, had the lowest results. Upon analyzing the results, what was surprising was that the lowest level of proactivity was observed for managers (32.1% of the respondents indicated a very high and high level) but significantly higher among administrative (45.9%) and production staff (53.5%). This may be caused by the fact that managers participated in fewer meetings and events organized for employees in companies surveyed, as opposed to activities benefiting the company.
- It may also come as a surprise that the shared language indicator did not show major differences. This may mean not that only the managers but also the administration and production staff know about the company's history and important facts from its past and use similar vocabulary and terminology that facilitates cooperation (Table 6).

All three indicators of structural capital (company structure, contacts in the workplace, and employee status) point to managers as having the highest level of capital (84.5%, 84.8%, and 73.3%, respectively, of indications at high or very high levels). The lowest level of capital was found in the production staff (70.5%, 63.6%, and 44.5%, respectively). Other regularities include:

- According to detailed indicators of structural capital, its main strength is its high level of communication within an organization as well as the manner of organization of cooperation and contacts within an organizational unit. In addition, structural deficits are apparent in a relatively low assessment of cooperation with superiors, contacts outside the department, and especially appreciation of employees by others.
- As was the case previously, the highest levels of structural capital are found in the group of managers, particularly in terms of contacts at the workplace (48.2%) and company structure (42.3%). Production staff has the lowest level of structural capital,

mainly due to their low level of appreciation (15.7%) and a low level of contacts outside of their department (24.7%), which is a consequence of the nature of their work. The group also demonstrates high levels of structural capital in terms of communication (45.2%) and contacts within their own organizational unit (42.7%) (Table 7).

**Table 6.** Social capital levels among surveyed energy companies according to *cognitive capital* indicators per employee groups (%).

Cognitive Capital Indicators	Social Capital Level			
	Very High	High	Low	Very Low
<b>Managers</b>				
Norms and values	46.0	34.8	8.7	10.5
Shared norms and values	54.0	37.9	6.7	1.3
Attitude toward diversity	37.9	31.7	10.7	19.6
Shared language	41.5	32.6	17.0	8.9
Proactivity—actions designed to benefit the company	9.8	22.3	46.9	21.0
<b>Administration</b>				
Norms and values	38.1	36.2	12.4	13.3
Shared norms and values between employees and the company	42.4	42.1	8.8	6.7
Attitude toward diversity	33.9	30.2	16.0	19.9
Shared language	42.6	34.1	16.5	6.7
Proactivity—actions designed to benefit the company	18.3	27.6	34.1	19.9
<b>Production</b>				
Norms and values	43.6	34.5	10.0	11.9
Shared norms and values between employees and the company	50.6	37.5	6.1	5.8
Attitude toward diversity	36.6	31.5	13.9	18.0
Shared language	41.1	35.5	14.4	9.0
Proactivity—actions designed to benefit the company	20.2	33.3	30.1	16.4

Source: own research.

**Table 7.** Social capital levels among surveyed energy companies according to *structural capital* indicators per employee group (%).

Structural Capital Indicators	The Level of Social Capital			
	Very High	High	Low	Very Low
<b>Managers</b>				
Company structure	42.3	42.2	11.4	4.0
communication at the workplace	42.0	43.8	9.8	4.5
the manner in which work is organized	42.6	40.6	11.1	5.7
assessment of cooperation with superiors	42.4	42.4	13.4	1.8
Contacts in the workplace	48.2	36.6	8.8	6.4

Table 7. Cont.

