PROBLEMY EKOROZWOJU/ PROBLEMS OF SUSTAINABLE DEVELOPMENT
SUBMITTED: 7.05.2024, ACCEPTED: 20.05.2024, PUBLISHED ON-LINE: 1.07.2024
2024, 19(2): 203-214
DOI: https://doi.org/10.35784/preko.6202

International Determinants of Demining Territories in the Context of Sustainable Development: Economic Projection

Międzynarodowe uwarunkowania rozminowywania terytoriów w kontekście zrównoważonego rozwoju: perspektywa ekonomiczna

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Abstract

The problem of landmines is becoming increasingly prevalent, with a growing impact on all spheres of society and a consequent slowing down of sustainable development planning at the international, national and local levels. Since February 2022, the issue of mine clearance has become even more relevant for Ukraine, where active hostilities are still ongoing, which requires a thorough study of the economic, social and environmental aspects of this process. In order to mitigate the negative impact of the war and possibly speed up the clearance of mines and other explosive hazards, it is important to analyse the key results of international experience in this area, which has already been gained by a significant number of countries. In order to expand on the subject of this study the example of demining territories of the seven most heavily mined countries in the world were chosen: Albania, Afghanistan, Bosnia and Herzegovina, Cambodia, Croatia and Turkey. The authors concentrated on identifying problems and highlighting the potential for further research into the sustainable dimension of demining, which is considered in this study to be the initial stage of territorial rehabilitation. In this context, the authors focus on the key results of demining through the prism of sustainable development, with particular emphasis on the economic component, as it affects the possibility of rapid resumption of economic and other peaceful use of the territories affected by armed conflicts. This formed the basis of the conclusions, where the authors substantiated ways to implement international demining experience in Ukrainian practice that lies in the inclusion of sustainable development components in strategic and operational documents at the national level. This is to lay a solid foundation for restoring the economic, social and environmental potential of territories in the context of war and post-war recovery.

Key words: demining, territories, sustainable development, international experience, explosive ordnance, recovery

Streszczenie

Problem min przeciwpiechotnych staje się coraz bardziej powszechny, wywierając coraz większy wpływ na wszystkie sfery życia społecznego i w konsekwencji spowalniając planowanie zrównoważonego rozwoju na poziomie międzynarodowym, krajowym i lokalnym. Od lutego 2022 r. kwestia rozminowywania stała się jeszcze bardziej istotna dla Ukrainy, gdzie nadal trwają aktywne działania wojenne, co wymaga dokładnego zbadania ekonomicznych, społecznych i środowiskowych aspektów tego procesu. Aby złagodzić negatywne skutki wojny i ewentualnie przyspieszyć usuwanie min i innych zagrożeń wybuchowych, ważne jest przeanalizowanie kluczowych wyników międzynarodowych doświadczeń w tej dziedzinie, które zostały już zdobyte przez znaczną liczbę krajów. Aby rozszerzyć temat tego badania wybrano przykład rozminowywania terytoriów siedmiu najbardziej zaminowanych krajów na świecie: Albanię, Afganistan, Bośnię i Hercegowinę, Kambodżę, Chorwację i Turcję. Autorzy skoncentrowali się na zidentyfikowaniu problemów i podkreśleniu potencjału dalszych badań nad zrównoważonym wymiarem rozminowywania, który w niniejszym opracowaniu uznawany jest za początkowy etap odbudowy terytorialnej. W tym kontekście autorzy skupili się na kluczowych wynikach rozminowywania przez pryzmat zrównoważonego rozwoju, ze szczególnym uwzględnieniem komponentu ekonomicznego, ponieważ wpływa on na możliwość szybkiego wznowienia gospodarczego i innego pokojowego wy-korzystania terytoriów dotkniętych konfliktami zbrojnymi. Stanowiło to podstawę wniosków, w których autorzy uzasadnili sposoby wdrożenia międzynarodowych doświadczeń w zakresie rozminowywania w praktyce ukraińskiej, polegające na włączeniu elementów zrównoważonego rozwoju do dokumentów strategicznych i operacyjnych na poziomie krajowym. Ma to na celu stworzenie solidnych podstaw do przywrócenia potencjału gospodarczego, społecznego i środowiskowego terytoriów w kontekście wojny i powojennej odbudowy.

Słowa kluczowe: rozminowywanie, terytoria, zrównoważony rozwój, doświadczenie międzynarodowe, materiały wybuchowe, odzyskiwanie

1. Introduction

The ongoing conflict in Ukraine, which began in 2014 and escalated with Russia's invasion in 2022, has had a significant impact on all aspects of society. One significant challenge that has emerged is the widespread mine contamination of the country's territories, which has implications for the economy, society, and environment. As of April 13, 2024, the State Emergency Service of Ukraine reported that over 174,000 square kilometres of land were contaminated by explosive ordnance. The Ministry of Defence identifies 349 areas that are potentially contaminated, negatively affecting reconstruction and development plans, particularly in terms of agriculture. With active hostilities ongoing, the economy, particularly the agricultural sector, faces significant threats. However, it is crucial to focus on restoring and utilizing the cleared territories to improve the lives of the population and prevent further loss of investment.

In order to address the issue of mine contamination, it is important to explore and learn from international experiences. Many countries around the world still face the consequences of mine contamination from both past and current armed conflicts. Therefore, studying best practices and lessons learned from countries like Albania, Afghanistan, Bosnia and Herzegovina, Cambodia, Ethiopia, Croatia, Türkiye, and Ukraine can provide valuable insights for the Ukrainian context. Additionally, it is essential to recognize that mine action cannot be isolated from other aspects of a country's development. The results of mine clearance efforts are closely linked to the levels of economic, social, and environmental components of sustainable development. The 2030 Agenda for Sustainable Development can serve as a strategic framework to support humanitarian efforts in mine action.

