

BUILDING COMMUNITY TRUST IN THE PROCESS OF ESTABLISHING A LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTE STORAGE FACILITY: THE CASE OF CROATIA

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ABSTRACT

In Croatia, the radioactive waste management programme foresees the construction of a national central storage for the management of both institutional radioactive waste as well as low and intermediate-level radioactive waste from the Krško Nuclear Power Plant. According to preliminary procedures, the former military logistic complex in the municipality of Dvor was identified as a single preferred location for the future storage facility. Currently, that location is the subject of detailed field testing and impact analysis. One of the conducted impact studies focused on the perception of the challenges and opportunities for the local community regarding siting the radioactive waste storage in its municipality. A broader analysis of social acceptance of technical risks included the issue of community trust, and in this paper we will focus on that aspect of the problem. More precisely, we were interested in the mechanism of building community trust in the state authorities in charge of the implementation of the national radioactive waste management programme. To better understand this, we relied on the concept of social licence to operate. This concept emphasises a relationship between community trust-building and the perception of justice of the project rationale regarding both its procedural and distributive components. This paper aims to investigate the existence of the indicated relationship in a situation where the decision-making process for the site selection is still ongoing. The data for this analysis were collected in 2020 through a questionnaire from 424 respondents living in the municipality of Dvor. The results of the analysis revealed that elements of both procedural and distributive justice were statistically significant predictors of the level of community trust. However, expectations regarding a fair procedure have a somewhat stronger effect on the trust level than expectations that the project would bring benefits to the community.

Keywords: community trust, radioactive waste management, procedural justice, distributive justice, social licence to operate, Croatia.

1 INTRODUCTION

Radioactive waste (RAW) is one of the by-products of industrial–technological development, and its disposal still poses a great challenge to modern societies [1]. It is a waste generated by human activity in various sectors, such as energy, medicine, science and agriculture, and due to its characteristics it belongs to the category of hazardous substances which can have an adverse effect on the environment and human health. These adverse effects are associated with the amount of ionizing radiation, and in this sense we distinguish low and intermediate level RAW from high level RAW. While efforts to establish a safe model for the disposal of high-level RAW is still underway, there is a consensus among experts that appropriate technical solutions and operational procedures can reduce the risk of low and intermediate level RAW to the level of negligible risk, while a dozen facilities for the management of such waste have already been established in various parts of the world [2]. Despite scientific optimism about the management of low and intermediate level RAW, the general public remains inclined to attribute significant individual, group and economic risks, as well as environmental risks, to such infrastructure [3].



The mentioned controversies are especially evident during the discussions concerning the issue of siting RAW management infrastructure [4]. This is not surprising, since centralised management of RAW is from a national perspective safer, more environmentally friendly, more efficient and ultimately cheaper. However, from the perspective of the local community in which such infrastructure is located, this solution is perceived as extremely burdensome [5], [6]. In addition to the indicated imbalance in the distribution of environmental burdens and benefits, doubts about the reasonability and validity of the decision on the place and manner of RAW management is another cause for opposition which often occurs in the local community. The antagonism towards the idea of storing of RAW in one's own backyard is further intensified by the decline in trust in public institutions, which has been observed over a longer period even in the developed countries of the world [7]. Due to the complexity and long timescale of the RAW disposal process, the state is the main guarantor not only for using adequate technical solutions but also for respecting administrative and operational procedures and ensuring that the local community would not be deceived in such a big game. In this context, a lack of confidence in the effectiveness of the state apparatus can further complicate the establishment of RAW management infrastructure [8].

Therefore, the issue of building trust remains key to success in ensuring the coexistence of the local community and the infrastructure for RAW management. Having this in mind, our paper focuses on the issue of building the local community's trust in the state authorities responsible for RAW management in Croatia, where the establishment of a national RAW management centre is underway. The paper is organized as follows: Section 2 provides a literature review on the relationship between the perceived justice, the trust in key stakeholders and the attitude of the local community towards the idea of siting an infrastructure for RAW management in their local area. Background information about the preferred location and the situation concerning the RAW storage facility development in Croatia were introduced in the Section 3. Section 4 describes the research method and the survey instruments. The presentation of the analysis results is provided in Section 5. The paper is concluded with a discussion of the key findings.

