



INNOVATIONS' ACCEPTANCE FOR REDUCING GLOBAL WARMING: INFLUENCES ON PUBLIC OPINION WHEN SOCIAL TRUST IS LOW

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Abstract: *The paper presents the factors which influenced the construction and the stability of public opinion in the Romanian space, while testing the public acceptance of innovative technologies for reducing global warming. The attitude of Romanian publics and the public acceptance in this matter are compared to the attitude of publics in other five European countries, highlighting social and cultural characteristics of the Romanian environment. The findings in the paper were collected in an ERA-NET research project developed during 2009-2010, in which the author of the paper had the function of country scientific coordinator. The methods used were the focus group discussion and the representative national survey. The comparison with results from the other five countries revealed distinct characteristics of the Romanian social climate. Finally, the paper emphasizes the characteristics of formation and evolution of public opinion in Romania, in view of future persuasion strategies addressed to publics for implementation of public policies.*

Keywords: *trust, communication, public acceptance, environment, energy*

1. INTRODUCTION

Trust is indispensable for the development of a social life, being the premise for constructing relationships, considering the fact that very little is known for certain about people (Meyerson, Weick & Kramer, 2006: 429). Scholars (Rotter, 1967, *apud* Mayer, Davis & Shoorman, 2006: 87) define social trust as “the expectation of an individual or of a group that the promise, verbal or written declaration of another individual or group will be fulfilled”. Tied to the social trust are, for the trusted pole of relationship, the *credibility* (or the characteristics that enables trust from other people) and, back to the other pole, the *orientation to trust* of individuals or groups (the availability to have trust). Groups and societies could have different level of orientation to trust, depending of their stage of development and cultural characteristics.

The introduction of an industrial innovation determines a public debate which

results depend on the capital of social trust. The sociological surveys in the last years in the Romanian space showed the erosion of the capital of social trust, which makes more difficult the introduction of innovations or the development of effective economic projects. According to barometers, in the last years (RISE poll, 2010) develops a tendency of accentuated decrease of trust in institutions, and in other traditional actors of democracy. The level of trust in legitimate democratic institutions is the lowest (the Parliament and the Government have the lowest level of trust, under 18%). NGOs have only 25% level of trust (RISE poll, 2010: 57-78). Also, suspicion is a general feature of the climate, about two thirds from Romanians believe that people in their community look for profit in relationships, and have confidence only in people they know personally (*idem*).

The data from surveys suggest the difficulties of obtaining public acceptance on large scale innovations. The public perceive

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public policies as being abstract and with little impact in the real life. Cautions are necessary in applying research tools and building recommendations based on findings in public policies. This paper presents the factors which influenced the construction and stability of public opinion in Romania, as resulted from an ERA-NET research project developed in six European countries, in order to test the public acceptance of industrial technologies introduced for reducing global warming.

2. METHODS

FENCO-ERA research project "Scrutinizing the impact of CCS public communication on general and local publics" (2009-2010) was a beginning in Romania in the field of industrial innovations for protecting the environment. The CCS (carbon capture and storage) technologies are designed to decrease the level of industrial CO₂ emissions, having an important effect in decreasing global warming. The project has been developed in Germany, Netherlands, United Kingdom, Norway, Greece and Romania. Some of the countries (as Germany and Netherlands) were advanced in the development of the new technologies, while others were at beginning.

2.1 The qualitative research. The first part of the research project used the focus group method to test the stability and strength of opinion and the type of information which stimulate a better reception and recollection of publics. Using the same methodology (Dancker *et al.*, 2010), three presentations of an expert followed by focus groups were organized in each country. Three alternative groups (ICQ groups, abbreviation from "information-choice questionnaire groups"), with an equivalent composition of participants, received the same information in a written form, without discussing it. The purpose of this part was to see which presentation form is more effective, and which generates the most stable opinion. After receiving information, participants from both groups answered to a detailed questionnaire in order to verify the

recalling of information. The only difference in the content among countries referred to technologies (different, due to economic conditions). In Romania, the technologies tested for implementation were: "A cluster of four coal-fired power plants with onshore storage in a saline aquifer" (technology 1), and "One gas turbine power plant with offshore storage in a saline aquifer" (technology 2).