As of December 31, 2022, there are 60 countries and territories contaminated with anti-personnel mines, including states party to the Ottawa Convention and non-party states. Among the states with the highest levels of mine contamination are Albania, Afghanistan, Bosnia and Herzegovina, Cambodia, Ethiopia, Croatia, Türkiye, and Ukraine. However, due to ongoing hostilities, Ethiopia and Ukraine have limited information and analysis available regarding their mine clearance experiences. Therefore, it is important to focus on studying the experiences of the aforementioned six countries to gain insights that can be applied in the Ukrainian context. By leveraging international experiences and implementing effective mine action measures, Ukraine can work towards mitigating the negative effects of mine contamination and foster the reconstruction and development of war-affected territories.

2. Literature review

The analysis of scientific literature in the field of demining states that foreign experts focus on issues of a mainly military and technical nature D. Ambruš, D. Vasić and V. Bilas (Ambruš et al., 2020), T. Bechtel, L. Capineri,

G. Pochanin, F. Crawford, P. Falorni and V. Ruban (Bechtel et al., 2021), I. Cruz, L. Jaupi, S. Sequesseque, N. Kassanga and O. Cottray (Cruz et al., 2018), N. Ibrahim, S. Fahs and A. AlZoubi (Ibrahim et al., 2021), J. Killeen, L. Jaupi and B. Barrett (Killeen et al., 2022) and others through the prism of state policy in the field of defence and civil protection. Research on these topics has contributed to the accumulation of solid experience in demining theoretical developments by scientists and has been embodied in a number of scientific publications, scientific reports, policy briefs and analytical notes, and expert opinions.

However, in order to cover the subject matter of this scientific article, it is necessary to base it on the results of the author's research on economic, legal and other issues of territorial restoration, sustainable development of European countries in the post-war period, and management of local territories in the context of armed conflict. The main scientific results in the areas of the presented research can be found in foreign scientific and analytical sources, namely, certain economic and legal issues of demining, where special attention should be paid to studies on the formation and development of legislation in the field of demining in post-conflict countries. Such issues have been addressed by scholars D. Arias Henao and J. Ospina Perdomo (Arias Henao et al., 2020), U. Hofmann and P. Rapillard (Hofmann et al., 2017), J. Macías Montoya and M. Corcione Nieto (Macías Montoya, 2020) and other authors.

In Ukrainian science, there are studies related to the prospects of using the land and resource potential of war-affected areas, which mention the problem of demining and the need to address it in the context of war and the transformation of the post-war economy (Ustymenko et al., 2023), but due to the economic, social and environmental dimensions, the data presented are not analysed fully, which requires a separate in-depth study of the issues of restoring mined areas to ensure the sustainable development of regions and the country as a whole.

While acknowledging the significance of the scientific results obtained by these scientists, it is crucial to highlight the lack of applied research in the field of demining that would facilitate the integration of humanitarian demining and territorial development. One of the primary objectives of demining is to create safe conditions for the return of the population (including the reduction of violence and casualties) and the restoration of economic sectors to enhance the potential and competitiveness of mine-affected areas. For instance, the clearance of landmines is aligned with the Sustainable Development Goal (SDG) target 16.1, which aims to reduce all forms of violence. This, in turn, has an impact on target 5.2, which concerns the ending of violence against women and girls. In addition, the humanitarian nature of mine action should be considered not only in terms of ongoing assistance to affected individuals, but also in a broader sense. The restoration of a safe physical environment is a favourable precondition that enables a pool of sustainable development activities. In order to achieve this, it is essential to analyse the key international project and programme instruments in the field of demining from the perspective of sustainable development goals. This analysis should then be used to determine how their implementation affects the restoration of the economic, social and environmental potential of the affected territories, that justifies the purpose of this research paper.

3. Methods

The methodical basis of the work is a set of methods and principles of scientific knowledge, general and special methods and techniques used in the study. The theoretical basis of the study is the fundamental and applied provisions of mine action, regional economics, and the scientific works of domestic and foreign scientists on mine action in the context of sustainable development.

The legal framework of the study was formed by the current regulatory legal acts of the countries under study on the regulation of economic, social, and environmental components of development after demining. In addition, the information base comprises statistical data, reports and analytical data from communities and regions within the states under study, Internet resources and publications, as well as the results of the authors' own research and development.

In order to achieve this goal, this article employs the following methods: a systematic approach (in the study of the theoretical foundations of demining in the context of their sustainable development), a process approach (in the grouping of design and software tools for demining). Furthermore, the analysis employs a historical and logical approach to determine the prerequisites for demining and to ensure the economic, social, and environmental development of territories as well as a comparative analysis to analyse specific steps of demining. Finally, a grouping and typology approach is used to determine the results of demining.

