



MASS TRANSPORTATION OF PERSONS IN CRISIS SITUATIONS

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Abstract: *Ensuring a transport is very important part of solving crisis situations as a multidisciplinary process. In the past solution of transport in crisis situations was concentrated especially on freight transport, less on personal transport. Mass transportation of persons, that is included in evacuation or reduced transport services in regions, is in the competence of the territorial municipality and the state administration regulates it minimally. In term of its importance it should become a part of preventive measures and crisis planning of crisis management bodies.*

Key words: *Mass transportation of persons, crisis situations, crisis management, territorial municipality, state administration*

INTRODUCTION

Many risks are related to the transportation, defined as the movement of vehicles using infrastructure or as the activity of transport equipments providing the transport. These risks are a treat to the fulfilment of the contract of carriage arranged between the carrier and the consignor/consignee. The structure and the characteristics of the risks interfering the transport activities are quite various. It is due to the substance of the transportation, transport industries and transport processes. The most important peculiarity of the transportation is the movement of people and goods in the space which is a source of external threats. The most of them are independent from the carrier's will and he is able to eliminate them just minimally. On the other side there are some risks in the transportation linked to the specific type of transport, its character and the quality of technological process organisation. At least the transport business is impacted of the risks common for every type of business.

It is not possible to define exactly and to separate these risks one from the others. They

interweave each other, they are connected or growing. It can cause synergic effects or so called "domino effect". The risk analysis in the transport industry and in the specific transport modes is a very complicated process. It is a multi-criteria functions probability of traffic flow smoothness violation. The threat and the crisis situation consequences can cause a fail of transport plan fulfilment.

Mass transportation of people and goods has to be realized in every situation. It is not possible to solve the crisis situations in the society and in the transport itself without ensuring the transport. This transport ensuring has in this condition its own specifics. Faculty of special engineering is dealing with the problems of crisis management since its establishment. At first the faculty used to deal with the problematic of military transports and ensuring the continuity of traffic processes during the war. In the present the faculty is dealing especially with the traffic solutions of every crisis situation and its researchers have been working on twelve scientific-research projects on this topic in last ten years. The part of results is presented in this article. The projects for

the Ministry of Transport, Posts and Telecommunications and some grant agencies are emphasized here (*“Traffic solutions during the emergency situations and creating of crisis management system at the competence of the Ministry of Transport, Posts and Telecommunications of Slovak Republic”, “Crisis management model at the Ministry of Transport, Post and Telecommunications of Slovak Republic”, “Crisis situation transportation solutions in theory”, “Crisis planning in transportation”, “Transportation during the evacuation” and others*).

THE IMPACT OF CRISIS EVENTS ON THE TRANSPORTATION

The transport system is impacted by its surroundings like any other system. From these surroundings as well as from the system itself some stimulus causing crisis events can arise. The specific of the transportation system is that the crisis events inside the transportation system can cause crisis situation in others systems, objects and processes and vice versa. The crisis events in other systems can arise a crisis in transportation system.

The negative crisis events in transport can prove the disruption of the transport, damage and devastation traffic roads and buildings, or even cause the mis-functionality of the whole transport systems. The people’s lives and health, property or environment are endangered.

The crisis events (emergency situations or crisis states – state of emergency, state of extreme emergency, state of war or war) can initiate special measures in transport services of state or region. The transport is changed to the special mode and based on the decisions of the state administrative; it is regulated according to the crisis plan. The crisis events inside the transport system give rise to traffic accidents, constructional failures, technological breakdown and failure of IT systems. It is possible to specify this classification according to the conditions of each transport mode. The levels of the crisis events in transport are:

- state of crash,
- state of accident,
- state of crisis [3].

The crisis events in the transport cause the failure of the continuity in the transport process. To solve such events it is necessary to integrate fire and rescue teams, maintenance and restore crews and in some cases also to integrate special

forces, devices and resources based on separate rules of law. It is possible to solve the states of crash with minimal restriction of transportation, but it is necessary to carry out special operating regime of transport during the clear out time of the crisis event’s consequences (state of accident). It is not possible to find solutions of the state of crisis by common means and methods. It is necessary to declare the appropriate level of crisis state and according to this level to solve the transportation situation. According to the current legislative of the Slovak Republic it is possible to solve the crisis situation to declare following:

- emergency situation,
- state of crisis:
 - state of emergency,
 - state of extreme emergency,
 - state of war,
 - war [4].

The emergency situation is a long-lasting duration of emergency event effects on the life and health, property or environment. The emergency event is for example nature disaster, accident, catastrophe or terrorist incident. In the case the emergency event was classified as a crisis situation it is necessary to start crisis management system including the crisis transportation.

