

Hanna SOMMER¹
Grzegorz ZAKRZEWSKI²

*"Subdue the earth"*³
– that is, about changes in the natural environment of man,
eco-awareness in the minds of the young people from Podkarpacie
as exemplified by the implemented investment of constructing the Vistula Spit canal.

SECURITY IN THE CONTEXT OF ENVIRONMENTAL CHANGE: SPLITTING THE VISTULA SPIT CANAL

This article is an attempt to organise information, both historical and geographical, related to construction of the Vistula Spit canal, including fragmentary reports from the construction site. Provided the investment schedule is not disrupted, this project will be in its final implementation phase at this article's time of publication. From the beginning, the project has been highly controversial, with not only politicians, but also spatial planners, economists, and, above all, environmentalists scrutinising it in great detail.

The investment process related to the project is the product of successive and effective activities aimed at completing construction through associated investments. Each stage of this process has been affected by legal regulations of various legal branches (construction, water, environmental protection, etc.), and the effects of these regulations have become interwoven. When the project is completed, its components—hydrotechnical structures, bridges, locks, breakwaters, fairway, silting island, and waterfowl refuges—will not be subject to evaluation, only its complexity. Anthropopressure is omnipresent, and environmental reports following completion of the investment will analyse the environmental impact of the Vistula Spit canal.

This article reports the findings of research conducted among young inhabitants of Podkarpacie whose aim was to examine their attitudes toward the investment made in Vistula Spit canal's construction and to assess its justifiability. Study respondents assessed its impact on the security of Poland and on ecological safety, the opportunities for a revival of tourism in the region following the canal's completion, and the state's information policy concerning its construction.

Keywords: anthropopressure, ecology, Vistula Spit, security.

¹ Hanna Sommer, PhD, Associate Professor, Department of Humanities and Social Sciences, Faculty of Management, Rzeszów University of Technology, 8 Powstańców Warszawy Ave., 35-959 Rzeszów; e-mail: hansom@prz.edu.pl (corresponding author). ORCID: 0000-0001-7208-7641

² Grzegorz Zakrzewski, PhD, Eng., Gdansk Higher School of Humanities, 16 Kopernika St, 80-208 Gdańsk; e-mail: grzegorz574@wp.pl. ORCID: 0000-0002-0945-5322.

³ Gen 1:28.

1. INSTEAD OF INTRODUCTION - GEOGRAPHICAL AND HISTORICAL DESCRIPTION

Żuławy Wiślane (a place name translatable as “Vistula Fens”) is a Holocene alluvial plain; the process of delta growth began 5–6 thousand years ago through the formation of new alluvial fans with frequent changes in the course of the beds of numerous branches of the Vistula; at the same time, Vistula Spit was formed, therefore the formation of Żuławy Wiślane took place within the boundaries of the lagoon, not the sea bay; this process ended in the 19th century. – the main current of the Vistula changed from the Nogat to the Leniwka river and forced its outlet through the Wisła Śmiała (a distributary river), and after the Nogat river had been cut off by a sluice gate and the canal nearby Świbno had been built as well as the Martwa Wisła and Szarpawa rivers had been closed, the waters of the Vistula were channelled directly to Gdańsk Bay (<https://encyklopedia.pwn.pl/haslo/Zulawy...>).

Figure 1 shows the division of Żuławy Wiślane.



Wysokość n.p.m.