4. Results and discussion

It is well established that effective mine action removes physical obstacles and mobility restrictions, and facilitates (and, in the case of completed demining, guarantees) safe access to basic social services such as healthcare (SDG 3), education (SDG 4), water and sanitation (SDG 6) for stakeholders. This contributes to the implementation of sustainable development goals at the international, national and regional levels. Furthermore, demining

should be regarded as the initial step towards the recuperation of territories that have experienced and/or continue to experience active hostilities in terms of expanding economic opportunities for the affected areas through the restoration of access to the market and natural environment. The implementation of measures under the economic component of sustainable development will assist in increasing access to livelihoods for residents of the affected areas and will also assist in increasing productivity in demined communities (SDG 8). Furthermore, mine clearance will have a direct impact on the priority restoration of critical infrastructure (SDGs 7 and 9), and the restoration and construction of housing, human settlements and transport infrastructure (SDG 11). Therefore, mine clearance is a prerequisite for achieving sustainable development goals and restoring the potential of affected cities, towns, communities, as well as forests, water and land. This process lays the foundation for security for the further development of areas affected by mines and other explosive hazards. For the purposes of this study, it is therefore necessary to examine the international experience of mine clearance through the lens of sustainable development. In order to gain insight into this process, the states with the greatest experience in this area were selected for analysis: Albania, Afghanistan, Bosnia and Herzegovina, Cambodia, Croatia, Türkiye and Türkiye. While Ukraine is currently the most mined country in the world, it is premature to assess its progress in de-mining, given the ongoing conflict. Furthermore, it is of great significance for Ukraine to examine the experiences of other countries in the field of demining, with the aim of implementing these in practice during wartime and in the context of post-war reconstruction.

4.1. Albania

The issue of landmines was a significant challenge for Albania, particularly in the aftermath of the 1999 Kosovo conflict. Prior to this, the country had already experienced the impact of mines during the two World Wars. In the mid-1990s, Albania faced significant political and security-related difficulties as it transitioned from a near-totalitarian communist regime to a multi-party democracy. Furthermore, during the internal unrest in 1997, ammunition depots were destroyed and looted, resulting in the scattering of ammunition in some areas. Since then, Albania has implemented political and security sector reforms, with the adoption of a new constitution in 1998 and the country's accession to NATO in 2009 representing significant milestones.

Non-technical surveys conducted in the aftermath of the Kosovo conflict initially identified approximately 15 km² of suspected hazardous areas along the Albanian-Kosovo border in the municipalities of Kukes, Has and Tropoe, affecting a total of 39 villages and approximately 25,000 people. Undoubtedly, the mining of the territories on the border with Kosovo hinders the socio-economic and environmental development of the region and increases its isolation from the rest of the country. Since 2000, Albania has released (reduced or cleared) approximately 16 km² of land and destroyed 12,452 anti-personnel mines, 152 anti-vehicle mines, and 4,965 pieces of other explosive ordnance through survey and demining (Email from Steve Costner, Deputy Office Director, 2017). In November 2009, Albania announced the completion of demining and land clearance of all known unexploded ordnance. However, since then, safe land has not been prioritised for agricultural use or for improving the country's environmental performance.

On 29 February 2000, Albania ratified the Ottawa Convention, also known as the Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction. This was done in accordance with the obligations set out in the Ottawa Convention. On 30 November 2009, the Government of Albania fulfilled its obligations in this regard. Over the past 15 years, Albania has made significant progress in attracting international support to build national mine action capacity. Realistic plans for surveying and demining have been developed and implemented, allowing for early compliance with Article 5 of the Ottawa Convention. Furthermore, the country has created facilities within the social component of sustainable development, namely for the physical and psychological rehabilitation of people affected by explosive hazards and people with disabilities.

With regard to the financial aspect of mine clearance in Albania, the United States represents the largest donor, having provided USD 1.5 million in 2016 alone through the ITF Enhancing Human Security for demining and victim assistance in Albania. This has served to reinforce humanitarian demining activities and to enhance the significance of the social component of sustainable development in this country. Table 1 presents the data on international support for mine clearance in Albania. The most recent data was recorded between 2012 and 2016, as this was the period during which active demining operations were conducted.

Table 1. US support for mine action in Albania 2012-2016, source: Email from Steve Costner, Deputy Office Director (2017)

Year	Direction	Amount (USD)
2016	Mine action (humanitarian), assistance to victims (social component of sustainable development)	1 500 000
2015		1 074 949
2014		1 935 000
2013		566 013
2012		160 738
Total	-	**5 236 700**

The case of Albania in mine action serves to illustrate the significance of structured long-term strategic planning for this process, including the implementation of a comprehensive and properly executed National Mine Action Strategy. Concurrently, the provisions of this strategy do not include direct tasks within the framework of the Sustainable Development Goals. Nevertheless, in view of the current stage of mine action in Albania, which has been characterised by the near exhaustion of financial resources provided by the international community, there is an urgent need to assess and develop measures to overcome the constant threat posed by the presence of explosive remnants in the cleared areas and to plan for their economic and social recovery. The ongoing operations deployed to address the threat posed by the remaining hotspots constitute the backbone of mine action in Albania to date. However, these operations lack consistency and a clear correlation with the economic, social and environmental pillars of sustainable development.

4.2. Afghanistan

The issue of mining in the Islamic Republic of Afghanistan is the most significant and longest-standing in the world. The Mine Action Centre of Afghanistan was established in 1989 by the UN Office for the Coordination of Humanitarian Affairs (UNOCHA), and a specialised Mine Action Department was established in 1990 to coordinate the Mine Action Programme of Afghanistan (MAPA). MAPA is financed from two principal sources: the primary source is UNOCHA, while funds are also transferred directly from donors to individual NGOs. Consequently, the programme encompasses the UN Mine Action Centre in Afghanistan (MACA), four UN Regional Mine Action Centres (RMACs), and 15 partner NGOs. In 2005, the Specialised Mine Action Department became the Directorate for Mine Action Coordination (DMAC), marking the transition from the UN Mine Action Service (UNMAS) to national ownership of DMAC. This transition was completed in May 2018 (Afghanistan, 2020).

