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IS CAPACITY BUILDING POSSIBLE DURING EMERGENCY? INITIAL CASE STUDY ON SOLOTVYNO, UKRAINE SALT MINES ISSUE

Introduction

In December 2010, the situation related to the dangerous exogenic geological processes within the territory of Solotvyno salt mines was classified as an emergency by a decision of the Transcarpathian Regional State Administration. Later, this decision was approved by the expert report of the Ministry of Emergency Situations of Ukraine (No. 02-17292 /165 dated from 09.12.2010). This resulted in the announcement of an environmental disaster at state level by the Ministry.

The problem

In Solotvyno village, 24 salt karst sinkholes have been revealed and one of the largest has emerged to approx. 120 meters from the underground working site. Overall, sinkhole development is preliminarily estimated at approximately 5 million cubic meters, while the depth of degradation zone is reported to reach more than 200 meters. Moreover, **the situation may cause cross-border environmental and health challenges in the neighbouring Romania and Hungary if large quantities of salt water stream into the trans-boundary Tysza river. A significant increase in dangerous deformations of the earth's surface are reported in the area that can affect residential, industrial buildings (it has also impeded the functioning of the mine sites) as well as engineering systems.**¹

The collapse hazard is due to the rupture of the roof of old mining voids and some of them are located near the surface at shallow depths (approximately 30m). The rupture of the roof occurred after the filling up from water in different parts of the mine complex. The dissolution process has increased in intensity:

1. Due to the change of mining methods, particularly the use of explosive mining techniques to expose the salt product which has damaged the underground structure;
2. Due to the drainage system not having been maintained.

Methodology

Site visits, meetings and interviews, literature study and case study, data cross-referencing.

On 12 January 2016, Emergency Response Coordination Centre (ERCC) of Directorate General for Civil Protection and Humanitarian Aid Operations received a co-signed **Request for Assistance (RFA) from Ukraine and Hungary** to conduct a risk and threat assessment on a possible

¹ EUCPT Scoping mission's report, 2016

cross-border environmental disaster situation in Soltvyno, Ukraine which may have significant negative effects on human health and the environment of Hungary, Romania and Ukraine. Two missions (Scoping – 5 experts and Advisory – 17 experts) were deployed and as a result the Risk Assessment report was produced. Author of this paper was the Project Officer for these two missions – from the early beginning after receiving the RFA - establishing the Terms of reference and managing the whole project as well as being an ERCC Liaison Officer.

The aim of the Advisory mission was to determine a programme of actions, which in addition to short-, medium- and long-term goals and their priorities, would define available resources for their achievement within the framework of the EU Strategy for the Danube Region (EUSDR). The Advisory Mission's independent report produced a number of conclusions and a set of 8 packages of recommendation. One of the first recommendations was to establish and set a monitoring system in order to obtain data, set benchmarks and plan next steps, activities and investment.²

The report also tried to linking up the Union Civil Protection Mechanism's work with the EU Strategy for Danube River for possible projects.

Based on my previous research as a Master of Science programme student at San Diego State University, USA in 2013 and my thesis - "A future model for capacity building and partnership integration by leveraging GIS and knowledge discovery" (hereinafter – Akitis, 2013), I find many of the findings relevant and timely also for the case of Soltvyno salt mines. A number of elements from my thesis I am applying also to the Soltvyno case. I hope that I will be able to explore and research the capacity building in the Soltovyno area even further. The situation is "frozen" in Soltvyno in terms of active solution finding.

During its missions, the EUCPT noticed remarkable drawbacks in functionality and disagreements among the main Ukrainian stakeholders with the Ukrainian civil protection system. Coordination and horizontal information sharing was lacking, and therefore the disaster risk management system is fragmented and knowledge and expertise is needed to ensure the proper risk management process. In other words – capacity building for the Ukrainian civil protection system was urgently needed.

Important to remember that the emergency situation was still ongoing at the time when the missions were deployed and even today the Emergency situation is present.

