

THE SITUATION IN KOSOVO: A STOCK TAKING

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ICMP

The International Commission on Missing Persons (ICMP) endeavors to secure the co-operation of governments and other authorities in locating and identifying persons missing as a result of armed conflicts, other hostilities or violations of human rights and assists them in doing so. ICMP also supports the work of other organizations in their efforts, encourages public involvement in its activities and contributes to the development of appropriate expressions of commemoration and tribute to the missing.

ICMP is an international organization that currently provides assistance to governments *inter alia* in the Western Balkans, South America, Middle East and South East Asia. In addition, ICMP works with governments to ensure that the rights of victims in this process are met, including the concept that relatives of the missing have a right to information regarding the fate of a missing person, that they have the right to reliable and accurate information regarding search, recovery and identification processes.

In this regard, ICMP assists governments in building their capacity to address the issue, through the creation of appropriate rule of law institutions, legislation and expressions of commemoration. ICMP also works with civil society, including family associations of the missing.

ICMP provides technical assistance to support the process of locating, recovering and identifying missing persons. In its technical assistance program, ICMP is perhaps best known for pioneering the application of a DNA-led identification process to large-scale cases of missing persons.

ICMP also supports the work of justice sector institutions, including the international and domestic criminal justice systems. It provides assistance in disasters on an ad hoc basis.

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A STOCK TAKING

Relating to the Issue of Missing Persons from the Kosovo Conflict

I. EXECUTIVE SUMMARY

1. Large numbers of persons missing as a result of violent conflict and human rights abuses are a poignant reminder of a failure to safeguard individual rights and to uphold the rule of law. In addition, they perpetuate the specter of a painful past, exacerbate the fragility of peace and reconciliation processes, and are an obstacle to the development of democratic society through effective, accountable and just institutions. Addressing the issue of the missing is therefore a vital concern.
2. It is estimated that some 4,500 persons disappeared as a consequence of the Kosovo conflict. After more than a decade of intensive efforts, about half of these missing persons have been located, accurately identified and their remains returned for burial. The primary technical responsibility of the International Commission on Missing Persons (ICMP) in Kosovo has been to provide the United Nations Interim Administration Mission in Kosovo (UNMIK) and today the European Union Rule of Law Mission in Kosovo (EULEX)¹ with a DNA-led system of identifications. As of 9 August, 2010, relative to the Kosovo conflict, ICMP had issued DNA match reports that account for 2,304 missing individuals, based on 14,517 genetic references that ICMP has collected from family members.
3. Despite this progress, the search for the missing has now come to a virtual standstill. The factors contributing to this stasis are manifold, but three basic causes are identifiable. The first important reason is that the rate of location and recovery of mortal remains of missing persons has declined dramatically since 2005. In Serbia, no further mortal remains have been recovered since excavation operations were carried out between 2001 and 2002.² In Kosovo, the majority of mortal remains were recovered early on in the process, primarily through the initial efforts of the International Criminal Tribunal for the former Yugoslavia (ICTY) and later UNMIK (between 1999 and 2003). Overall, there has been a very significant decline in the numbers of clandestine graves found each year since 2005.
4. ICMP receives biological samples taken from mortal remains found in clandestine graves, which are submitted to ICMP by both international missions and governmental authorities. In this context, a second complicating factor is that the EULEX Office of Missing Persons and Forensics (OMPF)³ and Serbian officials often submit multiple samples from the same individual,⁴ and some samples do not contain enough DNA to yield a DNA profile.⁵ On average, 1.15 samples were submitted by Serbian authorities per individual and 1.9 samples were submitted by UNMIK and EULEX. Overall, in the context of the Kosovo conflict, 38.9% of biological samples⁶ submitted to ICMP have permitted identifications of missing persons not previously DNA-identified. In the last year, the rate of DNA identifications dropped precipitously from 38.9 % to a mere 4.68%.

¹ The United Nations Interim Administration Mission in Kosovo (UNMIK) was established in 1999, in accordance with UN Security Council Resolution 1244, as the interim administration in Kosovo. In 2002, UNMIK created the Office on Missing Persons and Forensics (OMPF). In 2008, following the creation of the European Union Rule of Law Mission in Kosovo (EULEX), the OMPF was transferred to EULEX. The OMPF has a “dual mandate” that includes, “clarifying the fate of missing persons,” and “providing a medical legal system to Kosovo of European standards.”

² Between 2001 and 2002, 840 persons were recovered from clandestine grave sites on the territory of Serbia. Although there continue to be allegations regarding the existence of additional sites, the latest one being in the Southern Serbian town of Raska, no further sites have been discovered in the last 8 years. ICMP assisted Serbia in recovering and identifying the mortal remains through the use of DNA. All of the mortal remains recovered in Serbia between 2001-2002 were those of Kosovo Albanians executed in 1999. These remains were transferred to UNMIK and that process was completed between Serbia and UNMIK by mid-2006.

³ On August 23rd, 2010, OMPF was renamed the Department of Forensic Medicine (DFM); this Stock Taking refers to OMPF as it reports on past work.

⁴ For example, in one case concerning mortal remains found on the territory of Kosovo, in Ruhot village, 22 biological samples were submitted to identify one individual.

⁵ The average success rates of DNA extraction are discussed in paragraph 42.

⁶ The preferred samples are bone and tooth. See Glossary for technical terms.

5. A third contributing factor inhibiting further progress is that a proportion of early identifications made without the use of DNA, in the period from 1999 to 2003, are incorrect. In a Stock Taking Report issued in 2005,⁷ ICMP noted the possibility of such identification errors. ICMP strongly recommends that the extent of those misidentifications needs to be thoroughly explored.
6. It is noteworthy that as early as December 2004, UNMIK - OMPF reported that "most of the bodies of alleged missing persons have been recovered"⁸ and, indeed, almost six years later, ICMP has received from OMPF samples from skeletal remains that could account only for 521⁹ missing persons not previously DNA-identified. DNA testing from remains still held by OMPF has been largely completed. Not only does this very low number of 521 reflect an alarming decline in the numbers of mortal remains recovered from clandestine graves over the last five years, it also raises the question of how most of the bodies could have been recovered if there are still some 2,000 persons registered as missing. ICMP's analysis indicates that this question also warrants serious attention.
7. Today, ICMP has an abundance of family reference genetic profiles¹⁰ for the 2,011 remaining missing persons represented in its Kosovo database and yet none of these match any of the 693¹¹ distinct, yet unidentified genetic profiles taken from skeletal remains also held in ICMP's database. What is more disturbing is that a consistent number of the 413 genetic profiles obtained from postmortem samples received from OMPF, taken from mortal remains stored in the Pristina morgue, have not matched genetic profiles generated from blood reference samples for a very considerable time, in some cases for almost nine years.¹² This fact further reinforces the need to explore the problem and extent of misidentifications.
8. Continued case-by-case re-examinations of previously closed cases may offer an opportunity for some progress, however, they can neither obviate the need for a strategic approach, including a broader review of past work, nor can they ultimately proceed without the active involvement of domestic decision-makers.
9. A first step in this regard would be for EULEX and ICMP to devise a work plan focusing on determining the magnitude of previous errors in the identification process and a strategy to address the problem.
10. Given the current impasse outlined in this report and in the absence of a new strategic approach to address these problems, ICMP will soon be in a position where it can no longer provide technical assistance to the process through identification work.

II. INTRODUCTION

11. Following the end of the Kosovo conflict, the task of locating, recovering and identifying missing

⁷ See *The Situation in Kosovo: A Stock Taking*, ICMP.FSD.18.05.doc, see <http://www.ic-mp.org/wp-content/uploads/2007/11/icmp-fsd-18-05-1-doc.pdf>.

⁸ OMPF, Activity Report 2002-2006, p.6.

⁹ This is the number of open cases according to OMPF's Minimum Number of Individuals (MNI) calculation. This number includes at least 89 samples submitted by OMPF from cases previously identified without DNA, which were investigated at the request of families to confirm the previous identification.

¹⁰ Please see paragraph 54 for a discussion on the numbers of family reference samples collected.

¹¹ This figure is inclusive of all distinct DNA genetic profiles from skeletal remains on ICMP's Kosovo database that have not produced a match to family references. Some of these relate to cases that are considered by OMPF as identified and "closed," but ICMP does not have access to records that indicate which cases have been closed, by whom, or on what basis. Full accounting of this issue based on joint record review and reconciliation would be highly desirable.