	poniżej 0 m (depresja)
	0 - 50 m
	50 - 100 m
	100 - 150 m
	150 - 200 m

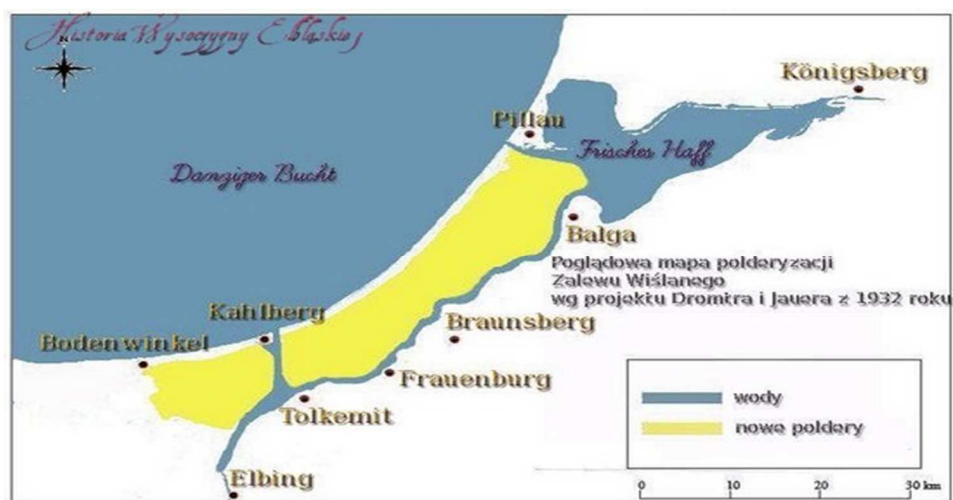
Picture 1. Division of Żuławy Wiślane

Source: <http://www.rzgw.gda.pl/cms/site.files/image/ProgramZulawski/MapaDuza1.jpg>
[Access: 10.01.2020].

The wetlands and depression areas in the Żuławy Wiślane were covered by drainage works by the Dutch settlers in the 14th century. The desire to drain further polders in the Żuławy and later in the Vistula Lagoon dates back to that moment.

Floods have affected this land since time immemorial. In the 16th century there were 21, in the 17th century – 38, in the 18th century – 41, and in the 19th century – 35 floods. In 1945, the entire Żuławy was flooded by the retreating German troops. The population settling here struggled to have them drained for a long time. Even in 1950, crops were harvested while standing in the water for hours (<https://www.tygodnikprzeglad.pl...>).

In 1874, a famous urban architect of Gdańsk – Julius Albert Licht, presented a vision of draining the Vistula Lagoon with a system of polders, which the Elbląg City Council returned to in 1932 (<https://www.historia-wyzyna-elblaska.pl/niemieckie...>). Figure 2 presents the project of engineers: Herbert Dromtra and Otto Jauer “Memorandum concerning the drainage of the Vistula Lagoon and cutting a canal across the Vistula Spit in the area of Krynica Morska” The canal across the Vistula Spit does have its history. The plan was first drawn up in 1577 when Stefan Batory, King of Poland, was at war with the city of Gdańsk. He ordered that the possibility of cutting a canal across the Vistula Spit and the construction of a military port in the city of Elbląg be studied. The most convenient site was found to be near the village of Vogelsang (Skowronki).

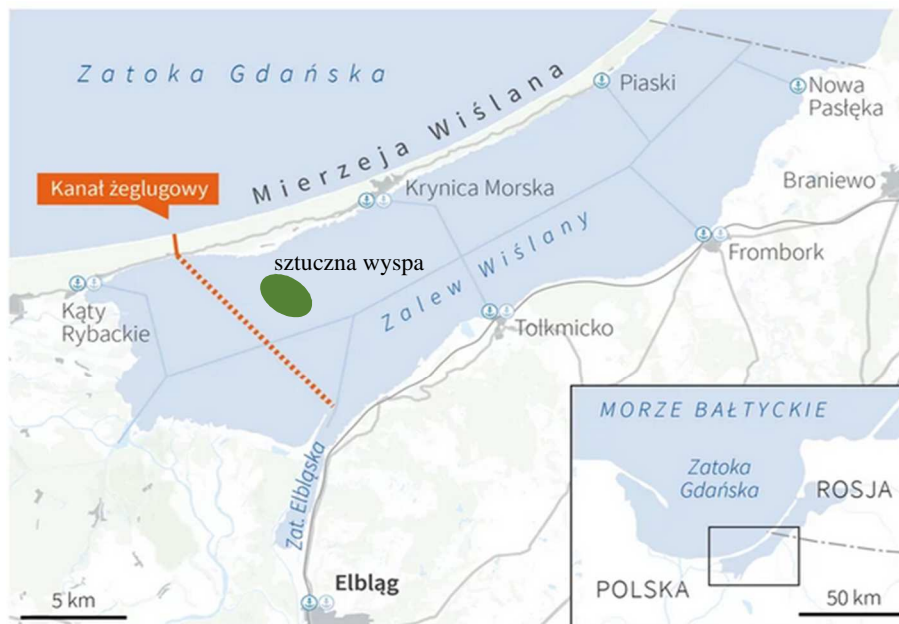


Picture 2. The project of engineers: Herbert Dromtra and Otto Jauer “Memorandum concerning the drainage of the Vistula Lagoon and cutting a canal across the Vistula Spit in the area of Krynica Morska”

Source: <https://www.historia-wyzyna-elblaska.pl/niemieckie-plany-osuszenia-zalewu-wi-lanego-i-przekopu-przez-mierzej--wi-lan-.html> [Access: 10.01.2021].