2.2 The quantitative research. The second part of the project supposed the organization of representative polls at a national level, in order to identify the level of information and potential public acceptance of technologies and the influence factors. The poll tested the influence of the source in changing attitude: information was presented in four ways to respondents (negative message with/without a source, positive message with/without a source - for Romania, the source for "negative information" was Greenpeace, and the source for "positive information" was Shell). The questions in the survey were the same in all countries; only the method of implementation was different (in Norway, online survey; in Romania, telephone survey).

3. RESULTS

3.1 The focus groups and information-choice questionnaires results. The results in this phase for Romania (Cismaru *et al.*, 2010: 59-60) showed a fine reception of the information: both types of participants (focus groups and information-choice questionnaire) considered the information comprehensible, valid and useful. Further, both types of participants recalled the greatest part of the information provided. When comparing the effectiveness of the two methods of communication, oral presentation of an expert followed by group debate was in advantage for Romanians. The self-reported awareness to form an opinion on technologies was slightly better in focus groups. Participants reported fewer difficulties in forming an opinion, a greater certainty and sufficient information.

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Table 1. Means (and SD) of self-reported ability to form an opinion on technology 1

	A. Difficulties	B. Information	C. Certainty	D. Expectancy
FGD	3,40 (1,83)	5,00 (1,72)	4,93 (1,25)	3,70 (1,60)
ICQ	3,63 (1,40)	4,67 (1,58)	5,37 (1,15)	3,83 (1,57)

Note. Scale was from 1 to 7 (less/more). A- experienced difficulty; B- sufficient information; C- certainty of opinion; D- expectancy to change

Table 2. Means (and SD) of self-reported ability to form an opinion on technology 2

	A. Difficulties	B. Information	D. Certainty	E. Expectancy
FGD	3,27 (1,59)	4,87 (1,67)	5,57 (1,19)	3,63 (1,92)
ICQ	3,63 (1,40)	4,67 (1,58)	5,37 (1,15)	3,83 (1,57)

Note. Scale was from 1 to 7 (less/more). A- experienced difficulty; B- sufficient information; C- certainty of opinion; D- expectancy to change

Further, the score on recalling information was better on focus groups (mean of 2,46 with SD 1,17) compared to ICQ participants (mean of 2,23 with SD 1,14). At last, the collective opinion towards innovations was more positive if the information was presented by an expert, and could receive feed-back (table 3).

Table 3. Mean (and SD) for opinions on technology 1 and technology 2

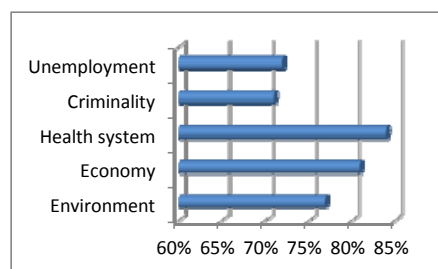
	Overall on T1	Vote for T1	Overall on T 2	Vote for T2
FGD	5,43 (1,59)	5,30 (1,80)	5,43 (1,52)	5,60 (1,83)
ICQ	4,87 (1,79)	6,00 (2,01)	4,60 (1,90)	4,83 (2,23)

Note. Overall opinion was measured on a scale ranging from 1 = very bad, to 7 = very good. Higher scores indicate a positive evaluation.

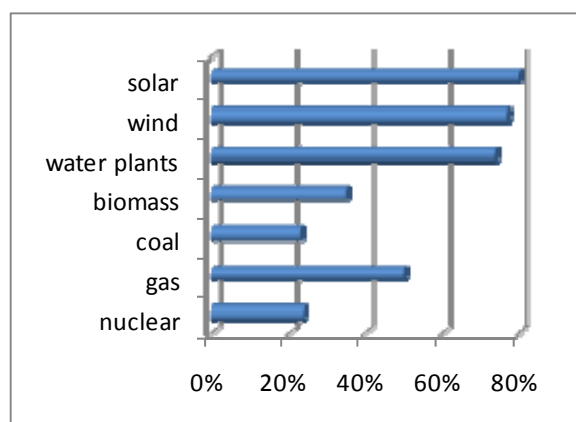
In testing acceptance of the two technologies in the focus groups, the score was high. The mean for overall opinion for both the two technologies tested was high (table 1, 2). Also, the activity in favor of implementation (vote for it in a national referendum) would be strong, while the attitude for rejecting technologies or vote against them was low. The opportunity to

express about the technologies was appreciated (general mean was 5,71, with SD of 1,41), which shows an availability of informed subjects to public participation in debates about policies.