¹² See page 12, Figure 1: Chart of the number of bone samples from cases currently open in the OMPF morgue, for which ICMP has an unmatched DNA profile in its database.

persons was primarily undertaken by international organizations.¹³ After more than a decade of intensive efforts, approximately half of all persons reported missing from the conflict have been located, accurately identified and returned for burial by families.

12. ICMP's primary technical responsibility in Kosovo has been to provide UNMIK and today EULEX with a DNA-led system of identifications. That assistance has been delivered pursuant to a Memorandum of Understanding that UNMIK and ICMP signed in November 2003 and which continues to serve as the basis for support to EULEX.
13. ICMP has developed a high-throughput DNA-led identification system that has for the first time permitted the identification – through scientific methods – of large numbers of persons missing as a result of violent conflict. For that purpose, ICMP maintains the highest standing operational capacity for DNA typing of skeletal remains in the world. In a DNA-led process of genetic matching, DNA profiles from skeletal remains are compared to profiles from surviving family members of the missing in order to find DNA kinship matches of extremely high scientific surety, providing the basis for reliable and accurate identifications.
14. The vast majority of the identifications made in the former Yugoslavia following the recent wars would not have been possible without the objective certainty of DNA. There is, in general, a lack of medical, dental and fingerprint records that would permit accurate identifications in the absence of DNA. Antemortem data provided by families, postmortem biological profiles of the missing, circumstantial information and personal effects can play a role in the identification process, but assessment of their significance is highly subjective.
15. At the societal level, the use of DNA-based identifications in politically charged, post-conflict environments can be of significant value in pre-empting denial, manipulation and myth building that invariably exploit uncertainties regarding the identity of missing persons. The use of DNA permits an accurate accounting of the overall number of missing persons and can also reveal mistakes made by previous, less reliable means. Unless these errors are addressed in a transparent and accountable manner, they risk contributing not only to the emotional trauma of families of the missing, but to political abuse of the issue.
16. Assistance to Kosovo represents about a quarter of ICMP's overall DNA-based forensic work in the region of the Western Balkans. It is a sizable proportion, amounting to 3,942 match reports submitted to the authorities over the years and representing 2,304 missing persons who were identified as a result.
17. Despite the notable success in providing large numbers of scientifically-based identifications, the process appears to be losing momentum. Families of the missing and others are concerned that almost half of the missing still cannot be accounted for and that there are the remains of at least 413 individuals in the Pristina mortuary that cannot be identified.¹⁴ Since March 2005, there has also been a sharp decline in the rate of location of remains of persons who went missing as a result of the conflict, which has consequently caused a sharp decline in the number of DNA-based identifications. There are also conflicting numbers of persons reported missing, uncertainty over who shall be deemed a person missing as a result of conflict, numbers of conflict related casualties, and questions concerning possible errors made in some 2,000 cases that were closed using non-DNA means prior to ICMP and UNMIK signing an agreement in 2003 on commencing a DNA-led process of identifications.¹⁵
18. The involvement of international organizations in the process of locating, recovering and identifying

¹³ The main agencies involved in these operations at various times included, ICTY, UNMIK, EULEX, the International Committee for the Red Cross (ICRC), ICMP, as well as the Kosovo Force (KFOR) and the Organization for Security and Cooperation in Europe (OSCE).

¹⁴ OMPF cites 434 unidentified individuals on its MNI list, whereas ICMP's figure is 413, see paragraph 46 for details.

¹⁵ There is apparently no precise number regarding the amount of mortal remains recovered and identified during this time period; however, there is a general understanding, based upon a number of sources, including ICTY and OMPF that about 2,000 cases were recovered and identified prior to the use of DNA (See UNMIK OMPF Activity Report, 2002-2004, page 6.)

missing persons is not unique to Kosovo. It has been a common feature following the recent conflicts in the Western Balkans. The region benefited in particular from the engagement of the ICTY, as well as the international community's efforts to develop post-conflict rule of law institutions. There are very few parallels to this effort in the world, especially as it pertains to persons missing from armed conflict and violations of human rights.

19. Although ICTY's extensive excavation and recovery effort in the region had primarily investigative purposes, it also aimed to identify mortal remains. In Kosovo and Bosnia and Herzegovina (BiH), a large number of missing persons' cases that were closed early on were made using "traditional" or non-DNA means, without a uniformly applied process of scientific investigation or defined criteria for establishing identity. Such methods of identifying human remains incur a considerable risk of error. In the case of Kosovo, available information indicates that some 2,000 or more individuals were identified between 1999 and 2002.¹⁶ It is unclear how many of these cases were officially closed during that period and, again, how many by ICTY and UNMIK respectively. This issue has an effect on the tabulation of the overall number of persons missing from the conflict as compiled by the ICRC-led Working Group on Persons who are Unaccounted for in Connection with Events in Kosovo (hereinafter: WG or ICRC Working Group), which as of April 2010, totals 1,862 persons.
20. One general difficulty with establishing an overall number of persons missing, is determining exactly what constitutes a "missing person." In this regard, the efforts of the ICRC to create a consolidated list of the missing that is derived from various sources are commendable. However, the extent to which the population of reported "missing" may be intertwined with other wartime casualties, such as soldiers killed in combat or those who died of natural causes, may limit the list's practical and analytical application to resolving the problem as it presents itself today.
21. Nonetheless, international assistance on the missing persons issue in Kosovo has been largely of a technical nature, concentrating almost exclusively on casework devoted to the requirements of solving individual cases of missing persons. In other countries confronted with a serious missing persons problem, whether in the region of the Western Balkans or elsewhere, efforts to address the issue of the missing have not stopped short at casework, but have sought to strengthen local mechanisms, based on local laws and legitimized through local democratic processes, however nascent they may be following the cessation of conflict.
22. What sets the process in Kosovo apart from its neighbors in the Western Balkans is that it has come thus far without the active engagement, operational participation, or ownership of Kosovo's democratic institutions. At this juncture, there are, however, clear signs that domestic authorities in Kosovo have an increasingly pronounced interest in assuming more responsibility for the missing persons' issue. This development should be regarded favorably and be supported in order to enable the government to deliver on its obligations in a nondiscriminatory, transparent and accountable manner.
23. It should also be emphasized that the government's obligations regarding the issue of the missing are based on directly binding domestic law. The Kosovo Constitution incorporates the main international human rights instruments, including the European Convention on Human Rights (ECHR). The government has also adopted a Strategy and Action Plan on Human Rights 2009-2011, and Kosovo courts apply ECHR case law. Under the ECHR, family members of missing persons have a right to information concerning the fate and whereabouts of their relatives, which is anchored in Articles 2, 3, and 5 ECHR. The Kosovo authorities are accordingly obliged to undertake all reasonable efforts to provide such information.
24. Equally important as the government's obligation to seek answers in each missing person's case, is the need to address the issue as a societal concern. Large numbers of missing persons are a powerful symbol of a failure to safeguard individual rights and to uphold the rule of law. They are a constant reminder of human vulnerability and exposure to arbitrariness. Unless resolved in an impartial and

¹⁶ Ibid.

objective manner, the issue also contributes to perpetuating an atmosphere of distrust that exacerbates the fragility of post-conflict governance and which can adversely affect the credibility of political, democratic and rule of law institutions. While seeking answers in each individual missing person case is necessary and required by law, addressing the issue at the aggregate level of society, where it affects the credibility and prospects of successful political transition is likewise highly important.

25. However, societal and political conditions are not static; addressing the issue of the missing is a lengthy process, and it is one that begins during hostilities and continues for a long time after the violence has ceased. It is a process that bridges dramatic societal changes, and can entail both changing standards of work and shifting objectives. It is precisely that long-term commitment during times of fundamental change that makes the issue of persons missing as a result of armed conflict and human rights violations different and more complicated than other missing persons' scenarios, for example those resulting from natural disasters. Making technical casework the sole objective oversimplifies the post-conflict environment and works to the detriment of developing a viable response at the level of society.
26. Domestic processes to address the issue of missing persons help to ensure that it is treated in a manner that is more holistic than international actors, working from a technical mandate alone, can accomplish. Enabling domestic processes would not by itself mean more identifications of persons still reported missing, although it may well have that benefit. Capable domestic processes would allow society to assess the missing persons' situation, discuss available options, and to assume ownership of successes and shortcomings alike.
27. In addition to exploring recent initiatives and providing a stock taking of ICMP's work, the following sections seek to summarize information as is available from ICMP to contribute to improving domestic capacity. This stock taking report cannot replace either a much needed societal appraisal or a joint review by international actors. However, it aims to advance the notion that only closer international cooperation with the objective of enabling domestic mechanisms can ensure a lasting benefit to peace, justice and reconciliation.

