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## National Mine Action Strategy of the Republic of Croatia

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REPUBLIC OF CROATIA

# NATIONAL MINE ACTION STRATEGY OF THE REPUBLIC OF CROATIA



Zagreb, September 2009

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## **INTRODUCTION**

With the beginning of war operations on its territory in 1991, the Republic of Croatia started facing the mine problem as one of the most difficult consequences of war operations conducted on its territory and became one of many countries worldwide with a severe contamination of living space with mines and unexploded ordinance.

In the Republic of Croatia contamination with mines causes a line of economic, developmental and social disturbances, problems of safety in particular, especially on the areas located inside the zone of war operations. Big agricultural areas, forest complexes, border zones and parts of river banks are inaccessible even today due to a mine contamination or a doubt in being mine contaminated.

The Republic of Croatia confirmed its resoluteness in solving the mine problem by passing the Law on Demining in 1996, by the establishment of the Croatian Mine Action Centre in 1998, by fulfilling the commitments undertaken by joining the Ottawa Convention as well as providing for permanent and stabile sources of financing in the State budget, in the World Bank loan and from public companies in the Republic of Croatia.

The ultimate result of all mine action activities from 1991 until today is a precisely defined suspected hazardous area (SHA), its considerable reduction as well as reduction of mine incidents and number of mine victims.

Mine action includes all activities aiming at mitigating socio-economic, safety, ecological and other consequences of mine problem. Therefore, the purpose of mine action is not only mine clearance but also the removal of impact of mine problem on people. The aim of mine action is to reduce mine risk and provide conditions for safe living where mine contamination will not represent an obstacle for the development of economy and society and where the needs of mine victims will be something the account will be taken of. Mine action consists of several groups of activities:

- Humanitarian demining operations covering the activities resulting in removal of danger threatening from mines and unexploded ordinance,
- Education of population on mine danger (the process trying to increase the level of general awareness of the danger threatening from mines and unexploded ordinance through information for public, formal and informal educational systems and promotion of safer behaviour of groups living in risk zones),
- Mine victim assistance, rehabilitation and reintegration (each type of assistance and support to mine victims with the aim to reduce direct and long-term health and psychological traumas. Mine victim is a person who suffered a certain damage during the mine accident and, in the context of victim assistance, the term victim includes people dependent of the casualty),
- Destruction of landmine stockpiles, mediating and pleading for non-usage and ban of anti-personnel mines. In December 1997, the Republic of Croatia signed the Convention on the Prohibition of the Use, Stockpiling, Production and Transfer or Anti-Personnel Mines and on Their Destruction known as the Ottawa Convention. The Croatian Parliament verified the Ottawa Convention on April 24, 1998. The Republic of Croatia fulfilled its commitment of destruction of stockpiles of anti-personnel mines in 2002, banned the production as well as sale and usage of anti-personnel mines and started politically pleading for non-usage of anti-personnel mines at the international level.

Precise definition of the size and structure of mine problem in the Republic of Croatia created the necessary preconditions for the establishment of real mine action goals as well as preconditions required for their realization.

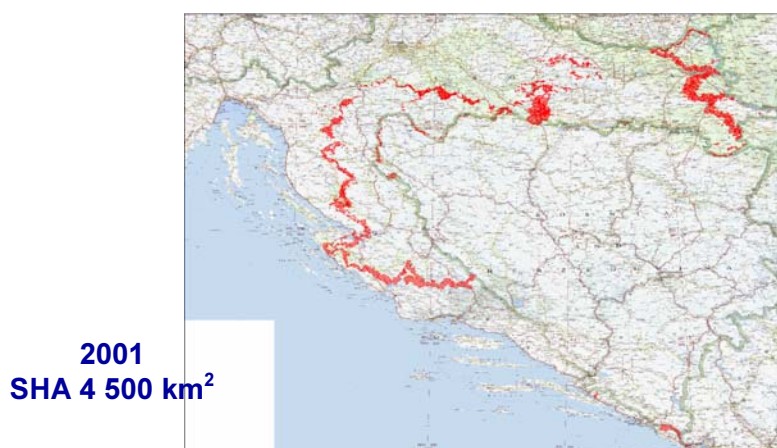
## 1. MINE ACTION IN THE PREVIOUS PERIOD

In the course of mine action in the Republic of Croatia so far, the most important and most represented activity has been conducting humanitarian demining operations. Considering the method and subjects that have been conducting these operations, the course of mine action so far can be divided into three periods:

**1<sup>st</sup> period** covers the war years from 1991 until 1995 when the focus of mine clearance was on the needs for undertaking battle operations and creating basic safety conditions for movement of population on these areas in which the holders of mine clearance itself were the Croatian Army, Police and Civil Protection.



**2<sup>nd</sup> period** covers the period from March 1996 i.e. from passing the Law on Demining until the first half of 1998 when the Croatian Mine Action Centre was founded. It is characteristic for this period that the Demining Plan was conducted by the Ministry of Interior, the demining operations were conducted by the state-owned commercial company AKD «MUNGOS» Ltd, and that the UN Mine Action Centre (UNMAC) was established in August 1996 and it played an important role in raising demining funds but also collecting data on mine contamination from all parties involved in war operations on the territory of the Republic of Croatia. In this period, the Government of the Republic of Croatia founded the Committee for Demining Issues as an advisory body for management and improvement of demining system. In December 1997, the Republic of Croatia signed the Ottawa Convention.

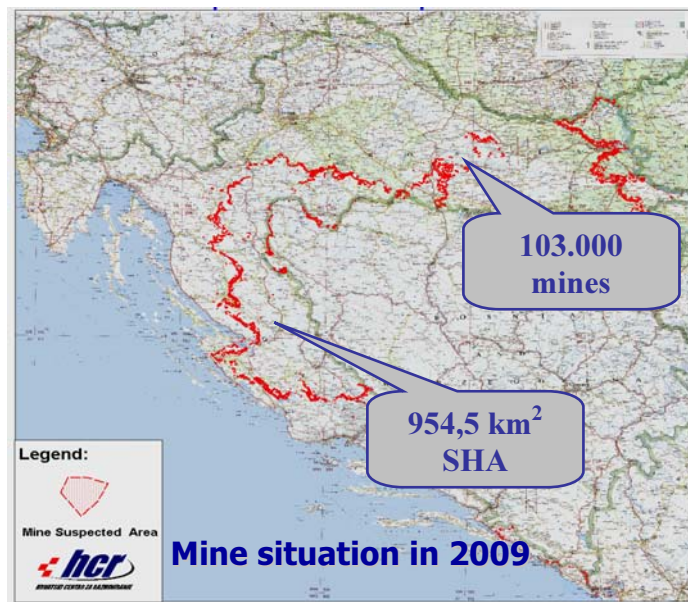


**3<sup>rd</sup> period** started with the establishment of the Croatian Mine Action Centre (by Government Decree dating from 19 February 1998), i.e. amendments to the Law on Demining from June 1998 when market model was introduced into the demining system and all the activities relating to management and co-ordination of demining process in the Republic of Croatia were taken over by the Croatian Mine Action



Centre (former Croatian Centre for Mines). It was the period when considerable funds started being invested into demining, capacities were developing (many private companies were founded) all resulting in considerably bigger areas demined each year.

In the first two periods, i.e. from 1991 until 1998, ca. 40 km<sup>2</sup> were demined while from the beginning of third period, i.e. since the establishment of the Croatian Mine Action Centre until today, ca. 270 km<sup>2</sup> have been searched and demined.



## Development of the Croatian Model of Organization and Operative Defining of Suspected Hazardous Area

Since the very beginning of systematic pursuit of demining problem area, the basic issue has always been the question of defining suspected hazardous area. Considering the fact of non-existence of staff or technical capacities, primary definition of suspected hazardous area was conducted mainly using the mathematical assessment methods so the first UNMAC's assessments stood at about 13.000 km<sup>2</sup> of suspected hazardous area. Upon the establishment of the Croatian Mine Action Centre and conducting general and technical surveys, the above-mentioned areas i.e. their estimates started reducing considerably so, at the end of 2002, suspected hazardous area was estimated to ca. 1 700 km<sup>2</sup>.

For the purpose of precise definition of the actual suspected hazardous area during 2003, the Croatian Mine Action Centre (hereinafter: CROMAC) developed its own model of organization and operative handling of humanitarian demining process with guidelines and contents of the international mine action standards (hereinafter: IMAS) built in.

Standard Operating Procedures (hereinafter: CROMAC SOPs) of the Croatian Mine Action Centre were passed in order to realize the tasks set in a rational manner and speed up the process of defining suspected hazardous area all the way to the handover of areas cleared from mines and UXO to the final beneficiaries. CROMAC SOPs define the survey of suspected hazardous area and/or facility (general survey, SHA marking, technical survey and area reduction), project designing, competence assessment of authorised legal entities for the conduct of humanitarian demining operations, quality assurance and quality control (quality assurance and quality control over mine search and/or demining, sampling-sampling for inspection and control of soil treatment depth while using demining machines, sampling-sampling for inspection and control of demined and searched area) and medical support.