As of 20 December 2020, the estimated extent of mined land is 191 km², although there are still areas in the country designated as *initial danger zones* that require further survey to determine the full extent of the mined land. The estimated area of cluster munitions in two provinces is 5.8 km², although the DMAC has reported some evidence of additional cluster munitions that require further investigation.

The tools available for the management and coordination of mine action in Afghanistan are limited to the level of plans. For instance, Afghanistan's Five-Year Plan for 2016-2020, which was adopted in January 2016, identified four strategic goals:

1. Promoting the development of mine action
2. Integrating mine action into the socio-economic sector of life
3. Reducing the volume of mines and ERW, reducing the number of accidents
4. Ensuring gender equality and diversity in mine action (National Mine Action Strategic Plan, 2016)

The plan proposed the integration of mine action into Afghanistan's National Priority Programmes and Sustainable Development Goals. However, it was not until 2019 that mine action was incorporated into the country's broader UN-led Afghanistan Mine Action Assessment (UNMAS, 2020), which identified cross-sectoral needs in all 34 provinces for relevant humanitarian programmes. This represents a positive example of the country's implementation of the Sustainable Development Goals.

The DMAC also had a 10-year mine ban treaty implementation workplan for the period from April 2013 to March 2023, which provided a framework for operational mine action planning. Furthermore, in September 2018, a regulation on the prohibition of the production, import, transport, export, storage, use and destruction of anti-personnel mines and cluster munitions was developed and adopted as Annex 1 to the 2005 Law on Firearms, Ammunition and Explosives (Afghanistan, 2020). In November 2017, an *Abandoned Improvised Mine (AIM) Technical Working Group* was established with the objective of developing terminology and policies for dealing with AIM. This initiative served as the foundation for the National Standard for the Clearance of Improvised Mines, which was published in March 2019 (Mine Action Review, 2019). This document made Afghanistan the first country in the world to adopt such a document.

Following the conclusion of the Afghanistan Citizens Assistance Programme (Phase III) in March 2018, its Civilian Mitigation Assistance Programme (COMAC) was transferred to Blumont Global Development, a private company that received $40 million in funding from the United States Agency for International Development (USAID). The COMAC was designed to enhance the capacity of the government's mine action sectoral authorities, particularly in terms of providing assistance to affected civilians.

Furthermore, the Ministry of Health of Afghanistan has entered into significant contractual agreements with international and national NGOs to provide support to mine victims. These include the Systems Enhancement for Health Action in Transition (SEHAT) and Sehatmandi projects, which are supported by the Afghanistan Reconstruction Trust Fund (ARTF) managed by the World Bank. These initiatives directly align with the social goals of sustainable development.

The most recent data on financial support for mine action in Afghanistan is recorded as of 15 December 2023. In 2022, Afghanistan received $66.4 million in mine action support from 12 donors, representing a 34% increase from the $49.5 million received in 2021. The European Union was the primary contributor of funds, providing a total of $27.8 million for mine action, risk education, and economic and social assistance to victims, representing

42% of the total international mine action assistance to Afghanistan in 2022. The United States (US) was the second largest donor, contributing $15.2 million (or 23% of the total). Table 2 illustrates the direction of international contributions to mine action in Afghanistan.

Table 2. International support for Afghanistan's mine action in 2022, source: (Afghanistan, 2023)

Donor	Direction	Amount (USD)
European Union	Mine action (operational and humanitarian), risk education, victim assistance (economic and social component of sustainable development)	27 799 226
United States of America	Mine action (operational and humanitarian), risk education, victim assistance (social component of sustainable development)	15 193 000
Germany	Coordination, risk education	8 772 715
United Kingdom	Mine action (operational and humanitarian), risk education	6 185 500
Japan	Mine action (operational and humanitarian), risk education, victim assistance (economic and social component of sustainable development)	2 793 268
Sweden	Mine action (operational), targeted assistance to victims (social component of sustainable development)	1 396 068
Norway	Mine action (operational and humanitarian), risk education, victim assistance (social component of sustainable development)	1 174 041
Italy	Victim assistance (social component of sustainable development)	1 053 400
Finland	Mine action (operational), risk education	916 458
Denmark	Mine action (operational), risk education	635 719
Ireland	Mine action (operational and humanitarian), risk education, victim assistance (economic and social component of sustainable development)	263 350
Slovenia	Victim assistance	219 961
Total	-	66 402 706

A considerable amount of targeted international support for mine action in Afghanistan serves to enhance the country's economic and social capacity to plan sustainable development measures. Consequently, access to economic opportunities within the framework of sustainable development is also a significant area of concern, as this process directly affects the economic recovery of post-conflict areas. Despite the fact that active hostilities are still ongoing in Afghanistan, some districts and communities are already directing their efforts to restore their economic and social potential. For instance, the French international organisation Handicap International provides vocational training in Kandahar and Kabul, with 70 students (39% women, 61% men) having undergone training in tailoring, embroidery and mobile phone repair. As part of the international *Victim Assistance/Livelihood Project* (April 2019-March 2020), we supported vocational training initiatives for people with disabilities who have left the demining areas. The Swedish Committee for Afghanistan (SCA) has developed recommendations to enhance physical accessibility to its own infrastructure, buildings, and services for individuals with disabilities affected by landmines.

