

# Mitigating Adverse Environmental Impacts in Mine Action

by Martin Jebens [ DRM-Consultancy ] and Gianluca Maspoli, Ph.D., [ Geneva International Centre for Humanitarian Demining ]

In order to help mitigate adverse environmental impacts, this article supports the mainstreaming of environmental concerns into mine action. This is achievable by strengthening existing standards, and is motivated by two main factors.

Firstly, an increased consideration of environmental issues is based on growing concerns about climate change and is reflected in international treaties and agreements. Additionally, the *2030 Agenda for Sustainable Development* (2030 Agenda) and the *Sendai Framework for Disaster Risk Reduction* (SFDRR) are significantly important to the protection of the environment and are relevant frameworks for mine action.

Secondly, International Mine Action Standards (IMAS) are an essential tool for mainstreaming environmental concerns,

and in particular IMAS 10.70 “Safety & occupational health - Protection of the environment.”<sup>1</sup> This guidance can be improved, and this article proposes changes to IMAS 10.70 in order to better reflect current needs and practices.

## Why The Environment Matters

The environment is the foundation for sustainable development and significantly influences people’s livelihoods at local, regional, and global levels. Over the past decades, the environment has become a major concern. On one hand, climate change endangers all societies but especially those in developing countries. On the other hand, human development and armed conflicts have impacted the environment via increased pollution and exploitation of resources.<sup>2</sup>

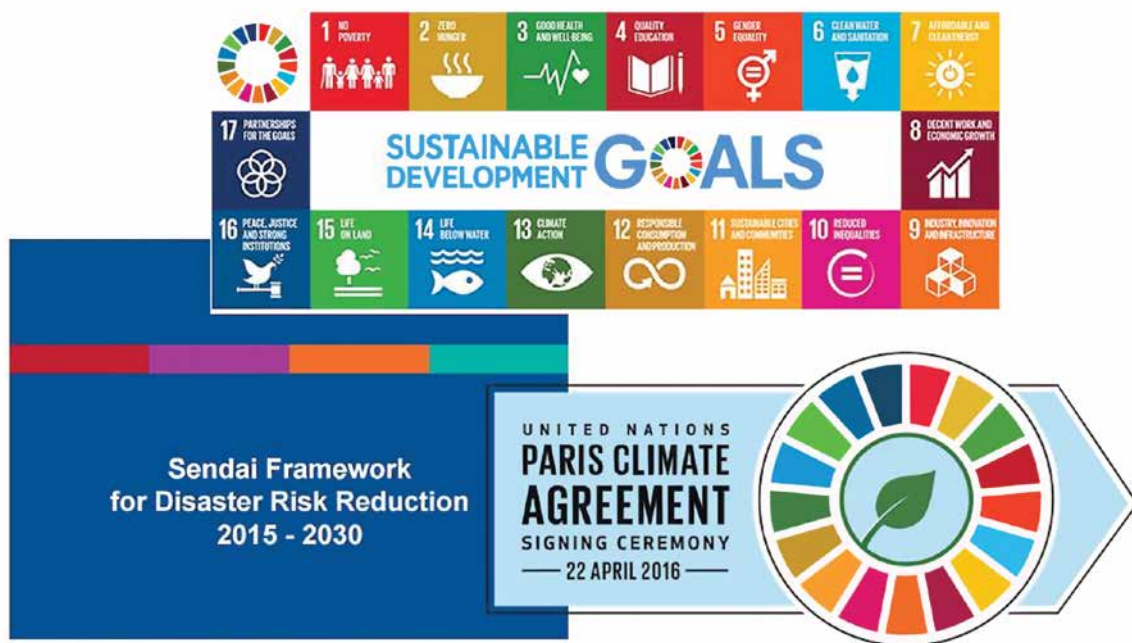


Figure 1. Commitment to environment protection and risk reduction. Figure courtesy of Gravitazz, the United Nations, and IHG.

National legislation and various international treaties target environmental protection, including the Geneva Conventions, which prohibit all means and methods of warfare that cause severe, widespread, or long-term damage to the environment.<sup>3</sup> The *Anti-Personnel Mine Ban Convention* (APMBC) and the *Convention on Cluster Munitions* (CCM) account for the environment in relation to extension requests and transparency reports.<sup>4</sup> Other international agreements and treaties like the *Paris Agreement*, the *Convention on Biological Diversity*, and the *Convention to Combat Desertification* pay specific attention to the environment. Their aim is to lower the risk of loss of life and poverty and improve people's daily lives by advocating for sustainable and holistic solutions. Moreover, important international frameworks like the *2030 Agenda* and the SFDRR have brought additional focus to the environment.