The transport management during the emergency situation depends on the fact if the emergency event led to the emergency situation has effected:

- one or more elements of the transportation system,
- one of the critical infrastructure elements in the struck region,
- one region or the whole state territory [5].

Finding solution of the emergency event should be based on an objective judgment of the character and the extent of disruption of the transport system and its continuity. To renew the transport and to dispose the effects of the emergency event it is important to factor the specifics of road, rail, water and aviation transport technology. In the case the emergency event have not harmed the transportation itself but one other element of the state critical infrastructure, the transportation will be used to resolve it.

Not every dissimilarity from the common transport service, including crashes, will need to be declared the emergency situation. The most of

the emergency events in the rail transport is solved using own forces and means. Only event fulfilling the conditions stated in the legislative can be declared for the emergency event, for example it will have a negative impact on the life in the region and its resolving will restrict the usual services. According to the provided information and crisis management and civil protection department analysis the head of the district authority will decide if the emergency situation will be declared or not. Citizen, nature or juridical persons or coordination centres of the integrated rescue system can provide the necessary information.

The tasks of transport and transport companies during the emergency situation are to issue a warning to the population, to make announcements in the transport organisations premises and to act according to the given accidental plan, civilian protection plan, evacuation plan, standard solution plan of emergency events and crisis plan of economic mobilisation (in accordance to type and character of transport organisation). The transport is involved in the rescue operations (transport of people and property from the affected area), it is used in the evacuation (realisation of the transport evacuation plan of persons, animals and property from the affected area). Other activities are to take part at the reconstruction and rebuilding (transport rescue teams, working crews, food and material) by using vehicles and also to take part at the reconstruction and building works at the transport infrastructure. Next important task is to secure transport for citizens (transport to school, work, transport of ill, injured etc.), transport of mobilisation and material reserves and emergency supplies and to support the integrated rescue system crews.

State of emergency is a governmental declaration to resolve the effects of nature disasters, extreme catastrophes, industrial, traffic or other accidents threaten the life and health of citizens, environment or causing damages to property [4, 7]. It could be also declared in the case of imminent event. The risk of emergency event on our territory has significantly increased recently and it is necessary to pursue the measures taken to eliminate the consequences of the crisis events [1].

The state administration has to secure the increasing demand on the transportation during the state of emergency in the devastated region by specific measures (service duty or ensuring transport by appointed carriers). The

transportation should be ensured according to the generally accepted contracts. The economic mobilisation can be also use to resolve some tasks.

The tasks of the transport sector during the state of emergency are similar to those during the emergency event. Main tasks are providing the evacuation, ensuring transport for the armed forces of the Slovak Republic and armed corps as well as for the integrated rescue services, securing the roads and railways, facilitate building works and reconstruction, protection of key assets in transport sector.

State of extreme emergency is a special governmental precaution to resolve effects of terrorist incident, harm of state facility or extent streets riots linked to the attacks on the public administration and lootings [4, 7]. It could be also declared in the case such actions are imminent. The probability of declaring the state of extreme emergency on our territory is minor, but it could never be excluded. The precondition of its declaring is: it is not possible to resolve the crisis event using standard powers and devices.

The state administration has to secure the increasing demand on the transportation during the state of emergency in the devastated region or on the whole state territory by specific measures (service duty or ensuring prior transport by appointed carriers). The economic mobilisation can be used to resolve some tasks, too.

Main transportation tasks during the state of extreme emergency are providing the evacuation, if needed, ensuring transport for the armed forces of the Slovak Republic and armed corps, securing the roads and railways; facilitating of building works and reconstructions, protecting and defending of key assets in transport sector.

State of war is a difficult crisis situation. It can precede war and is understand as a time of state preparation for it [4, 7]. It is declared in the case of imminent invasion threat or war proclamation by other power. The risk of declaring the state of war on our territory is minor, but it could never be excluded.

The country takes some essential measures during the state of war. The goal of these taken measures is to prepare conditions for the armed forces, national economic and public administration in the case of war. One of these measures is securing the transport including the prompt restoring of transport continuity, especially roads and railways and to renew its operation.

The legislative of the Slovak Republic enable to implement some measures during the state of war, which will increase the preparedness and defence level of the central authorities of state administration, local state administration, self-governments, natural and juridical persons. These tasks are part of the economic mobilisation measures and other activities and services provided for the armed forces or according to their demand.