4.3. Bosnia and Herzegovina

Despite the conclusion of the armed conflict in 1995, Bosnia and Herzegovina (BiH) continues to be one of the most heavily mined countries in Europe. Following the conclusion of hostilities, the responsibility for mine action was devolved to local authorities, resulting in an increase in the number of mine action organisations and operators. The regulation of the mine action sector in the study country commenced with the establishment of the Commission for Mine Action, based at the Centre for Mine Action (BHMAC), in 2002. In March 1999, Bosnia and Herzegovina (BiH) became a State Party to the Mine Ban Treaty. Since that time, it has submitted requests to continue its activities under this international instrument. In June 2020, another request was submitted to complete demining by 1 March 2027. Furthermore, Bosnia and Herzegovina (BiH) became a State Party to the Convention on Cluster Munitions in March 2011. In 2020, it submitted a request for an 18-month extension to complete demining by 1 September 2022 (Bosnia and Herzegovina, 2021).

Bosnia and Herzegovina is significantly contaminated by landmines and ERW, including remnants of cluster munitions, as a consequence of the 1992-1995 conflict associated with the dissolution of the former Yugoslavia. The majority of mined areas are situated between the Federation of Bosnia and Herzegovina and Republika Srpska. The 2016 report of the National Audit Office on the effectiveness of the demining system concluded that, 20 years after the end of the war, the BHMAC lacked comprehensive information regarding the location of landmines (Audit Office of the Institutions of Bosnia and Herzegovina 2000-2020, 2016). Nevertheless, by the end of 2019, approximately 70% of minefields had been mapped.

The majority of international support for mine action in this country is provided through national strategic and operational mine action instruments. This has contributed to the formation of a significant amount of the state's own financial resources to support it. It is evident that international assistance played a pivotal role in mine clearance in BiH. However, it is noteworthy that the proportion of international assistance was only 42%, while the

remaining 58% was covered by national stockpiles. In 2022, international contributions to mine action in BiH amounted to US$7.7 million from six donors, representing a 20% decrease from the total international contribution in 2021. The United States of America and Germany were the largest contributors, with $4.7 million and $2.3 million, respectively. Collectively, the United States and Germany accounted for 90% of the total contribution to BiH in 2022 (Table 3). The majority of international support in 2022 was allocated to mine action and risk education (US$7.5 million, representing 97% of the total), while US$0.2 million (3%) was directed towards victim assistance under the economic and social pillars of sustainable development.

Table 3. International support for BiH's mine action in 2022, source: (Bosnia and Herzegovina, 2023)

Donor	Direction	Amount (USD)
United States of America	Mine action (humanitarian), risk education, victim assistance (economic and social component of sustainable development)	4 665 000
Germany	Mine action (humanitarian), victim assistance (economic and social component of sustainable development)	2 317 480
Japan	Building strategic mine action capacity, risk education	358 189
Switzerland	Mine action (humanitarian), risk education	156 021
Slovenia	Victim assistance (social component of sustainable development)	102 472
Czech Republic	Mine action (humanitarian)	91 936
Total	-	**7 691 098**

The lack of significant progress in achieving the goal of mine-free BiH by 2019, as stated in the National Mine Action Strategy for 2009-2019, was primarily due to a lack of funding and the scale of the landmine problem. The absence of a unified minefield database and the influence of restrictive climatic conditions (Bosnia and Herzegovina, 2021) were also significant factors. However, we believe that the lack of clear goals and benchmarks for planning the economic, social and environmental recovery of post-mining areas was also an important reason. While representatives of the central authorities of BiH proclaimed the importance of targeted measures and the combination of demining and sustainable development, these proclamations were not systematically implemented in practice.

The new National Mine Action Strategy for the period 2018-2025 was developed in 2017 with the support of the United Nations Development Programme (UNDP) and the Geneva International Centre for Humanitarian Demining (GICHD) and adopted in January 2019. It covers all types of mines, including landmines and cluster munitions. It is crucial to highlight that two of the primary strategic objectives of this document are to enhance information management systems and to gain a more precise understanding of the extent of mined areas (GICHD and UNDP, 2022). This is anticipated to facilitate a more rapid pace of demining in Bosnian territories and the return of internally displaced persons.

4.4. Cambodia

Cambodia is afflicted by a considerable degree of mine contamination, with the most severely affected region being the north-western region bordering Thailand. A study was conducted on the extent of mine contamination in Cambodia, which revealed 8,923 suspected hazardous areas (SHAs) with a total area of 801.6 km² as of the end of 2020 (Cambodia, 2023). During the 2021-2022 period, further non-technical and technical surveys identified an additional 1,141 SHAs in areas that were previously inaccessible or where data was not available. This resulted in an additional 160.64 km² being identified. Following major land clearance activities, 7,392 suspected hazardous areas with a total area of 681.28 km² were identified, including newly identified areas that have already been inspected by the Cambodian Mine Action and Victim Assistance Authority. This indicates that there is an insufficiently effective level of activity in this area.

With regard to determining the extent to which areas are mined with cluster munition remnants, the final data is still unknown and requires further examination, according to experts. This is because the data is the result of intensive US bombing during the Vietnam War in north-eastern Cambodia along its borders with the Lao People's Democratic Republic and Vietnam. However, as of the end of 2022, the Cambodian Mine Action and Victim Assistance Authority reported that 741.07 km² of land was mined with cluster munition remnants. Of this total, 154.42 km² was classified as a confirmed hazardous area (CHA) and 586.65 km² as a SHA (Cambodia, 2023). These findings indicate an increase in the total area of cluster munition remnants by 42.38 km², despite the demining activities conducted during 2022.