3.2 The representative poll at national level results. The poll at the national level showed a fine level of information about pollution and global warming effect, but almost no information on capture carbon and storage technologies at a majority of the Romanians (75% never heard about carbon capture and storage, only 2,9% had more information). For respondents, environmental issues were placed on the third place on the public agenda, after medical system problems and economic problems, but before criminality (graph 1 – the percentage of respondents considering environment as being important or the most important).



Graph 1. The priority of issues for respondents

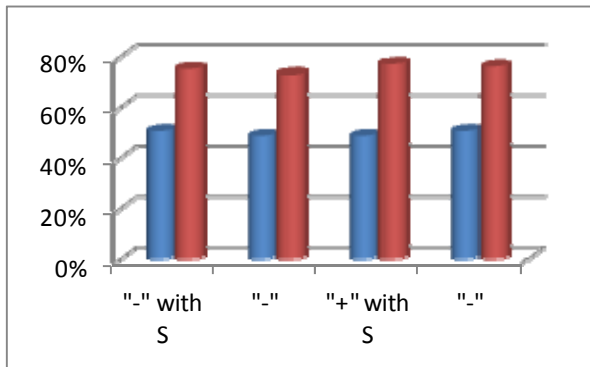


Graph 2. The percentage of preferences for forms of energy (strongly agree or total agree)

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The poll revealed that Romanians understand the importance of the maintenance of the environment, and would evaluate positively modern options of producing energy, as solar and wind energy (graph 2).

Another finding is that the level of acceptance is very high, even if the information was new. Almost three quarters of the Romanians (73%) would be in favor of testing the CCS technology in the country and only 12,8% would be against. The active attitude (vote or sign a petition in favor of implementation) would be stronger than the opposite attitude (vote or sign a petition against implementation). The high level of public acceptance has a small variation (only 3%) between negative and positive presentation even if it comes from a public authority (a well known non-governmental organization as Greenpeace) (Cismaru & Ivan, 2010: 14-16).

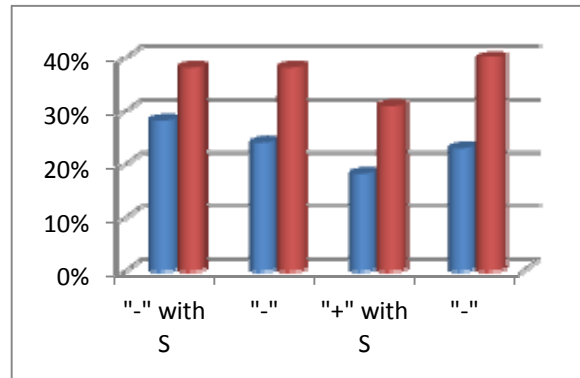


Graph 3. The change in acceptance while changing positive/negative (+/-) information with/without a source (S). *Note. Red-the total options of agreement; blue – the intense options (“totally agree”)*

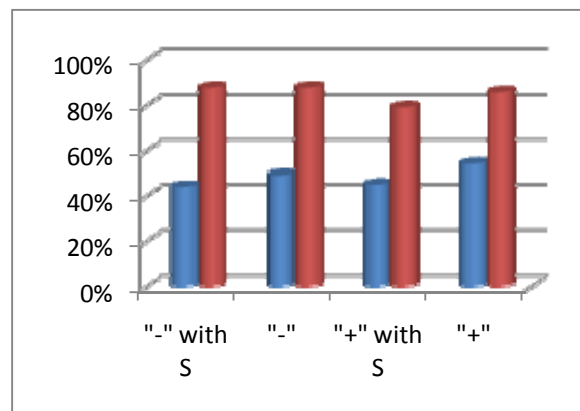
In Graph 3, the variation among agree responses is slight (maximum, between positive and negative with a source), but in the last variant still an important percentage of people agreed with the testing of the technology.

The variation of people voting against introducing the technology is also slight. The lowest value is encountered in case of positive information with a source (31%); for the rest,

the level of total opposition (strong and moderate) is around 38%. The increase of percentage of opposition attitudes in case of ambiguous message or public debate shows the general lack of stability of public opinion in Romania.