The transportation tasks during the state of war are intended to prepare the conditions for military operations. Important tasks are ensuring and providing evacuation of citizens, public administration institutions, production capacities and cultural monuments from endangered regions. Determinant part of transportation tasks is ensuring transport for the armed forces of the Slovak Republic to prepare for state defence as well as to secure the transport needs of national economy and citizens during the state of war. Very important is also to secure roads and railways, to facilitate building works and reconstructions. The protection and defence of key assets in transport sector is significant, too.

The war is the most complicated crisis situation for the state. It is declared after the Slovak Republic is invaded by other foreign power that has declared the war to the Slovak Republic or without its declaring has violated the security and sovereignty of Slovak Republic. Besides this it is possible by war declaring to fulfil the obligation towards the EU and NATO. Although the risks of developing the war in the Central Europe have been significantly eliminated and by joining the EU and NATO have fallen even more, it is not possible to exclude them completely.

Every country is forced to prepare a variety of necessary measures to create conditions for the operation of armed forces, national economy and public administration during the war. Ensuring transportation is one of this main measures as well as a flexibly and effective restoring of transportation continuity and its operating.

The legislative of the Slovak Republic enable to implement measures to increase the preparedness and defence level of the state at all levels - central authorities of state administration, local state administration, self-governments, natural and juridical persons. These tasks of state defence are part of the economic mobilisation measures and other activities and services provided for the armed forces or according to their demand.

Main transportation tasks during the war are ensuring transport and transit for armed forces of the Slovak Republic to secure the state defence and transport of war economy and citizens or providing evacuation. Very important is also to secure roads and railways, to facilitate building works and reconstructions. The full protection and defence of key assets in transport sector is significant, too.

TRANSPORT MANAGEMENT DURING THE CRISIS SITUATIONS

Making business in the field of transport is connected to the transport market and transportation itself and their reciprocity. It is based on the transport demand structure and its splitting in particular transport modes, on the transport market evaluation and development, that means it is based on the comparison of demands and possibilities (offers). The transportation can fulfil its function in the society only then, when the necessary transport ways and devices are available for every transport mode and fulfil the conditions of capacity, structure, spatial and time arrangement.

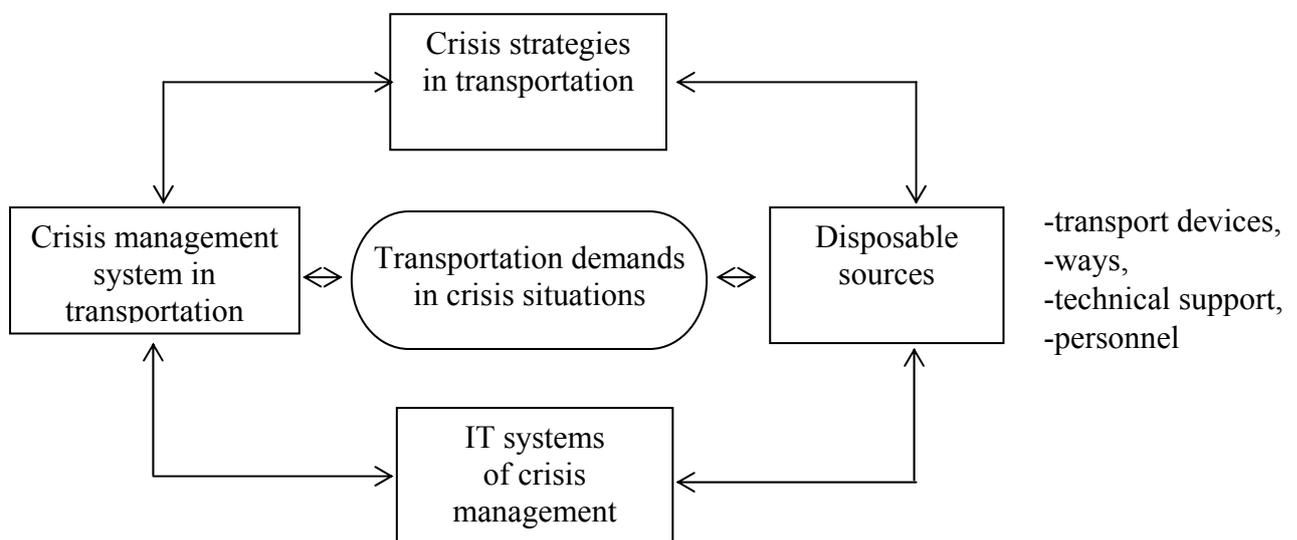
The harmony of demands and offers of transportation services is based on the competition fight among the particular transport modes as well inside every transport mode. The competition influences the demand and the choice for specific transport service and transport provider. It can be assumed that the offer exceeded the demand.