In terms of the progress made in mine clearance, Cambodia successfully cleared a total of 191.54 km² of landmine-contaminated areas in 2022. Of the total number of kilometres, 46% were completely cleared, 37% were reduced through technical surveys, and 17% were not subject to clearance due to non-technical surveys. A total of 13,708 anti-personnel mines were destroyed in 2022. In 2022, Cambodia successfully cleared 46.42 km² of land contaminated with cluster munitions, representing a total of 5,194 units.

Since 2019, the total volume of demining in Cambodia has been on a consistent upward trajectory. In 2022, the figure was 88.47 km², representing a notable increase from 58.9 km² in 2021. The quantity of land subject to technical surveys has increased significantly, from 11.2 km² to 70.79 km².
In 2021, Cambodia initiated a fundraising campaign to solicit private sector support for the Mine-Free Village programme. This initiative encompasses measures to enhance the economic and social potential of villages, thereby contributing to the country's sustainable development goals. By the end of 2022, approximately $18 million had been donated for rural mine action (Cambodia, 2023).
In 2022, Cambodia received US$37.7 million in international assistance for mine action from eight donors, representing a 1% increase over the support received in 2021. The largest contribution was provided by Japan, with a total of US$20.1 million. This included US$18.6 million for the construction of an educational complex for children and an information centre for the Cambodian Mine Action Centre (Table 4).

Table 4. International support for Cambodia`s mine action in 2022, source: (Cambodia, 2023)

Donor	*Direction*	*Amount (USD)*
Japan	Mine action (humanitarian), strategic mine action capacity building, victim assistance (social component of sustainable development)	20 137 928
United States of America	Mine action (humanitarian), risk education	9 515 000
United Kingdom	Mine action (humanitarian), strategic mine action capacity building, risk education	2 222 323
Australia	Mine action (humanitarian)	1 737 750
Norway	Mine action (humanitarian), risk education	1 350 504
Germany	Mine action (humanitarian)	1 053 400
Switzerland	Mine action (humanitarian), risk education	1 047 120
Ireland	Mine action (humanitarian), risk education	632 040
Total	-	**37 696 065**

The majority of international financial support to Cambodia has been directed towards mine action operations, with a notable absence of measures designed to achieve economic and social sustainable development goals. Japan is the only country to have demonstrated a commitment to strengthening the social component of sustainable development through education. Nevertheless, the country has demonstrated a commendable commitment to the restoration of rural areas. For instance, the United Nations Development Programme (UNDP) has been collaborating with the Cambodian Mine Action Authority since 2006 through the *Clear for Results* project, which is currently in its fourth phase (2020-2025) under the title *Mine Action for Human Development*. This initiative supports mine action in affected rural areas. The alignment of mine action with socio-economic development activities and the strengthening of national capacity to deal with residual mine risk (UNDP Cambodia, 2023) that directly correlates with many of the SDG.
In the context of the social and environmental component of sustainable development, it is important to note that Cambodia has 16 national Cambodian Mine Action Standards (CMAS), which are aligned with the IMAS. In 2022, the Environmental Management Standard for Mine Action was adopted, and with the support of the Geneva International Centre for Humanitarian Demining (GICHD), Cambodia has also developed a draft standard on gender and diversity mainstreaming, which is expected to be adopted in 2024.
The National Mine Action Strategy for the period 2018-2025 in Cambodia has the objective of ensuring effective targeted funding for mine action. It stipulates that at least 75% of mine action contributions should be allocated to communes (communities) that have been prioritised for mine action by the CMAA (CMAA, 2017). The provisions of this strategy are in accordance with international instruments. In 2000, Cambodia joined the Millennium Development Goal (MDG) on mine action and victim assistance, and in 2019, SDG 18, which aims to end the negative impact of mines.

4.5. Türkiye

The Republic of *Türkiye* has been affected by the presence of mines and explosive remnants of war along its borders with Armenia, Azerbaijan, Iran, Iraq and Syria. Furthermore, Türkiye is responsible for the demining of areas under its control in Northern Cyprus. The Mine Action Centre (TURMAC) is the body responsible for mine action in Türkiye. It was established on 3 February 2015 under the Ministry of National Defence and began operating in 2016. Since 2016, this centre has been financially supported by the United Nations Development Programme (UNDP), the Geneva International Centre for Humanitarian Demining (GICHD) and other international partners.
TURMAC has identified 899 villages with the highest level of mine risk in 15 provinces, which will receive enhanced mine risk education in 2020-2022 as part of the National Mine Risk Education Plan. Furthermore, the statements made by Turkish authorities regarding the prioritisation of socio-economic integration in mine-affected areas and their residents were declarative. In 2022, the employment rate remained below the 4% guaranteed by

current legislation, and the majority of mine victims remained unemployed (Türkiye, 2021), which did not contribute to the achievement of the relevant sustainable development goals.

Türkiye became a State Party to the Mine Ban Treaty on 1 March 2004, with the deadline for demining its territories set at 1 March 2014. Following an extension granted at the Twelfth Meeting of the States Parties in 2012, the deadline was extended to the end of 2022. However, this deadline is also planned to be extended for another eight years due to a number of problems that slow down the pace of demining. These include difficult terrain, a difficult security situation and climatic conditions, which worsen the conditions for ensuring the environmental component of the country's sustainable development.