III. RECENT INITIATIVES

28. As recently as 2009, EULEX embarked upon two noteworthy initiatives. At the beginning of the year, EULEX located samples of remains in the Pristina mortuary that had not previously been submitted to ICMP. As a consequence, a small number of missing persons' cases was resolved. However, in the vast majority of cases, the samples submitted proved to be from the associated skeletal remains already identified by ICMP through DNA. Although this process of providing ICMP with older samples from the Pristina morgue has continued in 2010, the time is fast approaching when it will be completed and there will be nothing further left to analyze.
29. In another recent initiative, EULEX has engaged in *ad hoc* efforts to respond to family requests for DNA identification to confirm identification work which was originally undertaken in Kosovo without the use of DNA.¹⁷ Of 89 such cases, ICMP was recently able to review 77 for which there was sufficient genetic reference information and found that 13 of the original identifications proved to be incorrect. This again confirms the need to explore the issue of misidentifications more specifically.
30. Recent initiatives taken by the Kosovo Government, including the creation of a Policy Group and efforts to strengthen the capacity of the Government Commission on Missing Persons (GCMP), *inter alia*, indicate the beginning of a shift from exclusively international authority to domestic responsibility

¹⁷ A DNA-based identification of an individual who was previously identified by non-DNA means, conducted at the request of a family for confirmation of the previous identification. In Kosovo, the body is exhumed under the authority of a Court Order, and the relatives provide blood reference samples and give permission for a postmortem examination and the taking of a biological sample from the missing person in question.

on the issue. This development should be enhanced through capacity building measures and political support. Domestic engagement is much needed to establish and move forward with strategic objectives at this juncture. Domestic engagement is also an indispensable precondition to systematically addressing the problem of previous identification errors, because such a strategy would need to take into account the social, legal and political consequences of potentially large numbers of misidentified mortal remains.

31. Furthermore, the Kosovo Government's Policy Group on missing persons,¹⁸ requested that all organizations involved, in particular EULEX, ICRC and ICMP, analyze the reasons why progress had met an impasse and that they work together to develop a strategic plan to address the underlying problems.
32. In 2009, ICMP for its part proposed a joint strategic review that would allow for a comprehensive analysis of all available data and documents that may help shed light on the problem and identify a way forward. ICMP considers that a joint exercise of cross-referencing its own data with data from EULEX – including excavation records, autopsy reports, death certificates and a thorough inventory of mortal remains in the Pristina mortuary – as well as a sharing of EULEX's own stock taking efforts, would permit a better understanding of the situation, including the extent of errors in those identifications made without the use of DNA.
33. Allowing for an understanding of the underlying technical problems may not only lead to closing cases in the Pristina mortuary, but would also enhance the ability to assess just how many mortal remains may still be hidden in clandestine graves, not only in Kosovo but elsewhere. For example, an analysis of the geographical data would allow for exclusions of known recovery sites and predictions of the location of new sites where additional mortal remains could be recovered.
34. It should also be noted that redressing the current situation will require renewed political and financial investments.¹⁹ To secure continued support, including financial support on the issue of Kosovo's missing persons, it is clearly necessary to credibly demonstrate prospects for progress, which only renewed commitment and energy can accomplish.

IV. A STOCK TAKING

4.1. Review of reported numbers of missing persons

35. Over the last years, much attention has been given to discrepancies between the reported numbers of missing persons from the Kosovo conflict. These numbers not only vary, they are also at odds and, to some extent, contradict each other. Being able to reliably estimate the number of persons missing is critical to quantifying progress, planning the task ahead and managing expectations, whereas incorrect or unreliable numbers open the door to speculation and manipulation. Establishing credible numbers is therefore an important objective in addressing the issue of the missing.
36. Compiling numbers of missing persons as a result of armed conflict and violations of human rights is particularly difficult when numerous actors accumulate information in varying formats, analytical depth and for divergent purposes. In the context of the Kosovo conflict, it is undoubtedly a significant achievement of the ICRC to have compiled, *inter alia* through tracing requests from families, a list of 6,010 individuals that reportedly also includes a total of 1,371 persons found alive or visited in prisons. Today the number of persons remaining unaccounted for on the WG list is 1,862.²⁰

¹⁸ Established in 2009 to oversee progress on the issue of missing persons.

¹⁹ ICMP for its part has been funded for its work in Kosovo by the governments of the United States, the United Kingdom, Germany, Norway, Switzerland and Sweden.

²⁰ "ICRC Kosovo Statistics as of April, 2010"; courtesy of the ICRC.

37. Accounting for the missing is also problematic because existing lists and databases are undermined by definitional and conceptual difficulties that are becoming increasingly accentuated. What constitutes a 'missing person' depends to a significant extent upon the context of the disappearance, on who is searching for that person and on the person's presumed whereabouts. While the ICRC WG and ICMP have implicitly shared the same definitional basis for who shall be regarded as *missing*, the ICTY's investigative efforts were concerned more broadly with potential victims of war crimes. As a result, EULEX addresses not only persons *reported* as missing, but also cases of war related deaths more generally. Some of the latter may be included among the unidentified remains in the custody of EULEX, but they may not be represented on either the WG list, or in the ICMP database. It is important to further consider that some remains under the custody of EULEX may not even be of the appropriate time period, but predate the conflict.
38. The creation of a central records archive on missing persons at the domestic level – preferably on a single, searchable, computerized database – would be a tangible point of departure from the status quo and would enable a systematic consolidation of existing investigative data, antemortem and postmortem data, geographical site locations, as well as identification and repatriation information. This would, in turn, permit improved casework, while establishing better foundations for overall analysis. Such a central archive would also permit the initial testing of hypotheses regarding the potential for pinpointing the locations of, as yet unexcavated, mass graves.
39. Some steps towards consolidating and reviewing available information have been made, particularly through the ICRC-led Working Group. It would be important that this data be shared at an appropriate time with domestic authorities, such as the GCMP, as is envisioned by the draft Law on Missing Persons. Provisions should also be made to provide data to the Serbian Commission on Missing Persons. ICMP currently provides records of its work to both governments. Completing the task of creating central records in a transparent and systematic manner is vital to building domestic capacity with the objective of enabling compliance with governmental obligations as set forth, *inter alia*, in the ECHR.

4.2. Review of the identification process

40. The DNA-led identification process as applied in Kosovo consists of matching DNA profiles from skeletal remains to DNA profiles from family members of the missing. Therefore, the ability to make DNA-based identifications depends on the recovery of sufficient quantities of DNA from skeletal samples and also on the collection of genetic samples from relatives, of a sufficient number and type to permit DNA matches to be made.
41. Considerable effort has been expended throughout the search for the missing to increase the success of DNA typing and matching of Kosovo samples. In 2006, all previously unmatched DNA profiles were subject to *de novo* technical review to apply refinements in genetic analysis that had recently become available. The effort permitted one additional DNA match, while confirming the previously obtained genetic data in all other cases. In 2009, ICMP developed a new, even more effective DNA extraction method called demineralization extraction. The new method permits the extraction of DNA from very degraded or partial samples, that OMPF has been submitting in great numbers and which account for almost the entire DNA casework that ICMP performs for Kosovo today. As this caseload represents remains that were recovered a long time ago, it unfortunately does not indicate that additional missing persons are being located and recovered at any significant rate.
42. To date, ICMP has received in total 5,918 postmortem samples from both OMPF and Serbia. DNA profiles have been successfully obtained for 4,622 samples, with work ongoing in 37 cases. The overall success rate for extracting a DNA profile from all bone samples received is 78.6%. This success rate is lower than ICMP's typical DNA extraction rate from bone samples, reflecting the submission of many samples that are not taken in accordance with ICMP's Standard Operating Procedures (SOPs) on Bone

Cutting.^{21 22} The 4,622 DNA profiles obtained represent 2,997 different individuals, meaning that in many instances multiple samples were submitted for the same individual.