I have observed numerous stakeholders, their interest, and willingness or neglecting to cooperate and work together before, during and after the missions. Local government, State Enterprise "Soltvynksyi solerudnik",

² EUCPT Advisory mission's Risk Assessment report, 2016

regional government, Ministry of Agrarian Policy and Food, State Emergency Service, Scientists representing different scientific institutions of Ukraine, politicians, media, general public, just to name the few key stakeholders and their interest.

As in every emergency, the biggest issue in emergency response is often national capacity. Clearly, for the case of Solotvyno, the national and local capacities are limited. There have been attempts and there are relatively small activities corresponding to the financial resources, ongoing, including scientific. There is working group established (led by the Ministry of Agrarian Policy and Food), there are some finances allocated, but it is all insufficient. The biggest threat in solving the Solotvyno problem is **lack of not having disaster risk reduction mechanism in place**, stakeholder different interest, local management and population's attitude (waste management problem). All of the mentioned affects everything: planning, implementation, monitoring, evaluation, training, and so on. It should be the priority of the country to build the country's own capacity within own terms and conditions. Of course, political decisions and financial solutions not to be forgotten, but difficult to manoeuvre since the chain of command is very complex, fragmented and not transparent.

Leveraging Knowledge Discovery capabilities can really support in finding solutions to the common problems and can assist across the boundaries of multiple agencies and can build bridges for increased communication and collaboration throughout agencies and neighbouring jurisdictions. (Akitis 2013). Discovering the most likely “early wins” is a key reason to engage Geographical Information Systems and Knowledge Discovery as key components of preparing for and responding to disasters.

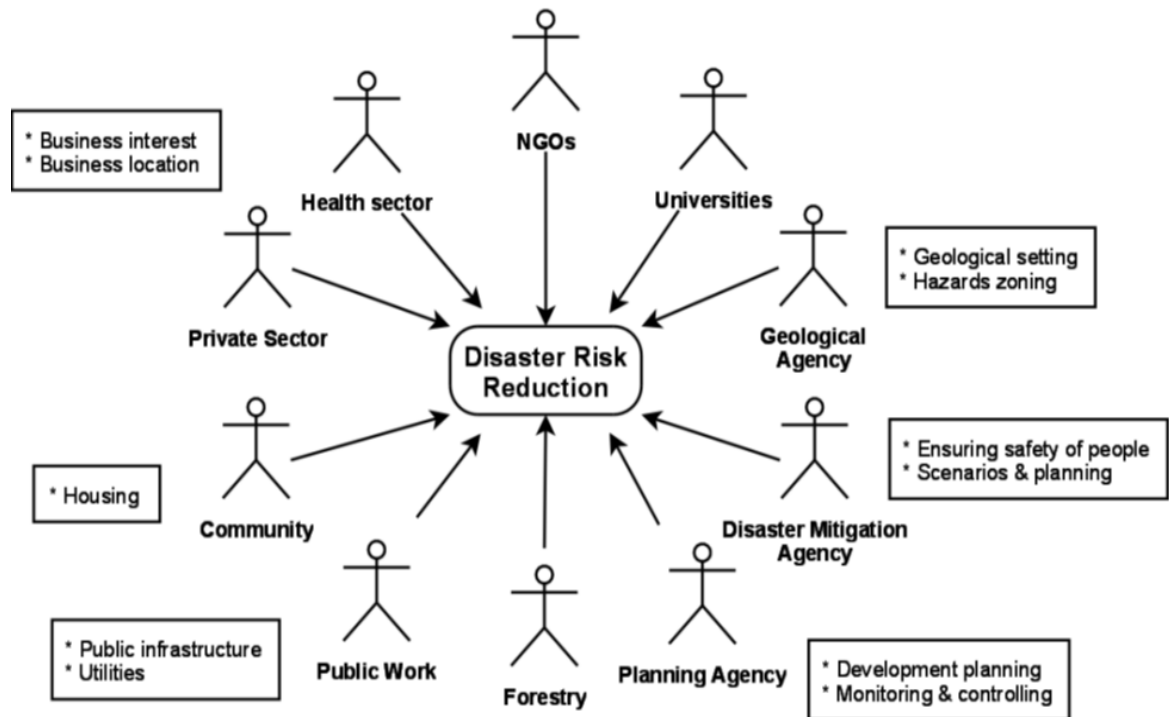
1. “Identification, assessing, monitoring and measuring of capacity and its ultimate impact is difficult.”³ Yet in the difficulty, this is a common reason for government to be involved because their responsibility is in this overall coordination and leading especially during times of extreme stress and threat to a community and nation.(Akitis, 2013) The difficulty of the issue lies also within the legal area and the shared responsibilities between Ministry of Agrarian Policy and Food the local administration where the latter has little or no say at all.

