ПСИХОЛОГИЯ

УДК 303

ВОСПРИЯТИЕ ПОГОДНЫХ И КЛИМАТИЧЕСКИХ ИЗМЕНЕНИЙ СЕЛЬСКИМИ ЖИТЕЛЯМИ И ШИРОКОЙ ОБЩЕСТВЕННОСТЬЮ

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Статья обсуждает отношение жителей Словении к изменениям погоды и климата в целом. Результаты опроса 1311 жителей Словении показывают их осведомленность о погодных и климатических переменах. Обеспокоенные этими переменами, многие принимают меры с целью облегчить последствия. Особое внимание было уделено сельским жителям (N = 252) и их ответам. Возникли некоторые разногласия между ними и остальными участниками опроса, например, сельские жители более остальных участников уверены, что перемены являются частью естественного процесса, а также, они видят сельское хозяйство в меньшей мере способствующим загрязнению окружающей среды и т.д.

Ключевые слова: изменение климата; принятие мер; сельские жители; глобальное потепление; погода.

PERCEPTION OF WEATHER AND CLIMATE CHANGE BY FARMERS AND GENERAL PUBLIC

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The contribution discusses the relation of Slovenians towards weather and climate change. The results on a quota sample of 1311 Slovenians show they are aware of the weather and climate change. The changes concern them and many are implementing measures to alleviate the consequences. Special attention was devoted to farmers (252) and their answers. Some differences between them and other participants appeared, e.g. they believed in a greater degree than other participants that climate changes are also natural process, they perceived agriculture as less contributing to pollution, etc.

Key words: climate changes; coping; farmers; global warming.

Introduction

As was presented elsewhere, especially by Intergovernmental Panel on Climate Change [7], human activity during the last century influences climate changes on Earth over the temperature range within which human development was taking place during the last 10 000 years. It was established [11] that — with 95 % certainty — human activity is the dominant cause of observed warming since the middle of the 20th century, and there is a great consensus on that in the scientific literature [4]. The changes are vast — we observe warming in the atmosphere and the ocean, diminishing snow and ice, rising sea levels and increasing concentration of greenhouse gasses. Nevertheless general public expressed also some doubts into aforementioned processes, but especially lack of the activity to change the situation, as expressed for instance in APA report [12] or in a recent edition of a Gifford's Environmental Psychology [6].

As changes are so widely discussed, general public is getting increasingly interested in the topic. The interest is also reflected in the increasing number of psychological studies dealing with the issue, the number of records with climate change as keyword in the PsychInfo database has risen from 27 in the peri-

od between 1995 and 2004 to 807 in the period between 2005 and 2014. A number of respected psychological associations (e.g. APA, Australian Psychological Association) also warned about psychological findings regarding human attitudes and behaviors connected to climate.

Climate Changes Risk Perception

Psychological findings are all the more important because one of the key characteristics of the current climate changes is human causal role in their formation [7]. Human drivers or causes of climate change include for example using fossil fuels, land use, and land use change. Human impacts or consequences include among others changes in the intensity and frequency of natural disasters, in water supplies, in food production and threats to public health, while human responses include for example individual and group attempts to mitigate climate change or adapt in ways that reduce damage from climate change that were not avoided.

Contradictory effects of climate changes on different places across the globe are causing confusion. One of those effects are heavier snowfalls in areas prone to having snowstorms (which can be explained by greater moist in the air due to global warming). Additional cause of confusion is introduced by media trying to balance predominant scientific views with opposing ones, like in political debates.

People are not experiencing climate changes only directly, but also indirectly through different media reports. Personal experiences are often partial and therefore possibly misleading, as long-term climate change are not easily detected by them. Small probability events tend to be underestimated and when not experienced recently they are perceived as less probable than it would be appropriate.

Psychological Aspects

When dealing with climate changes psychologists are amongst others dealing with risk perception, well-being, inter-group relationships, vulnerability of different groups, their adaptation capability, and different ethical issues.