2. PROJECT DESCRIPTION

The new navigation canal, which will be created after digging across the Vistula Spit, will improve access to the port of Elbląg and the Vistula Lagoon ports. It will guarantee Poland free access from the Vistula Lagoon to Gdańsk Bay, circumventing the Strait of Baltiysk controlled by Russia, as shown in Figure 3. The area of the Vistula Lagoon is 838 km² (Poland owns 328 km², the rest belongs to Russia), extends for a total length of 90.7 km and is the largest coastal water body in the southern Baltic Sea. It is a very shallow body of water, with the maximum depth of 5.1 m (measured south-east of the Strait of Baltiysk), the average depth of which is 2.6 m. This body of water accumulates a relatively small volume of water – approx. 2.3 km³, and its bottom is poorly diversified (<http://portalgis.gdansk.rdos.gov.pl/waly...>). The lagoon is separated from the open waters of the Baltic Sea by the Vistula Spit, a 55 km long sandy peninsula.



Źródło: Urząd Morski w Gdyni, Ministerstwo Gospodarki Morskiej i Żeglugi Śródlądowej



Foto: Małgorzata Latos, Maciej Zieliński, Adam Ziemiencowicz / PAP/zdjęcia

Picture 3. New shipping channel created after ditching Vistula Spit

Source: <https://businessinsider.com.pl/wiadomosci/przekop-mierzei-wislanej-zgodnie-z-planem-rusza-budowa-mostu-nowe-nagranie-z-placu/pw4c2gs> [Access: 10.01.2021].

The construction of a waterway which will connect the port in Elbląg with the Gdańsk Bay entails major changes in the natural environment (Sommer, Zakrzewski, 2017a). A new road system will be built on the Vistula Spit with two bridges allowing the passage over the canal. Table 1 presents the basic data of the hydrotechnical and road structure.

Table 1. Basic technical data of investment

Channel length	1350 m
Max. channel width	120 m
Channel depth	5 m
Sluice chamber length	200 m
Sluice width	25 m
Sluice gate	2 main gates 2 emergency gates
Communication above channel	2 swing bridges
Channel length on:	
Vistula Lagoon	10,176 km
River Elbląg	10,381 km
Area of artificial island	180 ha

Source: based on own resources: <https://businessinsider.com.pl/wiadomosci/przekop-mierzei-wislanej-zdjecia-z-budowy-budowa-dwoch-nowych-wysp/dkt6t8f> [Access: 31.01.2021]; <http://www.port.elblag.pl/article/show//207/budowa-drogi-wodnej-laczacej-zalew-wislaney-z-zatoka-gdanska-%E2%80%93kwiecień-2020-roku> [Access: 31.01.2021]

As a result of the works associated with the construction of the fairwater to the port of Elbląg, the Vistula Spit will become an island and an artificial island will be created in the Vistula Lagoon. The new silting island is called Estyjska (Aestian). The name was selected in a national competition held by the Ministry of Marine Economy and Inland Navigation. Its name invokes the Old Prussian name of the Vistula Lagoon (<https://pomorska.pl/nazalewie-wislanym-powstaje-sztuczna-wyspa-estyjska/ar/c7-15197214>). The artificial – silting island is formed from the spoil excavated during the deepening and widening of new waterways in the nature protection area Natura 2000, and is a compensation for the interference in the environment. A closed nature reserve, an avian habitat, will be created and it is planned to be inaccessible to tourists (Sommer, Zakrzewski, 2017b).

3.HISTORY OF CONSTRUCTION

Like every other construction project, it had its own planning and consultation process, which did not incite any negative emotions among the public. It was only in the second decade of February 2019, when within 5 days foresters cut down about 10,000 trees growing in a 200-meter strip between the Gdańsk Bay and the Vistula Lagoon (<https://www.portalmorski.pl/zegluga...>), that the mass media presented footage exposing the magnitude of the investment (See more: Sommer, Zakrzewski, 2020). For the first time, while standing atop a dune, which was previously covered by a forest, it was possible to see both the Gdańsk Bay and the Vistula Lagoon at the same time. As of today, the works are proceeding as planned and the completion date of the crosscut, i.e., 2022, is not at risk. The press follows the construction development on a regular basis and provides the attentive reader with new arguments (<https://www.money.pl/gospodarka/przekop-mierzei...>). Currently, there is a rapidly developing discourse regarding the purposefulness of this investment.