### *Sustainable Development and Risk Reduction*

The *2030 Agenda* is intended “to end all forms of poverty, fight inequalities and tackle climate change” and the environment is featured prominently as one of the three fundamental dimensions, in addition to economic and social issues.<sup>5</sup> The 17 Sustainable Development Goals (SDGs) of the *2030 Agenda* address these three dimensions and aim to shape global development, peacebuilding, and humanitarian agendas.

The Geneva International Centre for Humanitarian Demining (GICHD) has looked into how mine action can contribute to the implementation of the SDGs and how they can be mainstreamed within mine action.<sup>6</sup> The GICHD's study shows that 12 of 17 SDGs are directly relevant for mine action and points out that SDGs can bring a new emphasis on environmental mitigation measures for impacts like “deforestation, land degradation, climate change vulnerability and loss of biodiversity.”<sup>6</sup> The study also identifies that mine-affected countries, operators, and donors intend to review their mine action strategies with the purpose of aligning with the SDGs.<sup>6</sup> Ultimately, the *2030 Agenda* brings new momentum to protecting the environment and calls for an enhancement of the existing instruments in mine action.

The Sendai Framework for Disaster Risk Reduction (SFDRR) was adopted by U.N. Member States on 18 March 2015 at the Third U.N. World Conference on Disaster Risk

Reduction. The SFDRR aims to reduce the risks from both natural hazards and man-made disasters. Disaster risk reduction is not a stand-alone process, it needs to be coordinated with sustainable development; therefore, SFDRR is linked to the SDGs. The SFDRR states that activities like natural resources management, land use, and urban planning are central to disaster risk reduction. It introduces “a wide scope that includes risk of small-scale and slow-onset disasters as well as man-made, technological, environmental, and biological hazards.”<sup>7</sup> As such, the SFDRR also applies to mine action.

The SFDRR does not determine how to manage specific disaster risks but outlines how disaster risk reduction needs to be holistic. It calls for coherence between disaster risk management policies and practices across sectors related to the environment, technological hazards, and biological hazards respectively.<sup>7</sup> Therefore, a key element in the SFDRR is to ensure that stakeholders coordinate across sectors and on all levels: locally, nationally, and internationally.

The SFDRR and the *2030 Agenda* are highly-developed frameworks, forming a platform for environmental protection that should be integrated in the mine action sector. The driver in these frameworks is to decrease the risk to human life by developing capacity and to increase resilience, thereby creating a better future.<sup>8</sup> In order to do so, an improved collaboration among mine action organizations and other stakeholders is needed, not only through policies and planning, but also through monitoring and evaluation.<sup>9</sup> These requirements are addressed by the International Organization for Standardization (ISO) in their current version of standards

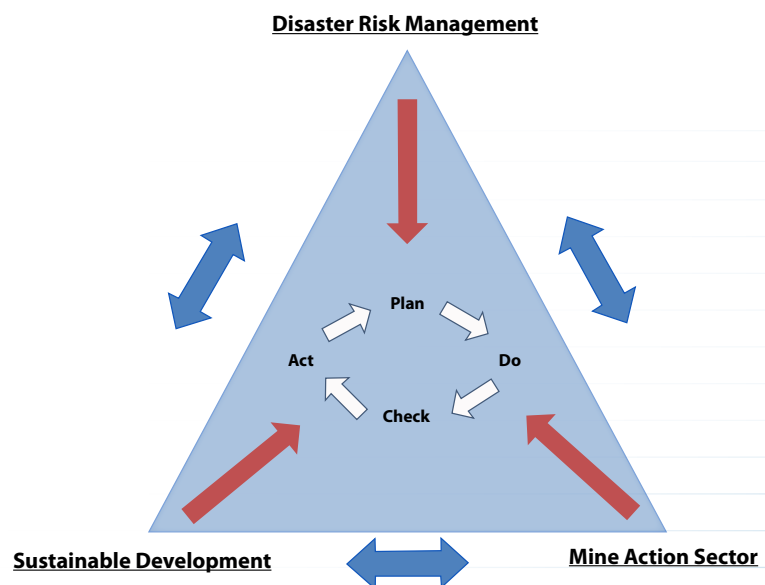


Figure 2. Integrating mine action, SDGs and SFDRR. Figure courtesy of Martin Jebens and Carlo Sorensen.

on environmental management (e.g., ISO 14001:2015) and should be included in IMAS 10.70.