As of 31 December 2023, it can be concluded that Türkiye has made only marginal progress in the fight against landmine contamination. Since 1998, a mere 1.15 km² of mined areas have been cleared, with the majority of this occurring in 2011. Furthermore, military teams have cleared 2,487 mines, but only to ensure the safe movement of troops, not to release mined areas that would have facilitated the restoration of socio-economic potential. Since the establishment of TURMAC in 2015, there has been a discernible improvement in mine action management and progress in demining. This improvement has been further enhanced by the increase in technical and financial capacity through international partners since 2019.

Türkiye developed its inaugural National Mine Action Plan for the 2019-2021 period. This plan encompassed the development of strategic mine action capacity, the survey and clearance of mined areas and areas containing unexploded ordnance within its borders, as well as the provision of mine risk information and victim assistance. This represents a positive trend in the country's sustainable development goals.

In 2020, the Directorate of the National Mine Action Centre of the Ministry of National Defence of Türkiye prepared and adopted a five-year Strategic Mine Action Plan for 2020-2025. This plan provides for an assessment of the socio-economic impact of mined areas, with the results forming the basis for developing a roadmap for restoring the potential of mined areas and planning their sustainable development in the strategic and tactical perspective. Conversely, between 2020 and 2022, the National Mine Risk Awareness Plan was implemented, with the objective of informing communities situated in proximity to mined areas. However, no discernible positive outcomes were observed in terms of restoring their socio-economic potential, nor were any measures proposed to implement the Sustainable Development Goals.

Table 5 presents the financial aspect of international support for demining in Türkiye, with the most recent data from 2018 to 2022. The results indicate that in 2022, the EU allocated €9.5 million ($10 million) for demining along the Turkish-Iranian border as part of the Eastern Border Demining Project, which is managed by the United Nations Development Programme (UNDP). In 2022, the Turkish government allocated $13.8 million for national demining and risk education, which is a positive trend in the implementation of the Sustainable Development Goals. Furthermore, the Ministry of National Defence approved the allocation of 80 million Turkish liras (approximately $2.7 million) for humanitarian demining for the period 2023-2025. The sum of 100 million Turkish liras (approximately $2.7 million) has been earmarked for humanitarian demining for the period 2023-2025 (Türkiye Mine Ban Treaty Second Article 5 deadline Extension Request, 2022). Over the five-year period from 2018 to 2022, Türkiye received international support for mine action amounting to $42.5 million.

Table 5. EU support for mine action in Türkiye 2018-2022, source: (Türkiye, 2023)

Year	*Direction*	*Amount (USD)*
2022	Mine action (humanitarian), victim assistance (social component of sustainable development)	10 007 300
2021		11 200 000
2020		21 200 000
2019		70 000
2018		8000
Total	-	**42 485 300**

In May 2015, the European Union, UNDP and Türkiye initiated an international project on the eastern borders, entitled *Technical Assistance for Social and Economic Development through Mine Action and Enhanced Border Surveillance Capabilities on Türkiye's Eastern Borders*. The overarching objective of the project is to facilitate social and economic development in Eastern Türkiye through the implementation of mine clearance and border security measures. The specific objective of the project is to contribute to the prevention of illegal migration and all types of cross-border crime on Türkiye's eastern borders in line with EU policies and strategies on integrated border management. This will be achieved by demining the area and ensuring effective border surveillance. It should be noted that the areas to be cleared under the project will remain restricted areas even after clearance, due to their strategic importance. The initial two phases of the project, which were completed in December 2019, resulted in the clearance of 4.7 km² of land from mines and the removal and destruction of 45,608 mines. The third phase of the project was scheduled to commence in 2020–2022, but was postponed due to the global health crisis caused by the novel coronavirus (COVID-19). The clearance of mines along the south-eastern border with Iraq

was postponed due to the ongoing conflict in Syria. It is regrettable that the report on the implementation of the second phase of the project only indicates the results of demining, and no evaluation indicators of socio-economic impact or measures for the implementation of sustainable development goals are presented. Concurrently, no specific economic and/or social programmes have been documented in Türkiye for mine victims. Some NGOs provide victims with monthly payments, free employment counselling and courses according to their specific needs. However, there is no unified approach to correlating mine action with the Sustainable Development Goals.

4.6. Croatia

Following four years of armed conflict following the break-up of the former Yugoslavia in the early 1990s, Croatia has been affected by landmines and, to a much lesser extent, explosive remnants of war. As of December 2020, eight of Croatia's 21 županija (counties) were still affected by landmines. In these eight counties, 98.75% of residual contamination was located in forest areas, while 1.08% was on agricultural land and 0.17% was in swamps or rocky soils (Croatia, 2021). It is evident that the mining of territories impedes the secure utilisation of land for livestock and forestry, thereby precluding the restoration of the economic, social and environmental potential of these areas.

In the period between 2003 and 2004, the entire territory of Croatia was surveyed, resulting in the identification of 1,174 km² of hazardous areas. In 2005 and 2006, a second survey was conducted, which resulted in a reduction in the area of hazardous zones to 1,044 km² in early 2007. Between 2016 and 2020, more than 35 km² of land previously suspected of being mined was cleared through in-depth field surveys (Croatia, 2021). As of the end of 2020, Croatia has reduced the total size of hazardous areas to 279.55 km² through demining.

Since 2019, CROMAC and the Government Office for Mine Action (GOMA) have been integrated into the Ministry of the Interior, forming the CPD Department. In terms of mine action programming in Croatia, the Ministry of the Interior developed a new Mine Action Act in 2020, as well as the relevant National Mine Action Programme and Work Plan for the period 2020-2026.