4. AUTHORS' OWN RESEARCH

The authors undertook the task of examining the recognizability of the investment consisting in cutting a canal across the Vistula Spit among students of the Institute of Agricultural Sciences, Environment Protection and Formation at the University of Rzeszów. 108 people took part in the study. They decided to participate in a web survey conducted using the CAWI method. Recruitment for the online survey is very quick, feasible via e-mail. The survey used a questionnaire consisting of 15 basic questions and 3 demographic questions.

The formulation of the research problem is the first step in research planning. A research problem is an intellectual incentive which triggers a response in the form of scientific research. The following research problem was formulated during the studies conducted as a part of this article:

- How do the respondents evaluate the justifiability of cutting a canal across the Vistula Spit?

When the research problem had been formulated in detail and the researchers precisely defined the objectives of their research and research questions, the next step was to formulate the research hypothesis, that is, suppositions about the current situation. The planned research should be used to confirm or reject these suppositions. When we gather evidence for our suppositions, the hypothesis becomes true.

The following hypothesis was formulated for the research problem presented in the study:

- The construction of the canal is an element in the national security strategy – it will allow the unrestrained access to the Vistula Lagoon and exit from it.

The first question the respondents were asked concerned their attitude towards the completion of the investment consisting in cutting a canal across the Vistula Spit. They were asked if they supported this project. The results are shown in Figure 1.

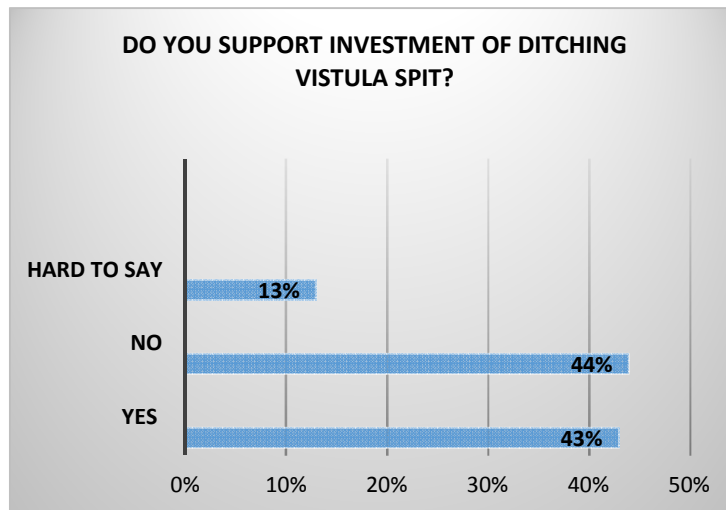


Chart 1. Approach of surveyed towards investment of ditching Vistula Spit

Source: based on own resources.

The respondents did not unequivocally support or oppose the completion of the Vistula Spit investment. The responses for and against were distributed evenly. 43% of the respondents were in favour of this investment, 44% were against, and 13% were unable to take a position on this matter. An inconclusive assessment may result from the information appearing in the media message, which is also inconclusive. It can be presumed that the people who were unable to take a position on this issue did not have sufficient knowledge on the discussed subject.

In their justification of the investment, the respondents pointed out that the canal will serve tourism and create jobs, especially in Elbląg and its vicinity. It would also strengthen Poland's military position in the relations with Russia.

On the other hand, the people who were against this investment most often emphasised its negative impact on the natural environment, including both the Vistula Spit and the Vistula Lagoon. They also considered it to be unprofitable.

Another issue that the respondents were enquired about concerned their evaluation of the chances for a tourism revival in the region upon the completion of the investment. The results are shown in Figure 2.