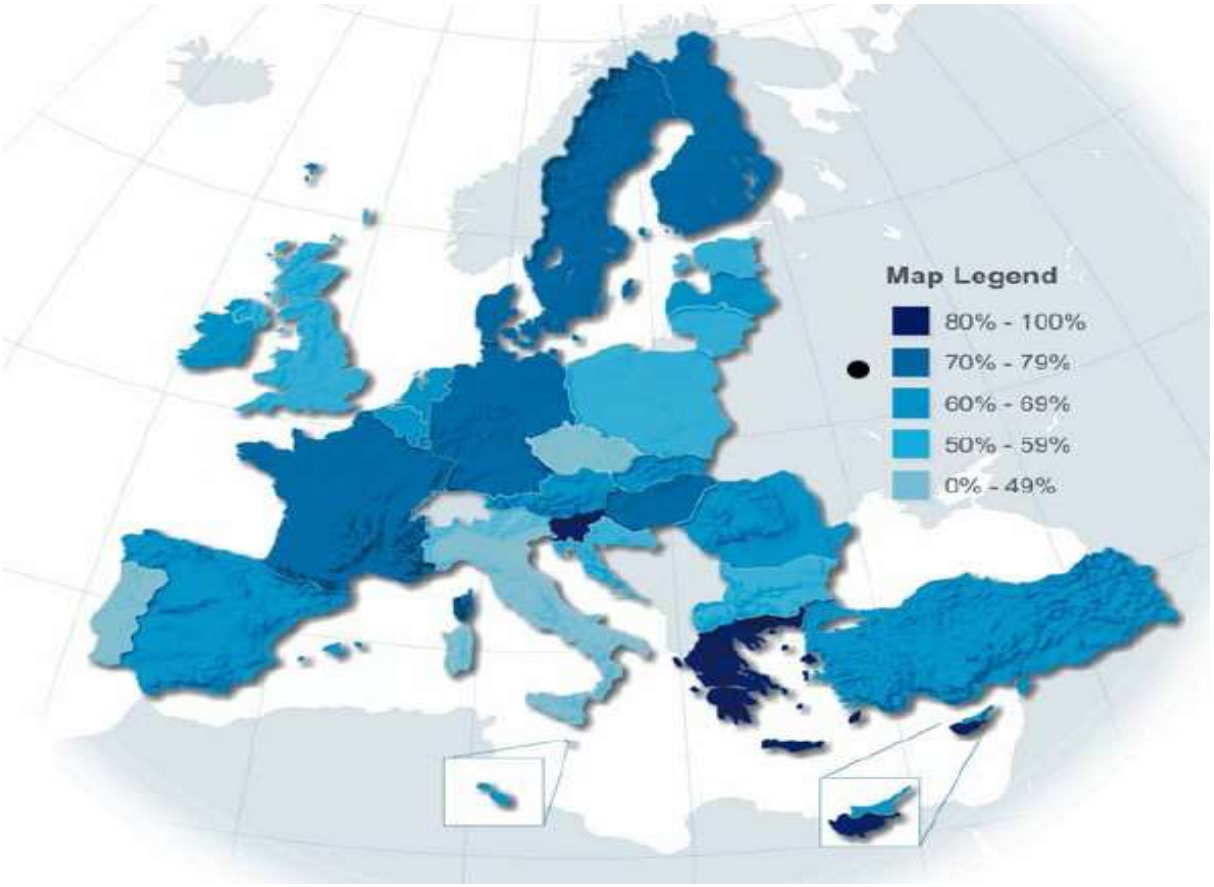
Countermeasures against climate changes could meet resistance on individual or higher, even state levels. There are many barriers [6; 12] causing that resistance, such as ignorance, uncertainty about facts, people do not believe experts or their conclusions, they follow their habits instead of changing their behaviors, they believe others should act or don't believe that actions would make any difference. Human behavior regarding climate changes is not consistent, perhaps because people perceive them as psychologically distant phenomenon, striking other people and places, and future.

Construal level theory [8] appeared as a good explanation of such behavior. It describes the relation between psychological distance and the extent to which people's thinking about some object is abstract or concrete. It states that closer objects will be thought of more concretely, while objects farther away will be thought of more abstractly. Climate changes are perceived as distant and therefore as less influential [10]. Swim et al. [12] believe that abstract and distant consequences have not concrete associations with the present and proximity and are not causing great fear.

Another theory that could explain behavior connected with climate changes is the theory of planned behavior [1]. According to this theory behavioral beliefs (beliefs about the consequences of the behavior), produce favorable or unfavorable attitudes toward behavior (individual's overall evaluation of the behavior), normative beliefs (beliefs about normative expectations of others) produce subjective norms (individual's estimate of the social pressure to perform the behavior) and control beliefs (individual's beliefs about factors that may facilitate or impede performance of the behavior) produce perceived behavioral control (individual's perception of ease or difficulty of performing the particular behavior). These three components, attitudes toward behavior, subjective norms, and perceived behavioral control together shape an individual's behavioral intentions and through it the behaviors. The theory was proven as useful to predict different environmentally responsible behaviors [2; 9]. If we illustrate the terms in the case of pro-environmental behaviors — if a person believes that specific behavior will contribute to reduction in global climate change, personal attitudes towards that behavior will be positive, normative belief that conservation behavior is socially desirable, will be reflected in a subjective norm that that behavior should be implemented, and control belief that environmentally friendly behavior is complicated will resonate in perceived behavioral control that person is able to perform such behavior. All those components will shape individual's behavioral intentions to act pro-environmentally and their pro-environmental behavior or the opposite.