Structural Capital Indicators	The Level of Social Capital			
	Very High	High	Low	Very Low
knowledge of other people's competences	33.0	37.9	16.1	12.9
contacts within the department	54.0	36.6	5.4	4.0
contacts outside the department	57.6	35.3	4.9	2.2
Employee status	34.4	38.9	15.0	11.8
being appreciated by others	23.7	32.6	23.7	20.1
influence on others	44.3	44.7	7.0	4.1
<b>Administration</b>				
Company structure	40.2	37.7	16.1	5.9
communication at the workplace	48.8	40.6	8.3	2.3
the manner in which work is organized	40.1	36.7	16.8	6.5
assessment of cooperation with superiors	31.8	35.9	23.3	9.0
Contacts in the workplace	35.7	33.8	18.4	12.1
knowledge of other people's competences	31.8	33.3	20.7	14.2
contacts within a department	41.1	33.1	15.2	10.6
contacts outside the department	34.4	34.9	19.4	11.4
Employee status	25.2	33.1	27.4	14.3
being appreciated by others	13.2	25.1	42.1	19.6
influence on others	37.2	41.1	12.7	9.0
<b>Production</b>				
Company structure	36.3	34.2	19.6	10.0
communication at the workplace	45.2	42.5	7.9	4.5
the manner in which work is organized	34.4	31.5	20.7	13.5
assessment of cooperation with superiors	29.2	28.8	30.1	11.9
Contacts in the workplace	32.5	31.1	28.2	8.2
knowledge of other people's competences	30.1	29.0	29.0	11.9
contacts within the department	42.7	33.3	18.9	5.2
contacts outside the department	24.7	31.0	36.9	7.4
Employee status	15.7	28.8	37.1	18.4
being appreciated by others	15.7	28.8	37.1	18.4
influence on others	36.3	34.2	19.6	10.0

Source: own research.

Based on the study of social capital in the four energy companies, the following general conclusions emerged:

- Among energy companies, there were no significant differences in terms of social capital. We were able to present the results jointly without having to conduct a case study. It is nevertheless important to bear in mind that each of the four companies surveyed belongs to one of two large energy companies that perform extensive activities in the field of social capital (as will be discussed below). While the companies were located far apart from each other, they had similar employee counts. There is a possibility that a study of other energy companies could reveal greater differences among them.

- The results of the study showed that managers, administrative staff, and production workers differed in the level of social capital. The highest level of social capital is observed in the managerial group of the surveyed enterprises, while the lowest level is found in the group of production workers who require specific strategic and operational activities to increase social capital.
- An analysis of detailed indicators allows us to determine the strengths and weaknesses of relational, cognitive, and structural capital (see Table 8). From this, tailored tools can be developed to improve selected capital indicators.
- A critical aspect of this study was that the respondents did not hesitate to indicate extreme responses. It is for this reason that the investigated energy companies have a high level of social capital.
- It is relatively easy to identify indicators that determine the level of social capital. The highest value is attached to indicators such as shared norms and values, contacts between employees within the department, and contacts outside the department. The strongest drop in this capital is associated with such indicators as satisfaction with working with others, attitude toward diversity, being appreciated, and proactivity (see Table 8).

**Table 8.** Indicators determining the level of social capital.

Sum of Very High and High Ratings	Indicators Determining the Level of Social Capital
90% or more	<ul style="list-style-type: none"> <li>• Shared norms and values</li> <li>• Contacts within the department</li> <li>• Contacts outside the department</li> </ul>
80–90%	<ul style="list-style-type: none"> <li>• Trust in colleagues</li> <li>• Trust in the company</li> <li>• Reciprocity in contacts</li> <li>• Communication at the workplace</li> <li>• Cooperation</li> <li>• Assessment of superiors</li> <li>• Influence on others</li> </ul>
70–80%	<ul style="list-style-type: none"> <li>• Trust in superiors</li> <li>• Positive attitude to work</li> <li>• Shared language</li> <li>• Knowledge of other people’s competences</li> </ul>
60–70%	<ul style="list-style-type: none"> <li>• Satisfaction with working with others</li> <li>• Attitude toward diversity</li> </ul>
50–60%	<ul style="list-style-type: none"> <li>• Being appreciated by others</li> </ul>
50% or less	<ul style="list-style-type: none"> <li>• Proactivity</li> </ul>

Source: own research.

### 3.2. Study Results—Comparison of Social Capital Levels between Energy Companies and Other Surveyed Industrial Companies

The study results presented in the previous part of this paper show that the surveyed companies possess substantial amounts of social capital. Despite the fact that the research sample was relatively small (as it consisted of only four energy companies), the results suggest that similar results may be found among energy companies in Poland at least in part. Nevertheless, can we draw the same conclusions about a high level of social capital for other industrial companies?

