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**POSSIBLE RESPONSES TO THE EFFECTS OF CLIMATE CHANGE, WITH SPECIAL REGARDS TO THE PARTICULAR NEEDS OF  
THE HUNGARIAN DEFENCE FORCES**

**AUTHOR'S ABSTRACT AND FORMAL CRITIQUES OF PHD DISSERTATION TITLED**

## **FORMULATION OF THE SCIENTIFIC PROBLEM**

Climate change has several negative impacts on mankind. It is our obligation and duty to find further global responses to reduce these impacts. Taking into account and applying the responses the Hungarian Defence Forces can give to climate change the concept of passive house containers may provide a certain new direction in the support of Special Forces.

### **1. RESEARCH OBJECTIVES**

I set myself the scientific goal to verify that the passive house technology learnt in the course of climate research entails new application opportunities. The so-called passive house containers although non-existent today could fill a gap in supporting the Hungarian Defence Forces. My goal was:

- To examine the negative domestic effects caused by global climate change,
- To analyse the ways of responses that can be given to them (energy saving),
- To explore the different hazards emerging in the course of fulfilling the tasks by the Hungarian Defence Forces,
- and after surveying them to elaborate the concept of applying the passive house technology in an area with potentials unexplored so far and which can be efficiently applied at the forces of the Hungarian Defence Forces.

### **2. HYPOTHESES**

1. Responses to be given to climate change that reduce its negative effects may only be determined by the permanent propagation of energy efficient new technologies, the radical change of the structure of energy resources and the well-considered application of new construction methods.

2. The development of the basic concept of energy efficient passive house containers that could be used in fulfilling the tasks of the defence forces, based on the technological principle of passive houses and the containers already used by the defence forces.

3. Examination of human defencelessness caused by weather extremities arising from climate change and demonstrating that the particular passive house container the use of which I'm proposing in the course of (among others) military humanitarian activities can significantly and in a sustainable way enhance the protection of human life and reduce health hazards without any additional devices.

4. Investigating the protection passive house containers provide against hypothermia.

5. Investigating further opportunities for the application of the passive house container technology by the defence forces.

### **3. RESEARCH METHODS**

- Development of a system approach
- Studying the relevant current legal regulations and statutory provisions (ex lege)
- Synopsis, analysis and comparison of specific literature
- Participation at conferences and exhibitions connected to the problems of the effects of climate change
- Contacting specialists (meteorology, architecture, etc.)
- Analysing principally military technical parameters concerning the containers already in use (collection, comparison, processing)
- Drafting proposals subsequent to the analysis.

**CONCISE, CHAPTER BY CHAPTER DESCRIPTION OF THE EXAMINATION PERFORMED**

1. In the first chapter I presented the general information connected to global climate change such as the concept of environmental safety and related items, the fundamental concept of climate change as well as the components of the atmosphere and their main features. I stressed the anthropogenic features and the peculiarities of natural effects. Among the generally applied methods of research methodology I put stress on applying system approach. Both climatologists and non-professionals are concerned about the possibility of global climate change which is not a question any more but an accepted fact. Therefore I thought it was important to present this idea. I emphasised that out of the factors affecting climate change researchers clearly hold the so-called greenhouse gases responsible. These are generated partly by nature and partly by anthropogenic activity. I demonstrated how curiosity and willingness of man to act leads to continuously investigate causes, consequences and responses which can be given to the effect that emerged. Obviously the majority of researchers and non-professionals tie the phenomena caused by climate change primarily to greenhouse gases and the anthropogenic activities that are supplemented by the processes of nature itself. Man and the factors of the living environment kept in view have a direct and compelling effect on the climatic conditions of the Earth. The planet responds to the processes by a changing global climate which change stimulates humanity populating the planet to join forces and act in a co-ordinated and conscious way. Climate change is a global hazard that threatens man and his environmental safety.