Figure 2 (previous page) illustrates the need to integrate disaster risk reduction, SDGs, and the mine action sector to foster the protection of the environment.<sup>10</sup> It underlines the requirement for introducing the plan-do-check-act (PDCA) principle, which is a fundamental condition in the ISO system to reduce environmental risks by adopting ISO standards or adapting other standards (e.g., IMAS) to address specific challenges. These ISO should serve as a basis for the adjustment of IMAS 10.70, as well as taking into account regional differences and the need to avoid transferring risks. This has to be done by assessing environmental and societal needs. In addition, it is important to keep in mind that planning itself is not enough to decrease risks for the environment and must go hand-in-hand with awareness rising.

### *Environment, Mine Action, and International Mine Action Standards*

Mine action can impact the environment positively but also negatively by degrading land or giving rise to pollution, therein changing the ecosystem and affecting civilians' livelihoods. Appropriate assessments and management can help in incorporating environmental mitigation measures. These include sound applications of the land release approach to limit heavily-invasive clearance methods and appropriate remediation activities.

In 2005, Ian McLean pointed out that environmental issues were "treated as peripheral" and argued in favor of a higher consideration, especially in the context of "mainstreaming demining with development." According to McLean, there was a need to "explore the issue, raise awareness, create incentives and educate the practitioners."<sup>11</sup>

Since then, awareness has increased, impacts of contamination and clearance operations are better understood, and methods to reduce such impacts have been developed. The relevance of adapting mine action operations to fragile ecosystems is documented, and experiences show that mitigation of negative impacts is important to ensure livelihoods, avoid additional environmental degradation, and take advantage of opportunities for sustainable development.

For instance, conflicts put natural environments under stress and contamination from mines contributes to this, especially in contexts where the balance between the ecosystem and human activities can be easily disrupted. This is illustrated by the case of Kuwait, which suffered contamination during the Gulf War in 1990–1991 and went

through clearance operations in the aftermath. The laying of landmines and clearance operations produced immediate and long-term environmental damages that consisted of "soil disturbance, soil compaction and loss of biodiversity and deterioration of vegetation cover."<sup>12</sup>

Another example is Yemen, where the rural population depends on a very sensitive environment, and traditional laws forbid the cutting of trees. Studies show that poverty is higher in contaminated areas.<sup>13</sup> In such contexts, mine action helps to fight poverty by granting access to grazing and farming lands, and to sources of water and firewood. However, these positive impacts demand trade-offs between operational requirements, local practices, and environmental features in order to avoid unintended consequences.

The mitigation of possible negative environmental impacts is also relevant in contexts that are not immediate post-conflict but where there are legal international obligations. For example, the Skallingen peninsula in Denmark was contaminated by landmines from World War II, and clearance was needed to fulfill obligations under the APMBC, but the country had to preserve the ecology of Skallingen, which is a protected area. A study of the environment was thus conducted, and clearance included methods that reduce the impact on wildlife and erosion.<sup>14</sup>

The GICHD has worked to improve the mitigation of adverse environmental impacts in mine action as well. Particular attention was given to mechanical clearance, which is a cost-effective method but can create adverse impacts like erosion, deforestation, ground pollution, and soil structure damage.<sup>15</sup> However, environmental considerations are not restricted to mechanical clearance, as other activities can produce negative consequences: disposal of ordnance, disposal of debris and hazardous waste, burning of vegetation, establishment and dismantlement of temporary facilities, and transportation of hazardous material.<sup>16</sup> Mine action, as well as other humanitarian operations, has a potential impact on the environment due to the presence of staff, equipment, and facilities, which may create stress on local resources and environmental degradation if improperly managed.<sup>17</sup>

The increased awareness and knowledge of environmental issues is reflected in the IMAS 10.70, which sets general requirements and responsibilities for the protection of the environment. It states that operations "should be carried out without damaging property or infrastructure, in a manner that minimizes the impact on the environment" and planning "shall take into account the effects of those operations, and any supporting activities, on the environment."<sup>18</sup> Ultimately, mine action organizations should ensure that the land "is left