43. In order for DNA matches to be made, it is necessary to obtain genetic reference samples from family members of the missing. As of August 9, 2010, ICMP had collected 14,517 family reference blood samples, representing 4,315 persons reported missing from the Kosovo conflict. ICMP has continuously maintained collection teams in Kosovo for this purpose and also deployed teams to other locations, such as Serbia, BiH, and Croatia, as well as areas outside the Western Balkans, including Western Europe and North America.
44. As of August 9, 2010, ICMP had submitted to either OMPF or the Serbian authorities a total of 3,942 DNA match reports, representing 2,282 different individuals.^{23 24} As noted, there are more DNA match reports than individuals represented because ICMP has in many cases received multiple samples for the same missing person. Usually this is a result of remains being fragmented or commingled, with the need to use DNA to re-associate partial skeletal remains. However, substantial effort and extensive coordination with OMPF has been undertaken to resolve problematic cases and to permit DNA assisted identifications. In some cases, DNA matches resulting in identifications have enabled the DNA profile of the newly identified person to be used as an additional family reference for other related missing persons, permitting their identification in turn. In coordination with OMPF, periodic searches have been made to check for possible family relationships within DNA profiles that could lead to clues to identity even in the absence of DNA matches to surviving reference donors. Likewise, matches between postmortem samples are issued periodically to OMPF to allow re-association of partial skeletal cases, even when matches to families are not found.
45. Furthermore, ICMP periodically issues to OMPF a list of possible matches between postmortem samples and family references that fall below the statistical threshold of 99.95% certainty that ICMP requires for issuing a DNA match report. These reports permit OMPF to investigate non-DNA evidence that might strengthen or refute the putative identification. In a case where the DNA evidence taken together with non-DNA evidence is deemed sufficient to support an identification being made, ICMP may issue a Statistical Comparison Report on its conclusions in the case. To date, 67 such reports have been submitted, representing 48 individuals who were consequently identified by this approach.
46. Regarding unidentified human remains still held at the OMPF mortuary facility, currently, on the basis of anthropological estimation of the “minimum number of individuals” (MNI), OMPF reports that it still has in its custody the remains of at least 434 unidentified individuals.²⁵ As of the end of July, 2010, ICMP had obtained 619 DNA profiles from these unsolved cases representing 480 individuals and 139 related re-associations. A majority of these DNA profiles were obtained long ago, and have remained unmatched for years (see Figure 1). For 67 of these 480 individuals, ICMP has found DNA matches that are currently in the process of review and finalization or which have already been submitted; the remaining 413 distinct DNA profiles do not match any family reference profiles. There are an additional 160 samples for which DNA testing has repeatedly failed to yield a DNA profile and for which replacement samples have been requested or testing is ongoing.

²¹ When a sample fails to provide a DNA profile, ICMP requests another sample from the same case. On many occasions the replacement sample successfully yields a profile.

²² Environmental conditions from which human remains are recovered can result in the degradation of DNA within skeletal samples, and successful recovery of DNA requires specialized expertise and highly refined protocols. DNA preservation within bone also varies with the type of skeletal element, and is best preserved in dense bones such as femurs and teeth. In some cases, particularly with sample types that preserve DNA less effectively, insufficient DNA is present to allow a DNA profile to be obtained. Many of the samples received by ICMP have been from sub-optimal sample types from the standpoint of DNA preservation.

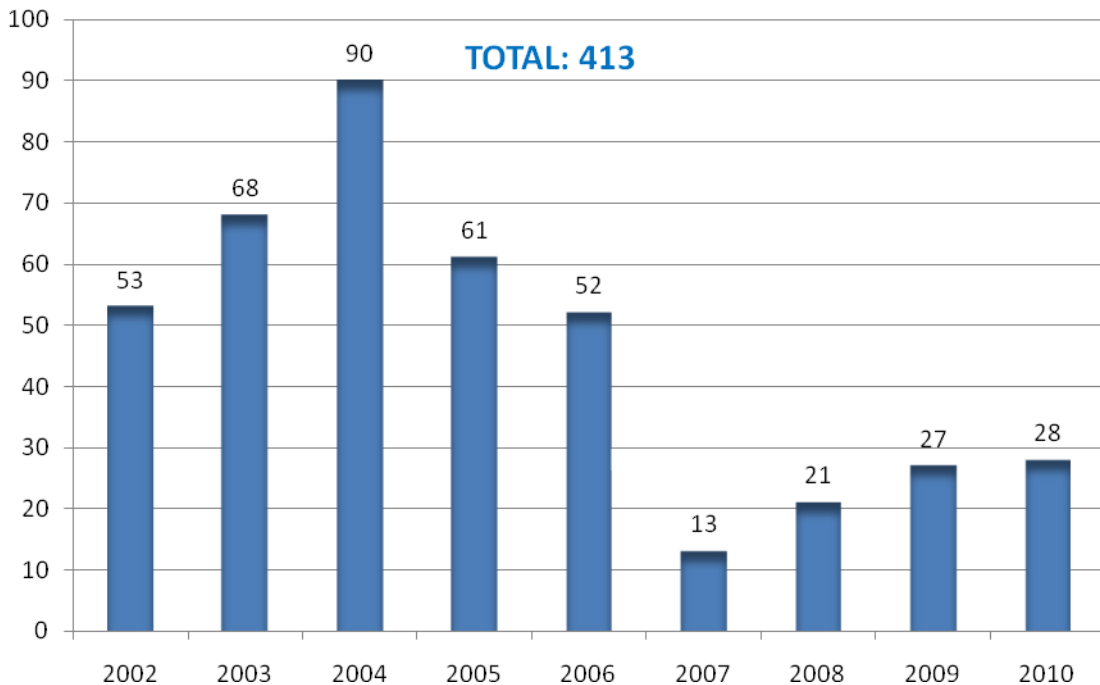
²³ The total number of *generated* individual DNA match reports as of August 9, is 2,304, whereas the number of *submitted* reports is 2,282; the difference relates to DNA reports that are under preparation for submission to the authorities.

²⁴ ICMP continuously notifies governments participating in its Western Balkans identification program of all DNA reports generated for that region, i.e. Bosnia and Herzegovina, Croatia, Kosovo, and Serbia.

²⁵ Information from ICMP’s database of unmatched profiles based upon the Monthly MNI Status Update of July, 2010.

47. Theoretically, therefore, if DNA profiles could be established for all these cases, an additional 160 missing persons might be identified. However, this assumes that the failed samples do not include instances of multiple submissions for the same missing person, though it is unlikely that this is the case given the current high rate of multiple submissions for the same person.

Figure 1: Chart of the number of bone samples from cases currently open in the OMPF morgue, for which ICMP has an unmatched DNA profile in its database. The chart indicates the year that ICMP obtained the DNA profile. The great majority of the 413 unmatched samples represent remains that have been in OMPF custody for years; the slight rise in new profiles in the last two years represents processing of samples previously taken but not submitted by EULEX to ICMP.



48. In the period from January 2009 until August 9, 2010, ICMP received 1,063 postmortem samples from OMPF. As noted earlier, the submission of these samples demonstrates a rigorous effort on the part of OMPF to re-examine cases in the Pristina mortuary, including samples taken but not previously submitted to ICMP. Of the 1,063 samples submitted, 520 were from remains recovered at some time in Kosovo, and 543 were from remains recovered in Serbia in 2001 and 2002.²⁶ Of the 1,063 samples, DNA profiles have been obtained from 689, work is in progress for 34, and 340 did not yield sufficient DNA to enable the production of a profile. Out of 689 obtained profiles 485 represented individuals from whom samples had previously been submitted and DNA profiles obtained.
49. Thus, the primary effect of the DNA tests since 2009 has been to re-associate partial skeletal remains to previously DNA-identified sets of remains. There were 485 such DNA based re-associations. Not counting the confirmatory-tests (see below), the rate at which postmortem samples received since January 2009 relate to missing persons not previously found and DNA profiled has dropped to 4.68% overall.
50. The low rate of new identifications is of great concern. In 2005, ICMP's Stock Taking Report²⁷ indicated that as of March 2005, it had issued 2,066 DNA Match Reports, representing 1,363