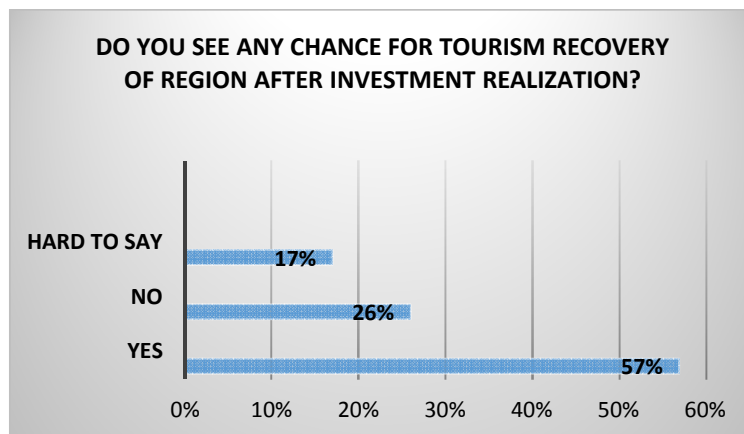


Chart 2. Rating of chance for tourism recovery of region after investment realization

Source: based on own resources.

As many as 57% of the respondents perceives an opportunity for the region's tourism revival after the investment is completed, 26% do not see such a chance, while 17% were unable to take a stance on the analysed issue. More than half of the respondents believe that Elbląg and the port may count on the development of tourism, especially with regard to yachting and windsurfing, once the canal has been cut. Sceptics, on the other hand, believe that the canal may lead to a decline in tourists' interest in the well-established and constantly developing tourist facilities located on the Vistula Spit.

The next question asked to the respondents concerned the matter of gaining independence from Russia's decision regarding the passage through the Strait of Baltiysk. The results are presented in Figure 3.

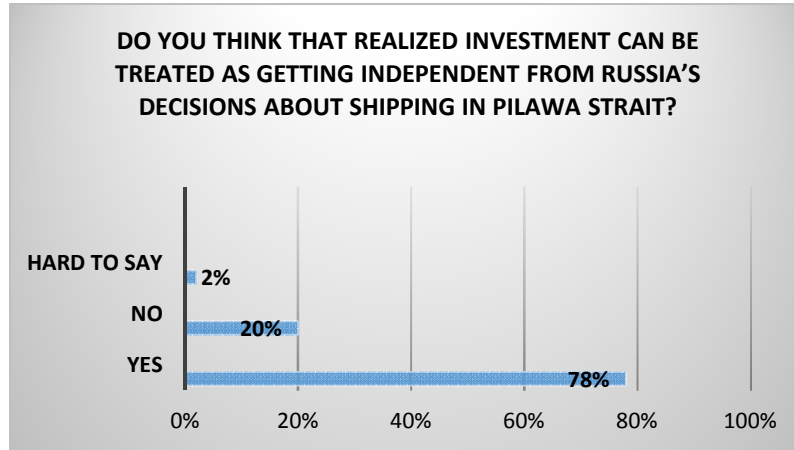


Chart 3. Rating of chance on getting independent from Russia's decisions about shipping in Pilawa Strait

Source: based on own resources.

As many as 78% of respondents believed that the canal would render shipping in the Vistula Lagoon independent of Russia. Such freedom is not perceived by 20% of the respondents, and only 2% were unable to assess the issue. Such an attitude demonstrated by the respondents may be surprising, but it may be a consequence of the statements made by Russians who see no economic benefits in cutting the canal. In their view, it is an exclusively political initiative, possibly having a hidden agenda of military or geostrategic nature.

Another question put to the respondents involved the justifiability of building the Vistula Spit canal. The results are shown in Figure 4.