In 2022, Croatia received €5.5 million ($5.8 million) in international demining assistance from the European Union. However, no funds were allocated for the economic and social component of sustainable development of the affected areas. Concurrently, the national financial contribution constituted 68% of the country's total budget for mine action in 2022 (Response to Monitor questionnaire by Michal Adamowicz, 2023). Over the five-year period from 2018 to 2022, international contributions to mine action in Croatia amounted to approximately US$117.3 million. The majority of these contributions (89%) were provided during the 2018-2020 period. Over the five-year period, Croatia's own contributions to its national mine action programme amounted to at least US$86.5 million. However, no total annual amount was reported for 2018 or 2022 (Croatia, 2021).

Among the countries studied, Croatia stands out for the availability of international demining programme instruments that also aim to restore the economic, social and environmental potential of the affected areas. One such instrument is the Swiss-Croatian cooperation programme *Demining and Socio-Economic Integration*, which combines demining efforts and the socio-economic inclusion of people affected by mines and explosive remnants of war (Croatia, 2021). The project entails the demining of the suspected area of the Kotar forest, which will ensure the safety of the local population and Croatian forestry employees who reside and work in the area, as well as facilitate the utilisation of the area for economic purposes. The total cost of the project is CHF 6.12 million, with a Swiss contribution of CHF 5.2 million and national co-financing of CHF 0.92 million for the entire project period of 2017-2024.

This project consists of two complementary components, which are also key components of mine action: humanitarian demining and assistance to victims of mines/unexploded ordnance/explosive remnants of war. In this context, the demining of the Kotar forest areas in the Sysacko-Mosławinski County was initiated on 30 April 2024. This was based on the preliminary assessment which revealed a significant level of mined area and made it extremely dangerous. Furthermore, the Sisak-Moslavinska County ranks second in Croatia in terms of the number of mined areas (75 km²), with 74% of the total area suspected to be mined comprising forest and forestry. Approximately 15 km² of the total area of Petrynia (380 km²) is suspected to be mined, which poses a serious danger to residents and threatens the socio-economic development of the area. Furthermore, over half of the suspected minefields are situated within the Kotarski Forest, which was a frontline and partially occupied territory during the Second World War. This hinders the post-conflict development of Croatian districts. Following the demining, the second phase of the project was initiated, with the objective of enhancing the socio-economic empowerment of mine victims. This phase encompasses the creation of a unique database of victims in the Republic of Croatia and the analysis of their needs. It is anticipated that, upon the conclusion of the project in 2024, this database will serve as the foundation for short-term employment initiatives for these individuals. These programmes are expected to enhance their competitiveness in the national labour market, thereby contributing to the implementation of relevant sustainable development goals in Croatia.

5. Conclusions

This research analyses international demining experience on the example of six countries (Albania, Afghanistan, Bosnia and Herzegovina, Cambodia, Croatia, Türkiye, and Vietnam) that have the most experience in this process and are of the greatest scientific and applied interest to Ukraine in terms of the possibilities of implementing the lessons learned in the context of sustainable development.

Albania sought to expand its understanding of demining as a basis for further territorial restoration of social potential, with the United States providing targeted support in the form of funds to assist mine victims in their rehabilitation and return to their homes as soon as possible. Concurrently, the provisions of national mine action documents did not include direct measures to implement the Sustainable Development Goals, in particular, to plan for the social rehabilitation of mine-cleared areas. This represented a missed opportunity for this country.

Afghanistan has considerable experience in mine clearance (operational and humanitarian), given the fact that there are still spotty hostilities on the territory of the country. Consequently, the country has to respond quickly to challenges and pay attention not only to the disposal of explosive ordnance, but also to creating conditions for the return of internally displaced persons after demining. These facts, in conjunction with a considerable amount of targeted international support, provide an effective foundation for the enhancement of this country's economic and social capacity within the context of sustainable development goals. This experience may be regarded as a positive example for Ukraine.

It is unfortunate that Bosnia and Herzegovina has not demonstrated a robust capacity to restore territories following demining and in the context of sustainable development. Significant financial resources have been allocated to address economic and social issues related to the post-clearance period. However, financial assistance to victims has not been a priority within the economic sphere.

Cambodia's experience in mine action, viewed through the lens of sustainable development, has yielded positive results in terms of rural rehabilitation. This is currently receiving much attention as a basic level administrative unit capable of enhancing economic, social and environmental recovery and development through the use of demined land. While international financial support to Cambodia has generally focused on mine action, Japan has focused on strengthening the social component of sustainable development through education, and UNDP has focused on social and environmental components, again as part of village capacity building, which is directly correlated with many of the Sustainable Development Goals.

Türkiye has gained valuable experience in strategic mine action planning. Accordingly, the plan for the period 2020-2025 encompasses not only humanitarian demining measures, but also an assessment of the socio-economic impact of mined areas. This is of significant importance for the formulation of management decisions on the restoration of the economic, social and environmental potential of mined areas and the planning of their development in a strategic and tactical perspective.

Consequently, it is our contention that the most effective means of integrating international best practices into Ukrainian policy is to incorporate sustainable development principles into strategic and operational documents at the national level. Demining represents a robust foundation upon which to rebuild the economic, social, and environmental potential of territories affected by conflict and post-conflict recovery. This necessitates further scientific research into the economic dimension of the issue of the essence of demining, international experience of the cost and priority of demining, which will contribute to a more complete understanding of the economic, social and environmental determinants of demining in the international dimension.

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