Attitudes and Beliefs

European commission report [3] revealed relatively great concern for climate changes in EU countries (EU average 62 %), though there are differences between countries. They were perceived as single most serious problem, right after poverty, hunger and lack of drinking water.



Pic. 1. Concern for climate changes in Europe (Euro-barometer, 2011)

However, even neighboring countries differed in their concern (e.g. Slovenia and Italy). Swim et al. [12] draw attention to many aspects of climate change perception, e.g. their mistaken connection to the ozone hole, mixing concepts of weather and climate, influence of political orientation, cross-cultural differences, etc., so the differences between different countries can be result of those.

Problem of the study

The contribution discusses the relationship of Slovenian inhabitants towards weather and climate changes — from the awareness, to perception of the causes and consequences as well as their preparedness to respond.

Weather and climate changes encounter all the forms of exceptional weather and climate conditions which have various time and spatial extent that negatively impact their proper perception. Because Slovenia is situated between the border of Alps, the Mediterranean sea and Pannonian basin, it has very versatile climate with a lot of heavy rainfall, that cause landslides and flooding, lack of rain, which causes drought (and consequences on the agricultural production), unusually high or low temperatures, which affect people's health, heavy wind (with wind gusts up to 180 km/h) which damages trees and buildings, heavy snow that causes difficulties in the traffic and damages buildings, sleet that causes damage on the trees and electrical power cables, and storms with possible hail that causes damage on the crop [5].

As farmers — due to their job — experience climate more intensively and are more directly affected by the consequences of its changes, special attention in the paper is devoted to them, their perception of climate changes and preparedness for countermeasures, and their answers compared to answers of other participants.

Method

Participants: Results were obtained on a quota sample of N = 1311 participants from all regions of Slovenia. Special attention was devoted to farmers (N = 252 within the sample). In a sample there were 51 % of women, average age was 43,79 years (SD = 16,08), 40 % finished secondary school, 30.4 % high school or university, 19.6 % professional school and 9.3 % primary school. 51.7 % were employed, 17.3 % students, 15.7 % retired, 9.4 % self-employed and 5.8 % unemployed.

Materials: Questionnaire consisted of 74 questions prepared on the base of previous in-depth interviews with 17 participants, other studies, Ajzen's theory of planned behavior, construal level theory, mental models approach, etc. as well as questions about basic demographic data.

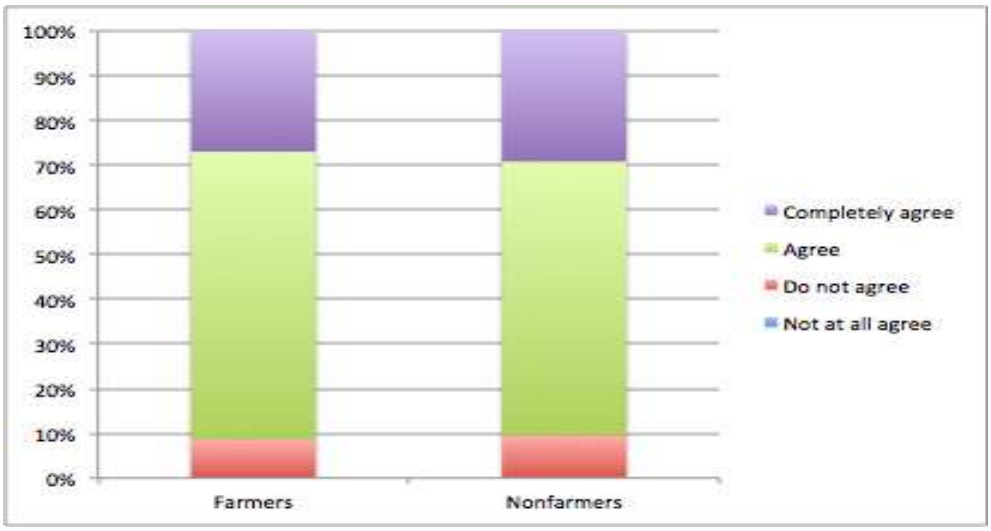
Procedure: Surveying was conducted personally at participants' homes from April to June 2013.