I have found and concluded in my professional and academic work, that developing countries tend to rely on international support and are often very reluctant and slow in their own internal development. In part this is completely understandable as trying to build your own system when you are also seeking and sometime receiving international assistance is a complicated balancing of commitments, partnerships, and control. (Akitis , 2013) There are opportunities for having the EU financed projects, but with partnership

³ http://ec.europa.eu/echo/files/funding/grants/Enhanced_Response_Capacity_guidelines_en.pdf, pg. 8.

(including Ukrainian) co-financing - 10-25 % depending on the programme. Lack of the overall strategy in addressing the issue hinders the possibilities to reach an agreement and address on a priority basis the solutions to the Solotvyno issue.

Stakeholders in disaster risk reduction and their interests⁴



Ideally, this is how the picture should look in the best case scenario, for the Solotvyno case it is far from this, but nevertheless it should be the aim of all stakeholder and partner activities.

The solution

International capacity is most effective when combined appropriately with local capacity: “The engagement of international actors with local capacities was most effective and efficient when it was built on sustained partnerships with the local actors that existed before the disaster”⁵ International Capacity is really relationships empowering response capabilities. Communication networks enable maps and information to assist in such relationships and partnerships so that the disasters can be addressed by a much larger group of people with much larger resources than those directly impacted by the disaster. Information including maps and specific, near real-time information (Knowledge Discovery) can be provided globally via networks that enable these partnerships and provide one of the brightest

⁴ Gopalakhrisnan and Okoda (2007)

⁵ <http://www.sida.se/Documents/Import/pdf/Joint-Evaluation-of-the-International-Response-to-the-Indian-Ocean-Tsunami4.pdf>, pg. 35.

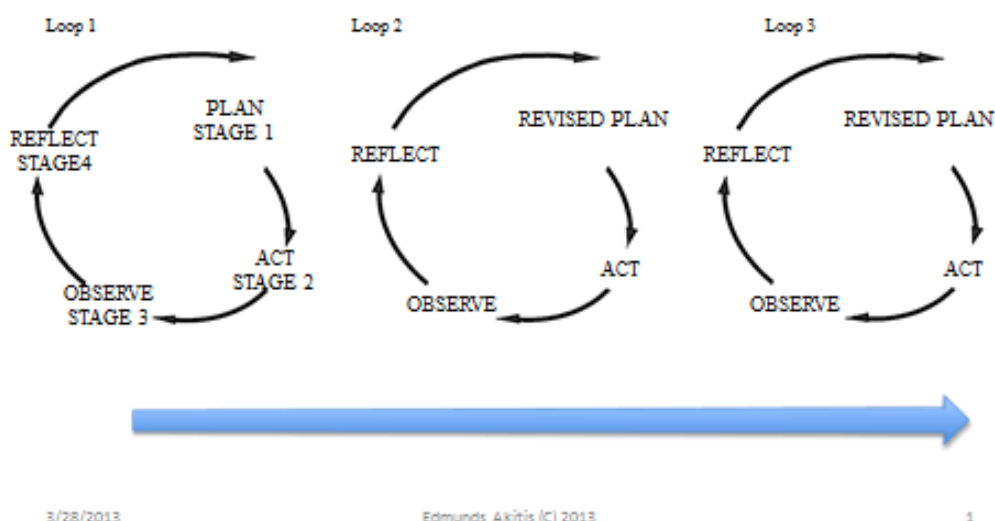
lights for Emergency Management across the world. (Akitis, 2013)

Action Research Model

Action research methodology should be used in the future studies to determine the shortfalls and possibilities for improvements in this particular case

The Action Research model that should be used and employed in analysing and addressing the Solotvyno salt mine issue, with a target for capacity building. It can be expressed as an “interacting spiral”⁶ of activities – plan, act, observe and reflect. By doing or employing that the problem or the issue addressed can be exploited even further and compared to other models in order to determine the gaps or the possible improvements and discovering the things that work or that does not.