An assessment of the level of social capital in other industrial companies was conducted earlier (the second half of 2019 and the first half of 2020) and used the same research

tools and principles as the above-described research on energy companies. It was conducted in six different industrial companies with a variety of products, such as household appliances, computers, construction chemistry, ceramic tiles, window glass (a glass factory), cosmetics, canned foods, and fruit preserves, as well as companies engaged in printing books and advertising materials. Each of the companies fell into a different industry and employed different numbers of people, ranging from 250 to 1900. This study's findings have already been published as case studies.

As the two studies show, none of the surveyed industrial companies had a social capital level higher than the average social capital level in the energy companies. Presented in a collective manner below (see Table 9) is a comparison between the level of social capital in these companies and the level of social capital in the energy companies.

**Table 9.** Comparison of social capital levels among three energy companies and six other industrial companies surveyed (%).

Type of Social Capital	Social Capital Level							
	Energy Companies				Other Industrial Companies			
	Very High	High	Low	Very Low	Very High	High	Low	Very Low
Capital in total	37.1	34.9	17.3	10.7	26.7	28.7	29.8	14.9
Relational capital	40.1	36.4	13.8	9.8	29.0	30.5	26.6	13.9
Cognitive capital	35.8	33.4	18.0	12.8	25.7	28.6	30.7	15.0
Structural capital	35.3	34.9	20.2	9.6	25.3	26.9	32.1	15.7

Source: own research.

It is apparent from the joint presentation of the results of both studies that the level of social capital in any of the surveyed industrial companies was not higher than the average level of social capital in the energy companies.

The total difference in the levels of social capital, i.e., the percentage of answers indicating very high and high level, is 16.6%. This constitutes a very considerable difference, which allows for the formulation of a number of conclusions (to be found in the final part of this paper), despite the fact that the studies included only 10 enterprises in total. A difference of similar size has been found in the level of relational capital (17.0%), with energy companies scoring higher. A slightly smaller difference can be observed for cognitive capital (14.9%), while the most substantial one is observed for structural capital (18.0%).

We can draw the following conclusions by comparing the levels of structural capital of four energy companies with those of six other industrial companies:

- The substantial difference between the social capital levels in energy companies and other industrial firms can be explained by the differences that occur among administration and production staff. The difference in the level of social capital is much smaller among managers (8.9% higher for energy companies). However, the difference in the level of social capital for administration staff is 18.0%, while for production staff it is 16.8%. As in previous instances, we compared the percentages of answers indicating very high and high levels of capital.
- The differences are largely dependent on the type of professional groups. There is no specific pattern that demonstrates why differences are approximately the same for all the groups within individual types of capital. Quite the opposite could be the case. For managers, when we compare energy companies with other industrial companies, the largest differences occurred in structural capital (13.3% more answers pointing to high and high levels), and the smallest differences were found in cognitive capital (2.7%). Administrative staff, on the other hand, had much greater differences: 21.6% in relational capital, 20.8% in structural capital, and 13.3% in cognitive capital (Table 10).

**Table 10.** Comparison of structural capital levels in energy companies and other industrial companies (%).

Type of Social Capital	Employee Group	Social Capital Level							
		Very High		High		Low		Very Low	
		Energy	Other	Energy	Other	Energy	Other	Energy	Other
Total	Managers	39.7	31.2	36.8	36.4	14.1	21.3	9.4	11.0
	Administrative	36.7	25.4	34.8	27.3	17.5	32.9	11.3	14.4
	Production	36.2	26.1	33.9	27.2	19.1	30.4	10.9	16.3
Relational capital	Managers	40.8	32.8	40.0	37.4	10.7	18.8	8.6	10.9
	Administrative	40.1	26.3	35.9	28.1	13.8	31.0	10.3	14.6
	Production	39.7	29.6	35.1	29.9	15.3	26.2	9.9	14.3
Cognitive capital	Managers	35.8	29.3	31.1	34.9	20.3	22.9	12.7	12.9
	Administrative	34.3	26.2	33.5	28.4	18.9	32.7	13.3	12.7
	Production	37.1	24.3	34.4	26.8	16.1	31.8	12.3	17.1
Structural capital	Managers	42.5	31.6	39.3	36.9	11.4	22.3	6.9	9.2
	Administrative	34.8	23.7	35.1	25.4	19.8	35.0	10.3	15.9
	Production	31.7	24.3	32.1	24.8	25.8	33.2	10.4	17.6

Source: own research.