Graph 4. The percentage of people voting against the technology. *Note. Red-the total options of agreement; blue – the intense options (“totally agree”)*



Graph 5. The percentage of people who would vote for introducing the technology. *Note. Red-the total options of agreement; blue – the extreme options (totally agree)*

The lowest level of activism is associated with the case of positive message with a positive source. Also, the lowest level of “maximum agree” with voting or active implication is associated with sources, positive or negative. The intervention of a source does not necessarily change the results, in the positive, or in the negative part of the balance.

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The level of public acceptance is high about any new technology of protection for the environment. Carbon capture and storage technologies were associated with even more positive effects, though in reality positive effects were only on global warming. For example, toxic waste or water pollution were considered positive effects of CCS technologies (which was not true) by 70% of the respondents (Cismaru & Ivan, 2010: 10-14). But, even with the unrealistic expectations, the public acceptance would not be totally guaranteed; still, a quarter of respondents do not accept the testing of the new technology. When asked what technology would introduce for reducing global warming, respondents preferred the new forms of energy (solar and wind energy) and low-consuming machines (Cismaru & Ivan, 2010: 16).

4. COMPARATIVE ANALYSIS

4.1 Comparison of qualitative results.

When comparing Romanian sample with the other countries participants in the project, some characteristics come into evidence. All the other countries (exception Norway respondents, who preferred equally FDG and ICQ form of presentation) indicated ICQ groups (written information) as producing a more accurate and stable opinion on the matter discussed. The availability to publicly express varied, Romania being among countries with an intense positive attitude towards expressing opinions. Also, Romania had the lowest level of information on CCS technologies (completely new as information). The acceptance of technologies varied, being positive for the majority of the countries, while in Germany the overall opinion towards them was negative (population preferred renewable energies instead of CCS technologies).

4.2 The comparison of quantitative results. The level of information on environmental issues in the poll for Romanians was lower than Netherlands and Norway, higher than Greece and comparable to United Kingdom. (Pietzner *et al.*, 2010: 26-28). Romania had the highest level of self-reported

lack of awareness on carbon capture and storage technologies (71% of Romanians) (Pietzner *et al.*, 2010: 36). Other difference was in the level of public acceptance. The Netherlands, the UK and Norway citizens are essentially neutral regarding the use of carbon capture and storage technologies, although the Germans are the most sceptical. Greece and Romania have the highest level of supporting the introduction of new technologies (around a half of respondents strongly agree). (Pietzner *et al.*, 2010: 40-42). Also, almost a half of Greek and Romanian respondents would action (signing petitions or vote) in favour of CCS facilities (Pietzner *et al.*, 2010: 43).

When comparing Romania with the other countries in the four options of presenting the information, a distinct characteristic occurs. Even in the case of negative presentation (with or without a source), the attitude towards carbon capture and storage technology changes in a positive way. This change was registered only for Romanian respondents, while the respondents from other countries reacted "normally" to the change in the message and to the source, with a negative change after negative message and positive change after positive message (strongly in case of a source).

5. CONCLUSIONS

The evaluation of information during Romanian focus groups demonstrated a strong orientation for information received by an expert source, followed by a group/public debate. The preference of Romanians has been different from the preference from other countries (for example, Germany). This result suggests that the best method for introducing industrial innovation would probably be by public events, where expert presentations and debates could both take place.

On the other hand, the large acceptance of innovations without information shows a lack of maturity to Romanian publics (as a difference from publics from other countries, for example United Kingdom or Germany). The functioning, the benefits and limits of the

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technologies should be clearly explained, in order to avoid unrealistic expectations.

The four scenarios used in the poll (positive presentation with/without a source, negative presentation with/without a source) revealed that, in promoting innovation, the most important factor in creating public acceptance is not the importance and credibility of the source, but the accessibility of the information presented. The little or no change in positive attitude show deviations in the formation of public opinion, due to the lack of social trust.

As a general conclusion, in a social climate characterized by a low level of trust, the introduction of technological innovations should be done with the support of experts and opinion leaders in the field, while the spreading of information and the obtaining of public acceptance should be based on neutrality and adequate structure of information presented to publics.

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