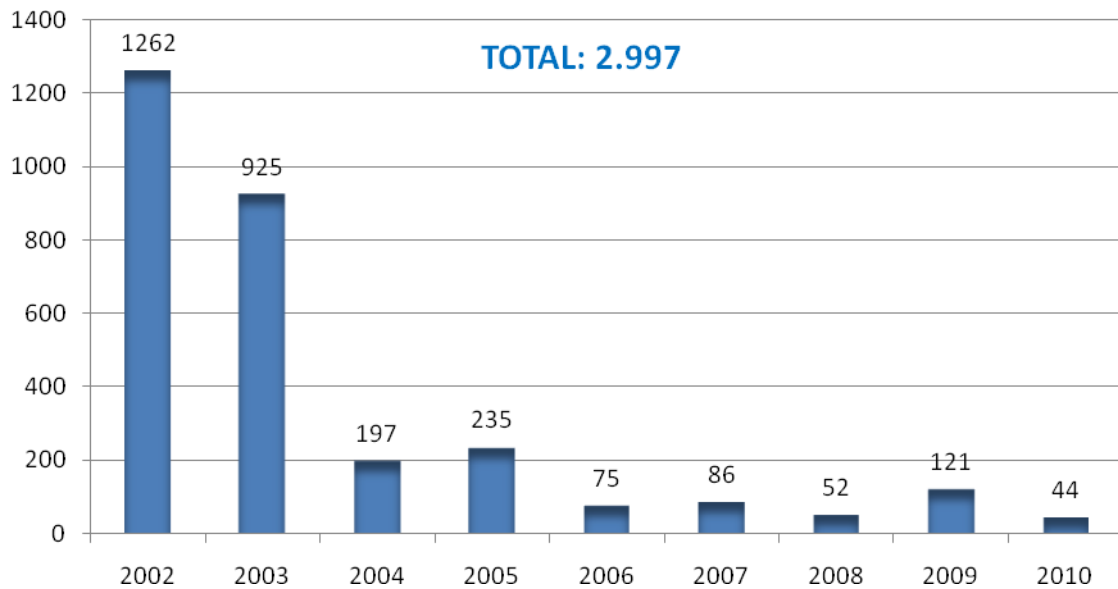
²⁶ ICMP originally performed extensive DNA testing on the remains recovered from Serbia, which were submitted by Serbian authorities prior to 2006. For these samples, ICMP issued 920 DNA match reports for 780 individuals. However, ICMP has additional unique unmatched bone samples in 23 cases from the samples submitted by OMPF in the period between January 2009 and August 2010.

²⁷ *The Situation in Kosovo: A Stock Taking*, ICMP.FSD.18.05.doc.

individuals. More importantly, the report stated that ICMP had received postmortem samples that would allow it to genetically account for up to 2,500 missing individuals in total.

51. Today, ICMP can genetically account for 2,997 persons based on bone samples received, of which 2,304 have been identified through DNA. However, of the 2,997 individuals for which genetic information exists, post-mortem samples for only 521 individuals (17.4%) have been submitted to ICMP in the five and a half year period since March 2005 (see Figure 2).

Figure 2: Unique profiles obtained from postmortem samples received between 2002 and 2010. This chart reflects the year the sample was submitted to ICMP and demonstrates the decline in the number of samples submitted annually since 2005, thus indicating a sharp decline in the number of mortal remains recovered from clandestine graves.²⁸



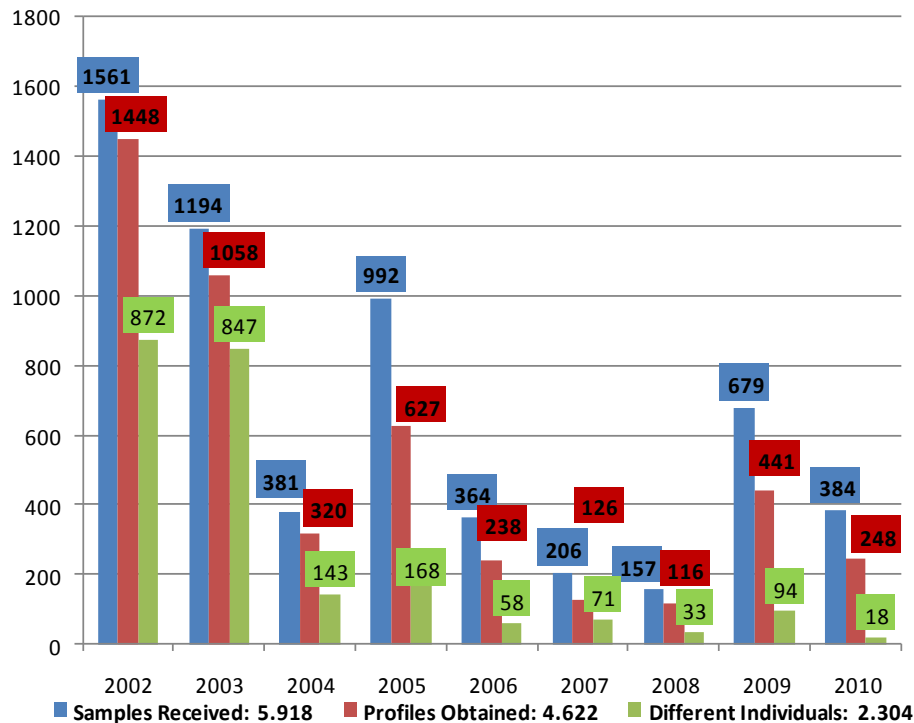
52. Today, ICMP still has a very high proportion of unmatched blood samples which would provide sufficient reference samples to allow for 1,800 genetic matches to be made; however, as noted above, none of the 413²⁹ cases in the Pristina mortuary match these samples even at a level below the 99.95% surety level.
53. Considering that the unidentified remains in the custody of OMPF have already been extensively sampled for DNA profiles, and profiles have been successfully obtained for a great majority of those cases, it is fair to conclude that continuing with the current approach holds no prospect for resolving a significant portion of the missing persons cases currently listed as open on the WG list. The markedly diminished progress in making new identifications over the last few years is detailed in Figure 3.
54. ICMP has 14,517 family reference profiles representing 4,315 missing persons. Of these 4,315 missing persons 2,304 have been DNA identified. ICMP confidently estimates that it holds sufficient family references to enable DNA matches for ~1,800 (or 90%) of the remaining 2,011 missing persons of whom 1,549 are also listed on the WG list of 1,862. Overall, ICMP has sufficient family references to enable DNA matches for over 95% of the 4,315 missing persons reported to ICMP.
55. These numbers would seem to suggest that, theoretically, a lack of family references could play a role in only 313 currently unsolved cases on the WG list. However, for many of the cases where it is not certain that the available references would permit a match, a strong suggestion of identity would nonetheless be evident to permit issuing DNA statistical comparison reports. For the remainder, with

²⁸ The slight rise in 2009 reflects the processing of samples previously taken but not submitted to ICMP. See paragraphs 28 and 29.

²⁹ See paragraph 45 for details.

the exception of some 50 cases, there are no remaining avenues for blood collection. Unfortunately, additional blood collection efforts, while they will be pursued, do not hold great promise for resolving many additional cases.

Figure 3: Identification results of postmortem samples received, by year of submission to ICMP.
Blue bars indicate the total numbers of samples received, red bars the number of those samples that yielded DNA profiles, and green bars the number of those that resulted in new identifications.



56. In addition, there are 693³⁰ unique DNA profiles taken from sets of mortal remains which have no corresponding match to any of the 14,517 family references collected by ICMP. This combination of 693 unmatched DNA bone profiles, on the one hand and the 2,011 remaining missing persons on the other constitute the central impasse of the missing persons’ situation in Kosovo.³¹ For reasons outlined above, continuation of the current approach can result in only a small number of identifications. Such incremental progress will fail to substantially reconcile the number of unmatched DNA profiles obtained from skeletal remains and family reference DNA profiles already in hand.

57. It is useful to place these numbers in perspective, because there are notable similarities between Kosovo’s missing persons’ problem and that in other countries in the region and in particular BiH. Once Kosovo participated fully in the DNA-led system, many indicators proved to be similar to those observed in BiH when considered in proportion to the numbers of persons reported missing for each setting. These comparable indicators include: the proportion of missing persons for whom reference samples have been collected, the proportion of reported missing that have been recovered and DNA profiled, and the proportion of missing persons that have been identified to date.

58. There is, however, an important difference that requires special attention in devising a new strategy for resolving Kosovo’s missing persons’ issue. It has been estimated by government authorities in BiH that some 7,000 persons who went missing as a consequence of the war in BiH were identified during and following hostilities prior to the introduction of the DNA-led system. The number in Kosovo is

³⁰ ICMP has 4,622 DNA profiles of human remains in its Kosovo database representing 2,997 different individuals. As of August 9, 2010, 2,304 of these individuals have been matched to families, leaving 693 unique DNA profiles from different persons without a match.

³¹ See Figure 1, Annex 1, which presents a summary of the key statistical hallmarks.

reported to be at least 2,000³². In relation to the respective overall numbers of missing persons this constitutes a significantly higher proportion of individuals whose remains were identified by potentially unreliable means in Kosovo than was the case in BiH.

