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Session: F1 Advancing urban resilience through the strategic use of spatial data

Presentation: Disaster Risk Assessment Management (DRAM)- Experience from Kosovo

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Abstract:

The level of integration of DRAM into spatial planning is limited in Kosovo despite the fact that Kosovo has experienced several floods, earthquakes, landslides, and avalanches. The United Nations Human Settlements Programme (UN-HABITAT) through its Municipal Spatial Planning Support Programme (MuSPP) funded by Swedish government (Sida) is supporting different partner municipalities towards improving the effectiveness of the spatial planning efforts in Kosovo. UN-HABITAT has supported the municipality of Ferizaj/Urosevac, Kosovo for retrofitting DRAM in Municipal Development Plan (MDP) and Urban Development Plan (UDP) as such aspect was not elaborated within MDP and UDP. The activities conducted were: discussions between central and local institutions, examining laws and practices on DRAM in Kosovo; collecting and formulating of Spatial Information Database for DRAM analysis; providing trainings to municipal counterparts; implementing of disaster surveys; conducting hazard mapping by using GIS tool and drafting DRAM document for retrofitting MDP and UDP.

Keywords: Disaster Risk Assessment and Management (DRAM), spatial data (GIS), spatial and urban planning.

1. Introduction

After 1999, Kosovo has experienced a construction boom and sprawl especially in urban areas. The high percentage of the new construction is without building permits; and there is almost no control by the authorities. This could cause the high risk to the population, particularly with regards to earthquake, floods, avalanche, forest fires, landslides etc.

Climate change is also increasing vulnerabilities of populations to natural hazards; however the planning documents didn't consider the mitigation measures in order to reduce the disasters. The same situation was in legislation; in terms of mainstreaming Disaster Risk Assessment Management (DRAM into development plans, the Law on Spatial Planning didn't pay attention to the necessity of DRAM approach; and therefore, current spatial and urban plans lack the DRAM aspect. Recently, Disaster Risk Reduction (DRR) report and action plan have been drafted by the support of UNDP. The action plan states that DRR shall be treated in planning documents. However, in Kosovo, authorities lack knowledge on how to treat disaster issues in the field of planning. In addition the current legislation is strongly and only oriented towards response; with very limited focus on preparedness, and no policies and strategies that support risk reduction (Armen Grigoryan Hachim Badji George Bryant, 2011 p 6).

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Fig1. Kosovo in regional context

In the past years Kosovo experienced different natural disasters such as earthquake, landslide, flooding and avalanche. In 2012, there was avalanche in Dragash municipality located in the southern Kosovo. People lost their lives and several houses were destroyed. The avalanche occurred in the place called “avalanche place” by local people (Jutkevits UNDP 2012). The situation is similar in all municipalities The municipality of Ferizaj located in the south east Kosovo experienced severe flood; however, houses are still being constructed within flood prone areas without any concern or attempt on how to prevent future damage by next disasters. New buildings are being constructed without properly considering building code even though South East Kosovo is situated in seismic areas. *“In April 2002, an earthquake with a magnitude of 5.7 hit the Gjilan municipality leaving significant structural damage”*(Armen Grigoryan Hachim Badji George Bryant, 2011 p 6).

The United Nations Human Settlements Programme (UN-HABITAT) through its Municipal Spatial Planning Support Programme (MuSPP) funded by Swedish government (Sida) is supporting different

partner municipalities in Kosovo towards improving the effectiveness of the spatial planning efforts in Kosovo. One of the partner municipalities is Ferizaj.

Ferizaj is situated in South East Kosovo in the very strategic area between Pristina (the capital city of Kosovo) and Skopje (the capital city of Former Yugoslav Republic of Macedonia). The strategic location has attracted industry and accelerated the uncontrolled urbanization very fast. After 1999, a boom of construction development arose everywhere in Kosovo despite the fact that most of the municipalities did not possess MDP or UDP in order to properly control the development. As a result, in some cases settlements were built in high risk areas. As a consequence, Ferizaj, located in a very flat area (flood prone area), faced significant problems and realized its needs on how to properly treat DRAM in MDP and UDP in order to prevent disasters and reduce risks. UN-HABITAT has supported the municipality of Ferizaj, Kosovo for retrofitting DRAM in MDP and UDP as such aspect was not elaborated within those plans.

2. Methodology

The methodology used was quantitative and qualitative research. The activities conducted were: discussions in different institutions, examining laws and practices on DRAM in Kosovo; collecting and formulizing of Spatial Information Database for DRAM analysis; providing trainings to municipal counterparts; implementing of disaster surveys; drafting DRAM document for retrofitting MDP and UDP.

For the purpose of getting information, a qualitative method was used by formulating the questionnaires and conducting in depth interviews with different citizens living in the hazard areas.