#### 4. Discussion

It is a fact that the researched energy companies exhibit high levels of social capital. Their social capital levels are higher than those of other surveyed industrial companies. Undoubtedly, reasons for this do exist. Nonetheless, conclusions about the level of social capital in other industries or companies based on the comparison with the power industry must be carefully formulated. It is at this point that the question arises as to why the surveyed energy companies have higher levels of social capital than other companies.

Analysis of the scientific literature as well as analysis of expert opinions published in the media indicate that the reasons for a high level of social capital in the energy industry enterprises can be found in the facts that: (1) energy industry employment is perceived as very desirable (high remuneration, steady employment, opportunities for professional development, generous social benefits, etc.); (2) the energy industry has maintained a good economic condition during the pandemic; and (3) numerous and expensive activities are conducted in this industry to increase social capital.

ad 1. In the energy industry, remuneration does not differ greatly from 1:3.5 (from 1300 Euro gross when you start your career to over 4400 Euro for a managerial position) [43]. We can assume that employees are aware and appreciative of the fact that they earn above 660 Euro (the minimum wage in Poland in 2022), while their director earns 10 times as much. However, the 1300 Euro gross wage is only slightly more than the monthly average wage in the enterprise sector in Poland, including payments from profit, which equaled 1275 Euro in the second quarter of 2021 [44]. In December 2020, the average monthly gross wage in the energy companies surveyed was 1450 Euro. To compare, the average monthly gross wage in the same period for surveyed companies other than energy companies was 1300 Euro.

In 2018–2019, the fluctuation level in Poland was approximately 15.0% [45]. For the same period, the fluctuation level in the energy companies surveyed was 7.5%, whereas in 2020 it was 7.6%. Comparatively, for surveyed companies other than energy companies, it was 13.2% in 2018, 13.1% in 2019, and 14.1% in 2020.

ad 2. The energy industry has done well during the pandemic. Many technical jobs that are crucial to investments across the country had to be filled despite the difficult conditions since investments in progress could not be interrupted. The solar power boom

resulted in an increase in newly hired staff. Apart from the huge growth of the photovoltaic industry, foreign companies also showed great interest in the Polish market. Despite the pandemic and economic slowdown, Poland's energy market developed dynamically. In every field, there has been an increase in installations, whether solar panels or biogas, hydropower, biomass, or wind power. According to the Hays Poland salary report, 78% of energy companies are planning to increase employment in the near future, of which 39% anticipate problems with recruitment [43]. In the surveyed enterprises from outside the energy industry, the consequences of the pandemic have been felt, though not in the same way for all, as two of the six companies reduced their staff count.

ad 3. The four surveyed energy companies are subsidiaries of in two companies: PKN ORLEN S.A. (two) and PGNiG S.A. (two). As a result, the social capital policy in all subsidiaries of both companies is determined at the level of management, even though its implementation may differ to a certain degree for each subsidiary.