4.3. Assessment of misidentifications

59. In Kosovo errors in identifications made prior to the systematic use of DNA may contribute to the notable discrepancies between the number of those still reported as missing, the number of unmatched reference blood sets, and the number of unmatched DNA profiles. Some of the unmatched family reference sets for reported missing persons may never be matched, because the body of the missing person has erroneously been returned to a different family. In turn, the family that has received an incorrect body may not have provided reference samples having assumed that their search was over thus, causing the recovered remains of their actual family member to remain unmatched.
60. ICMP's experience throughout the Western Balkans has indicated that traditional identifications carry a substantial risk of error. In Kosovo, the error rate has not been examined systematically, but initial investigations using DNA to test previous non-DNA identifications, indicate that this problem needs to be thoroughly explored.
61. OMPF has, at the request of families, investigated some previous identifications made, where remains have been exhumed and sampled, and the families have provided reference samples for DNA confirmation by ICMP. In the 77 completed cases that ICMP has been able to track, 13 indicated an incorrect identification by traditional methods, meaning that the body previously identified was excluded as having a relationship to the family members in question. Moreover, DNA testing has shown a much higher exclusion rate (averaging 30%) in cases where OMPF submitted samples along with the presumed identity of the skeletal remains. It must be clarified whether or not the cases investigated so far are representative of the ~2,000 cases overall that were identified without DNA. A systematic approach to understanding the magnitude and implications of previous errors in identification is a critical element in understanding the overall missing persons' situation in Kosovo, and in defining an optimal strategy for making additional identifications.
62. One striking aspect of the DNA identification results in Kosovo is the disparity in match rates between samples recovered in Kosovo, and those recovered from mass graves in Serbia. Samples from remains recovered in Serbia were subject at the outset to uniform DNA-sampling in a DNA-led approach, without any bodies identified by traditional methods.³³ The match rate of profiles from Serbia-recovered remains is 97.2%, while profiles from remains recovered in Kosovo match at a rate of only 68.9%.³⁴
63. The reason for this difference is unclear. Kosovo-recovered missing persons are affected by a significant rate of misidentification. However, it may also be the case that the individuals recovered in Serbia are persons missing solely as a result of forcible disappearance during the conflict, whereas remains recovered in Kosovo may include cases not related to the conflict itself. The DNA match rate disparity between these two sets of missing persons can only be clarified by systematically evaluating the issue of early misidentifications as discussed above and through a truly comprehensive audit of the provenance of remains that were recovered in Kosovo and how cases were closed.

³² See footnote 15.

³³ ICMP was invited by the Government of Serbia to assist in the forensic archaeological recovery of these remains found in Batajnica, Petrovo Selo and Bajina Basta. For more information on the excavation of the 2001 and 2002 sites, see; <http://www.ic-mp.org/wp-content/uploads/2008/02/batajnica-2001-eng.pdf> - Exhumations in Serbia, 2001 Summary; <http://www.ic-mp.org/wp-content/uploads/2008/02/icmp-fsd-16-04-2-doc.pdf> - Batajnica Summary Report Forensic Monitoring Activities.

³⁴ See Figures 2a and 2b, Annex 1.

V. CONCLUSIONS

64. Some initiatives have been taken to review progress to date. ICMP last proposed a joint strategic review in 2009 to examine operational strategies together with relevant international actors, in particular with EULEX-OMPF, and with a view to involving local stakeholders. OMPF has for its part commenced a record review and, based on requests by concerned families, submitted some past identification work for examination to ICMP. It has also submitted samples that had previously been taken but not submitted to ICMP.
65. Domestic authorities in Kosovo have shown an increasingly marked interest in demonstrating accountability on the issue in a manner that gives visibility to their concerns and strengthens their credibility with the population of Kosovo. Recent initiatives taken by the Kosovo Government, such as the creation of the Policy Group include strengthening the capacity of the GCMP, developing a law on missing persons and coordinating a strategic approach to addressing the technical problems, including misidentifications, which are posing an impediment to progress. These initiatives should be regarded favorably.
66. The creation of a central records archive on missing persons, the necessity for which was recognized by the government as far back as 2006, would seem a tangible point of departure for embarking on a systematic consolidation of existing investigative data, antemortem and postmortem data, site location information as well as identification and repatriation data, which would even permit improved casework, while establishing better foundations for overall analysis.
67. The continuing absence of domestic processes implies that there is also an absence of capacity building efforts for such processes. This in itself is likely to incur liabilities in the long term as international actors can neither hope to resolve the missing persons' problem comprehensively through continuing casework alone, nor can they continuously substitute for domestic responsibility. Furthermore, a deficit of domestic participation prevents the development of a sense of ownership of successes and shortcomings alike. Redressing that situation in Kosovo is as equally important for the prospects of future casework as it is for determining whether international efforts will in the future be considered to have been successful or not.
68. Local responsibility and progress with casework are linked concerns. EULEX today confronts not only cases of persons *reported* as missing, but very probably other war related casualties in addition. Developing a broader conceptual basis that will be embraced locally will require the inclusion of Kosovo's local authorities, institutions and the families of the missing, which could entail collecting family references for war related casualties more generally in an effort to resolve cases in OMPF custody that do not correspond to persons reported missing to the WG.
69. In addition, EULEX has inherited a legacy of identification work that very probably includes a significant number of errors. Addressing these errors comprehensively would require re-exhumations and renewed reference sample collection from families who previously received bodies identified by traditional methods, and such a strategy must weigh the social, legal, financial and political implications against expected outcomes.
70. There are reasons beyond definitional limitations and previous misidentifications for the process having come to a virtual standstill. These reasons will include problems with the lists themselves. It is currently unclear whether all reported cases are in fact still open, or whether families have accepted identifications, or buried their presumed relatives without the WG being aware of such instances.
71. Therefore, more effective outreach to society, enabling local responsibility, developing a broader conceptual basis as to who shall be regarded "missing," addressing a legacy of identification work that very probably includes a significant number of errors, redressing problems with current lists and records and securing better cooperation domestically and internationally would appear as key elements in a future strategy for progress.

VI. RECOMMENDATIONS

6.1. Joint Review

72. A joint review by ICMP and EULEX should be conducted to examine excavation records, autopsy reports, death certificates, any stock taking efforts conducted by EULEX OMPF, as well as any other records of cases closed. Reliable error rates for previous non-DNA identification work could be established through reviewing particular events or sets of previous identifications by objective criteria. One subset of such cases might include families who have already provided DNA reference samples to ICMP and buried relatives based on DNA-identifications, as well as relatives identified by traditional means. Reviewing such cases, including the previous identification records, would be of significant value to objectively assessing error rates in relation to specific identifiers that were used in non-DNA identification work. Investigating these cases through re-exhumations would not incur a need to collect new reference samples, but would seek the cooperation of family members whose reference samples have already been DNA profiled and are familiar with the DNA identification process.
73. Whether to take that approach or not would depend on developing a strategy that is cost effective, promises useful results, and has properly evaluated the social impact of re-opening cases having sought the appropriate involvement of local authorities and family organizations. As a result there would probably be some direct progress with casework. As importantly, establishing a reliable error rate across the spectrum of identifiers applied would permit more informed decision making by local authorities, both with regard to the scope of the problem in Kosovo and possibly also concerning the existence of additional clandestine graves in and outside Kosovo.
74. The results of these joint efforts should be provided to the government of Kosovo as requested by the Policy Group³⁵ and to the government of Serbia and should be shared with the families of the missing so that they can be engaged in next steps on how to address the issue.

6.2. The Policy Group

75. It is important to build domestic capacity so as to enable the government to comply with its human rights obligations on the missing persons' issue. Serbia currently has a seasoned commission that works on the issue. It is important that Kosovo's institutions are capable of engaging in this process in a commensurate and sustainable manner. Therefore, support should be provided to the initiative of the Kosovo Government to continue with its Policy Group so as to ensure a strategic approach to the issue. This would also permit the Kosovo GCMP to provide the families of the missing with reliable and accurate information on all on-going efforts to determine the fate of the missing. This should include information on technical problems that are an impediment to progress in accounting for missing persons.

6.3. Central Records Archive

76. A comprehensive joint review would be a tangible starting point for the creation of a central records archive on missing persons at the domestic level that would systematically consolidate existing investigative data, antemortem and postmortem records, site location information, as well as identification and repatriation information, which would in turn permit for improved casework, while establishing better foundations for overall analysis. As ICMP has indicated to the Kosovo authorities, it would make its own forensic data management system available for that purpose. Provisions should also be made to provide data to the Serbian Commission on Missing Persons.

³⁵ See paragraph 31.