Procedures for conducting surveys, implementation of procedures, responsibilities as well as control and verification of survey operations carried out, all in order to define suspected hazardous area (SHA) were described in detail.

During 2003 and 2004, based on SOPs passed stipulating the methods for the definition of SHA and reconstruction of estimated SHA until 2003, there were surveying and marking of the entire territory of the Republic of Croatia performed. 1.174 km<sup>2</sup> of the territory of the Republic of Croatia was defined as suspected hazardous area. At the end of 2005 started the revision of SHA aiming at sustaining constant up-to-dateness of data relating to suspected hazardous area i.e. up-to-dateness of suspected hazardous area. The revision ended in October 2008. Basic indicators of the status of suspected hazardous area of the Republic of Croatia upon completion of processing data collected during the above-mentioned revision are as follows:

- suspected hazardous area of the Republic of Croatia extends through 111 towns and municipalities in 12 counties. It is marked with 14.986 mine warning signs.
- On December 31, 2008, the total size of suspected hazardous area of the Republic of Croatia amounted to 954,5 km<sup>2</sup>.

## Financing in the Previous Period

In the previous period, financing of mine action in the Republic of Croatia was conducted through several basic funding sources:

1. State Budget of the Republic of Croatia
2. World Bank Loans
3. Public companies and state administration bodies
4. Donors

Since the establishment of CROMAC, State Budget funds intended for demining purposes have been increasing from year to year, so in 1998, they amounted to 83,0 million HRK, in 2003 they amounted to 147,5 million HRK and in 2008, 175,2 million HRK i.e. over 2 times more. Total amount from the State Budget spent until December 31, 2008 for mine action purposes amounted to 1,56 billion HRK.

Important funding source until 2003 were the World Bank loans:

- Urgent loan for the revival of road traffic and demining intended for demining of roads, railways and waterway systems as precondition for the economic reconstruction and return of population, and
- Loan for the reconstruction of Eastern Slavonia, Baranja and Western Syrmium intended for the reconstruction of canals and embankments in Eastern Slavonia.

In 2008 started the process of using funds from the Loan IBRD -7283 (Socio-economic recovery of the units of special state concern-demining component), program 1931. Total amount of 222,8 million HRK is spent for demining from these loans.

Legal entities and state administration bodies finance demining of their own facilities and areas. They have so far invested 529,1 million HRK, mostly during 2002, 2003 and 2007.

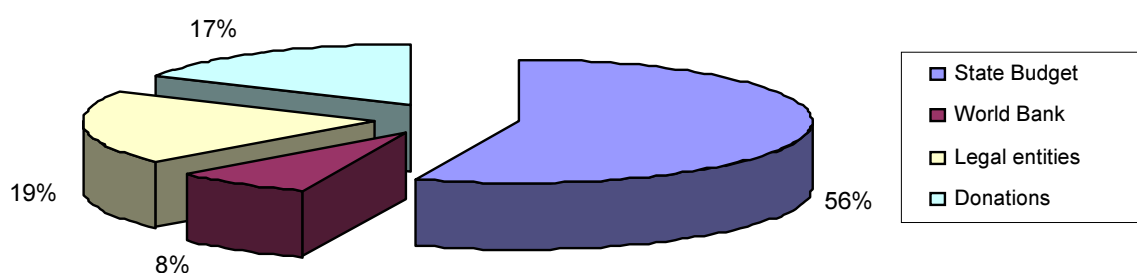
Financing from the donation mostly applies to the donations of the governments of friendly countries and foreign non-governmental organizations participating not only in financing of demining operations but also in other mine action components. In the period 2007-2008, the emphasis was put on using the European Commission funds from CARDS 2004 and Crossborder programmes.

Donor funds for demining have also been increasing and they reached an average value of 50,6 million HRK per year in the past three-year period.

Donor funds invested up to now participate with 17% in the total amount spent for demining out of which foreign donations cover 88%. In the last couple of years, there has been a slight increase of domestic donations. 473,4 billion HRK have been spent for demining from donations since the establishment of CROMAC.

2,78 billion HRK were spent for demining in the period 1998 – 2008.

**Graph 1: Funding sources in the period 1998-2008**



## Development of Demining Capacities

An overview of the development of demining capacities is in direct relation to the periods of demining i.e. subjects that conducted demining operations in a certain period. Namely, in the first period (from 1991 until 1995), demining was conducted by the Croatian Army and Civil Protection of the Ministry of Interior troops exclusively. In the second period (from 1996 until the first half of 1998) demining was conducted by the state-owned commercial company AKD «MUNGOS» Ltd. with the assistance of engineering troops of Armed Forces of the Republic of Croatia and Special Police forces of the Ministry of Interior.

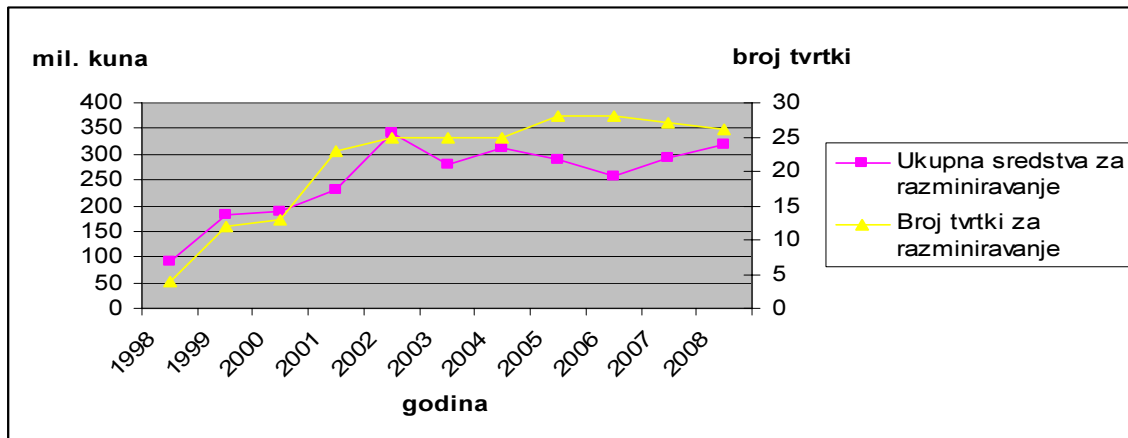
True development of demining capacities starts with the establishment of the Croatian Mine Action Centre and amendments to the Law on Demining by which the market model was introduced. By the end of 1998, 4 legal entities were accredited for the conduct of demining operations, by the end of 1999 there were 12 entities accredited. In 2000, there were 13 accredited entities, in 2001, 23 entities. Today, 27 legal entities are accredited for conducting humanitarian demining out of which 26 are commercial companies and one non-governmental organization (Norwegian People's Aid - NPA) that employ 586 deminers with 48 mine detection dogs, 57 demining machines and 708 metal detectors at disposal.

It is clear from data stated above that the development of capacities has been intensively underway since 1998 until today, what is in a large part the result of the decision of a legislator to establish a body that would co-ordinate and manage the demining process in the Republic of Croatia and to introduce the market model but also the continuous growth of financial means secured for demining operations each year from the state budget and other sources. The fact that the number of demining machines was the one with the fastest increase is especially important. This growth contributed to the increase of the overall demining potentialities but what is even more important, to the reliability and safety of demining itself.



**Graph 2: Increase of a number of demining companies and financial means**

**Total demining funds and number of demining companies**



## Scientific and Research Work

The central scopes of activities in the past period were: detection, use and testing of new methods, techniques and tools intended for: suspected hazardous area (SHA) survey with the purpose of reduction, detection (identification) of mines and mined areas, development of mechanical demining and improvement of CROMAC Geo-Information System (hereinafter: CROMAC GIS).

World scientific public recognized and defined the problem of detecting mined areas and surveying, all with the purpose of even more precise definition of suspected hazardous area (SHA) as a priority for mine-endangered countries, and that is where the representatives of CROMAC and its Scientific Council had an important role. CROMAC participated as a partner in several European and world scientific projects from the sphere of technologies of detection of mined areas and mines such as: aircraft reduction of minefield size (ARC), space and aircraft tools for the reduction of mined areas (SMART), testing and evaluation of MEDDS method and FIDO detectors for the reduction of suspected areas, field testing and use of impulse neutron generator in demining „Pelan”, operative testing of Japanese dual sensor ALIS.

Due to the fact that the scope of the above-mentioned activities has constantly been growing requiring bigger organizational support but also other types of support, CROMAC established CROMAC-Centre for Testing, Development and Training Ltd. (hereinafter: CROMAC-CTDT). According to the Contract on the Transfer of Operations and Tasks, Article 2, signed between CROMAC and CROMAC-CTDT on October 30, 2003, CROMAC-CTDT took over the activities and projects focused on performing administrative and technical affairs relating to testing (of machines, dogs and metal-detectors) as well as activities relating to scientific, research and educational issues.