2 LITERATURE REVIEW

Over the years, there have been some changes in framing the radioactive waste problems, starting from viewing only technical problems to including the social dimension of acceptance and legitimacy. As Bergmans et. al [4] state, more attention has been devoted to legitimacy and participation in the siting procedures. According to Cotton [9], socio-technical reframing occurred, which includes integration of the community's and stakeholders' values in the governmental decision-making process.

Bergmans et al. [4] state three main benefits of citizens' participation in decision-making process when it comes to controversial risk issues: (1) it leads to increased legitimacy of decision outcomes, (2) an enhanced knowledge base produces better decisions, and (3) it leads to a more democratic society by securing democratic values. Today, participation is included in the laws and regulations in many countries, with the aim of producing a dialogue among all actors, which can lead to mutual understanding, trust, and cooperation [10].

According to Wolsink [11], community acceptance of siting decisions has a temporal dimension and follows a U-curve; going from a high level of acceptance to a typically low level of acceptance in the siting phase, and looping back to a higher level in the phase once the project is established. The whole process of acceptance is affected and constructed by a dynamic interaction between three main actors: community, stakeholders and companies. Wüstenhagen et al. [12] pointed out that the perceived justice of procedures and outcomes are crucial in gaining a community's acceptance for a new project. According to Krütli et al.



[13], [14] studies on residents' perception of justice in the case of a nuclear waste repository in Switzerland, the existence of procedural justice affected the decision of acceptance more than distributive justice did.

Vilhunen et al. [15] studied the perception of justice and trust among the residents of two nuclear communities in Finland. The main results showed that the residents of both communities expressed concerns over both procedural and distributive justice. Injustice was perceived in the lack of information about siting the second repository and in the decision-making process, which lacked the voice and views of the communities' residents. In the case of the Puspokszilagy facility and the Ofalu attempt in Hungary, community members were highly interested in compensations and their distribution between the beneficiaries. However, there were protests due to a lack of justice in the general rule of distribution [6].

Trust is also a key issue in facility siting issues, which are always loaded with many risk components, such as social, environmental, and economic. Besides companies and industry, the government is a common object in which community members place their trust. Flynn et al. [16] found a connection between the level of trust in the government and the perception of risks and benefits of nuclear power; if trust in one's government is lower, then there is a higher perception of risks and a lower perception of benefits. Vainio et al. [17] state that it is important to take into consideration different kinds of trust, as they influence the acceptance of nuclear power, such as trust in ministries, nuclear energy companies and research institutes. Based on a national survey conducted in Finland, Vainio et al. [17] show that a higher level of trust in NGOs results in a decreased belief in nuclear power as a solution for climate change, whereas a higher level of trust in government and research institutes results in increased belief in nuclear power. Wang and Kim [18] analysed factors which affect the acceptance of nuclear power based on survey data from the Eurobarometer in 2009. The results show that the perceived benefits, trust and knowledge increase nuclear power acceptance. Regression analysis showed that the perceived benefits had a positive impact on acceptance in 26 out of 27 countries, trust had statistical significance in 23 countries, but knowledge had an effect in only eight countries. Another study, conducted by Litmanen et al. [19], regarding the project of building a final disposal repository in Finland showed interesting results concerning trust. Elements of trust were measured through two dimensions: trust in the company in charge and trust in the authorities regarding the risk assessment of the final disposal project. Results show that the residents' trust in the authorities was lower than their trust in the company [19]. Generally speaking, when a community trusts the guiding process by an organisation, there is a lower perception of risk and a higher level of acceptance. However, trust is not always a direct indicator that people will accept a siting proposal [20]. Community members can have trust in the process and industry, but they can also have other reasons for rejecting the project.