Image 1. The need for remediation after clearance is evident from the Skallingen project.  
Image courtesy of Martin Jebens and the Danish Coastal Authority.

in a state whereby it is suitable for its intended use once demining operations cease.”<sup>18</sup>

IMAS are a key instrument to mainstream the protection of the environment, and there is room for a review of IMAS 10.70 in order to better reflect international treaties, agreements, frameworks, and the current increased relevance of environmental concerns. Two examples—Cambodia and Croatia—substantiate the importance of the environment in mine action and illustrate concrete attempts that have been made by mine action national authorities.

### *Cambodia*

Cambodia has experienced a rapid rate of deforestation with tree cover loss accelerating faster than in any other country in the world.<sup>19</sup> The deforestation has socio-economic consequences and increases national climate change vulnerabilities. Cambodia is also home of many protected areas and endangered species. While mine action often occurs in environmentally sensitive areas, it is important to take steps to avoid contributing to deforestation and the loss of biodiversity.

Cambodia’s National Mine Action Strategy 2018–2025 includes the goal of ensuring that mine action is “environment

protection sensitive.”<sup>20</sup> The objective is to mainstream environmental protection in mine action. The process of developing the strategy was supported by the United Nations Development Programme (UNDP) in Cambodia and has relied on a comprehensive Environmental and Social Impact Assessment.<sup>21</sup>

This attention to the environment also reflects international obligations. Cambodia ratified several international treaties that all have links to national level planning, including the National Environmental Action Plan, the National Protected Area Strategic Management Plan, the National Biodiversity Strategy and Action Plan, and the Cambodia Climate Change Plan. These treaties implement the United Nations Framework Convention on Climate Change as well as Cambodia’s National Program to Combat Land Degradation.<sup>19</sup> In order to mitigate the potential environmental impacts, cooperation is needed between UNDP, the Cambodian Mine Action and Victim Assistance Authority (CMAA), operators, and other stakeholders to lower direct and indirect negative environmental consequences and threats to cultural resources.

### *Croatia*

Inclusion of environmental protection in Croatian mine action was the result of top-down and bottom-up processes.



There is a growing awareness of the importance of environmental protection and sustainable development by civil society. An institutional framework is now in place to advocate for a higher degree of environmental protection and to gather stakeholders for the management of protected areas at the county level.

At an early stage, this multi-stakeholder approach—including the Croatian Mine Action Centre (CROMAC), the Office for Mine Action, the Ministry of Economy, the Ministry of Environment and Nature Protection, the State Institute for Nature Protection, the Croatian Forests Company, operators, counties, and park authorities—has created a common understanding of the complexity and interconnectedness among all organizations involved.

Croatia does not have a specific national mine action standard on environment. Instead, CROMAC has developed its own regulations for demining operations building on the ISO system, particularly ISO 14001. This is in line with the national demining organizations that follow the ISO 14001 or are ISO-certified. In fact, ISO 14001 has become a common reference standard for Croatian companies.

When tendering for projects where demining takes place inside protected nature areas in Croatia, where monitoring is conducted by specialized organizations, operators must provide documentation on environmental protection in order to be selected and obtain permission for operation. An additional tool to implement mitigation measures is the legal basis of the National Environmental Protection Act.

### *Enhancing the Protection of The Environment*

The enhancement of the protection of the environment needs to be closely related to operational requirements. On this point, mine action can count on IMAS as an instrument to strengthen the sector in mitigating adverse environmental impacts. The following sections outline a number of points to be considered in a review of IMAS 10.70 in order to strengthen guidance on environment protection and to ensure that the international frameworks described earlier are better integrated into mine action.

### *Environmental Impact Assessments*

Operational safety is a must in mine action. The protection of the environment at times will be at odds with safety measures, and balancing these two needs will require coordination and planning among stakeholders. A thorough environmental impact assessment together with technical and non-technical survey can define and establish mitigation measures, which lower adverse impacts on the environment

without compromising the safety of operators and cost-effectiveness of operations. Moreover, an impact assessment can help make cost-effective choices. IMAS 10.70 should better capture the need of environmental impact assessments. This would also be in line with ISO 14001. Among other countries, both Croatia and Cambodia are currently successfully implementing environmental assessments to find optimal solutions to protect the environment.