6.4. The Kosovo Law on Missing Persons

77. The Law on Missing Persons should clarify the mandate of the GCMP as an independent governmental agency with the authority to coordinate the missing persons issue related to the Kosovo conflict with relevant local and international actors, and other governmental entities, including the judicial system. The Law on Missing Persons should expressly state the GCMP's authority to monitor and coordinate excavation processes related to cases of missing persons from the Kosovo conflict and to ensure transparency and nondiscrimination. Furthermore, the Law on Missing Persons should be the catalyst for the creation of the Central Records Archive.

6.5. The Kosovo Government Commission on Missing Persons

78. The recent initiatives taken by the Kosovo government to strengthen the capacity of the GCMP, and to coordinate a strategic approach to casework, should be supported. Transitioning authority on the missing persons issue to domestic institutions must clearly ensure that local authorities will deliver on their obligations in a nondiscriminatory, transparent and accountable manner.

6.6. Enhanced Engagement of the Families of the Missing

79. Once an agreement is reached with EULEX to engage in a joint review and to create a joint strategy, this strategy should be shared with the Policy Group, as well as with the Serbian Commission and the families of the missing. In this regard, a special meeting hosted by families of the missing and facilitated by ICMP and EULEX should be convened, to follow-up on the ICMP Ohrid conference that took place in 2007.³⁶

³⁶ See conclusions of the 2007 ICMP Ohrid Conference: <http://www.ic-mp.org/wp-content/uploads/2008/03/icmp-csi-18-2-doc.pdf>.

Annex 1: FIGURES

Figure 1: A summary of key statistical hallmarks, including statistics relating to the ICMP DNA-led identification process for Kosovo, as of August 9th, 2010.

This data highlights the fundamental difficulty with the current status of missing persons in Kosovo: almost 2000 individuals still reported missing to the ICRC Working Group (WG) for whom family reference DNA collection is virtually complete, a large number of missing persons for whom family reference DNA profiles exist, but that do not match any DNA profiles, and 693 DNA profiles that do not match any reference samples. That there are more DNA profiles than individuals represented by DNA profile is due to multiple samples having been submitted for the same individual.

*Cases “not open” at ICMP are those for which ICMP has collected no family reference samples.

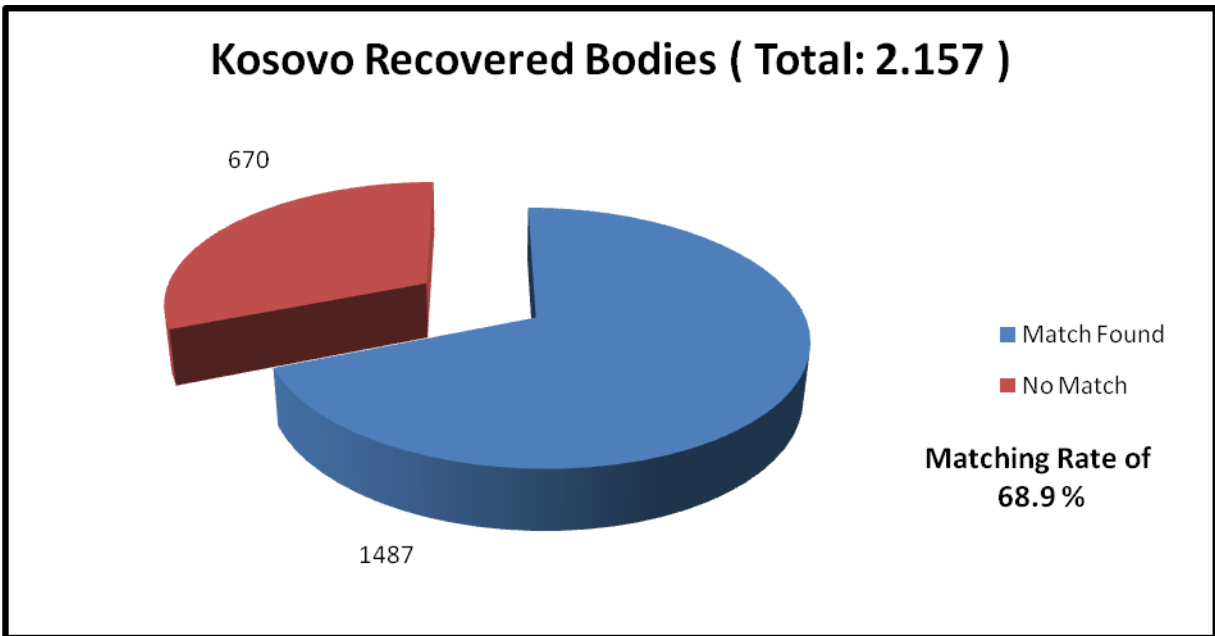
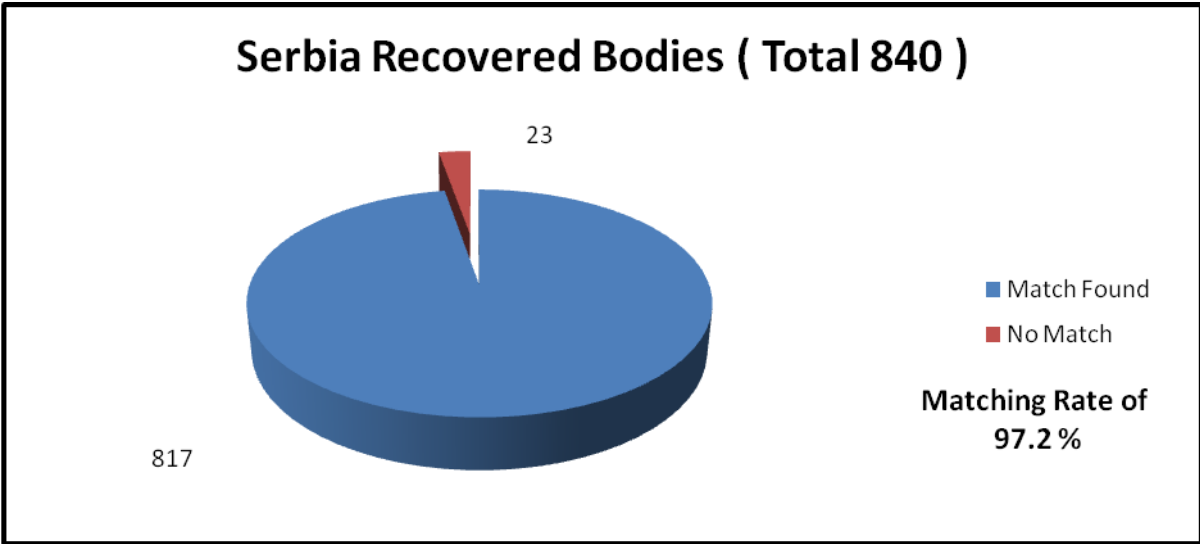
REFERENCE BLOOD SAMPLE STATUS WITH ICMP	
ICMP reported missing persons with family reference blood samples	4315
Total ICMP-held reference blood profiles	14517
Missing persons DNA matched by ICMP	2304
Number of samples submitted to ICMP	5918
Number of DNA match reports submitted by ICMP	3942
Reported missing persons that are unmatched by ICMP	2011

POSTMORTEM (PM) SAMPLE STATUS WITH ICMP	
PM DNA profiles created	4622
From remains recovered in Kosovo	3153
From remains recovered in Serbia	1469
Singular individuals represented by PM DNA profiles	2997
From remains recovered in Kosovo	2157
From remains recovered in Serbia	840
Individuals for whom PM DNA matches have been reported	2304
From remains recovered in Kosovo	1487
From remains recovered in Serbia	817
Unique PM DNA profiles that remain unmatched	693

WORKING GROUP (WG) LIST STATUS	
Outstanding persons reported missing on WG list	1862
Missing persons registered at ICMP from WG list	1802
For whom ICMP has full family reference blood samples	1549
For whom ICMP has partial family reference blood samples	253
For whom no case is open at ICMP*** (See note below)	60
For whom ICMP has sufficient family reference blood samples to indicate a probable match	187
For whom a probable match exists (DNA Match Report in review)	77
For whom adequate family reference blood samples do not exist	66
For whom families refuse to donate reference blood samples	5
For whom additional donors of family reference blood samples do not exist	52
For whom additional donor information is needed	7
For whom family reference blood sample collection is in progress by ICMP	2
Note:	
For whom no case is open at ICMP***	
For whom families refuse to donate reference blood samples	15
For whom additional donors of family reference blood samples do not exist	8
For whom additional donor information is needed	32
For whom family reference blood sample collection is in progress by ICMP	5

Figures 2a and 2b: Comparative chart of the match rate of DNA profiles to family references (i.e., the identification rate).

a) of individuals recovered from the territory of Serbia (97.2 % match rate), b) of individuals recovered from the territory of Kosovo (68.9%), c) overall figure of 76.7%.