Action research model/methodology used to determine the shortfalls and possibilities for improvements in Emergency management, and particularly – whether employing GIS and Data mining Capacity Building (CB) and Partnership Integration (PI) could be improved.



Partnership integration

With the work done and performed by the EU civil protection and other actors (Hungarian colleague field visit in 2016) integrated relationship attempts have been addressed. These partnerships and relationships are vital to ensure possibilities to develop multidisciplinary approaches and cross-coordination and collaboration.

There is an enormous complexity of the concerns for organizations and institutions trying to address the Solotvyno issue. It is clear that the individual needs for each group and each disaster determine the requirements and context for the focus group of people both serving and seeking assistance

⁶ Stringer E.T. Action Research, 2007

during disasters. (Akitis, 2013). Individual work or rather individual incentives are sought, but collectively or on partnership based principles the work is little to be noticed, that is due to the financial aspects and also knowledge or lack of knowledge of what and how to address these issues. Shared responsibility and coordinated and motivated actions should be the way to address the Soltvyno issue. The complexity requires more study and research, but what I have observed that the partnership integration works best when all Ukrainian stakeholders sit around one table (all government levels, scientist, others and are mentored by the EU representative/stakeholder) and try to find commonly acceptable solutions. Individually driven aims and incentives harm the whole partnership idea and the possible suitable solutions.

What is Knowledge Discovery?

The process of analysing data from different perspectives and summarizing it into useful information that can be used in variety of ways to reduce or to improve the organizations abilities and capacities in many forms is called “Data Mining” or is also sometimes called “Knowledge Discovery,”⁷.

One of the solutions is the integrated approach and capacity building activities before the disasters, where tools that display data locations and information can be tested and linked to other similar or related data (Akitis, 2013). Not in the case of Soltvyno, remember that the Emergency situation has been declared in 2010, and today we are in 2017.

EU Copernicus Risk and Recovery Mapping⁸ is an EU programme aimed at developing European information services based on satellite Earth Observation and in situ (non space) data. It has been activated, maps produced and available for the public, and the products are just shocking and eye opening. The maps explain the ground deformation in a retrospective linear line. The area is fragile, instable and houses damaged and sinkholes in the ground are opening frequently. With the GIS we can acquire knowledge and, in fact, perform the knowledge discovery and learn the damages or even project potential damages in the future. This is the perfect case where we see how the knowledge discovery creates partnerships, and builds capacities as the data do not have emotions and are free of charge and every user can clearly see the threats and risks to the people and environment. Leveraging existing data and discovering new knowledge by using GIS is the way to go when establishing partnerships and solving the salt mine issue

Recommendations

European Union and its institutions and services have many different policies and programmes and financial means to support them. A number of EU Member States have initiated projects to address the Soltvyno issue.

⁷ <http://www.anderson.ucla.edu/faculty/jason.frand/teacher/technologies/palace/datamining.htm>

⁸ <http://emergency.copernicus.eu/mapping/list-of-components/EMSR182>

Hopefully, the external partners will initiate projects and programmes both for the disaster risk management and for revitalization of the Solotvyno area. Also, the solutions should be sought by leveraging the EUCPT missions' recommendations. It has been a long time since the emergency situation has been declared, the capacity building and partnership integration can be performed if the aims are true, shared and agreed by all relevant stakeholders. Even when the emergency situation is still on-going.

The question remains on how willing are the Ukrainian authorities to support and contribute. As mentioned earlier, there have been different activities and actions from the Ukrainian state institutions, but a clear strategic action plan is missing.