The work of CROMAC-CTDT is focused on programmes of testing demining machines, mine detection dogs and dog handlers, metal detectors and programmes relating to other mine contaminated countries in terms of providing assistance in organization and management of demining operations (system management quality). CROMAC-CTDT will also actively take part in the development and testing of new demining methods and techniques. Centre's "know-how" will be used in other fields, especially in the field of education.

## Mine Incidents and Mine Risk Education

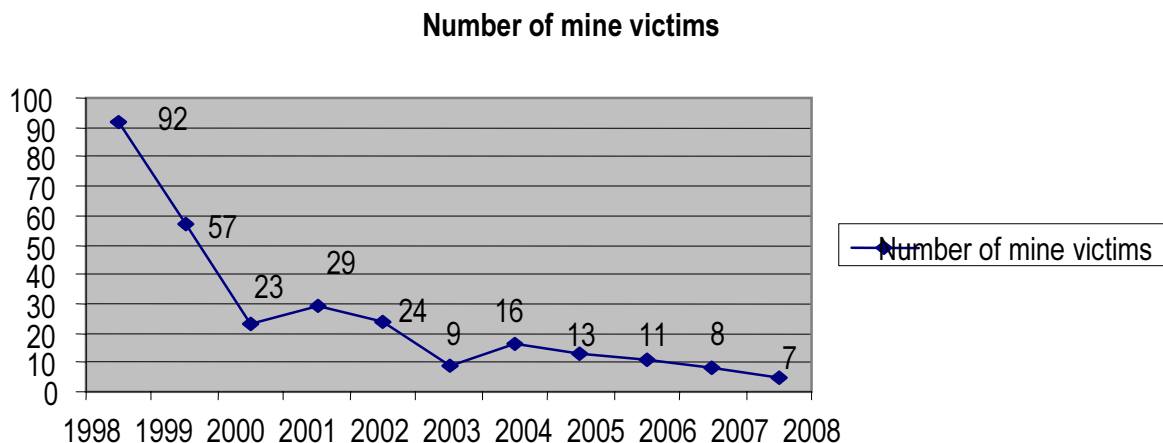
Since the beginning of war activities in 1991 until 2008, 1 888 persons have been involved in mine incidents out of which 492 were killed and 1103 suffered major bodily injuries.

In the period from 1991 until the end of 1995, 1343 people were involved in 923 mine incidents. 311 were killed and 843 suffered major bodily injuries. Most of them were soldiers and members of different government and foreign institutions that had been moving around contaminated areas. The biggest number of casualties was registered in 1995 – 337 persons.

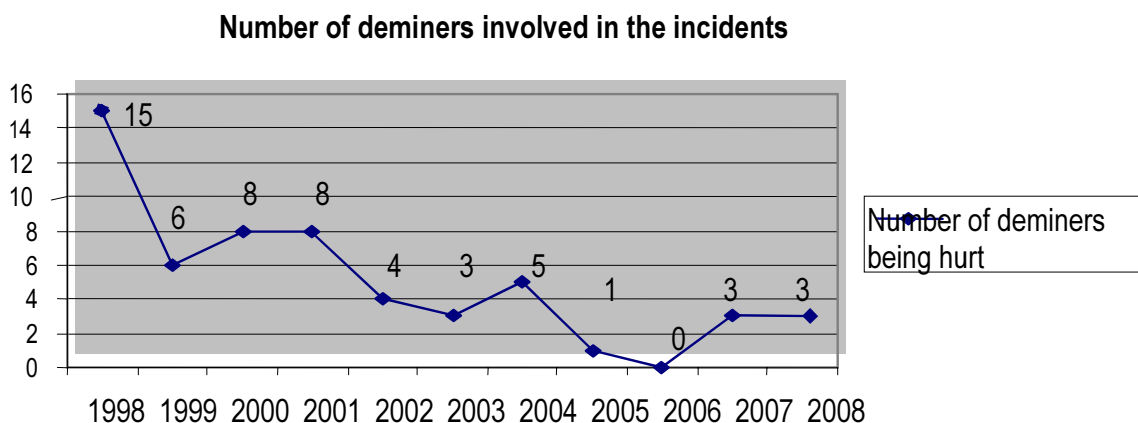
The period 1996 and 1997 is characterized by a large number of civilian casualties. The total number of all casualties in that period comes to 256 persons in 174 incidents out of which 75 fatalities and 140 persons with major bodily injuries.

Strengthening of co-operation between the subjects performing mine risk education contributed, during the years, to the reduction of a number of people involved in mine incidents. So, in the period from 1998 until 2008, there were 289 casualties involved in 211 incidents. This number is slightly bigger than the total number of casualties in the previous period of analysis that comprised only 2 years, or less than the number in 1995 only. Out of the total number of casualties, 106 persons were killed and 120 suffered major bodily injuries. Most of them were hurt by antipersonnel mines, especially from the type PROM-1. On the second place are incidents caused by different types of unexploded ordinances and on the third place are antitank mines and booby traps.

**Graph 3: Number of mine victims in the period 1998 - 2008**



**Graph 4: Number of deminers involved in the incidents in the period 1998 - 2008**



Graph 3 shows the total number of all mine victims in the period 1998-2008 (including the number of deminers involved in the incidents). The trend of reduction of the number of deminers can be seen from the graph. This reduction is mostly conditioned by an increased use of demining machines, the use of better quality devices and equipment during the conduct of operations as well as better control over humanitarian demining operations in progress (quality assurance).

Taking into consideration the slowness of the demining process, it was necessary to focus on permanent danger threatening from mines and unexploded ordinance to the population living in endangered areas. Learning about how to live and work but also relieve suffering caused by mines had to follow the demining process in order to reduce the risk from being injured or killed by promoting safe behaviour in the environment contaminated by mines and explosive devices.

Mine risk education programmes in the Republic of Croatia appeared as a response to the disseminated contamination by mines in 12 out of 21 county. Their special feature is the duality of goals: prevent accidents caused by mines and create the permanent programme.



*Forms of mine risk education*

In the Republic of Croatia, mine risk education programmes are conducted by the Croatian Red Cross, the Ministry of Science, Education and Sports and, due to the fact of a big part of population being endangered, several non-governmental organizations (Mine Aid Association, Daska Theatre, Recobot Trust Fund, "Croatian without Mines" Trust Fund, Union of Associations of Croatian Civil Victims of Homeland War of the Republic of Croatia, Croatian Mine Victim Association, NPA, Bembo Association, associations of war veterans, Centre for Neohumanist Studies from Karlovac, Children's Amateur Puppet Theatre "Pinokio" Knin, Puppet Scene MM from Osijek) as part of their regular programmes. Their intention is to inform the community about the problem the Republic of Croatia is faced with. All these programmes are implemented in co-operation with the Croatian Mine Action Centre as co-ordinator of all mine action activities. CROMAC provides support to all interested non-governmental organizations in order for them to make their own mine risk education programmes and encourages organizations to co-operate and take more active part in that process.

Ca.100.000 people per year was covered by different aspects of this programme in the period 1998 to 2008. This is one of the main reasons for constant decrease of a number of mine victims on annual basis ranging from 92 victims in 1998 to 7 victims in 2008.

## **Mine Victim Assistance**

Systematic assistance to persons with disabilities in the Republic of Croatia is conducted through the health care and social welfare systems. In order to find a solution to the specific problems of mine victims, the care is also provided by the non-governmental sector.

There are nine key forms of mine victim assistance the ministries, different institutions, non-governmental sector, a number of organizations and individual initiatives take part in.

- Emergency medical care;
- Continuing medical care;
- Physical rehabilitation, prosthesis and assistive devices;
- Psychological and social support;
- Employment and economic integration;
- Capacity-building and sustainability;
- Legislation and public awareness;
- Access to public services;
- Data collection.

One of CROMAC's activities relating to mine victim assistance is collecting data on mine incidents and mine victims, data processing and updating in CROMAC central database. The aim of such database is two-fold: collecting data with precisely defined co-ordinates of the location where the incident took place helps creating county demining plans and setting priorities while collecting data on victims themselves helps creating the recommendations about the new education programmes adjusted to the newly-arisen situations and target groups.

Data collected is also used by associations engaged in mine victim assistance such as Croatian Mine Victim Association, Union of Croatian Civil Victims of Homeland War of the Republic of Croatia, Croatian Red Cross and other in their activities of searching for donors or continuance of co-operation with existing donors. The aim is to finance projects of strengthening the capacities, implementation of psycho-social rehabilitation programmes for mine victims, employments or individual mine victims assistance programmes.

Data analysis showed that the share of men in the total number of casualties in the Republic of Croatia is a lot bigger than the number of women and children. Incident locations mostly follow the former confrontation line. Since 1998, new causes of mine incidents have been appearing mostly related to solving the existential needs (felling of trees, agricultural activities, watching over farm animals, hunting, fishing).

Relevant state administration bodies solve the problems of mine victims in the part concerning medical rehabilitation. The National Strategy of Unique Policy for Persons with Disabilities is currently being implemented. Government Committee for persons with disabilities supervises and reports about the implementation of the National Strategy. The National Strategy of Equalization of Possibilities for Persons with Disabilities has been in force since 2007 and will be valid until 2015. Other forms of assistance provided to mine victims are financed by foreign donors (almost 95%) and the rest is financed by domestic donors.