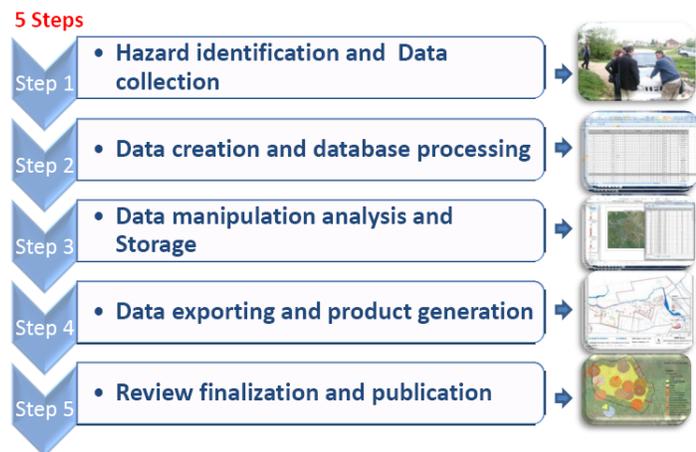
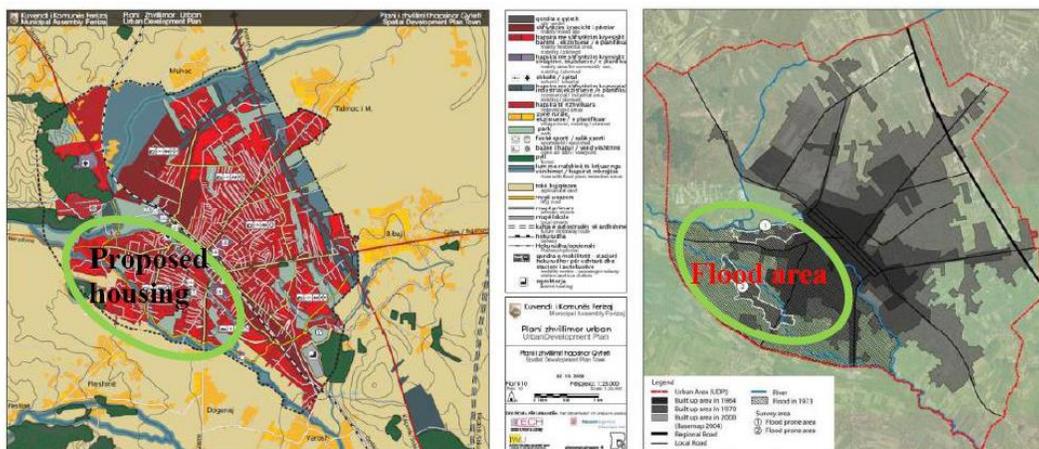


Fig. 2. Five steps of hazard mapping

2.1 The results of findings

The study conducted by UN-HABITAT and the Municipality of Ferizaj in 2009 (Ferizaj MDP 2009 and DRAM document 2011) shows the fact that land use didn't take into consideration of flood prone areas. For instance in Ferizaj, MDP/UDP describes flood prone areas as new housing construction areas without mitigation measures.



Source: Ferizaj UDP 2009

Source: Yokota & Seneque 2009

Fig.3. Comparison of proposed urban expansion and Flood prone area map

The qualitative method was conducted through field survey focusing on the flood prone area. These were generally the areas of flat topography adjacent to the rivers. In the past, these areas were used for agricultural purposes and had a surface irrigation system. However, as urbanisation progressed, the use of the land from agricultural to residential purpose, these irrigation and drainage channels were disrupted and covered over thus disrupting the previous flows of flood water.

Following the surveys, GIS data base was prepared and data was analysed in order to accurately understand the current condition of the areas. In the approved planning documents and strategies there was no clear mapping of hazards. For the purpose of hazard mapping and analysis, GIS data was established based on the information gathered from relevant institutions and field surveys. The data base for DRAM was established and maps prepared.

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Example of summary of the survey



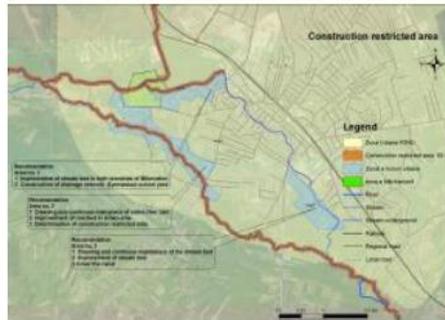
	Name of the city: Ferizaj	Survey area 1	Survey area 2
1	Number of houses	128	192
2	Obtained answers	78.7%	80.7%
3	Ethnic minorities	1.0%	0.0%
4	Low household incomes	36.00%	41.9%
5	Experience with flood	63.0%	87.0%
6	Desire to stay	86.0%	87.7%
7	Desire to invest for flood reduction	77.0%	80.6%

3. Conclusions and lessons learned

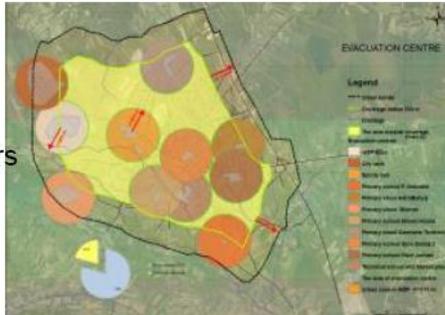
The vulnerability and hazard mapping was prepared based on the information gathered from different institutions such as Ministry of Internal Affairs - Department of Emergency. Based on these, GIS data was established and maps are prepared (seismic map, forest fire map, erosion map and flooding map for entire municipal area). The data obtained from different institutions and data collected from the field survey in three flood prone areas in urban zone were processed in GIS.

During the implementation of the project some challenges and lessons learnt were evident such as: lack of updated data and no data experience sharing; discrepancies when using maps from various sources due to differences in dates and spatial references; for conducting hazard mapping it requires GIS software and good computer and GPS devices; capacity building and training is time consuming; however, it is truly necessary; regularly updating of map information and conducting field survey is necessary in order to maintain the validity and accuracy of hazard maps because hazards change. Development control instruments for disaster prevention and mitigation were introduced through strategies and action plan.

Land restriction



Evacuation centers



Example of some measures proposed and implemented

The measures proposed were: Land use consolidation alongside the river area, retrofitting building, buffer zones, evacuation centres and evacuation routes, micro zoning and adapt seismic building code etc. The DRAM document is approved by the Municipal Assembly and is part of MDP and UDP.

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Bio

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