Results

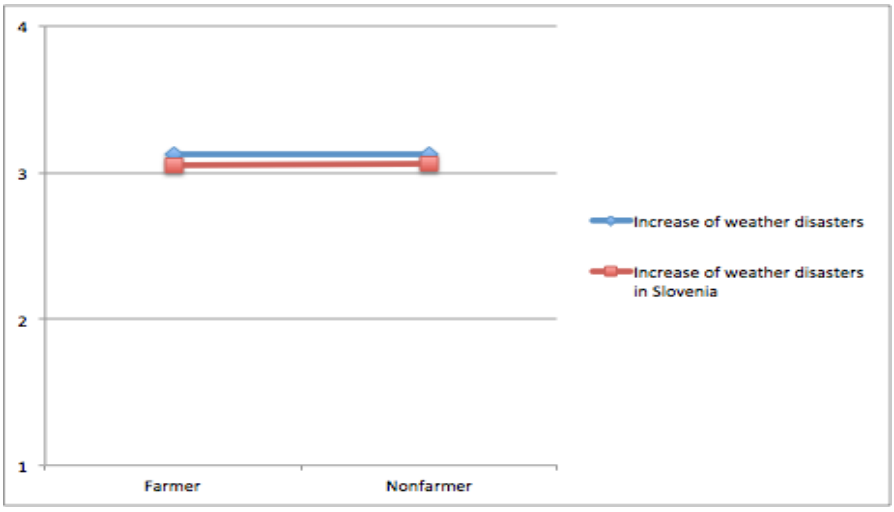
Perceived existence of climate changes by farmers and general population

Both groups agree with the statement that during the last 100 years climate on Earth changed a lot. Differences between both groups were not statistically significant ($\chi^2_{(3;\ 1237)} = 1.109$; $p = 0.775$). It seems that at least for the belief that climate change exists, being a farmer is not influential (pic. 2).

Both groups perceive some symptoms of climate change elsewhere and in Slovenia, as they agree with the statement that weather disasters in Slovenia and elsewhere in the last 20 years increased. The differences between farmers and other participants are not statistically significant ($t = 0.324$, $df = 1224$, $p = 0.746$ for climate changes in the World and $t = 0.228$, $df = 1222$, $p = 0.819$ for climate changes in Slovenia) (pic. 3).



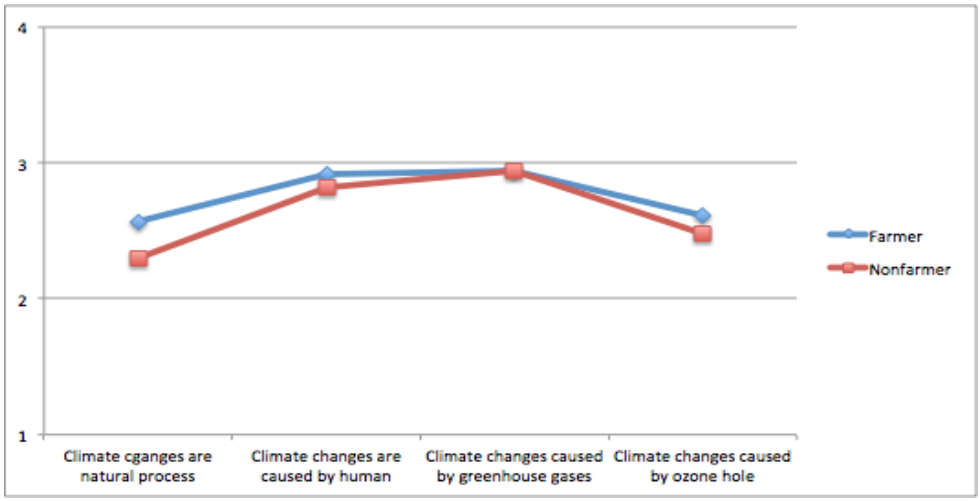
Pic. 2. Agreement with statement that during the last 100 years climate on Earth changed a lot



Pic. 3. Agreement with the statements about increasing weather disasters

Perceived Causes of Climate Changes

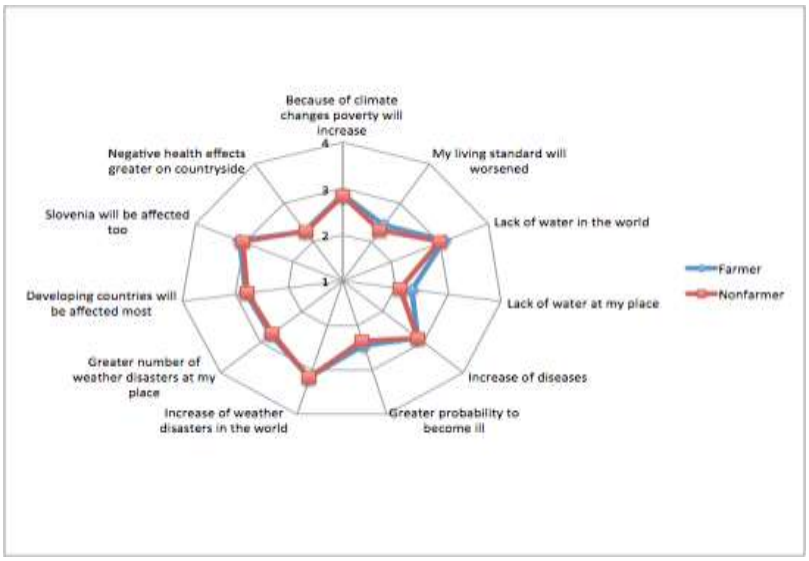
Both groups perceive climate changes as mainly caused by humans. Correlation between opinion that climate changes are caused by humans and opinion that they are caused by natural process r = -0,239 is low, negative, but statistically significant. Farmers believed in a greater degree than other participants that climate changes are also natural process (50.4 % vs. 33.4 %). Differences regarding climate changes as natural process and as caused by ozone hole are statistically significant in both groups (F = 29.797 and 7.185 respectively, df = 1, 1222) (pic. 4).