Although trust does not directly imply agreement with the project, it is hard to expect that there would be any local acceptance of a siting proposal without at least a sense of basic trust in the process of RAW management. This axiom serves as the foundation for the concept of the social licence to operate (SLO), developed by Joyce and Thomson [21] and Boutilier and Thomson [22], and later applied in the realm of RAW management by Lehtonen et al. [23]. In this adaptation, economic and socio-political legitimacy are again the key elements which build community trust, in this case in institutions responsible for RAW management. Optimisation of that process is indicated as the most useful approach toward the acquisition of SLO for establishing a RAW facility. In these terms, legitimacy refers to the acceptance of the project by the community, and it is mostly focused on justice. To gain acceptance, there must be economic legitimacy which is related to distributive justice. However, to win true approval, there must be socio-political legitimacy which includes procedural justice. In



this case, the organisation must show a willingness to protect the community's life from the project's harmful impacts. This refers simultaneously to social, cultural, and environmental aspects of the community.

All these are essential for building trust, which serves as a bridge between, on the one hand, the legitimacy and, on the other, the acceptance, approval or identification with the project. Lehtonen et al. [23] conceptually differentiated between two levels of trust: interactional and institutionalised. The aspect of interactional trust implies confidence that the other side provides true information and is responsive to community concerns, which can be seen throughout envisioning new development goals with the community. Institutionalised or complete trust is a true indicator of the existence of SLO. In this case, interests from both sides are taken into consideration and citizens start to identify themselves psychologically with the interests and values of the organisation. They see the project as their own and start implementing their activities as part of the project. This dimension of trust develops as a result of a long-term interaction between the community, its environment and stakeholders [23]. While interactional trust can lead to a peaceful coexistence, only institutionalised trust can provide solid ground for all stakeholders to live long and prosperous lives.

As we have seen in previous studies, as well as in the SLO concept, there should be a connection between community trust-building and perception of justice of the project rationale regarding both its procedural and distributive components. Having that in mind, we were interested in how this mechanism works in a situation where the decision-making process for the site selection is still ongoing. More precisely, this paper aims to analyse relations between community trust in the state authorities in charge of the implementation of the national RAW programme and the perceived procedural and distributive justice related to the decision concerning the establishment of a centre for RAW management in Croatia.

3 STUDY AREA

In Croatia, RAW management has been carried out for many years. The existing RAW is temporarily stored at two locations in the city of Zagreb, and this is mainly material produced through the activities of medical institutions and scientific research laboratories. Given that the existing storage resources have been filled to capacity, and since Croatia due to the co-ownership of the Krško Nuclear Power Plant has an obligation to promptly take care of large quantities of low and intermediate-level RAW generated by the power plant so far, the state has intensified preparations for the establishment of a national RAW management centre [24].

Concerning the current legal framework regarding RAW management in Croatia, the Act on Radiological and Nuclear Safety was revised in the February of 2022 and is now in full harmony with the EU requirements for safe long-term management of RAW. This revision clearly defines the ultimate responsibility of the state for the safety of spent fuel and RAW management and provides normative changes required for implementation of the national programme for RAW management. According to the Act, the Fund for financing the decommissioning of the Krško NPP and the disposal of Krško NPP radioactive waste and spent nuclear fuel as a specialized institution is responsible for establishing the RAW Management Centre while the Ministry of the Interior as a regulatory body for radiological and nuclear safety is responsible for issuing an operation license. The RAW Management Centre is planned for storage of solid low and intermediate-level RAW only and is scheduled for commissioning in 2023. Current strategic documents for the spatial development of Croatia and the national programme for RAW management envisage the establishment of such a centre in the municipality of Dvor on the site of the former military logistics complex Čerkezovac.