What should be mentioned as well is the establishment of the Regional Centre for Psycho-Social Rehabilitation of Children and Young People Mine Victims as biggest joint project of government and non-government sector initiated in 2001 on the area of hospital and recreation complex Mladen Horvat in Rovinj. After completion of operations, the Centre should become the "regional centre" for the region of South-Eastern Europe and wider. In 2005, with the support of the Norwegian Embassy to the Republic of Croatia and a number of domestic and foreign donors, started the first reconstruction works. The works are in progress and they mostly depend on securing financial means needed.

The Republic of Croatia succeeded a great deal in establishing a successful model of co-operation in dealing with issues relating to mine risk education and mine victim assistance in which there is a close co-operation between the Government sector (Ministry of Foreign Affairs and European Integration and CROMAC) and non-government sector (Croatian Red Cross, NPA etc.). This model is the best method of successful coping with MRE and MVA problem area but also dealing with questions relating to rehabilitation and reintegration.

## International Co-operation

The international co-operation has been intensively realized through each element of mine action and its importance is a result not only of the commitments of the Republic of Croatia undertaken by signing and ratifying the Ottawa Convention but also the need for considerable support of wider international community in solving the mine problem.

Co-operation at the international level required from all mine action stakeholders the transparency and intensive co-operation with the Ministry of Foreign Affairs and European Integration, missions of the Republic of Croatia all over the world and the Ministry of Defence. Apart from fulfilling the commitments undertaken by signing the Ottawa Convention, the activities of international co-operation were focused primarily on raising funds for demining, acquisition of equipment needed but also raising funds for mine victims assistance and mine risk education.

At the very beginning, the international co-operation manifested itself through co-operation with governments of foreign countries via their embassies in the Republic of Croatia or Croatian embassies in the foreign countries as well as numerous governmental and non-governmental organizations.

Beside donor activities, international co-operation also included taking part in the international scientific projects, attending different conferences at the regional and global level through which mine action achievements in the Republic of Croatia were presented.

Special emphasis should be put on international symposiums held in the period 2004-2008 organized by CROMAC and CROMAC-CTDT. Representatives of national mine action centres, UN representatives, representatives of non-governmental organizations, scientific institutions, demining companies and equipment manufacturers from over 30 countries participated at the symposiums. Main topics under discussions were: mine action, use and testing of demining machines, mechanical demining, demining methods and techniques, efficiency control, use of machines in humanitarian demining and a number of rules and methods of quality control.

Over the years, CROMAC became recognized among the international mine action subjects as a stable and reliable subject in the framework of the international mine action.

The establishment of SEEMACC, South Eastern Europe Mine Action Coordination Council, provided conditions for active exchange of experiences and know-how as well as co-operation with other national mine action centres in the region of South Eastern Europe. There is a chance for providing active assistance to other mine action centres in the region, initiating joint projects as well as joint policy towards the donor community.

For the last couple of years, special emphasis has been put on presentation of Croatian mine action experiences to the international mine action community.

We can offer the following forms of assistance to the international mine action community:

- Establishment of the National mine action centre,
- Legal, sublegal and normative regulations,
- Establishment of mine information system and geoinformation system,
- Planning system – production of National strategies, annual and operative activity plans,
- Education of executors of humanitarian demining operations (deminers, auxiliary workers and management) and mine risk education,
- General survey, definition of suspected hazardous area and education of survey teams,
- Protective equipment and demining machines produced in the Republic of Croatia,



- Capacities and know-how of the Croatian demining companies,
- Capacities for testing demining machines, equipment and devices as well as new technologies of mine and UXO detection.

## 2. CURRENT STATUS

### Status of Suspected Hazardous Area

Based on the analysis of all information and mine contamination data available, executed analytic estimates and general survey of the entire area of towns and municipalities contaminated with explosive ordinance carried out, the following was established:

- Size and distribution of suspected hazardous area per municipalities, towns and counties,
- Structure of suspected hazardous area according to intended use of stated areas,
- Data on minefields placed,
- Structure of suspected hazardous area according to the method of conducting demining operations.

**Table 1: SHA size and distribution per counties<sup>1</sup>**

No	County	County area (km <sup>2</sup> )	County SHA size (km <sup>2</sup> )	County SHA in relation to the SHA of the entire state (%)	County SHA in relation to the county area (%)
1	Lika-Senj	5.350	185,5	19,4	3,5
2	Osijek-Baranja	4.152	180,1	18,9	4,3
3	Sisak-Moslavina	4.463	158,1	16,6	3,5
4	Karlovac	3.622	81,1	8,5	2,2
5	Vukovar-Srijem	2.448	72,8	7,6	3,0
6	Zadar	3.642	70,3	7,4	1,9
7	Požega-Slavonia	1.815	64,2	6,7	3,5
8	Šibenik-Knin	2.994	58,4	6,1	2,0
9	Brod-Posavina	2.034	32,6	3,4	1,6
10	Split-Dalmatia	4.572	29	3,0	0,6
11	Virovitica-Podravina	2.023	14	1,5	0,7
12	Dubrovnik-Neretva	1.782	8,4	0,9	0,5
<b>Total</b>		<b>38.897 km<sup>2</sup></b>	<b>954,5 km<sup>2</sup></b>	<b>100,0 %</b>	<b>2,5 %</b>

On December 31, 2008, defined size of suspected hazardous area in the Republic of Croatia comes to 954,5 km<sup>2</sup> what makes 1.69% of the land area of the Republic of Croatia. Suspected hazardous area covers the territory of 12 counties or 57% of the total number of counties (21). It covers 111 towns and municipalities or 19,96% of the total number of towns and municipalities in the Republic of Croatia. 921.253 inhabitants or 20,78% of the total population of the Republic of Croatia live in the above-mentioned towns and municipalities (source: List of population from 2001).

<sup>1</sup> No data on mine problem of military facilities and polygons are given in the table. Such data are under the authority of the Ministry of Defence of the Republic of Croatia.

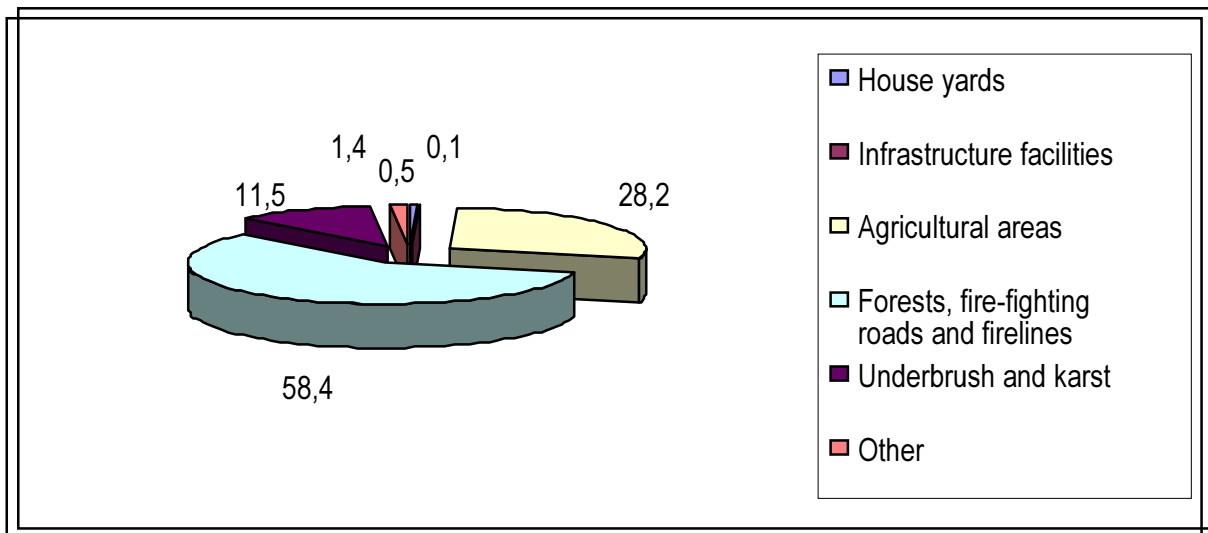
According to the size of suspected hazardous area of the county, Lika-Senj County, Osijek-Baranja County, Sisak-Moslavina County, Karlovac County, Vukovar-Srijem County, Zadar County and Požega-Slavonia County are classified as the most mine contaminated counties.

Comparing the relation between the county size and the size of its suspected hazardous area, the most mine contaminated counties are: Osijek-Baranja County, Sisak-Moslavina County, Lika-Senj County, Vukovar-Srijem County and Karlovac County.