Pic. 4. Opinion about causes of climate changes
(1 = Do not agree at all; 4 = Completely agree)

Perception of general and local consequences of climate change

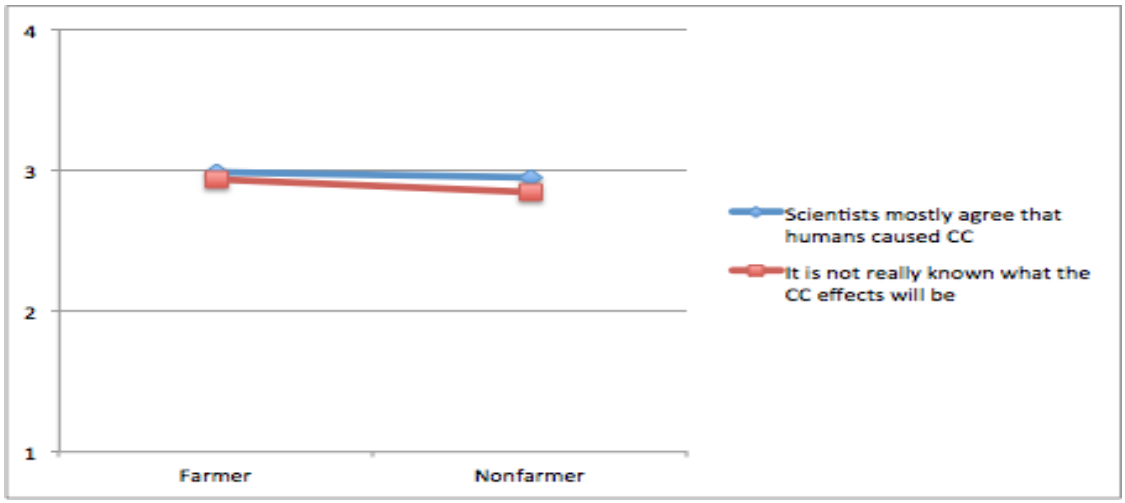
There are not great differences in perceived consequences of climate change between farmers and nonfarmers, but are greater for consequences on local and general level. Farmers in a greater degree perceive possible lack of water at their place (t = 4.714, df = 1221, p = 0.000) and marginally in the world (t = 1.944, df = 1224, p = 0.052), and worsening of their wellbeing (t = 2.130, df = 1222, p = 0.033). That health effects will be greater on countryside is not so much believed as well as a lack of water at someone's place (pic. 5).



Pic. 5. Perceptions of general and local consequences of climate change
(1 = Do not agree at all; 4 = Completely agree)

Knowledge of climate change causes and effects

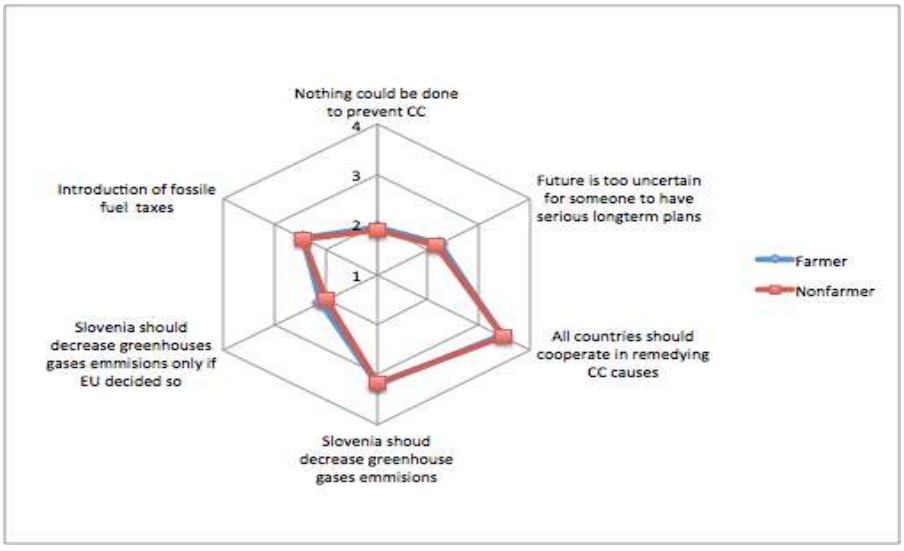
Both groups hold somewhat contradictory opinions that scientists agree that humans cause climate change (where groups are not statistically significantly different; t = 0.851, df = 1223, p = 0.395), but also that possible climate changes effects are not really known (with farmers agreeing more about that; t = 2.086, df = 1223, p = 0.037) (pic. 6).