The municipality of Dvor is located in the Sisak-Moslavina County on the border with Bosnia and Herzegovina, about 100 km south of Zagreb. According to the 2021 census, Dvor has a population of 3,044, which means that it has lost almost 80% of its inhabitants in the last three decades. In addition to demographic problems, the municipality of Dvor is characterised by a significant deficit in socio-economic development compared to the rest of Croatia. According to the latest calculation of the development index from 2018, Dvor is on the 548th place out of a total of 556 evaluated local self-government units in Croatia [25]. These indicators suggest that the living conditions which prevail in Dvor are quite unfavourable, and considering the broader picture, Opačić [26] estimates that this municipality falls into the category of one of the so-called disordered communities. These are communities which have undergone major and dramatic social changes in a certain period, which possess some resources, but not enough collective and institutional participants and the ability to use them for a stable and long-term economic growth and development. This is a consequence of a long term process. Even during the socialist period (1945–1990), Dvor was among the most underdeveloped municipalities in Croatia. The war and occupation in the first half of the 1990s only accelerated the collapse of the local economy and depopulation, and the post-war reconstruction was clearly either not ambitious enough or not successful in stopping these negative processes.

As mentioned in the introduction, the project of establishing a RAW management centre in Dvor is in its preparation phase. Collecting the necessary permits also includes the preparation of a feasibility study and an assessment of the impact of the project on environment. The basic principles according to which the process of establishing a RAW management centre takes place are defined by national legislation, as well as relevant recommendations of international institutions [25]. In addition to ensuring high technical standards, they include the application of an inclusive and participatory approach in the decision-making process. The purpose of the latter is to encourage building mutual trust and the establishment of a partnership with the local community. Given the unfavourable socio-economic situation in Dvor, the starting assumption is that the level of community trust in state authorities responsible for RAW management will be equally influenced by the perception of the procedural validity of the final decision and the belief that this arrangement can provide additional incentives to revitalise the local community.

4 STUDY DESIGN

The data for this study were collected through a survey conducted in the autumn of 2020 on a probabilistic stratified sample of adult residents in the municipality of Dvor. The stratification covered the following two elements: the size of the residential area and the distance of the settlement from the location designated for the future RAW storage facility. Based on these two criteria, a total of eight different survey zones were defined and the number of respondents from each of them was proportional to the share of the zone in the total population. The survey was conducted face-to-face at the respondents' residential address. The sample included a total of 424 respondents with a response rate of 52%.

The testing of the basic hypothesis was done using a hierarchical regression analysis. The gradual introduction of variables into the model enabled a comparison of the relative contribution of individual predictor sets or blocks, and we had a total of three blocks in this analysis. In the first block, we introduced the control variables, and then, in separate blocks, the perception of procedural justice, followed by the perception of distributive justice.

With the variables used in the model involving three or more items, a reduction was performed based on the results of a principal component analysis. Using the regression method, we generated factor points for the obtained factor solutions, so the created variables



were used in further analysis. The instruments used in the model are presented below with the basic results of the principal component analysis, while the results of the descriptive analysis are presented in the next section.

The criterion variable in the analysis is the community trust in the state authorities in charge of RAW management. The instrument used to measure this type of trust was prepared based on Lehtonen et al.'s [23] theoretical framework which distinguishes between interactional and institutionalised trust. We can see that the key moment in interactional trust is confidence, and the instrument includes items which question the expectations of the local public that state authorities in charge of RAW management will fulfil their obligations and inform them about all events which may affect them. In the case of institutionalised trust, the emphasis is on the development of partnerships, so in the instrument we included the items which question the respect of local interests and the similarity of visions for the future development of the municipality. The variables included in our instrument are taken from Boutillier's [27] instrument for measuring the social licence to operate, but are adapted to specific circumstances in Croatia, i.e. that this is about establishing an infrastructure for RAW management and that the project is still in preparation. In total, our instrument contained four items, and the degree of agreement with them was measured on a 5-point Likert scale. The results collected from an instrument set in this way were subjected to a principal component analysis, which, using the Kaiser–Guttman rule, indicated a one-factor structure of the items used, explaining 60% of the total variance with Cronbach's α of 0.77.

