

Adaptation to Climate Change through Territorial Development Strategies: *Experience of the City of Varna*

(Summary)

Introduction

Since 2005 the Municipality of Varna is preparing its new General Spatial and Land-use Plan which is supposed to be ready by the end of 2010. One of the goals of the Plan is to determine an appropriate functional designation and land-use of peri-urban areas with regard to mitigating the consequences of climate change. The mitigating measures as being developed in several different directions:

1. Sustainable expansion and preserving the natural function of the surrounding forests

Aiming at decreasing the greenhouse gas emissions and increasing the natural productivity of oxygen inside the city, the planners intend to include the surrounding forests inside the city borders. This kind of expansion will increase the total green area within the city itself and will allow a better ratio of green area per inhabitant. For the time being Varna has less than 10 m² of green space per inhabitant but with the new planning measures this ratio is supposed to grow up more than three times.

Therefore, the planners are facing the professional challenge of developing a planning solution which will allow the city to expand and grow in a sustainable way on new territories and at the same time to preserve their original natural function. They will need to provide a special status of protection to the green outskirts which will be included in the city borders as newly urbanized areas. Giving the surrounding forests the status of a peri-urban green system will provide them with a higher level of legal protection. For the next fifteen years there will be a legal ban on changing the functional designation of these forests and on using them for purposes other than a city green system.

2. Re-orientation of housing policy and providing more green space in high class real property

Apart from that, several other territories around the City of Varna will also be included in the city borders in order to provide the necessary space for new expensive real properties. This land-use planning exercise will entail a lot of design work on family houses. The task of the architects will be to provide no less than 70% of green space in those areas which would be unthinkable with the traditional blocks of flats.

3. Flood risk prevention

Since the last devastating flood in the 1950-ies the Municipality of Varna is constantly developing and mastering its experience in preventing the risk of extreme natural phenomena such as draughts and heavy and middle-sized floods.

As a first 'buffer' on the way of the storm waters coming from the Franga Plateau in case of heavy rains, in the 60-ties was designed and planted a forest belt on the foothills of the Plateau. The soil, the dry leaves, the bushes and the trees in this green belt act as a 'sponge' accumulating the first wave of storm waters and preventing the city from being flooded by enormous quantities of water in a very short period of time. This planning technique turned out to be extremely effective throughout the years in preventing small and medium-size floods.

According to the new General Spatial and Land-use Plan of Varna the green belt under the Franga Plateau will be preserved and ameliorated and will continue to perform its safeguarding function against floods and extreme weather conditions.

The decrease of the flood risk requires adequate planning and rehabilitation of the City's storm water drainage system consisting of gullies, gorges and creeks. For the time being Varna has a mixed sewer and rain water system. However, the efforts of the city planners are aimed at creating separate systems for sewage and for rain water. This will allow on one hand the WWTP to operate in accordance with its designed technical capacity and to drain properly and make use of some of the rain waters on the other.

4. Sustainable management of water resources and draught risk prevention

Water management in peri-urban areas and use of water sources other than the water supply system is another area where Varna has certain experience. The alternative dry and wet periods with an average time span of 10 years have urged the local authorities to look for alternative water sources such as ground waters and rain water instead of the traditional water "from the tap".

Varna has also experience in promoting water saving irrigation systems for the dry periods. These may be simple drip irrigation systems as well as a combination of drip irrigation using water from an alternative water source.

5. Reduction of greenhouse gas emissions

Varna has a good deal of experience in decentralized waste and water management in peri-urban areas and in small villages lying very closely to the big city. One of the aims of small scale and home composting which are widely promoted in peri-urban areas is to decrease the amount of greenhouse gases emitted from decaying (not composting) waste.

Conclusion

The adaptation to climate change through territorial development strategies is a powerful tool for mitigating the impact of global warming at the local level and for early prevention of environmental risks due to extreme weather conditions. It is a primary responsibility of the local authorities to have a good knowledge and understanding of the legal and economic instruments and to prevent their citizens from the disastrous events and increased levels of risk factors resulting in from the climate change, such as floods, draughts, gaseous pollutants, overheating, etc.