Pic. 6. Opinions about knowledge and consequences of climate changes
(1 = Do not agree at all; 4 = Completely agree)

Worries and activities concerning climate change

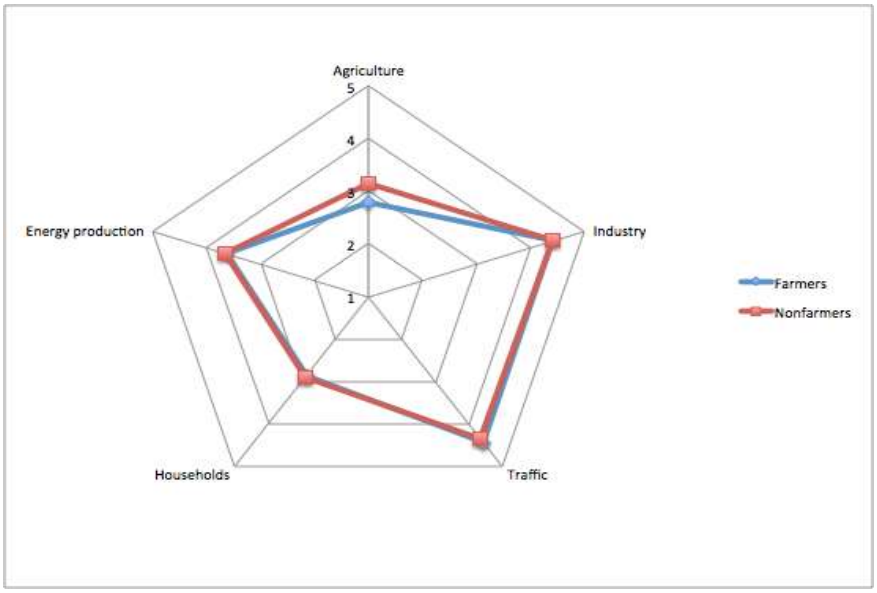
Both groups uniformly agree that activity to prevent climate change is necessary. Helplessness is not acceptable, as well as waiting for others. Cooperation between countries is perceived as necessary. Farmers are more strongly in favor of opinion that Slovenia should decrease greenhouses gasses emissions only if EU decided so (t = 1.1964, df = 1222, p = 0.050), while in other opinions they do not differ from general population (pic. 7).



Pic. 7. Worries and activities concerning climate change
(1 = Do not agree at all; 4 = Completely agree)

Causes of environment pollution as perceived by farmers and general population

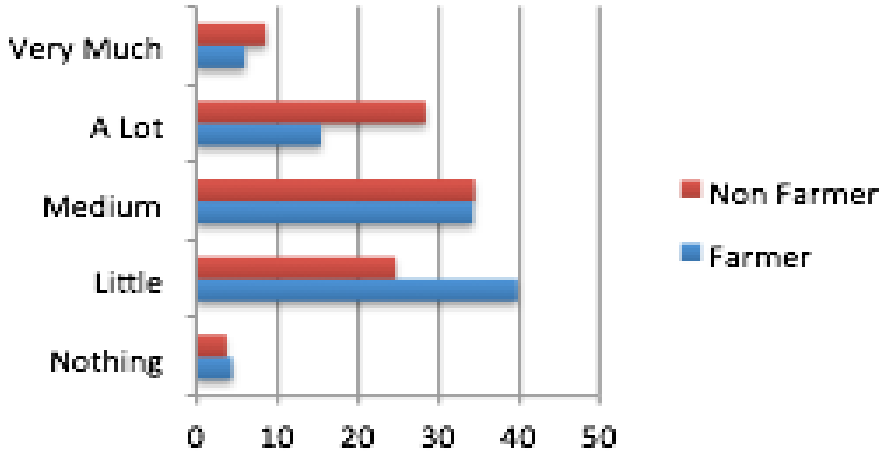
With the exception of agriculture, perception of causes of environment pollution is very similar in both groups. Traffic and industry are perceived as the main pollutants and through these answers is reflected the lack of knowledge about the actual causes of the pollution and the climate change (pic. 8).