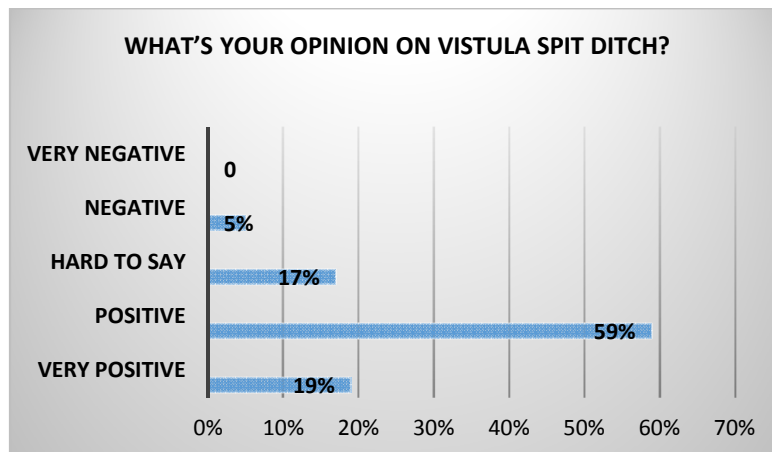


Chart 4. Rating of Vistula Spit ditch

Source: based on own resources

The opinions of the respondents on the justifiability of building the Vistula Spit canal are overwhelmingly positive. As many as 59% of respondents assessed this investment as good and 19% as very good. This demonstrates that the arguments appearing in the media are convincing, since respondents who do not have direct contact with the canal project recognised the grounds for its construction. 17% of the respondents were unable to make such an assessment. It may be concluded that they did not have enough knowledge on the analysed topic. Only 5% of the respondents assessed this project negatively. The results of the research are unquestionably influenced by the social debate, which has aroused strong emotions among the commentators. It is associated with the economic viability of this investment and its impact on the environment.

In the next question, the respondents were asked to evaluate their emotions in relation to the analysed investment.

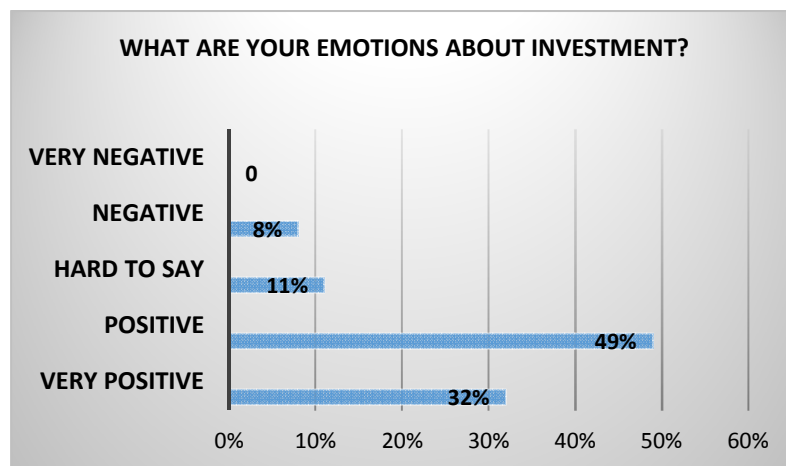


Chart 5. Rating of emotions about Vistula Spit ditch

Source: based on own resources.

Young inhabitants of Podkarpace express favourable opinions with regard to the analysed investment. As many as 49% of them positively assess their attitude towards the investment, while 32% are strongly in favour. Among the participants, 11% could not define their emotions, and 8% assessed them negatively. Seeking justification for such results, reference can be made at this point to the public debate and media coverage. Such an amount of positive attitudes and feelings towards the investment demonstrates that the respondents' knowledge, stemming from their fields of study, may also have contributed to such assessment.

Another aspect that the respondents were interviewed about was the environmental assessment of the investments. The results are presented in Figure 6.

As far as the evaluation of the investment in terms of ecology is concerned, as many as 48% of the respondents were not able to assess it unequivocally. The indications stating that it is an ecological structure amounted to 22%. Likewise, the indications whereby it is not an ecological project oscillate around 20% and the ones whereby it is rather not ecological

at 9%. None of the respondents replied firmly that the investment in question is ecological. It is problematic to justify such answers of the respondents when almost half of them are not able to make an unambiguous assessment and only 29% considered it as non-ecological and 22% as rather ecological. It can be assumed that the presented attitude of the study subjects stems from limited knowledge and uncertainty associated with the subject area. This may result from the fact that the construction of the crosscut has been a very controversial topic right from the outset.

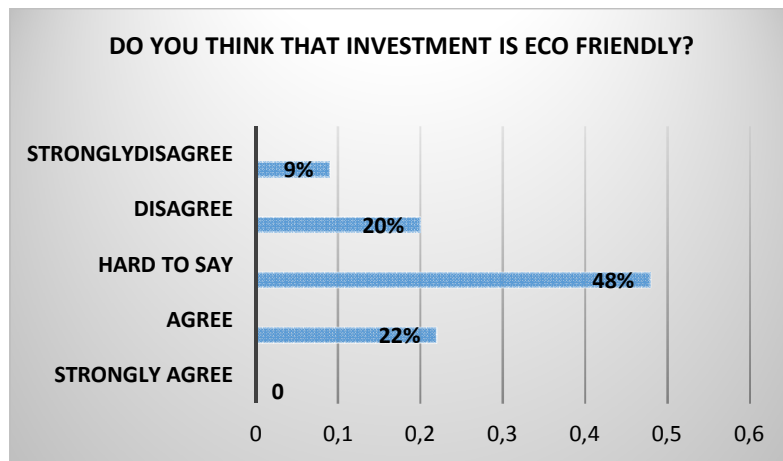


Chart 6. Rating of investment eco friendliness

Source: based on own resources.