In the analysis, we measured the effects of perception of distributive and procedural justice separately. The perception of distributive justice was captured by two elements. One was related to the expected personal benefits; we asked the respondents to rate on a 5-point scale whether the establishment of the centre will have a positive or a negative impact on their income, property value and personal life perspective. The second element affecting perception of distributive justice was related to communal benefits, i.e. on a 5-point scale we asked the participants about the level of agreement with four statements which expressed expectations that the project would improve living conditions and overall economic prosperity of the Dvor municipality. The principal component analysis was performed separately for each of the two elements, and with the application of the Kaiser–Guttman rule, a monofactorial structure was determined in both cases. The obtained factor solution explained 71% of the total variance in the perception of personal benefits (Cronbach's $\alpha = 0.80$), and 56% of the total variance in the perception of communal benefits (Cronbach's $\alpha = 0.73$).

In analysing the perception of procedural justice, we started from the premise that the basic purpose of an administrative procedure is to remove any doubts about the reasonability and validity of the decision on how and where to establish the infrastructure for RAW management. In that context, we focused on two aspects relevant to ensuring socio-political legitimacy. The first aspect refers to some form of international verification of the process of establishing such infrastructure, and we asked respondents about the extent to which they agreed with the statement that research on the suitability of the preferred location for the centre will be conducted in accordance with high international standards and EU directives. The second aspect refers to the role of the local government in the decision-making process, so we asked respondents about the level of agreement with the statement that cooperation between the municipality of Dvor and the state institutions responsible for RAW management is the best way to protect the local community's interests.

Furthermore, the model includes a set of control variables, and in the analysis of the relationship between criterion and predictor variables, in addition to basic socio-demographic characteristics (sex, age and education), we also isolated the effect of the



distance of the place of residence from the planned infrastructure. The results of the descriptive analysis for the above control variables are shown in Table 1.

Table 1: The respondents' socio-demographic characteristics.

Sex	Male	46.2%
	Female	53.8%
Age	18–34	12.5%
	35–64	46.9%
	65+	40.6%
Educational attainment	Primary school or less	23.5%
	Secondary school	63.5%
	Higher education	13.0%
Distance from the planned RAW storage facility	< 5 km	20.0%
	5–10 km	37.5%
	> 10 km	42.5%

5 RESULTS

While analysing the collected data we first tried to determine the level of trust the local community has in the state authorities responsible for RAW management. The results shown in Table 2 reveal that the vast majority of respondents disagree with all of the claims offered. Specifically, 67% of respondents do not think that state authorities responsible for RAW management will fulfil their obligations, 71% do not think that the public will receive relevant information, 75% believe that the interests of the local community will not be taken into account, and 77% believe that the local community and state authorities responsible for RAW management do not share a similar vision of the future of this area. Thus, taken as a whole, these results clearly indicate that the majority of respondents do not actually see the willingness of the relevant state institutions to build partnerships with the local community.

Table 2: Results on statements related to community trust in state authorities in charge of RAW management.

State authorities in charge of RAW management:	Strongly or somewhat disagree	Neither agree, nor disagree	Strongly or somewhat agree
...will fully meet its commitments to our community.	66.9%	17.6%	15.5%
...will inform us about things that could affect our community.	71.3%	17.9%	10.8%
... are concerned about the interests of our community when making their decisions.	74.9%	14.8%	10.3%
...and our community have a similar vision for the future of this region.	76.6%	11.9%	11.4%

Furthermore, we focused on the perception of procedural justice by observing two items. One item referred to the importance of the local authorities' active participation in finding solutions that would be acceptable to the local community, and there were some divisions among the respondents. The results show there is a similar share of those who agree and those

who disagree with the statement that cooperation between the municipality of Dvor and the state authorities responsible for RAW management is the best way to protect the interests of the local people (Table 3). The share of respondents in both groups was about 38%. When it comes to assessing the credibility of the site selection process, only 22% of respondents are convinced that it would be carried out in accordance with high international standards and EU directives, while 50% of respondents believe that this would not be the case. Let us also mention that in both claims a significant number of respondents were undecided, their share was 23% and 27% respectively.