2. In Chapter Two I examined and described the main events, organisations and dates connected to climate change. I made an extensive listing concerning both international and domestic aspects. Both domestic and international stages of nature conservation are included in a table. I made it clear that in order to intervene effectively against the damages occurred and caused in the surrounding environment we must join forces. I presented that determination, action and the creation of numerous laws and groups were required to pave the way to development. I emphasised the long distance mankind covered in the struggle against climate change and how complex, hard and crucial this road was until mankind had to realise that the resources of the Earth are limited and must be protected from thoughtless exploitation, destruction and irresponsibility. I deducted the long time it took until the first clubs and conferences – acting within narrow bounds at the beginning – could finally extend their views to the entire world and could call the attention to the upcoming hazards and effects. In the course of my investigation I realised that climate change has its effects felt in almost every social process both at international and domestic levels while the organisations, regulators and different forums managing the effects developed. In the meantime sustainability has become a key question. All the organisations, legal regulations, endeavours and actions that had sprung into existence prove that mankind has come to realise the consequences of its actions. The work of awareness raising conferences, committees and workgroups was not useless. The endless exploitation of nature, diminishing fossil energy resources and the substantial pollution of the environment resulted in the creation of treaties and the rise of a human race that is more preserving. The change of mindset that characterise people more and more is exemplary both at international and domestic level. However, our work is still not one-hundred-per-cent completed. There remains a lot to be done for future generations also, of course only in the case we succeed in preserving and passing on a liveable planet.

3. In the subsequent third chapter I studied the circumstances and features of our country from a geographical aspect. I pointed out that generally speaking weather characteristics are already changing. I picked some areas – affected by climate change – where signs of human destruction can be observed. I laid down that anthropogenic intervention did not remain unanswered by nature. I demonstrated the fact that the eroding landscape and disappearing vegetation results in an environment that is externally less enjoyable. I put into the foreground that by taking careful steps the process may still be reversible or at least can be maintained at a level of stagnation. In order to give positive responses to the changes caused by climate in the weather and in other factors we have to know the exact reasons and the geographical circumstances owing to which the responses given by nature are taking shape in a way characteristic to them. Perceptual weather extremities,

drier summers, rainier but milder winters, less extreme cold, and drought – these all urge man to acclimatisation and to give responses. Change already began and requires determined steps which can be observed in anthropogenic ambitions more and more frequently. Preservation of a rich flora and fauna is essential to maintain the global equilibrium state. Nevertheless in a world where man dominating the planet forgets to take care and to restore the surrounding environment to its almost original condition such values may become at serious risk. The ambitions would be successful if cause and causer become obvious. It is therefore necessary to examine the basic element where life itself commenced and where it will continue – if we are lucky and circumstances are sustainable.

4. In Chapter Four I examined the most characteristic energy saving methods, devices and areas widespread nowadays. I touched upon transportation and innovation, outlined the history and importance of waste management, presented the old and new opportunities of the life of paper and mentioned the increasing product range of photovoltaic technologies. Finally I studied the possible responses that can be given to locking up, the different construction methods and got as far as the detailed presentation of the passive house technology. Climate change is a global process that fundamentally determines almost every aspect of our lives. The responses to the climate crisis can and should be defined by taking into account the requirements of sustainable growth. If we take these principles into consideration and observe them we can at the same time reduce the negative effects of climate change. One of the basic principles of sustainable growth i.e. that raw materials should be accessible may only be attained if we change the structure of energy resources by using one of the above methods and focus on renewable energies and if we change obsolete construction methods and build passive houses or green buildings made of natural base materials having similar constituents than that of the old adobe houses, or incidentally light structure houses instead.