A.

Antemortem (AM) data: Refers to information and documentation about the missing person prior to death. This can include information on: sex, age, height, weight, hair color, dental and medical records.

B.

Biological profile: A biological profile is a series of characteristics that an individual possessed during life, determined from analysis of human remains after death. These characteristics consist of: sex, biological age at death, stature, geographical information, trauma and/or other medical conditions that were extant in life. Analysis of these characteristics is undertaken by direct comparison of remains with the accepted standard physical or graphic exemplars or by the application of mathematical models developed from reference populations.

Biological sample: See DNA Samples.

Blood sample: See DNA Samples.

Bone sample: See DNA Samples.

C.

Clandestine Grave: The burial of human remains in secret or hidden locations, either comprising: a single body; multiple bodies; or mass grave containing large numbers of human remains. These clandestine locations can be 'Primary' graves, i.e. excavated, filled with a body or bodies; or 'Secondary' graves, where the original 'Primary' grave has been exhumed and the bodies moved to another site to be re-buried in a 'Secondary' clandestine grave.

D.

Demineralization DNA Extraction: A chemical process of purifying DNA from a powdered bone sample, involving completely dissolving the mineral and protein matrix of the bone. This method of extraction is particularly effective on old and degraded samples. Since June 2009, all bone samples from Kosovo have been subject to the demineralization extraction methodology.

DNA (Deoxyribonucleic acid): The substance which carries genetic (hereditary) information and which is present in the cell nuclei of nearly all living organisms.

DNA-led identification process: An identification process in which DNA is used as a primary tool to identify missing persons based on 'blind' matching between the DNA profiles of missing persons and reference DNA profiles, where no other presumption of identity is required.

DNA match: For the purposes of ICMP testing, a DNA match involves genetic consistency between a missing person and the available relatives, such that the probability of relatedness is equal to or greater than 99.95%.

DNA match rate: The proportion of DNA profiles obtained from bone samples that match to family reference DNA profiles when genetic kinship comparisons are made.

DNA match report: A formal report produced by the ICMP to officially communicate the finding of a DNA match. The DNA match report lists the “possible identity” of the missing person and the family reference samples to which the DNA from the missing person has been matched. The report contains photo documentation of the postmortem sample tested and a conclusion statement that indicates the statistical surety of the DNA match.

DNA matching: The process of comparing DNA profiles of unidentified human remains to DNA profiles of reference samples, usually from family members of missing persons. Where there is no presumption of identity this process is often called “blind matching”.

DNA profile: A listing of an individual’s DNA characteristics at a number of different selected DNA locations (loci), following accepted nomenclature. At ICMP, the genetic profiles generally relate to 15 nuclear Short Tandem Repeat (STR) loci that are highly specific to an individual, plus a sex-indicating locus.

DNA samples:

- **Bone sample:** A physical sample taken from the skeletal tissue (bone or tooth) of a missing person during postmortem examination for the purposes of DNA analysis. ICMP provides a detailed Standard Operating Procedure (SOP) for bone sampling;
- **Blood reference sample:** A sample of blood taken by the ICMP from family members of missing persons for the purposes of DNA analysis, and subsequent genetic matching to DNA profiles from unidentified human remains. In most cases several reference samples are required in order to make a match.

E.

Excavation: The recovery of buried human remains from clandestine single, multiple or mass graves. Best forensic practice calls for this to be performed by qualified archaeologists and/or anthropologists who, in addition to the recording and recovery of the human remains and associated evidence, would perform and document a detailed forensic examination of the environment. This would include recording and recovery of the geological, ecofactual or artifactual evidence associated with the grave site, the grave fill and the grave construction.

Exclusion report: An official report on ICMP DNA typing indicating that the DNA data excludes a particular presumptive hypothesis of identity that had been put forward based on non-DNA evidence.

Exhumation: The recovery of buried human remains from a known grave, often with known identifications and located in local cemeteries. The priority is often for the recovery of the human remains and artifacts with the remains, as opposed to a detailed forensic examination of the burial environment, and recording and recovery of the geological, ecofactual or artifactual evidence associated with the grave site and the grave itself.

Extraction rate: The percentage of samples submitted for DNA extraction that result in a profile being successfully obtained.

F.

Family reference sample: See DNA samples.

G.

Genetic profile: See DNA Profile.

Genetic sample: See DNA Sample.

I.

Identification by traditional methods: Identification carried out in the absence of DNA information. This can be based on accepted primary identifiers such as: fingerprints, dental or skeletal radiography, or distinctive medical conditions or permanent prostheses; or is sometimes based on more subjective criteria such as: visual recognition of remains or personal effects, general biological profile comparison, as well as circumstantial information.

K.

Kinship analysis (genetic): Determination of possible relatedness of individuals based on their patterns of shared genetic characteristics which are known through DNA testing. The probability of relatedness can be calculated mathematically, and this is used as the basis for DNA matching between unidentified human remains and family members of the missing.

L.

Likelihood ratio: This is a ratio of the probabilities of the DNA profiles in question occurring under different hypotheses. It is the factor by which the DNA evidence supports the hypothesis that the sample comes from the named missing person, versus the hypothesis that the sample comes from some other individual unrelated to the named missing person. The likelihood ratio is combined with the prior probability to determine the final statistical surety (posterior probability) of a match.

M.

Match threshold: This is a preset threshold for reporting a DNA match based on the statistical significance of genetic relatedness calculations to family reference DNA profiles. ICMP's minimum match threshold for a DNA Match Report is set to 99.95% surety for blind matches.

Minimum number of individuals (MNI): The minimum numbers of individuals represented within an assemblage of skeletal remains. As an anthropological term it is usually applied where a number of disarticulated skeletal remains are discovered, and is the hypothetical minimum number of individuals represented by the skeletal elements in the assemblage. It may be used in a DNA context to represent the minimum number of individuals in a skeletal assemblage by the number of number of unique DNA profiles obtained. The different methods for estimating MNI may give different results.

Missing person's case: For purposes of ICMP's work, a report of a person about whom his/her family has no information and who is believed missing as a consequence of armed conflict or systematic human rights violations; or, the unidentified mortal remains of a person believed killed as a consequence of violent conflict and or systematic human rights abuses.

N.

Negative report: See Exclusion report.

P.

Postmortem: Pertaining to or occurring during the period following death; Postmortem examination is an alternative term for an autopsy.

Postmortem data: Refers to information obtained from the individual after death. Often this includes a biological profile: sex, biological age at death, stature, distinguishing marks or medical conditions.

Postmortem samples: See DNA samples.

Presumptive case: A missing person case where non-definitive evidence suggests a hypothesis of identity prior to DNA testing done for purposes of confirmation or exclusion.

Prior probability: The chance that the sample comes from the named missing person, evaluated prior to any DNA testing being done; this chance can be expressed mathematically in either an “odds” expression or a probability expression which are easily interchangeable. In the ICMP DNA match report the prior odds are based on the number of missing persons from a particular area, conflict, or event.

Probability of relatedness: A statistical surety which is derived from multiplying the DNA likelihood ratio by the prior odds.

R.

Re-association: The process of assigning previously unassociated skeletal elements to a single individual using anthropological methods and/or DNA evidence.

Reference samples: See DNA samples.

Reporting threshold: See Match threshold.

S.

Short Tandem Repeat (STR): Specific areas on the chromosomes where small units of DNA (2 to 6 bases in length) are repeated a certain number of times. These well characterized loci are highly variable between individuals, providing a particularly strong basis upon which to distinguish individuals.

Statistical comparison report: A DNA report that is issued at a level below the statistical threshold of 99.95% surety for a full DNA match, to be used in conjunction with non-DNA related evidence to support an individual identification. A statistical comparison report does not constitute a DNA identification, or stand-alone evidence on which a DNA identification should be made.

Statistical surety: An expression of the level of confidence in a hypothesis or conclusion, based on a calculation. In the case of DNA match reports the “posterior probability” is the value that informs the user how “sure” they should be regarding the hypothesis of identity in question, based only on the DNA evidence.

U.

Unique Profile: A distinct DNA profile representing a single individual. In a collection of DNA profiles obtained from different bone samples, a single individual may be represented multiple times; the number of “unique profiles” indicates the number of different individuals represented by the DNA profiles in question.