The common characteristics of transport business are changed in the crisis situations. In some cases it will be impossible to meet the legitimate transport demands without state interventions in the transport market. These changes are based on the variety of facts:

- offer reduction:
 - the armed forces take up part of the transport equipment according to statute,
 - the capacity of transport ways can be decreased, some of them can be particularly impassable,
 - special regime can be adopted in some regions,
 - restriction or even none service in international transport,
- increase of transport demands and changes of its structure:
 - it will be necessary to move forces, devices and resources to the effected

- support of crisis economy,
- increase of transport demand of armed forces,
- influence of particular crisis event:
 - changes in the market with labour force,
 - restrictions in the business possibilities,
 - the prior position of the economic mobilisation subjects,
 - restricted energetic and material support of the production,
 - others [5, 6].

Transport companies and those providing maintenance, servicing and renewal of transport infrastructure and the local state authorities and self-governments will cooperate to build the crisis transportation system. This system will be able to cover the transportation demands of crisis state economy, armed forces and armed corps, rescue systems and citizens. Such system is also called extern model of crisis management in transportation and its connection to the Ministry of Transport, Posts and Telecommunications of Slovak Republic and optimal use of disponsible sources, special equipment of crisis management and IT systems of crisis management is a very complicated till present not complex solved task.



Picture 1 Resolving of transport demands during crisis situations [6]

Crisis transportation is a part of the economic mobilisation. Material, technical and managing measures in road, rail, water and aviation transport are taken to provide transport for armed forces, war economy and citizens and to facilitate building works and reconstructions to renew the transport infrastructure during the state of war and during war. In some cases the crisis transportation can be used to provide transport during the state of emergency and state of extreme emergency.

Based on the analysis of the transport system of Slovak Republic and changes in transportation and in the structure of

transport demands these conclusions can be drawn:

- crisis transportation should be managed on three levels (national, regional and district),
- particular managing levels of crisis transportation should be part of the crisis staff at the Ministry of Transport, Posts and Telecommunications of Slovak Republic, district authority in the regional seat and district authorities,
- transportation in crisis situation is possible to provide as integrated system only on the national level,
- transport plan for each transport mode should be prepared separate,

- road transport is a base of crisis transportation system, but its managing is the most complicated because of the large number of carrier and the requirements to build common transport centres,
- rail transport is easier to manage than the road transport, there is only one passenger's transport and another one freight transport provider (despite the railways belong to ŽSR) and working central traffic control (water and aviation transport is similar organized),
- the powers of crisis transportation to manage to reconstructions on the roads are connected to road networks administration, rail network, aviation and waterways transport is regulated by the national crisis transportation centre and the transport administrators,
- road renewal units should be managed by particular managing levels in crisis transportation through the road networks investors,
- transport undertakers with the statute of transportation centre of crisis transportation should be a subject of economic mobilisation with the right to keep the transport equipment to ensure the transport during the crisis events and also to supplement the necessary equipment from other carrier and juridical persons not used by armed forces,
- vehicles' supply to the crisis transportation system should be provided by "committed drivers",...[6].

The Ministry of Transport, Posts and Telecommunications of the Slovak Republic has put together in full compliance with the research's conclusions *Methodical guide on the managing the transport during the crisis situation*. The guide provides information about the transport management, fields, relations and responsibilities of ministries, state authority, self-governments, subjects of economic mobilisation, juridical and nature persons in case the war, the state of war, the extreme emergency state or emergency state has been declared at the territory of the Slovak Republic.

All determined forces and equipment not used by armed forces of the Slovak Republic or by armed corps are involved in the crisis transportation. The vehicles of medical service, fire brigade or rescue corps, special emergency, measure, installation or service vehicles or

vehicles of others services which are used to ensure the war economy and vitally important operations of citizen are not used for crisis transportation. Special and one purpose vehicles, personal vehicles constructed not for common transportation of persons or freight are usually not included, too. If it is needed and the district authority gives a decision they can be used to ensure the tasks in public interests.

The transportation plans are worked out by departments of crisis management and civil protections of district authorities. The demands for freight transport are divided into three levels of importance: I. level – transport of armed forces, II. – transport of war economy, III. – transport of vitally needs of citizens. The persons' transportation is ensured as follows: armed forces of Slovak Republic and other armed security corps, workers from important companies to produce military technique, employees of energetic companies, health services, food industry, transport of students and pupils to the school and other transport needs of citizens. The Ministry of Transport, Posts and Telecommunications of the Slovak Republic is in charge to organize the transportation on national and international level according to the international agreements.

Besides the transport demands based on the transportation plans it is necessary to ensure transport out off the order for:

- the armed forces of the Slovak Republic and another armed security corps,
- inevitable evacuation of persons and materials after invasion, military fights, accidents,
- other tasks according to the decision higher managing levels of crisis transportation.