**Table 2: Structure of suspected hazardous area as per intended use of areas**

No.	COUNTY	SHA	STRUCTURE OF SUSPECTED HAZARDOUS AREA AS PER INTENDED USE OF AREAS															
			House yards of inhabited houses		Infrastructure facilities		Agricultural areas						Forests, fire-fighting roads and firelines		Underbrush and karst		Other	
							Plowed fields		Meadows and pastures		Total/Plowed fields, meadows and pastures							
km <sup>2</sup>	km <sup>2</sup>	%	km <sup>2</sup>	%	km <sup>2</sup>	%	km <sup>2</sup>	%	km <sup>2</sup>	%	km <sup>2</sup>	%	km <sup>2</sup>	%	km <sup>2</sup>	%	km <sup>2</sup>	%
1	Lika-Senj	185,5	0,2	0,1	0	0	18,6	10	36,6	19,7	55,2	29,8	124,1	66,9	5	2,7	1	0,5
2	Osijek-Baranja	180,1	0	0	0	0	48	26,7	0,2	0,1	48,2	26,8	121,9	67,7	0	0	10	5,6
3	Sisak-Moslavina	158,1	1,7	1,1	0,1	0,1	10,6	6,7	39,6	25	50,2	31,8	105,6	66,8	0	0	0,5	0,3
4	Karlovac	81,1	0	0	0	0	13,1	16,2	17	21	30,1	37,1	50,9	62,8	0	0	0,1	0,1
5	Vukovar-Srijem	72,8	0,1	0,1	0	0	28,3	38,9	0,2	0,3	28,5	39,1	43,6	59,9	0	0	0,6	0,8
6	Zadar	70,3	0,5	0,7	0,1	0,1	13,9	19,8	12,8	18,2	26,7	38	9,5	13,5	33,3	47,4	0,2	0,3
7	Požega-Slavonia	64,2	0,7	1,1	0	0	13,5	21	2,8	4,4	16,3	25,4	47,2	73,5	0	0	0	0
8	Šibenik-Knin	58,4	1,4	2,4	0	0	1,5	2,6	2	3,4	3,5	6	6,3	10,8	47	80,5	0,2	0,3
9	Brod-Posavina	32,6	0,1	0,3	0	0	5,8	17,8	0,9	2,8	6,7	20,6	25,7	78,8	0	0	0,1	0,3
10	Split-Dalmatia	29	0	0	0	0	0	0	2,2	7,6	2,2	7,6	8,8	30,3	17,8	61,4	0,2	0,7
11	Virovitica-Podravina	14	0	0	0	0	0,1	0,7	1,3	9,3	1,4	10	12,6	90	0	0	0	0
12	Dubrovnik-Neretva	8,4	0	0	0	0	0,1	1,2	0,1	1,2	0,2	2,4	1,6	19	6,6	78,6	0	0
TOTAL:		954,5	4,7	0,5	0,2	0,1	153,5	16,1	115,7	12,1	269,2	28,2	557,8	58,4	109,7	11,5	12,9	1,4

**Graph 4: Structure of suspected hazardous areas as per intended use of areas**



Forest areas with 557,8 km<sup>2</sup> or 58,4 % of the total SHA have the biggest portion in suspected hazardous area of the Republic of Croatia. Agricultural areas cover 269,2 km<sup>2</sup> or 28,2 % of the total SHA, underbrush and karst cover 109,7 km<sup>2</sup> or 11,5 % of the SHA, house yards of inhabited houses 4,7 km<sup>2</sup> or 0,5 % of the SHA and other areas with 12,9 km<sup>2</sup> or 1,4 % of the total SHA.

Counties with biggest portion of forest areas in suspected hazardous area are Lika-Senj County with 124,1 km<sup>2</sup> or 66,9%, Osijek-Baranja County with 121,9 km<sup>2</sup> or 67,7% and Sisak-Moslavina County with 105,6 km<sup>2</sup> or 66,8%.

Counties with biggest portion of agricultural areas in suspected hazardous area are Lika-Senj County with 18,6 km<sup>2</sup> or 10% of plowed land and 36,6 km<sup>2</sup> or 19,7% of meadows and pastures, Sisak-Moslavina County with 10,6 km<sup>2</sup> or 6,7% of plowed land and 39,6 km<sup>2</sup> or 25,0% of meadows and pastures and Osijek-Baranja County with 48 km<sup>2</sup> or 26,7% of plowed land and 0,2% of meadows and pastures.

Counties with biggest portion of underbrush and karst in suspected hazardous area are Šibenik-Knin County with 47,0 km<sup>2</sup> or 80,5%, Zadar County with 33,3 km<sup>2</sup> or 47,4%, Split-Dalmatia County with 17,8 km<sup>2</sup> or 61,4% and Dubrovnik-Neretva County with 6,6 km<sup>2</sup> or 78,6%.

Counties with biggest portion of house yards of inhabited houses inside suspected hazardous area are Sisak-Moslavina County with 1,7 km<sup>2</sup> or 1,1%, Šibenik-Knin County with 1,4 km<sup>2</sup> or 2,4% and Požega-Slavonia County with 0,7 km<sup>2</sup> or 1,1%.

**Table 3: Mine situation as per types of minefiles placed**

County	Type	Quantity	Total
1. Osijek-Baranja County	Anti-tank mines	17.410	30.008
	Anti-personnel mines	12.598	
2. Vukovar-Srijem County	Anti-tank mines	10.059	21.444
	Anti-personnel mines	11.385	
3. Lika-Senj County	Anti-tank mines	3.452	16.103
	Anti-personnel mines	12.651	
4. Sisak-Moslavina County	Anti-tank mines	392	9.400
	Anti-personnel mines	9.008	
5. Šibenik-Knin County	Anti-tank mines	600	7.694
	Anti-personnel mines	7.094	
6. Karlovac County	Anti-tank mines	1.019	6.487

		Anti-personnel mines	5.468	
7.	Zadar County	Anti-tank mines	596	
		Anti-personnel mines	5.122	5.718
8.	Požega-Slavonia County	Anti-tank mines	145	
		Anti-personnel mines	2.627	2.772
9.	Dubrovnik-Neretva County	Anti-tank mines	21	
		Anti-personnel mines	1.907	1.928
10.	Brod-Posavina County	Anti-tank mines	379	
		Anti-personnel mines	1.105	1.484
11.	Split-Dalmatia County	Anti-tank mines	0	
		Anti-personnel mines	265	265
12.	Virovitica-Podravina County	Anti-tank mines	0	
		Anti-personnel mines	116	116
<b>Total no. of anti-tank mines:</b>				<b>34.073</b>
<b>Total no. of anti-personnel mines:</b>				<b>69.346</b>
<b>Total no. of mines:</b>				<b>103.419</b>

Taking into consideration the demining activities carried out in the previous period, 103.419 mines out of which 34.073 anti-tank and 69.346 anti-personnel mines have so far been registered in mine-information system of the Croatian Mine Action Centre.

The biggest number of mines is registered in Osijek-Baranja County (30.008), Vukovar-Srijem County (21.444), Lika-Senj County (16.103) and Sisak-Moslavina County (9.400).

Almost 50% of mines (51.452) out of the total number of mines are placed in Osijek-Baranja and Vukovar-Srijem County.

The biggest number of anti-tank mines is registered in Osijek-Baranja County (17.410) and Vukovar-Srijem County (10.059) what makes 80,6% of the total number of anti-tank mines.

The biggest number of anti-personnel mines is placed in Osijek-Baranja County(12.598) and Lika-Senj County (12.651) what makes 52,81% of the total number of anti-personnel mines placed.

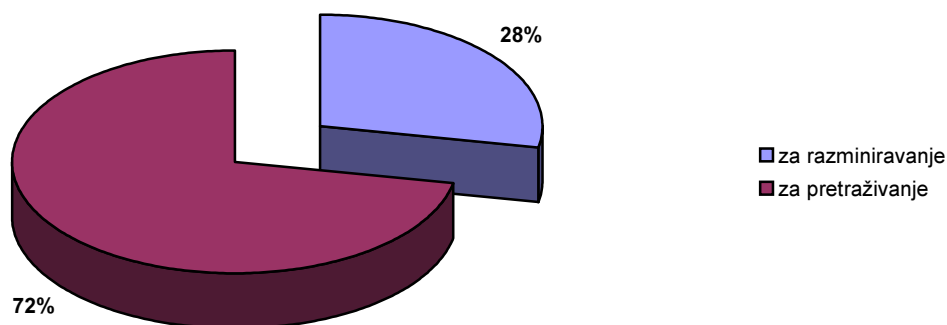
Besides the above-mentioned types and number of minefields placed, mine situation is also characterized by the following facts:

- In most cases, minefields are not placed according to adopted military systems of minefield placing and international standards (standards for marking, maintenance and keeping minefield records),
- Frequent relocation of minefields as well as their non-registered multiple supplementation, construction of false minefields etc.;
- Existence of a certain number of minefields for which there are no minefield records made;
- Areas under mines neglected and overgrown for a long time;
- Dispersal of unexploded ordinance on wider areas of the battle area and zone of separation of forces whose removal and destruction requires additional procedures and considerable financial means;
- Dispersal of unexploded ordinance on a large number of micro locations as a consequence of explosions of military storage or leaving them during the retreat or abandoning the positions
- Performed military demining without any demining records being made.