Pic. 8. Perception of causes of environment pollution (1 = nothing; 5 = very much)

Contribution of agriculture to pollution as perceived by farmers and non-farmers

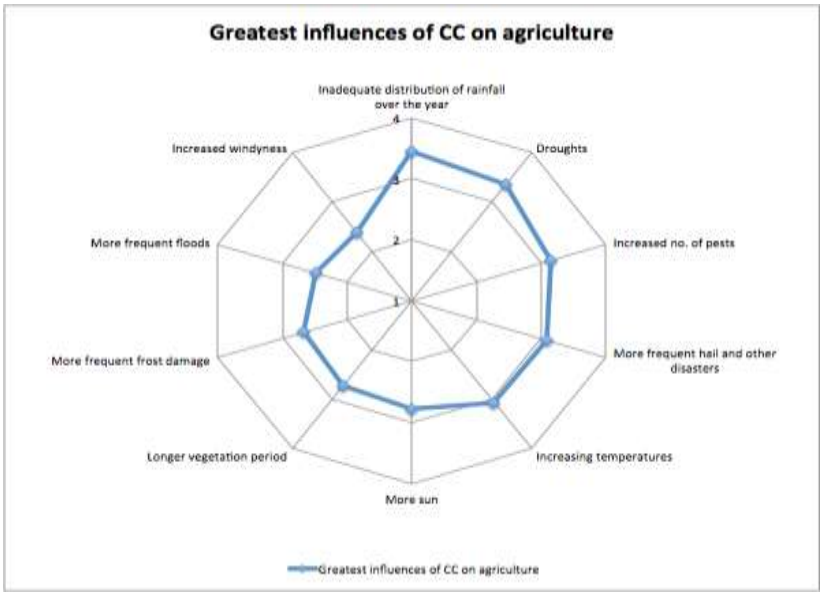
Farmers in comparison to the other participants perceive agriculture as less contributing to pollution (t = 4.936, df = 1221, p = 0.000) (pic. 9).



Pic. 9. Perception of agriculture contribution to climate change

Greatest influences of climate change on agriculture as perceived by farmers

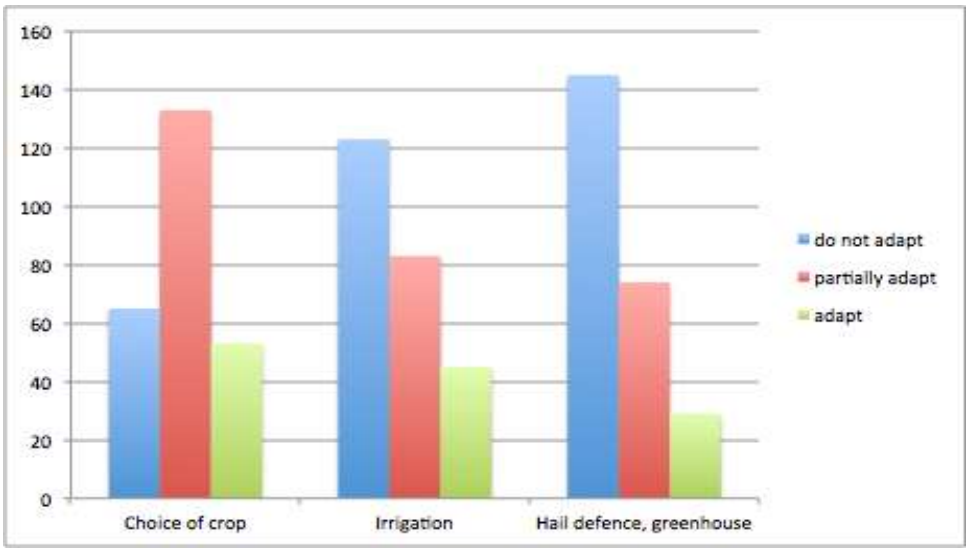
It is not surprising that the farmers perceived as more influential those consequences of climate change that are more directly connected to agriculture and more evident in everyday life, e.g. distribution of rainfall, droughts, pests, hail, high temperature (pic. 10).



Pic. 10. Farmers' perceptions of influences on agriculture (1 = no influence; 4 = great influence)

Farmers coping with climate change

Regarding coping with climate change farmers mainly adapt to climate change with the choice of the crop, but in a lesser degree with major investments like irrigation and hail defense. (pic. 11)