Table 3: Results concerning statements related to the perception of procedural justice.

	Strongly or somewhat disagree	Neither agree nor disagree	Strongly or somewhat agree
Cooperative engagement of local authorities is the best strategy to protect local interests.	38.6%	23.3%	38.1%
Final decision about the location of the RAW storage facility will respect international standards and EU directives.	50.4%	27.1%	22.4%

Shifting the focus to the perception of distributive justice reveals that only few people expect to be able to personally benefit from the siting of a RAW management centre in their municipality. Even still, the results given in Table 4 at the same time show that not everyone thinks they would feel the negative consequences. The least expected negative impact is a reduced income in their household; about 45% of respondents see a possible danger there. With the other two items, the share of respondents who feel threatened is somewhat higher. About 70% of respondents expect negative consequences regarding the value of their property, and 73% believe that there will be negative consequences on their life prospects. In other words, although most do not expect an immediate dramatic collapse in standards, most respondents are inclined to believe that the arrival of RAW management infrastructure in their municipality will produce long-term negative consequences for their standard of living.

Table 4: Results concerning the statements related to the perception of personal benefits.

How would the establishment of the infrastructure for RAW management in Dvor affect the following aspects of your life:	Very or somewhat negative	Neither positive nor negative	Very or somewhat positive
Your household's income	44.8%	49.9%	5.4%
Value of your property	70.1%	25.8%	4.1%
Your personal life perspective	72.6%	24.0%	3.3%

An analysis of the perception of distributive justice at a communal level reveals that most respondents do not even expect the wider community to benefit from siting the RAW management infrastructure in their municipality (Table 5). Only few predict a positive effect on the overall local economy; raising the average living standard of the local population and accelerating the local economy is expected by only 10% and 9% of respondents respectively. However, there are slightly more optimistic respondents when assessing the improvement of infrastructure; 18% think that there will be an improvement in the supply of water, electricity and the Internet, and 32% expect the improvement of the transport infrastructure.



Table 5: Results concerning statements related to the perception of communal benefits.

	Strongly or somewhat disagree	Neither agree nor disagree	Strongly or somewhat agree
The local community infrastructure will be improved.	57.0%	24.5%	18.4%
Transport infrastructure will be improved.	49.4%	18.7%	31.9%
The standard of living of the local population will be increased.	78.8%	11.2%	10.0%
Local economic development will be enhanced.	79.5%	11.6%	9.0%

In the next step, using hierarchical linear regression analysis, we investigated the connection between community trust in the state authorities responsible for RAW management and the level of perceived procedural and distributive justice. Prior to the regression analysis, the correlation matrix review (Table 6) showed that there is no strong correlation between the predictor and control variables, which is a sign that the problem of multicollinearity was not evident in the model.

Table 6: Correlation matrix of variables used in the regression model.

	2	3	4	5	6	7	8	9
1. Community trust in state authorities in charge for RAW management	-.001	-.040	0	.119*	.324**	.500**	.285**	.444**
2. Sex	1	.035	-.254**	.018	-.033	.040	-.01	.061
3. Age		1	-.211**	.039	.063	-.025	-.026	-.145**
4. Educational attainment			1	-.144**	-.071	.029	.095	.095
5. Distance from the planned RAW storage facility				1	.168**	.186**	0	.174**
6. Procedural justice: cooperative engagement of local authorities is the best strategy to protect local interests					1	.387**	.145**	.251**
7. Procedural justice: decision about the location of the RAW storage facility will respect international standards and EU directives						1	.390**	.362**
8. Distributive justice: expected personal benefits							1	.225**
9. Distributive justice: expected communal benefits								1

* $p < 0.05$; ** $p < 0.01$.