**Table 4. Mine situation as per structure of suspected hazardous area**

No.	COUNTY	SUSPECTED HAZARDOUS AREA OF THE REPUBLIC OF CROATIA	STRUCTURE OF SUSPECTED HAZARDOUS AREA			
			FOR DEMINING		FOR MINE SEARCH	
			AREA (km <sup>2</sup> )	%	AREA (km <sup>2</sup> )	%
1	Lika-Senj	185,5	74,0	39,9	111,5	60,1
2	Osijek-Baranja	180,1	21,4	11,9	158,7	88,1
3	Sisak-Moslavina	158,1	40,5	25,6	117,6	74,4
4	Karlovac	81,1	21,0	25,9	60,1	74,1
5	Vukovar-Srijem	72,8	20,5	28,2	52,3	71,8
6	Zadar	70,3	24,4	34,7	45,9	65,3
7	Požega-Slavonia	64,2	18,6	28,9	45,6	71,1
8	Šibenik-Knin	58,4	28,0	48,0	30,4	52,0
9	Brod-Posavina	32,6	5,8	17,7	26,8	82,3
10	Split-Dalmatia	29,0	10,1	34,7	18,9	65,3
11	Virovitica-Podravina	14,0	0,2	1,4	13,8	98,6
12	Dubrovnik-Neretva	8,4	3,6	43,3	4,8	56,7
<b>TOTAL</b>		<b>954,5</b>	<b>268,1</b>	<b>28,1</b>	<b>686,4</b>	<b>71,9</b>

**Graph 5: Struktura minski sumnjivog prostora prema vrsti poslova**



Areas for demining are areas defined by size and boundaries for which exist the original and other reliable information on being mined. Areas for demining cover all registered minefields inside their safety boundaries, mine incident locations and other relevant information on the existence of minefields. Areas for demining as separate entireties make the total of 268.1 km<sup>2</sup> or 28,1% of suspected hazardous area.

Areas for mine search are in most cases areas defined by size and boundaries for which there is no reliable information being mined and/or other analytic indicators of reliable existence of mines and UXO, but cannot be cancelled from the SHA due to other indicators showing the potential mine contamination such as: residues of the fortification and other facilities used for military purposes, established mine



contamination on border areas etc. Areas for mine search as separate entities make the total of 686.4 km<sup>2</sup> or 71,9% of suspected hazardous area.

## Socio-Economic Impact of Mine Problem

On suspected hazardous area of the Republic of Croatia covering the area of 12 counties, i.e. 111 towns and municipalities, 921.253 inhabitants live being directly exposed to mine threat. That makes 43,2% of the total population living in counties with SHA problem i.e. 20,8% of the total population of the Republic of Croatia.



*Display of mine situation and marking in digital ortophoto (DOP2)*

**Table 5: Number of inhabitants in towns and municipalities with SHA**

County	No. of towns and municipalities with SHA	No. of inhabitants in towns and municipalities with SHA	Total number of inhabitants in the county	Share of a no. of inhabitants in towns and municipalities with MSA in relation to the total no. of inhabitants of the County
Brod-Posavina	5	13.777	176.765	7,8
Dubrovnik-Neretva	4	19.734	122.870	16,1
Karlovac	13	108.032	141.787	76,2
Lika-Senj	9	41.191	53.677	76,7
Osijek-Baranja	17	195.259	330.506	59,1
Požega-Slavonia	4	25.445	85.831	29,6
Sisak-Moslavina	11	127.424	185.387	68,7
Split-Dalmatia	3	10.895	463.676	2,3
Šibenik-Knin	6	76.633	112.891	67,9
Virovitica-Podravina	5	28.156	93.389	30,1
Vukovar-Srijem	17	147.782	204.768	72,2
Zadar	17	126.925	162.045	78,3

	111	921.253	2.133.592	43,2 %
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Source: List of population from 2001

The above-presented data undoubtedly indicate the danger a considerable number of inhabitants of the Republic of Croatia is exposed to on a daily basis and at the same time set one of the most important mine action priorities in the period until 2019.

In the period so far, demining priorities have been the reconstruction of houses, traffic and utility infrastructure at the national level, reconstruction of Ernestinovo transformer station and corresponding electrotransmissible facilities, construction of Zagreb-Dubrovnik highway, first and second level canals and areas along the inhabited houses and in the close vicinity of settlements. Based on the analysis of SHA structure according to intended use of areas, mined agricultural areas, plowed land and forest areas represent the biggest problem for the economy.

A significant part of agricultural area on suspected hazardous area is owned by the state so the program of managing the state-owned land wishes to improve the agricultural production and use EC programmes for agricultural production until joining the European Union when further growth and increase of an agricultural production will depend on established quotas. Plowed land inside suspected hazardous area make 2,4% of plowed land in counties with the SHA i.e. 1,3% of the total plowed land in the Republic of Croatia.

**Table 6: Plowed land inside the SHA**

County	Total plowed land	Plowed land inside the SHA	Share
	km <sup>2</sup>	km <sup>2</sup>	%
Osijek-Baranja	1.040,3	48,0	4,61
Vukovar-Srijem	896,7	28,3	3,16
Lika-Senj	352,2	18,6	5,28
Zadar	271,0	13,9	5,13
Požega-Slavonia	383,7	13,5	3,52
Karlovac	614,7	13,1	2,13
Sisak-Moslavina	879,9	10,6	1,20
Brod-Posavina	573,6	5,8	1,01
Šibenik-Knin	193,2	1,5	0,78
Virovitica-Podravina	654,4	0,1	0,02
Split-Dalmatia	393,2	0,1	0,03
Dubrovnik-Neretva	226,3	0,0	0,00
	<b>6.479,2</b>	<b>153,5</b>	<b>2,37</b>

Source: List of agriculture from 2003

The second problem is the reconstruction of local infrastructure, especially the canal network of the third and fourth level. Contamination of canals for melioration and draining as well as impossibility of maintenance dictates overgrowing of canals what results in plowed land being flooded. This problem is most evident on the area along the Croatian-Hungarian border.

Beside canals, parts of river banks, of the river Kupa in Sisak-Moslavina County, of the river Sava in Brod-Posavina County and Vukovar-Srijem County and river Drava in Osijek-Baranja County are inaccessible due to being mine contaminated. Protection from flood is also impossible.

At the beginning of demining process, one of the priorities was to create conditions for the safe stay of the tourist in the Republic of Croatia. Therefore, there were areas along the tourist road communications

demined and, in that way, suspected hazardous area removed further away what enabled safe arrival of tourist to their preferable destinations.

Parts of national parks and parks of nature have also been demined. The problem continental counties are now facing is suspected hazardous area that had been used, prior to the war, for hunting tourism because it was one of the most important sources of income for certain towns and municipalities.

Development of traffic infrastructure, especially the highways, resulted in economic growth. Counties the Zagreb-Dubrovnik highway passes through are currently opening the entrepreneurial zones along the highway. Demining of the rest of mine contaminated area to be used for the future entrepreneurial zones in those counties is one of their main priorities.

In line with the above-mentioned, CROMAC in co-operation with relevant ministries, state agencies and legal entities whose business dealing is difficult due to their own areas and/or facilities being mine contaminated, have specified the criteria for setting demining priorities for the areas important from the safety, socio-economic and ecological aspect (priority groups).

Criteria for setting demining priorities are the form of assistance to the local and regional self-administration for the purpose of making proposals of humanitarian demining priorities i.e. annual planning.

**Table 7: Humanitarian demining priorities**

Group of priorities	I subgroup	II subgroup	III subgroup
<b>SAFETY</b>	Schools, hospitals, children's playgrounds etc.,	Areas along the communities	Forests along the communities
	Communities		
	Turistist destinations		
	Economic facilities		
	All known minefields		
<b>SOCIO-ECONOMIC</b>	Houses included into Government programme of reconstruction	Agricultural area – level II	Agricultural area – level III
	Agricultural area – level I	Agricultural area – level II	Agricultural area – level II
	Agricultural area – level I	Forest areas – level II	Forest areas – level II
	Forest areas – level I		
<b>ECOLOGY</b>	National parks	Parts of parks of nature	Parts of parks of nature
	Illegal dumpsites	Forests with special purpose	
	Fire protection		

## Capacities of Authorized Legal Entities

At the time of drafting of this National Mine Action Strategy, 26 authorised legal entities and one non-governmental organization were taking part in mine search and clearance operations in the Republic of Croatia having 586 deminers (CROMAC's deminers performing the operations under the authority of CROMAC excluded), 57 demining machines and 48 mine detection dogs at disposal. In relation to the previous period when the share of foreign funding sources (World Bank loan etc.) was considerable and foreign companies with foreign deminers also took part in public tenders and conduct of operations, in the last two years, deminers were used by domestic legal entities on mine search and demining operations financed by European Commission funds.

Besides, demining of military facilities is conducted by the Special Unit of Armed Forces of the Republic of Croatia (mine clearance battalion) as per special plan of the Ministry of Defence.

Demining capacities are defined by the procedure of accreditation of the authorised legal entities for conducting demining operations carried out by CROMAC.