### *Raising Awareness*

In both Cambodia and Croatia, increased awareness was identified as a fundamental condition for the successful implementation of environmental protection. Ideally, raising awareness of environmental protection should take place at all organizational levels, including both national and international stakeholders, and create a feeling of ownership for the population.<sup>22</sup> Awareness raising should also identify new partners who could possibly contribute to the mitigation of adverse environmental impacts with capacities or funding.

### *Improved Management*

Improved management can be achieved by establishing environmental policies and strengthening the importance of the environment in the tender process (statement of works), standard operating procedures, monitoring, and training. A revised IMAS 10.70, which reflects the ISO 14001 system, would be a key tool to improve management. The ISO 14001 points to strong environmental management by implementing environmentally sensitive policies and strategies. Environmental management systems result in a more systematic and cost-effective approach to protect the environment than an ad hoc approach.<sup>23</sup>

### *Increased Coordination*

Clearance of landmines and explosive remnants of war (ERW) relates to the environment, is multi-sectoral, and requires effective coordination and knowledge sharing. Therefore, increased coordination between stakeholders is essential and improves awareness so that appropriate mitigation measures can be established.

Increased coordination among environmental stakeholders also secures the use of existing capacities, frameworks, and legal acts. Stakeholders would include international, regional, and national environmental organizations, governmental bodies, NGOs, and academia. Coordination is identified as one of the major problems in the humanitarian sector to improve relief work and avoid gaps as well as duplicating efforts.


Coordination is thus a fundamental need to make the protection of the environment cost effective.

### Conclusion

Improved environmental protection is needed to create a sustainable future. The 2030 Agenda and the Sendai Framework embody this need. To integrate both these frameworks, mine action could benefit by improving its approaches to mitigation of adverse environmental impacts. Both the Croatia and Cambodia cases illustrate that sustainable development is a concern and a reason for the protection of the environment.

Due to the diversity of environments in which mine action takes place, environmental assessment should become an important and integrated part of the work. Environmental protection is cross-sectoral, and stakeholders' coordination is crucial to address threats to the environment. Different actors can contribute with their specific expertise to find solutions that do not compromise the security of staff and cost-effectiveness of operations while improving mitigation measures. This is best done by introducing a systematic approach as is already taking place for other aspects in mine action: quality assurance, quality control, and land release. A management system targeting the environment can therefore be integrated into already existing approaches in mine action.

In addition, the importance of promoting awareness toward environmental protection and mitigating adverse impacts among all stakeholders cannot be underestimated. Environmental mitigation is likely to increase expenses and should be reflected in the funding due to new demands and criteria introduced in the mine action sector.

A revised IMAS 10.70 on environment, which builds on ISO 14001, must address these issues to a higher degree. The revision should aim to release land so that wildlife and the population are not exposed to short- or long-term adverse environmental impacts while ensuring cost-effectiveness and the security of those involved in clearance activities. Ultimately, a revised IMAS 10.70 should ensure that mine action programs return the land back as it was before mines were laid, therein improving livelihoods and a sustainable use of land. 

See endnotes page 63

**Martin Jebens**  
 DRM Consultancy  
 Geologist



Martin Jebens is a specialist in disaster risk management and geologist at DRM-Consultancy, which he founded in 2015. In addition, he works for the Danish Coastal Authority. His main focus of work is vulnerability and risk assessments and how to decrease risks by improving capacities in planning, coordination, and awareness. In addition he is taking part in inter-ministerial work groups working on flood risk management and climate change adaptation. He has a background as GIS and environmental coordinator in mine action.

**Gianluca Maspoli, Ph.D.**  
 Advisor  
 Geneva International Centre for Humanitarian Demining



Gianluca Maspoli is Policy Advisor at the GICHD and is responsible for projects strengthening the linkages of mine action with human security. Prior to joining the GICHD, Gianluca worked in peace-keeping and peace-building missions. He holds a doctorate in Political Science from the University of Geneva.



**Sample Program Map**

Legend:  
 - GIS mapping  
 - Mine risk education  
 - Training/capacity building  
 - Activity  
 - Country border  
 - Provincial border  
 - River  
 - Capital  
 - Major city

Scale: 200 km

Source: CISR  
 Center for International Stabilization and Recovery  
 www.cisr.org

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