The partnership integration should be pursued but not the donor input, since that will not solve the situation, but will only be a temporary solution for a complex problem.

However, the coordinated action among Ukrainian authorities at central- regional- local levels should be undertaken with respect to short – mid – long term priorities. This seems to be a challenge due to different stakeholder interest and levels of commitment. The political will has been expressed by all respective levels and authorities.⁹

When looking at the situation and trying to understand the overall picture, it is clear that in general the disaster risk reduction management is weak and each segment (risk assessment, monitoring, prevention, preparedness, evaluation etc.) are purely developed and sometimes not in place. The main focus for the Ukrainian colleagues is risk assessment and monitoring, followed by socio-economic issues meaning that new shafts could be made and salt excavated. EUCPT sees the opportunity to introduce and share knowledge on disaster risk reduction management system; thus allowing the local and regional authorities to adapt new settings and formats of the risk management. That would ensure a proper hand-over to the local and regional authorities; credibility to Ukrainian authorities from international stakeholders and through education and knowledge risks will be mitigated and preparedness and response enhanced.

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⁹ EUCPT Scoping mission's report, 2016

4. http://ec.europa.eu/echo/files/funding/grants/Enhanced_Response_Capacity_guidelines_en.pdf, pg. 8
5. <http://www.sida.se/Documents/Import/pdf/Joint-Evaluation-of-the-International-Response-to-the-Indian-Ocean-Tsunami4.pdf>, pg. 35.
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9. <http://emergency.copernicus.eu/mapping/list-of-components/EMSR182>

2. ANNEX I

Information from the EUCPT Scoping mission, 2016

Activities of the Ministry of Agrarian Policy and Food of Ukraine for the mitigation and rehabilitation measures implementation in the area affected by the mining works of the SE “Solotvynskyi solerudnyk ” in 2015-2016

Uncontrolled developments of the emergency situation within the territory of the Solotvino salt deposit may result in the risk of the considerable amount of salt water inflow to the trans boundary river Tisa. This could also be followed by the negative consequences for people’s health and the environment of Ukraine, Romania, Hungary and other states within the basins of the rivers Tisa and Danube. Last summer, the Ministry of Foreign Affairs and Trade of Hungary, as the hosting institute of the national coordination of the EU Strategy for the Danube Region (EUSDR) have requested the Hungarian members of the European Parliament to enquire on the possible financial sources to be mobilized for assessing the environmental risk in Solotvyno via a question to the EU Commission. In his answer, Mr. Johannes Hahn, commissioner for European Neighbourhood Policy & Enlargement Negotiations, highlighted the EU Civil Protection Mechanism and the Hungary-Slovakia-Romania-Ukraine ENI CBC programme; he has also emphasized the importance of effectively utilizing the framework of the EUSDR.

For this reason, the Hungarian national coordination of the EU Strategy for the Danube Region (EUSDR) – through the Embassy of Hungary – has turned to the Ministry of Ecology and Natural resources of Ukraine expressing anxiety on the above-mentioned issue, and assured in the readiness to assist in funding request from the side of the EU. On September 14, 2015 the Ministry of Ecology and Natural resources of Ukraine convoked a meeting dedicated to the issue of the mining influence territory ecological rehabilitation of the SE “Solotvynskyi solerudnyk”. During that meeting, the UN FAO expert Mr. M Malkov confirmed the willingness to render support by the international organization, which he represents.

The solution of the problem on the mitigation and ecological

rehabilitation of the territory lies within the mandate of, not only the MoAPF of Ukraine, but also that of the Ministry of Foreign Affairs, State Emergency Service and others., Therefore, in 2015, the representatives of the above mentioned institutions held a series of consultations with a view to jointly coordinate and approve further actions. The MoAPF of Ukraine by its Order dated from 29.12.2015 No 499 established a Working group on the issue of mining influence territory ecological rehabilitation; this was carried out by the state enterprise “Solotvynskiyi solerudnyk” and consisted of the representatives of the above-mentioned Ministries, local authorities and institutions.