The results shown in Table 7 reveal that the created regression model explains a total of 31% of the variance of community trust in the state authorities in charge for RAW management. The analysis of the model showed that socio-demographic variables do not significantly contribute to the understanding of changes in the criterion variable. The four

control variables introduced in the first block explain only 2% of the variance, and only the distance of the place of residence from the planned location is statistically significantly positively related to the criterion variable. In the second block, two variables related to the perception of procedural justice were introduced. The percentage of the explained variance after the introduction of the second block was increased by 24 percentage points, and for both introduced variables we found a statistically significant correlation with the criterion variable. Those who believe that cooperation between the municipality and the state authorities in charge for RAW management is the best way to protect local interests and those who believe that the site decision will be made in accordance with high international standards and EU directives also show a higher level of trust in the state's good intentions that it actively supports the development of the local community by respecting its interests and needs. In this block, there was also a minor modification of the contribution of previously introduced variables to the change in the criterion variable. More precisely, after controlling for the effect of the perception of procedural justice, the distance of the planned infrastructure for RAW management from the place of residence is no longer related to the level of community trust.

Table 7: Regression results predicting community trust in state authorities in charge of the RAW management concerning the perception of procedural and distributive justice.

Predictors	Step 1 β	Step 2 β	Step 3 β
<i>Socio-demographics</i>			
Sex	0.004	0.004	-0.021
Age	-0.042	-0.030	-0.003
Educational attainment	0.071	0.055	0.009
Distance from the planned RAW storage facility	0.172**	0.060	0.034
<i>Perception of procedural justice</i>			
Cooperative engagement of local authorities is the best strategy to protect local interests		0.168**	0.134*
Final decision about the location of the RAW storage facility will respect international standards and EU directives		0.407**	0.309**
<i>Perception of distributive justice</i>			
Expected personal benefits			0.095
Expected communal benefits			0.235**
<i>Explained variance</i>			
Adjusted R-square	0.022	0.258	0.311
F	2.823*	19.816**	19.271**
Δ Adjusted R-square	—	0.236	0.053

* $p < 0.05$; ** $p < 0.01$.

In the third and final block, we introduced two variables related to the perception of distributive justice. They increased the proportion of the explained variance by an additional 5 percentage points. However, just one of the two introduced variables in the third block was significantly positively related to the criterion variable; only the expectation of higher communal benefits was associated with a higher level of trust in the state authorities in charge for RAW management. In the final model, there was no change in the contribution of other



previously introduced variables. Therefore, after controlling for other covariates included in the final model, both variables related to the perception of procedural justice and the variable related to the expected communal benefits were positively related to the level of community trust in the relevant state institutions. In doing so, the block with the perception of the distributive justice contributed relatively less to the total amount of explained variance than the block with the perception of procedural justice.

6 DISCUSSION AND CONCLUSION

The analysis presented in this study was an attempt to contribute to the understanding the local community's attitude towards the plan for the establishment of an infrastructure for the management of low and intermediate level RAW in its local area based on empirical insights. We mentioned that modern approaches to solving the problem of RAW management start from the fact that it is not exclusively a technical problem, but largely depends on social perception. In this context, building partnerships with the local community when creating one such infrastructure is evidently one of the most important prerequisites for successful project implementation. Important components of the development of a partnership are certainly the belief in the reasonability and validity of the decision itself, i.e. the social perception of the legitimacy of the decision and trust in the actors who make and implement decisions [8]. It is the latter which forms the backbone of the concept of social licence to operate [23]. According to this model, the relationship between the local public and the RAW management infrastructure can be graded in the range from rejection, through acceptance and tolerance, to approval, all the way to identification, and the outcome depends on the level of established mutual trust. The key to building trust lies in the way the local public perceives the economic and socio-political legitimacy of the project itself, i.e. how it perceives the elements of procedural and distributive justice. Our analysis focused on that very moment. In this paper, we investigated the relationship between community trust in the state authorities responsible for RAW management and, on the one hand, the perception of assurance that the procedure would take into account the protection of local interests, as well as protection of environment and health, and, on the other hand, the perception of possible benefits from the project, both for them personally and for the local community as a whole. The data analysed in the paper were collected by a survey conducted in the autumn of 2020 on the sample of the inhabitants of the municipality of Dvor, whose local area is a preferred location for the construction of a national centre for RAW management.