Another question asked to the respondents referred to the improvement of Poland's security. The results are shown in Figure 7.

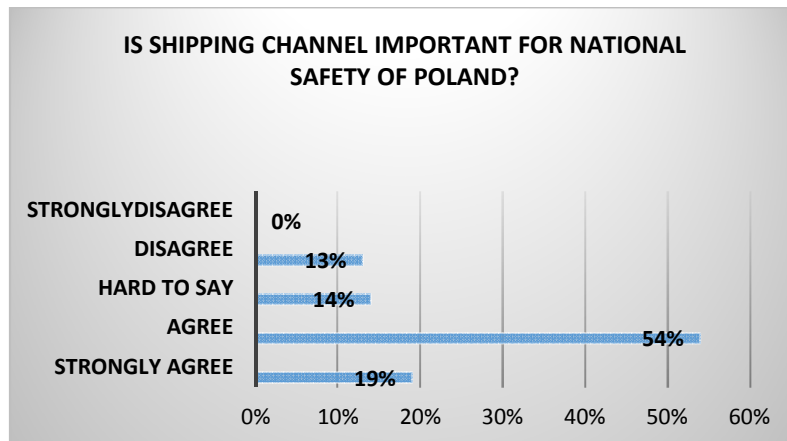


Chart 7. Rating of investment national safety for Poland

Source: based on own resources.

The respondents definitely assessed the investment as crucial for Poland's security. As many as 54% considered it to be important and 19% as highly important. 14% were unable to take a position on this issue, while 13% stated that the issue would not affect the security of our country. Such assessment of the construction of the Vistula Spit canal is undoubtedly influenced by the geopolitical situation, which changed after the annexation of Crimea by Russia. Therefore, ensuring public security and border protection has become a priority.

In the next question the respondents evaluated the State's information policy on the implemented investment. The answers are presented in Figure 8.

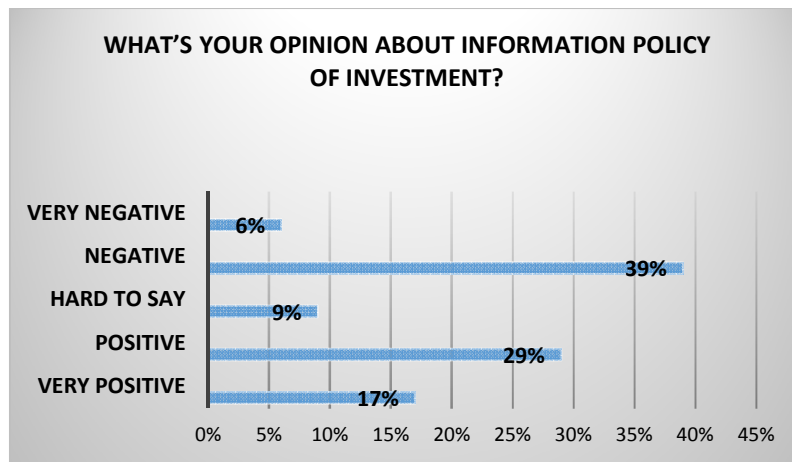


Chart 8. Rating of information policy of investment

Source: based on own resources.

It can be said that the respondents' answers were distributed among individual indications. 45% of respondents evaluated the state's information policy rather negatively, 39% negatively and 6% definitively negatively. 29% of respondents gave a positive assessment and 17% a definitely positive assessment, which in total gives us 46% of positive opinions. Only 9% did not assess the information policy in question. Such choices may have been influenced by the issue of the State's information policy, which may be assessed as a multi-vector one. It is an outcome of the country's internal information war. The commonality of various theses on any given topic presented in the media, especially on the Internet, is so immense that it can definitely influence the public perception of such project.