### **Potential of Current Capacities**

By use of current capacities including 586 deminers, 57 demining machines and 48 mine and UXO detection dogs and combination of all three it is currently possible to demine up to 67 km<sup>2</sup> per year. This performance can be reached by five-hour work including all non-working days, state holidays and vacations during the year as well as estimated number of days with unfavourable weather conditions for the execution of demining operations (rainy days, low temperatures etc.). It is assumed that demining machines can be used on 80% of the total area. On the rest of 20%, only manual mine detection method can be used.

## **3. MAIN GOALS OF THE NATIONAL STRATEGY**

Based on the analysis of the size and structure of mine problem in the Republic of Croatia, method of solving the mine problem and factors that influence the problem solving process, the following goals will be realized:

- 1. Removal of mine danger from the entire territory of the Republic of Croatia until 2019.**
- 2. Sustaining marking of suspected hazardous area during all phases of solving process.**

During the realization of this Program, the Croatian Mine Action Centre will sustain marking of suspected hazardous area and, if needed, at the request of local administration and self-administration bodies, police, forestry, hunting societies and other, execute additional marking and replace destroyed or for any other reason missing mine warning signs.
- 3. Covering the entire population living and/or working in suspected hazardous areas or gravitate towards them with mine risk education programmes.**

In co-operation with authorised state administration bodies (Ministry of Science, Education and Sports), local administration and self-administration, public companies and non-governmental organizations (Croatian Red Cross) intensify the process of conducting mine risk education programs and adjust the programs to most endangered groups of population.
- 4. Continuance of providing care and rehabilitation including psycho-social rehabilitation and economic reintegration to all mine victims.**

This task will be primarily performed by state administration bodies responsible for health and social care (Ministry of Health and Social Welfare) and other state administration bodies, local administration and self-administration that can contribute to the complete reintegration of mine victims to the social courses.
- 5. Positioning and promotion of the Croatian mine action system within the international community**

This goal will be realized with active involvement of the Ministry of Foreign Affairs and European Integration and diplomatic missions all over the world in order to ensure necessary preconditions for the placement of domestic capacities, know-how and technologies on the international market, independently or in the framework of international institutions.

## 4. METHODS AND PRECONDITIONS FOR THE REALIZATION OF GOALS

In the period 2009-2019, it is planned to remove mine danger from the areas intended for economic development of the country by *demining*<sup>2</sup> (agricultural areas, forests for exploitation etc.) and areas that represent direct safety problem for the population. The size of the area planned for demining comes to 384,3 km<sup>2</sup>.

In the same period, suspected hazardous area of 372,2 km<sup>2</sup> is planned to be reduced by *reduction*<sup>3</sup>.

It is planned to reduce suspected hazardous area of 198 km<sup>2</sup> by general survey and this presumes additional investigation activities on forest and areas and areas covered in underbrush and karst.

### Demining

**Table 9. Demining**

Structure \ Year	Total SHA in km <sup>2</sup>	Realization of demining plan in km <sup>2</sup> per year											Total km <sup>2</sup>	
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019		
House yards of inhabited houses	4,7	1,5	1,7	1,5										4,7
Infrastructure facilities	0,2	0,1	0,1											0,2
Agricultural areas (plowed land)	153,5	22,3	21,7	21	30	30	28,5							153,5
Forests, firefighting roads and firelines	557,8	6	6	7	10	10	10	12	12	10	10	1,8		94,8
Agricultural areas (meadows and pastures)	115,7	5	4,5	4,5	10	10	11,5	15	12	10	5	1,2		88,7
Underbrush and karst	109,7	2	1	1	3	4	4	6	6	6	5	0,5		38,5
Other	12,9	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,4					3,9
<b>Total</b>	<b>954,5</b>	<b>37,4</b>	<b>35,5</b>	<b>35,5</b>	<b>53,5</b>	<b>54,5</b>	<b>54,5</b>	<b>33,5</b>	<b>30,4</b>	<b>26</b>	<b>20</b>	<b>3,5</b>		<b>384,3</b>

The following goals should be realized by demining activities undertaken by demining companies:

- mine danger should be entirely removed from the areas intended for reconstruction and return of displaced persons until 2011,
- mine danger should be entirely removed from the current infrastructure facilities until 2010,
- mine danger should be entirely removed from the agricultural areas (plowed land),
- according to the plan made by the Croatian Forests, forest areas intended for exploitation, firefighting roads and firelines as well as minefields placed on these areas should be demined by 2019,
- mine danger should be entirely removed from the areas intended for cattle breeding and grazing until 2019,
- mine danger should also be removed from the areas covered with underbrush and karst that are important for the fire protection and parts of National Parks and Parks of Nature until 2019,
- until 2016, mine danger should be removed from the swamps, river banks and other unclassified areas.

Mine danger shall be removed from 384,3 km<sup>2</sup> by demining activities. Until 2019, mine danger shall be removed by demining performed by Armed Forces from the territory of military facilities used by Armed Forces.



<sup>2</sup> Demining operations presume mine search and demining of suspected hazardous area

<sup>3</sup> Reduction presumes cancellation of areas from SHA by performing demining and additional analysis of polygons inside the SHA

## Reduction

**Table 10. Reduction**

Year Structure	Total SHA in km <sup>2</sup>	Realization of reduction plan in km <sup>2</sup> per year											Total km <sup>2</sup>
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
House yards of inhabited houses	4,7												
Infrastructure facilities	0,2												
Agricultural areas (plowed land)	153,5												
Forests, fire fighting roads and firelines	557,8		7	15	35	40	40	40	35	35	30	3	<b>280</b>
Agricultural areas (meadows and pastures)	115,7		2	3	5	3	3	3	3	3	2		<b>27</b>
Underbrush and karst	109,7		1	3	8	8	8	8	8	6,2	5	4	<b>59,2</b>
Other	12,9				1	2	2	1					<b>6</b>
<b>Total</b>	<b>954,5</b>	<b>0</b>	<b>10</b>	<b>21</b>	<b>49</b>	<b>53</b>	<b>53</b>	<b>52</b>	<b>46</b>	<b>44,2</b>	<b>37</b>	<b>7</b>	<b>372,2</b>

It is planned to reduce part of forest areas, smaller part of agricultural areas (meadows and pastures) that have not been used intensively before the war and that are not close to the communities, areas for fire protection and protected parts of nature for which there is no information on mine contamination but it is established by general survey that the preconditions for public announcement of the area as safe for use still have not been met. Reduction will be applied starting from 2010. It is planned to reduce suspected hazardous area until 2019 by 372,2 km<sup>2</sup>.

## General Survey

**Table 11. General survey**

Year Structure	Total SHA in km <sup>2</sup>	Realization of general survey plan in km <sup>2</sup> per year											Total km <sup>2</sup>
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
House yards of inhabited houses	4,7												<b>0</b>
Infrastructure facilities	0,2												<b>0</b>
Agricultural areas (plowed land)	153,5												<b>0</b>
Forests, fire fighting roads and firelines	557,8	16	26	27	30	30	25	19	10				<b>183</b>
Agricultural areas (meadows and pastures)	115,7												<b>0</b>
Underbrush and karst	109,7	3	3	2	2	2							<b>12</b>
Other	12,9	1	1	1									<b>3</b>
<b>Total</b>	<b>954,5</b>	<b>20</b>	<b>30</b>	<b>30</b>	<b>32</b>	<b>32</b>	<b>25</b>	<b>19</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>198</b>

It is planned to additionally explore the forests, underbrush and karst with the aim of collecting additional/new information that will enable reduction of suspected hazardous area inside these areas. Croatian Mine Action Centre would continue conducting general survey operations and, with this method, it is planned to reduce suspected hazardous area of 198 km<sup>2</sup>.

## Financial Means

One of the basic preconditions for the realization of goals stated in this document is to provide necessary financial means. In line with the annual realization, it is required to provide 4.187,00 million HRK.

**Table 12: Required funds in million HRK**

Required funds	Year											Total million HRK
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Demining and reduction	318,2	338	361	540,5	557,5	557,4	404,6	369	325	265	42,9	4.079,10
Geodetic measurement	8	9,9	10	15	15	15	10	10	8	6	1	107,9
<b>Total million HRK</b>	<b>326,2</b>	<b>347,9</b>	<b>371</b>	<b>555,5</b>	<b>572,5</b>	<b>572,4</b>	<b>414,6</b>	<b>379</b>	<b>333</b>	<b>271</b>	<b>43,9</b>	<b>4.187,00</b>

In the period 2009-2019, there will be the areas along inhabited houses demined what is the most expensive part of demining operations. In the period until 2014, the biggest activities will be performed on the areas scheduled for agricultural production and cattle breeding. More intensive usage of demining machines is possible on those areas.