To bring into action the Instruction of the Deputy Prime Minister of Ukraine Mr. Voschevskiy dated from 29.07.2015 No 30322/1/1-15, the State Emergency Service of Ukraine together with the Ministry of Foreign Affairs, Ministry of Ecology and Natural Resources and Ministry of Agriculture and Food of Ukraine; this also was done in close cooperation with the Hungarian EUSDR National Coordination and the National Directorate General for Disaster Management, Hungary. A joint letter was then drafted and sent to the EU Commissioner for Humanitarian aid and crisis management Mr. Ch. Stylianides dated from 12.01.2016 № 01-322/162 requesting to assess the risks and threats arising from the situation within the Solotvino territory, to determine the program of activities and resources.

On January 14, 2016 the MoAPF of Ukraine convoked a meeting of the Working group, which supported the proposal as for the international assistance and in a way was anticipated by the legislation en force for the mitigation and ecological rehabilitation of the salt deposit’s territory and in the whole of Solotvino settlement. It was also decided that the State Emergency Service of Ukraine should appeal to the Hungarian officials as for the funding of the geological and hydrological examination of the situation within the village Solotvino and SE “Solotvynskiyi solerudnyk”.

During a joint meeting of the State Emergency Service of Ukraine and the representatives of the EU General Directorate “Humanitarian aid and civil protection” on February 3, 2016 in Brussels, the readiness of the EC experts to direct a mission to that area in order to assess the risks and threats was confirmed.

ANNEX II

Immediate Recommendations to Ukrainian authorities from scoping mission

1. The Ukrainian authorities were strongly advised that the protection zone must be increased.

2. Inhabitants living inside the hazard zone should be re-located.

3. Local, regional and State response and emergency plans and procedures are urgently reviewed, updated, coordinated, exercised and tested. This should include public safety messaging.

4. *They undertake immediate local on-site weekly measurements as a first step to monitoring-*

- *Photography.*
- *Crater dimensions and water level measurements using laser measurements.*
- *Change to ground conditions (cracking, morphology).*
- *Above documented with GPS coordinates.*
- *Above subject to ensuring a safe system of work.*
- *Maintain a register of new damage to buildings and infrastructure etc.*

5. *The Ukrainian expert stakeholders coordinate and agree a common platform to move forward with an advisory mission from the EU.*¹⁰

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PSICOLOGÍA EN EMERGENCIAS Y DESASTRES: CONTEXTUALIZACIÓN Y PRINCIPALES PERSPECTIVAS PARA CUBA Y AMÉRICA LATINA

Область надзвичайних ситуацій та лих в даний час є проблемою, яка зачіпає більшість людей, націй і вчених. Це робить її необхідною і важливою для вивчення і досліджень. Мета цієї роботи – запропонувати інтеграцію поточної і перспективної роботи «Психологія в надзвичайних ситуаціях і стихійних лихах» (PED) для Куби і Латинської Америки. Поєднання методу теоретичного рівня науки, аналітично-синтетичного, індуктивно-дедуктивного, історико-логічного, з переважно описовим характером. Через недостатність зв'язку між професіоналами та інститутами в Латинській Америці і Європі в цю область включене широке коло бібліографічних джерел для сприяння поширенню та діалогу з цього питання. Воно підтверджує освіту в Регіоні спеціалізації по психології в надзвичайних ситуаціях і стихійних лихах; яка існує як в процесі формування, так і в професійній діяльності в реальних умовах. Однак ця тенденція не розголошується в кожній країні. Сила в Регіоні відрізняється тенденцією до зміцнення інтеграції ноу-хау, знань, навичок і різних форм професійної діяльності. На основі цих критеріїв представлені прогнози розвитку цієї теми.

Ключові слова: надзвичайні ситуації, катастрофи, психологія, поведінка людини, культурна історична пам'ять.

Область чрезвычайных ситуаций и бедствий в настоящее время является проблемой, которая затрагивает и затрагивает большинство людей, наций и ученых. Это делает его необходимым и важным для изучения и исследований. Цель этой работы – предложить интеграцию текущей и перспективной работы «Психология в чрезвычай-

¹⁰ EU Civil Protection Report, July 2016