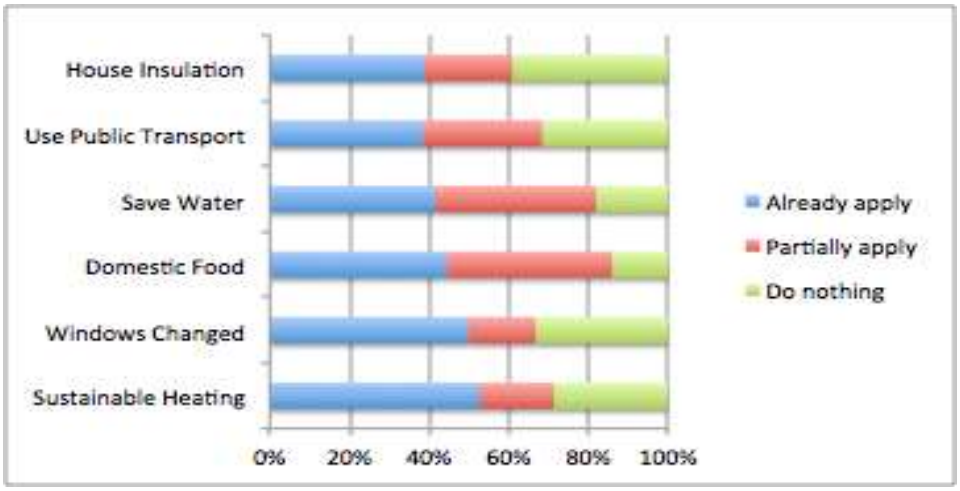


Pic. 11. Ways of adaptation to climate change

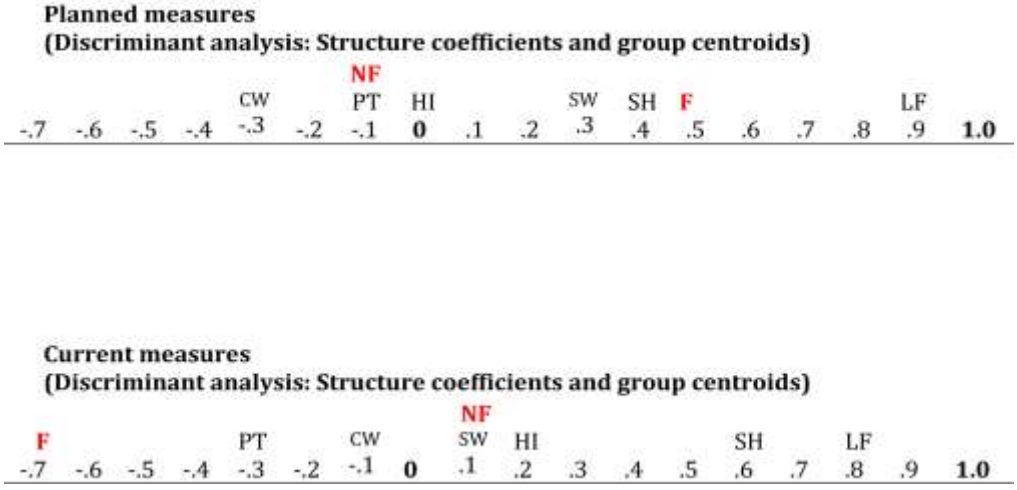
Prevention activities by all and discrimination between farmers (F) and non-farmers (NF)

It is evident that participants are acting against climate changes (pic. 12).

Use of *local food* best discriminate between both groups, either regarding current or planned measures, followed by sustainable heating (pic. 13).



Pic. 12. Actions against climate changes



Pic. 13. Discrimination in actions between farmers and general population as revealed in discriminant analysis
(LF = local food; SH = sustainable heating; SW = save water; HI = house insulation; PT = use of public transport; CW = change windows; F = farmers; NF = non-farmers)

Discussion and Conclusions

Results clearly showed that participants (in the case of Slovenia) are highly aware of climate changes, as more than 90 % of participants agreed with the statement that climate changed a lot during the last 100 years.

Our data supported construal level theory. Consequences on the local level are perceived differently than those on the general level, probably mainly based on the experiences of the participants. However, consequences assessed at the global level (weather disasters, lack of water) are rated higher than on the local level, regardless of the fact they could have greater psychological distance. That may be due to

the fact that Slovenia does not experience weather disasters as great as some other parts of the World and it is quite rich with the water. We cannot conclude that farmers and non-farmers perceive climate changes and their consequences radically differently, but there are some differences between them, more in degree than in direction, especially in those aspects that are more closely connected to their activity. Farmers, for example, to a higher extent believe that climate changes are caused by natural processes, perceive possible lack of water at their place and worsening of their well-being. Small differences may be due to the fact that Slovenians are quite connected with rural areas and nature, so information and experience they get are similar for farmers and general population.

Slovenian population supports activities to prevent climate changes and not helplessness. Regardless of the fact that they believed that climate changes effects are not really known, they did not believe that future is too uncertain to have serious long-term plans, and agree that the World and Slovenia should be active in preventing and remedying climate change causes. Participants are also at least partially (in more than 50 %) applying different actions, such as house insulation, use of public transport, saving water, eating domestic food, changing windows and sustainable heating. Use of local food is currently very popular — at least publicly — in Slovenia. Farmers earn for living with it, general public considers it healthier, and both government and sellers promote it.

To conclude — in general, relatively optimistic view appeared, at least concerning Slovenian participants awareness of climate changes and their preparedness to cope with them actively. They are aware of them and are implementing activities to prevent them.

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