At the same time, CROMAC will be conducting general survey activities (it is planned to cancel 198 km<sup>2</sup>) and part of reduction by which it is planned to reduce suspected hazardous area for over 300 km<sup>2</sup>. Along with the activities of general survey and reduction, CROMAC will be performing the operations of preparation and production of demining projects, marking of suspected hazardous area, keeping the database, production and submission of mine situation maps as well as quality assurance and quality control over demining operations. The costs of CROMAC's business operation in the forthcoming years would be kept at current level and after 2015 and reduction of volume of operations, the annual costs of CROMAC's business operation would be reduced. In the next 10 years, the costs would amount to ca. 450,0 million HRK. This has not been presented in the previous table.

Possible funding sources for the realization of this programme are presented in the table below.

**Table 13: Possible funding sources**

Funding source	Means (in million HRK)
State Budget	2.687,00
Funds of legal entities and other investors	800,00
European Commission programmes	250,00
World Bank loans and loans of other financial institutions	200,00
Domestic and foreign donors	250,00
<b>Total:</b>	<b>4.187,00</b>

As in the period so far, the State Budget will bear the biggest burden of financing the demining operations. The biggest participation of the local self-administration units in line with their development plans and financial means available is also to be expected.

Financing on behalf of legal entities will depend on new development projects and potential needs for demining of areas where these projects are planned to be implemented. Due to the specificity of suspected hazardous area (58% is a forest area) the company Croatian Forests Ltd. will appropriate additional demining funds in the forthcoming period in order to create conditions for the bigger exploitation of timber and planning new forests.

In order to realize the plan to remove mine danger until 2019, it will be necessary to intensify the use of financial means available from the European Commission pre-accession funds and, later on, funds from the structural programmes. The share of donors should be kept at current level i.e. ca. 10% of the total funds. It is possible to realize the increase of share of domestic donors.

Croatia is currently using the funds from the World Bank loan for the project of social and economic recovery of the areas of special state concern in the amount of 15,5 million HRK. The project will be finished by the end of 2009.

Financial means and funding sources will be more precisely defined by annual and tree-year plans according to the Law on Humanitarian Demining.

## Capacities

In the period 2009-2019, it is planned to demine and reduce 756,5 km<sup>2</sup> of suspected hazardous area by demining and recution operations. The biggest activities are planned in the period 2012 to 2015. It will be necessary to ensure ca. 2.060 million HRK for those activities. In order to realize planned goals, it is required to increase the number of deminers starting from 2010. The biggest increase of a number of deminers is expected in 2012. The biggest number of deminers is expected in 2013. Starting from 2015, the number of deminers will slowly be decreasing.

**Table 14: Required capacities**

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>No. of deminers</b>	<b>570</b>	<b>600</b>	<b>620</b>	<b>1000</b>	<b>1100</b>	<b>1100</b>	<b>750</b>	<b>650</b>	<b>570</b>	<b>400</b>	<b>100</b>

In the same period, there will be no need for the increase of a number of demining machines and mine and UXO detection dogs.

## Recapitulation

**Table 15. Recapitulation**

Total	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Demining km <sup>2</sup>	37,4	35,5	35,5	53,5	54,5	54,5	33,5	30,4	26	20	3,5	<b>384,3</b>
Reduction km <sup>2</sup>		10	21	49	53	53	52	46	44,2	37	7	<b>372,2</b>
<b>General survey km<sup>2</sup></b>	<b>20</b>	<b>30</b>	<b>30</b>	<b>32</b>	<b>32</b>	<b>25</b>	<b>19</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>198</b>
<b>Total km<sup>2</sup></b>	<b>57,4</b>	<b>75,5</b>	<b>86,5</b>	<b>134,5</b>	<b>139,5</b>	<b>132,5</b>	<b>104,5</b>	<b>86,4</b>	<b>70,2</b>	<b>57</b>	<b>10,5</b>	<b>954,5</b>
<b>Funds in million HRK</b>	<b>326,2</b>	<b>347,9</b>	<b>371</b>	<b>555,5</b>	<b>572,5</b>	<b>572,4</b>	<b>414,6</b>	<b>379</b>	<b>333</b>	<b>271</b>	<b>43,9</b>	<b>4.187,00</b>
<b>Required no. of deminers</b>	<b>570</b>	<b>600</b>	<b>620</b>	<b>1000</b>	<b>1100</b>	<b>1100</b>	<b>750</b>	<b>650</b>	<b>570</b>	<b>400</b>	<b>100</b>	

In the period 2009-2019, the area of 756,5 km<sup>2</sup> should be demined and reduced by demining companies and Croatian Mine Action Centre. The total of **4.187,0 million HRK** should be secured for stated activities. The biggest activities should take place between 2012 and 2015 and they will require the biggest financial means (2.060 million HRK). In order to realize these goals, it is required to engage additional number of deminers until 2012 because current capacities are unable to realize planned

volume of activities. The biggest engagement of deminers is planned for 2013 and 2014 that is twice as bigger as the current number of deminers employed by demining companies. Since 2015, the number of deminers needed would be the subject of constant reduction. Current number of demining machines and mine and UXO detection dogs will not have to be increased in the stated period and it basically satisfies all the needs.

According to the Law on Humanitarian Demining, for the costs of geodetic measurement of the demined area in the period 2009-2019, it will be necessary to secure the total of 107,9 million HRK.

CROMAC's costs for salaries and contributions as well as material and financial expenditures what include the costs of general survey conducted by CROMAC staff are not included in the financial means required and presented in the table. CROMAC's costs at the annual level amount to ca. 50,0 million HRK and they would not be substantially increased in the above-mentioned period. Due to the increase of operations, CROMAC will increase QA and QC capacities by internal reorganization

## **Research and Development**

Based on the analysis of the status of suspected hazardous area in the Republic of Croatia and according to the structure of suspected hazardous area where forests make 59% of the SHA, research and development activities in the future will be focused on:

- Development of survey methods and techniques that will be reliable enough to be for the purpose of reduction of suspected hazardous area. The following activities will be conducted: inspection of terrain features, vegetation and indicators of mine contamination of areas for the purpose of establishing anomalies of their features in relation to the areas that are not mined;
- Testing and establishment of parameters of biological method and devices for the detection of explosive vapours as precondition for operative evaluation and introducing to operative use;
- Development of demining machines and their tools adjusted to demining of forest areas;
- Integration of sensors to the machines for the needs of quality assurance and quality control after mechanical demining;
- Development of methods and techniques for the use of mine and UXO detection dogs on forest areas.

All scientific resources and capacities, especially experts from the sphere of forestry and their institutions, should be included into all the above-mentioned researches and development.

## **Normative Preconditions**

Current regulations basically provide the opportunity for the realization of this Strategy. In order to use all available resources as efficient as possible, it will be necessary during the implementation of this programme to modify sub-legal acts.

## **Organizational Preconditions**

Croatian Mine Action Centre is established by the Croatian Government with the basic task of organization and co-ordination of all mine action activities. Development of mine clearance system in the Republic of Croatia resulted in development of CROMAC whose scope of activities is defined by the Decree on establishment and, later on, by the Law on Humanitarian Demining.

In order to realize the mine action goals for the period defined by this National Strategy, CROMAC will focus its further activities primarily on the following actions:

- internal reorganization due to conducting comprehensive operations described in this Strategy. CROMAC will increase the number of quality assurance officers and monitors coming from the teams that have so far been conducting general survey;

- intensify the co-operation with state administration and local self-administration bodies as well as other relevant factors that need or can contribute to the establishment of goals specified in this National Strategy;
- further development of an adequate information system that will, beside CROMAC, also be used by other interested users;
- continuous conduct of mine risk education programmes and involvement into mine victim assistance programmes;
- international co-operation and promotion of the Croatian know-how and technologies abroad.

An extremely important role in the realization of goals defined in this Strategy will also have, in line with their authority, state administration bodies, especially the Ministry of Foreign Affairs and European Integration, the Ministry of Interior and the Ministry of Defence.

The Ministry of Foreign Affairs and European Integration will ensure international support in terms of financial assistance by intensive presentation of mine problem in the Republic of Croatia and method of solving the problem specified by this Strategy. Apart from the above-mentioned, in the forthcoming period this Ministry is expected to promote the potential of the Republic of Croatia and position Croatia in an adequate manner in company of world mine action community.

The most important segment of mine action from the sphere of authority of the Ministry of Interior is its normative action i.e. passing relevant sub-acts on time, monitoring and control of their implementation.

In the period 2009 to 2019, The Ministry of Defence will, in line with its activity plan and dynamics, remove mine danger from the territory of military facilities that will continue being used by the Armed Forces. This activity should entirely be performed in line with standards and regulations stipulating humanitarian demining.

Other state administration and local self-administration bodies will take part in the realization of the goals set by the National Strategy, in line with their authority of course. For example, the Ministry of Health and Social Welfare and the Ministry of Science, Education and Sports will participate in MRE and MVA activities. Towns, municipalities and counties, in co-operation with CROMAC, will focus on setting demining priorities and monitoring of marking situation on their territory etc.

In the period 2009-2019, the non-governmental organizations involved in mine action from the very beginning should be even more important factor in the realization of mine risk education programmes, especially in the realization of mine victim assistance programmes. Their activities should be harmonized with CROMAC and other mine action subjects.