5. In Chapter Five, being the main point of the paper, I listed the general duties of the Hungarian Defence Forces and the duties required in classified periods, respectively. I outlined the general properties of containers currently used and presented the requirements made on certain special structures (e.g. containers used for transport). Keeping the conclusions described above in view and taking the basic duties of the defence forces into consideration, as well as studying the range of solutions to the climate crisis I created the passive house container concept and detailed its possible characteristics. The duties of the defence forces are multiple, require special assets and demand immediate intervention in certain extreme cases. It is indispensable to deploy human forces whether it is a mission, exercise or evacuation. The human body also requires relaxation, warming up or cooling down, in order to fully perform the duty imposed on it. The above outlined passive house container serves the relaxation between changing. The container is close to zero-energy, can be applied flexibly and for various purposes, not to mention its energy saving property and mobility.

#### **4. SUMMARISED CONCLUSIONS**

Climate research is a complex task; it is in its heydays because of timeliness and considering its role in preserving the environment it is a primary area.

It can only be examined – and the problems of climate change can only be remedied – if we consider the requirements of sustainable growth and consciously form our technology and future in order to respond to them.

In an organic world it is not nature that adapts to the destruction carried out by humans but we, the inhabitants of the planet, have to form our biotope in a way that it accommodates to the processes of nature and to its pulsating versatility as much as possible.

If we observe these principles and live environmentally responsible lives it can be attained that the negative effects caused by climate change show a decreasing tendency or at least stagnate.

The Hungarian Defence Forces could utilise the advantageous properties of passive house technology, as one of the responses to the climate problem, during the deployment of human resources and in the course of fulfilling its basic tasks, respectively, as human reserves are finite even when employed in large numbers.

Consequently the application and propagation of passive house containers could become an asset satisfying a special new requirement characterised by sustainability and would protect human lives under extreme weather conditions and would reduce man's defencelessness towards nature.

The goal of implementing the innovation is – besides using it for own purposes – that it can be exploited by partner organisations, civilian population and other users in respect of the particular features of this special container. It would be possible to apply the container in other areas in the future (e.g. container for storing and transporting paintings with special thermal requirements, energy efficient sanitary container used at military programs, soundproof container for relaxation on airshows, etc.).

## **5. NEW SCIENTIFIC RESULTS**

1. During my research, while keeping the principles of sustainable development in mind, I found that responses to climate change can be determined with energy efficient technologies that meet future requirements, dramatic structural changes of energy sources, and conscious application of new construction methods.

2. Based on the principles of a passive-house and the housing containers used by the military in operations, I was the first to draw parallels between the factors identified, to develop the basic concept and describe the features of an energy efficient passive-containerized housing unit that would meet military requirements.

3. I studied human vulnerability caused by the weather extremes resulting from climate change, and clearly demonstrated that the use of the specific passive house container I proposed especially, but not exclusively, for military humanitarian operations, significantly and sustainably increased the protection of human life and reduced health risks even without any complementary devices.

## **8. PRACTICAL USABILITY OF THE RESEARCH RESULTS**

Humanitarian disaster situations caused by the global climate change demand extraordinary strength from organisations specialised in rescue and from forces maintaining law and order to cope with them.

One of the responses given to the climate crisis – the spread of the passive house technology – resulted in a new, unusual association because in this particular case the result of the research combines the passive house technology and the basic container deployed by the defence forces.

The passive house container focuses on the appropriate conversion of the basic containers already widely used by the Hungarian Defence Forces, in conformity with the criteria presented.

Their use might have high priority in supporting the Special Forces (e.g. missions, domestic exercises, programs, etc.).

The subject is suitable for further research in relation to other containers and areas unutilised so far; the basic idea can be utilised as a specimen and elaboration can be further improved.

## **9. RECOMMENDATIONS**

The subject did not cover the details of other container types (e.g. sanitary, guard, containers for transport) so later on the concept could be developed for these types also.

The contents of the present paper may assist in the effective execution and implementation of a future passive house container (PhK).

It may also provide basis for partner and civilian organisations concerning the application possibilities of the PhK.

For the professionals of the Hungarian Defence Forces dealing with transportation and accommodation, particularly for supporting missions and other military activities that demand the deployment of significant human resources.

As educational material in abstracted form.

For experts as a general research aid.