The conducted analysis provided several useful insights. Firstly, the respondents expressed a low level of trust in the intention of the state authorities responsible for the management of RAW to build partnerships with the local community. For example, three out of four respondents doubt their readiness to take into account the local community's interests and build a common vision of local development, and two thirds even doubt that the promises and commitments to the local community would be fulfilled. The low level of trust in the state authorities responsible for RAW management is not specific to Croatia, but is for various reasons also present in countries with much more developed democratic institutions [28]. The reasons for the low level of trust observed in our study should be sought primarily in the deficit of direct communication between the local community and the state authorities responsible for RAW management. Admittedly, there were already opportunities for the local public to express their opinions at some stages of the decision-making process, for example, when drafting the national program for implementing the RAW management strategy. However, the impact of their views on the final version of the document was negligible [24]. In addition, what Blowers [29] characterises as *the persistence of the periphery* seems to be important for understanding the relationship between the local community in Dvor and the



state authorities responsible for RAW management. Moreover, Dvor is not only geographically in a peripheral position, but also encounters the problem of insufficient or inadequate basic infrastructure, a large number of economically deprived population dependent on social transfers with the collapse of key elements of the community (institutions and local economy), exhibiting the need to restore community identity in the new circumstances after the dramatic events of the Croatian War of Independence. All this contributes to the fact that a part of the population shares a certain feeling of stigmatisation and powerlessness in the community, as it seems that everything is happening against their image of development [26]. In the context of such significant social and economic deprivation, the imposition of infrastructure for the management of RAW in the Dvor area can easily be seen from the local perspective as another proof of the state's neglect of its local community.

Secondly, the results of the regression analysis confirmed the initial hypothesis about the relationship between trust in the state authorities responsible for RAW management and the perceptions of procedural and distributive justice. More specifically, the analysis showed that besides the expectation that the RAW management infrastructure at Dvor would enhance the local standard of living, the belief in improving the credibility of procedures in ensuring adequate protection of environment and health was also associated with a higher level of confidence in the state's good will to cooperate with the local community. However, the perception of procedural justice had a slightly stronger effect than the perception of distributive justice on the change of the criterion variable. Moreover, in the presented model, the expectation of possible personal benefits from siting the infrastructure in Dvor did not prove to be relevant for the level of the expressed trust in the state authorities responsible for RAW management. These are consistent with the findings of a study by Krütli et al. [13], that the perception of procedural justice in the process of establishing RAW management infrastructure exceeds the importance of the perception of distributive justice. Di Nucci and Brunnengräber [8] reached a similar conclusion while analysing several examples of RAW management infrastructure placement, noting that the local community still expects some involvement in the decision-making process before discussing rent and benefits, as well as strengthening its capacity to understand the challenges arising from coexistence with such infrastructure.

Finally, none of the control variables used in the model showed a statistically significant effect on community trust in the government authorities responsible for RAW management. In other words, there is a local consensus on the importance of the perception of justice for the establishment of community trust, and here there is no division according to sex, age or education, nor even according to whether people live close to or somewhat further from the preferred location.

In conclusion, our findings confirm the operation of a basic mechanism that is at the heart of the concept of social licence to operate: stronger perception of legitimacy are reflected to higher levels of community trust. Regarding certain limitations of the present study, it should be noted that we have dealt with only one segment in the complex process of acquisition of a social licence to operate. Lehtonen et al. [23] draw attention to the importance of contextual factors in this process, primarily to the previous experience in RAW management and the level of general trust in the state. In this sense, one should be careful in generalising our results, because previous research shows that the Croatian public is largely uninformed about this issue [24] and has relatively low trust in institutions [30]. In addition to testing the functionality of this model in another context, future research could test a more complex regression model. For example, it would be useful to see what effect the perception of risk has on the relationship between perceived legitimacy and trust in the RAW management



institutions, which has already been reported as a major determinant of (un)acceptability of nuclear energy [31] as well as of new infrastructure for RAW management [32].

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