5. CONCLUSIONS

The results of the research conducted among young inhabitants of Podkarpacie may be surprising in some respects. The respondents did not unequivocally support or oppose the completion of the Vistula Spit investment. However, the vast majority sees an opportunity to boost tourist traffic in the region after the investment has been completed. More than half of the respondents believes that the port and city of Elbląg may count on the development of tourism, especially with regard to yachting and windsurfing, after the completion of the

canal crosscut. As many as 78% of respondents agreed that the canal would make shipping in the Vistula Lagoon independent from Russia. The respondents' views on the justifiability of building the Vistula Spit canal are overwhelmingly favourable. Young people express positive emotions towards the investment in question. However, the respondents were unable to unequivocally evaluate the investment in terms of ecology. On the other hand, they assessed the investment as definitely relevant for the security of Poland. As for the evaluation of information policy, the responses were distributed proportionally. The State's information policy on the examined subject was assessed negatively by 45% of respondents, and 46% gave it a positive assessment.

Various statements assessing the investments associated with the Vistula Spit canal can be found in the media. The project has aroused controversy from the very beginning, among others because the investment costs are high, and the expected benefits for the economy – “meagre”. The favourable impact of the canal on tourism and creating jobs, especially in Elbląg and its vicinity, is indicated as its advantage. It will also allow for strengthening Poland's military status in relations with Russia. On the other hand, the sheer unprofitability and harmfulness of the canal for the natural environment are listed among its disadvantages. The fairway through the Vistula Spit is the flagship investment of the current administration, and its main goal is to ensure national security. Economic and ecological arguments were relegated to a secondary position. The investment into cutting a canal across the Vistula Spit is an arena of political conflict. It is possible to get lost in the maze of controversy surrounding this project.

REFERENCES

Gen 1:28

<http://portalgis.gdansk.rdos.gov.pl/walypraelpowodziowe-krynicamorska/Za%C5%82%C4%znik%85c%205.pdf>

<http://www.rzgw.gda.pl/cms/site.files/image/ProgramZulawski/MapaDuza1.jpg>

<http://www.port.elblag.pl/article/show//207/budowa-drogi-wodnej-laczacej-zalew-wislany-z-zatoka-gdanska-%E2%80%93-kwiecien-2020-roku>

<https://encyklopedia.pwn.pl/haslo/Zulawy-Wislane;4003193.html>

<https://www.tygodnikprzeglad.pl/zulawy-raj-podtopiony/>

<https://www.historia-wyznaelblaska.pl/niemieckie-plany-osuszenia-zalewu-wi-lanego-i-przekopu-przez-mierzej--wi-lan-.html>

<https://pomorska.pl/na-zalewie-wislany-powstaje-sztuczna-wyspa-estyjska/ar/c7-15197214>

<https://www.portalmorski.pl/zegluga/41806-zakonczył-sie-pierwszy-etap-przygotowan-do-budowy-kanalu-przez-mierzeje-wislana>

<https://www.money.pl/gospodarka/przekop-mierzei-wislanej-pojawil-sie-film-z-prac-6613470633823168a.html>

<https://www.historia-wyznaelblaska.pl/niemieckie-plany-osuszenia-zalewu-wi-lanego-i-przekopu-przez-mierzej--wi-lan-.html>

<https://businessinsider.com.pl/wiadomosci/przekop-mierzei-wislanej-zgodnie-z-planem-rusza-budowa-mostu-nowe-nagranie-z-placu/pw4c2gs>

<https://businessinsider.com.pl/wiadomosci/przekop-mierzei-wislanej-zdjecia-z-budowy-budowa-dwoch-nowych-wysp/dkt6t8f>

- Sommer, H., Zakrzewski, G. (2017a). *Założenia dla edukacji ekologicznej czy bezpieczeństwa ekologicznego*. „*Humanities and Social Sciences*”, vol. XXII, 24 (3/2017). Access on the internet: <http://doi.prz.edu.pl/pl/publ/einh/344>
- Sommer H., Zakrzewski G. (2017b). *Rozumienie słownictwa z ochrony i kształtowania środowiska człowieka w dokumentach państwowych*. „*Humanities and Social Sciences*”, vol. XXII, 24 (4/2017). Access on the internet: <http://doi.prz.edu.pl/pl/publ/einh/365>
- Sommer H., Zakrzewski G. (2020). *Ecological security vs. food security*. “*Humanities and Social Sciences*”, vol. XXV, 27 (4/2020). Access on the internet: <https://oficyna.prz.edu.pl/zeszyty-naukowe/humanities-and-social-sciences/hss-27-2020/hss-2020-04>

DOI: 10.7862/rz.2021.hss.16

The text was submitted to the editorial office: April 2021.
The text was accepted for publication: June 2021.