The management, equipment, techniques and staff is ensured by the Ministry of Transport, Posts and Telecommunications of the Slovak Republic, local state authority, self-governments and appointed nature persons and juridical persons.

The chief of district authority in the regional seat recall the commission to manage the crisis transportation in the region immediately the crisis situation has been declared. The commission is a coordinate body and its members can representatives of:

- crisis management and civil protection department of the district authority in the regional seat,
- traffic and road networks administration of the regional authority,

- traffic and road networks administrative department of the self-governmental region,
- traffic police,
- carriers,
- infrastructure administrator,
- other [6].

The tasks of the commissions for managing the crisis transportation is to accumulate all free transport and renewal capacities and make use of them to fulfil the transportation tasks. The commissions regulate the prepared transportation plan according to the needs of transport situation. The regular individual transport is provided only in case of free transport capacities.

CONCLUSION

The solving of crisis events with the emergency events beginning till the war increases the demands on transportation. During the crisis situations it is necessary to transport citizens, technical means, property and cultural monuments from the endangered region and to centralize the necessary specialized forces, means and equipment in this region. The mass transportation is a part of the evacuation, but it also required to ensure transport of citizens to their works, schools or to ensure their basic needs. The Ministry of Transport, Posts and Telecommunications of the Slovak Republic, the local state authorities and self-governments are dealing with the transport during the crisis events only to ensure transport demands of the involved services, to ensure the evacuation and freight transport.

In the research projects of the Faculty of special engineering we have dealt especially with the freight transport during the crisis situations. In the future it is important to deal with the persons' transportation and to deal with the possibilities of the integration of public transport in the crisis transportation system. It is required in this process to determine the following principles:

- to work out a model of passenger transport in the crisis situations,
- to build forces and devices necessary to ensure the passenger transport during crisis situations,
- to put demands in the passengers transport plan during the crisis situations,

- to work out a passengers transport plan during the crisis situations,
- to work out a reduced transport plan of the region during the crisis situations,
- and many others.

REFERENCES

- [1] HUDÁKOVÁ M.: Obrana. Civilná ochrana a krízový manažment vo vzdelávacej sústave SR, In: Agrárni perspektívy XIV: znalostní ekonomika, Česká zemědělská univerzita, Praha, 2005, str. 372-379, ISBN 90-213-1372.
- [2] Právne normy SR na úseku krízového riadenia.
- [3] ŠIMÁK L. a kolektív: Doprava v krízových situáciách, FŠI ŽU v Žiline, 212 strán, 1999, ISBN 80-88829-53-4.
- [4] ŠIMÁK L.: Krízový manažment vo verejnej správe, FŠI ŽU v Žiline, 2. vydanie, 244 strán, 2001, ISBN 80-88829-13-5.
- [5] ŠIMÁK L. A kolektív: Dopravné zabezpečenie za mimoriadnych situácií a vytváranie systému krízového manažmentu v rezorte MDPT SR, výskumný projekt, 245 strán, 2003.
- [6] ŠIMÁK L. a kolektív: Model krízového riadenia na úrovni MDPT SR, výskumný projekt, 111 strán, 2004.
- [7] ŠIMÁK L., Filip S.: Manažérstvo rizík a krízových situácií vo verejnej správe, Vysoká škola ekonomie a manažmentu verejnej správy, Bratislava, tlač MERKURY Bratislava, 2006, 208 strán, ISBN 978-80-89143-43-6.
- [8] NOVÁK, L., LOPUŠANOVÁ, J.: Opportunities and prospects of the mass public transport. In: Научно списание *Механика – транспорт – коммуникации* č 3/2007. str. I-10-14. Higher School of Transport, Sofia 2007. Bulharsko. ISSN 1312-3823.

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МАСОВИ ПРЕВОЗИ НА ХОРА В КРИЗИСНИ СИТУАЦИИ

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Резюме: Осигуряването на транспорт е много важна задача при решаването на кризисни ситуации като мултидисциплинарен процес. При миналото решението за транспорта в кризисни ситуации е било особено концентрирано към товарния транспорт, по-малко върху транспорта на лица. Масовите превози на хора, което се включва в евакуацията или намалените транспортни услуги в районите са от компетенцията на териториалната община, а държавната администрация го регулира минимално. Поради своята важност те са станали част от превантивните мерки и кризисното планиране от страна на органите за управление при кризи.

Ключови думи: Масов транспорт на лица, кризисни ситуации, кризисен мениджмънт, териториална община, държавна администрация.