PKN ORLEN views social capital as shared norms, values, and behavior as well as relationships based on trust and involvement with internal and external stakeholders, such as employees, society, clients, and business partners. In the area of social capital, the company carried out a wide range of activities:

- It operates under the Code of Ethics and the CSR Strategy until 2022.
- It has begun work on a new sustainable development strategy. The strategy will integrate the goals of sustainable development while supporting the implementation of the 2030 business strategy.
- It has adopted the PKN ORLEN Supplier Code of Conduct as a mandatory criterion for contractors in the ORLEN Capital Grup qualification process.
- It responds to current challenges (fighting COVID-19 epidemics), ensuring that health protection is a priority.
- It is in dialogue and cooperation with local communities.
- It focuses on counteracting social exclusion and promotes equal opportunities.
- It supports national heritage and sports initiatives.
- It takes steps to protect biodiversity and shape ecological sensitivity.
- As for relationships with employees, it provides a safe working environment, provides decent working conditions, eliminates inequalities, ensures employee development, and supports their integration of personal, professional, and social objectives.
- With respect to client relationships, the ORLEN Group cares about clients' health and safety, fulfills their expectations, increases their access to infrastructure, and inspires the responsibility of the ORLEN Group's business partners [46].

The above areas of activity in the field of social capital listed in the 2020 Integrated Report were largely related to corporate social responsibility and perhaps partially confused with a CSR strategy. However, the scope of its activities was very large. In its report, the ORLEN Group described how it managed its social capital and what results it consequently achieved [46].

Grupa Kapitałowa PGNiG defines social capital as the ability to share and build good relationships and cooperation with stakeholders. In order to influence the level of social capital, the following key actions are taken:

- Enhancing customer satisfaction through improvements in service quality and investing in digital solutions and communication tools that are tailored to meet the individual needs of different groups of clients;
- Implementing the proprietary "Być jak Ignacy" program by PGNiG SA and the PGNiG "Ignacy Łukasiewicz" Foundation to promote science among Polish primary school students while teaching them about Ignacy Łukasiewicz and other outstanding Polish scientists;
- Implementing the "Rozgrzewamy Polskie Serca" project by PGNiG SA, the PGNiG Foundation, and other entities of the PGNiG Group to support activities to raise the historical awareness among Poles;

- Supporting Muzeum Gazownictwa in Warsaw (by PGNiG) and in Paczków (by PSG), and Muzeum Przemysłu Naftowego i Gazowniczego im. Ignacego Łukasiewicza in Bóbrka (by PGNiG and the PGNiG Foundation).

As with the ORLEN Group, PGNiG SA presented its Integrated Report showing the results achieved in the area of social capital and how they were managed. However, the most interesting aspect is the impact of social capital activities on other forms of the company's capital [47].

To sum up, it is very difficult to give a comprehensive answer to the question of what factors contribute to high levels of social capital. On the one hand, one reason could be that employment in the energy industry is highly desirable because of its high wages, steady employment, opportunities for professional advancement and development, and generous social benefits. On the other, it could be the good economic condition of this industry during the pandemic and the fact that numerous and expensive activities are conducted to increase social capital in this industry. In our opinion, high job desirability is of greater importance than any other aspect. However, this is a very subjective view.

In any case, Poland's energy industry is currently entering a period of intense change in the energy sector driven by the push for stronger climate and energy policy objectives at the European level. With the energy transformation, Poland's greatest challenge will be to build a power system capable of meeting social demands, both with regard to energy demand and with regard to environmental protection [48]. Social capital will play a crucial role in this process.

The main conclusions of the research are as follows:

- It is possible to study the level of social capital with the help of the proposed methodology;
- In the surveyed energy companies, the level of social capital is higher than in others;
- The reasons for the higher level of social capital are both the good economic position of this industry and the intense activities of concern to increase the value of this capital.

The research was carried out on three levels of social capital—structural, relational, and cognitive—in various professional groups. This is an advantage. The downside may be that the research must be carried out by outsiders, clearly stating that it is serving a scientific purpose. It is not possible to obtain reliable data on social capital if the research was carried out by the company's management. Another weakness of the research was that it concerned only social capital within the organization. The research should be continued in terms of the participation of social capital in the sustainable management of all company capitals. They should also include energy companies of greater importance to the economy.

The authors of the article present the conclusions both to scientists dealing with the issues of sustainable management of company capital and to managers of companies. In order to manage a company in an effective way, it is necessary to know the values of all capital of the company. It is not enough to know the value of physical, financial, or human capital. The possibility of evaluating social capital may ease the further development of the method of sustainable capital management and the creation of new management instruments.

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