Green Field Tool User Guidance
Using the environmental assessment and management tool for mine action field operations

Norwegian People's Aid

Conflict and Environment Observatory

About

Acknowledgement

Disclaimer

Cover image: *Mine action often takes place in remote and biodiverse areas. Credit: Norwegian People´s Aid Cambodia*

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Open detonation creates smoke plumes and a risk of soil and water pollution

Credit: Norwegian People´s Aid/Sean Sutton

1. Introduction

1.1 Mine action and the environment

The global climate and environmental crises are significant threats to people, including the communities where mine action programmes take place. Typically, the impacts of climate change and environmental damage disproportionately affect poor, conflict-affected and marginalised communities.[i]

Mine action can take a role in supporting communities and has a responsibility to ensure that good environmental practice is followed. This includes ensuring that measures are in place to avoid or reduce adverse environmental impacts from field operations and where possible, help to implement initiatives which enhance the environment. Mine action also has to consider climate change and how climate-related issues need to be addressed.

1.2 Purpose of the Green Field Tool

Mine action programmes must assess and minimise their environmental footprint. This should be done systematically, in line with the data-driven approach applied across mine action.

The goal of the Green Field Tool (GFT) is to enhance quality and accountability by identifying and addressing key environmental and climate issues. The GFT can be used to better understand the environmental setting of field operations, assess the potential environmental impacts and identify appropriate measures to manage environmental risk. The GFT can support programmes in complying with IMAS 07.13 on environmental management and climate change,[ii] and environmental compliance obligations of mine action authorities or donors.

The GFT is not a standalone environmental tool for humanitarian mine action interventions but should form part of an overall environmental management system (EMS), including an environmental policy,

Figure 1 – Core aims of the GFT

Hexagon diagram labels, clockwise from top: To highlight and **raise awareness** on the environmental issues linked to mine action / To ensure measures are in place to **avoid and minimise** environmental impacts / To identify where environmental **enhancement measures** could be or have been adopted / To document the **action and controls** in place, and demonstrate good practice / To identify if **specialist advice/support** is needed before work can proceed / To determine whether **more detailed** comprehensive environmental assessments are required. Centre: Aims of the GFT

environmental training of staff, standard operating procedures, quality assurance and a monitoring and evaluation review process. The Technical Note in Mine Action (TNMA),[i] which supports IMAS 07.13, notes that the whilst adoption of a formally accredited EMS may not be feasible, conforming with environmental management principles is encouraged.

A glossary is given in **Annex A**, and a set of Frequently Asked Questions in **Annex B**.

The GFT is designed to support the planning and implementation of mine action field operations and may be completed for any field activity – including survey and clearance, disposal areas, worksites, access routes and camps.

The **core aims** of the GFT are to raise awareness on environmental issues and improve environmental practices (see Figure 1). This includes identifying when more detailed and comprehensive environmental assessments are required and whether other specialist environmental advice and support is needed before any work can proceed. The GFT also allows action and controls to be documented, to demonstrate compliance.

1.3 Scope of the Green Field Tool

The GFT supports the environmental screening and assessment of field operations, helps identify environmental risks and how these can be managed. The scope is based on NEAT+ - a tool that is applied for other humanitarian sectors in the project design phase. The GFT also directs the user to consider climate change and how climate-related issues may need to be addressed.

Note that the GFT **does not cover** office-based activities, travel, procurement policy, energy use or greenhouse gas (GHG) accounting which should be addressed within an organisation's environmental policy and environmental management systems.

Core programme information on national level environmental policy and legislation is required to inform mine action activities and planning. This includes considering regional climate risk profiles. The GFT itself is split into two key components – **Step 1**: Environmental Profile and **Step 2**: Environmental Assessment and Monitoring – and should be used by staff with regional and local knowledge of the area. The GFT requires the information to be collected on the environmental setting (or profile) for the area of field operations and asks activity-based questions. An overview is given in the flowchart below (see Figure 2) and explained further in section 2.

i. ODI, 2024. Climate change, conflict and fragility: a recipe for disasters: Insight, 24 October 2024. Available at https://tinyurl.com/mr3mffzp

ii. UNMAS, 2024. International Mine Action Standard (IMAS) 07.13, Environmental management and climate change in mine action, Second edition, 3 July 2024. Available at https://tinyurl.com/5n8cdrmr

i. UNMAS, 2025. TNMA 07.13/01, Environmental management and climate change in mine action, First edition, 16 January 2025. Available at https://tinyurl.com/2s4w5fe7

Core programme information
Information on any national mine action environmental policy, organisational environmental policy, relevant environmental regulation, donor and key stakeholder requirements should be maintained for each country programme. This includes a climate risk profile.

Step 1 Environmental Profile
Establish the environmental setting of the task area, and the potential environmental constraints and issues. This can be done for a group of tasks - as appropriate - since similar constraints / conditions may apply for tasks in the same communal area or district.

Select activities
Before starting **STEP 2**, activities which may not be relevant can be excluded or screened out.

Screening out can reduce the range of aspects and potential impacts to be considered in **STEP 2**.

Environmental profile summary
This summaries the key environmental issues based on the **STEP 1** responses.

Step 2 Environmental assessment and monitoring
Each aspect and potential environmental impact of mine action activities are considered in STEP 2. Mitigation measures to avoid or reduce the risks are then selected.

Risk register and issues log
The register summarises the environmental risks and the measures, as well as any other enhancement or improvement opportunities.
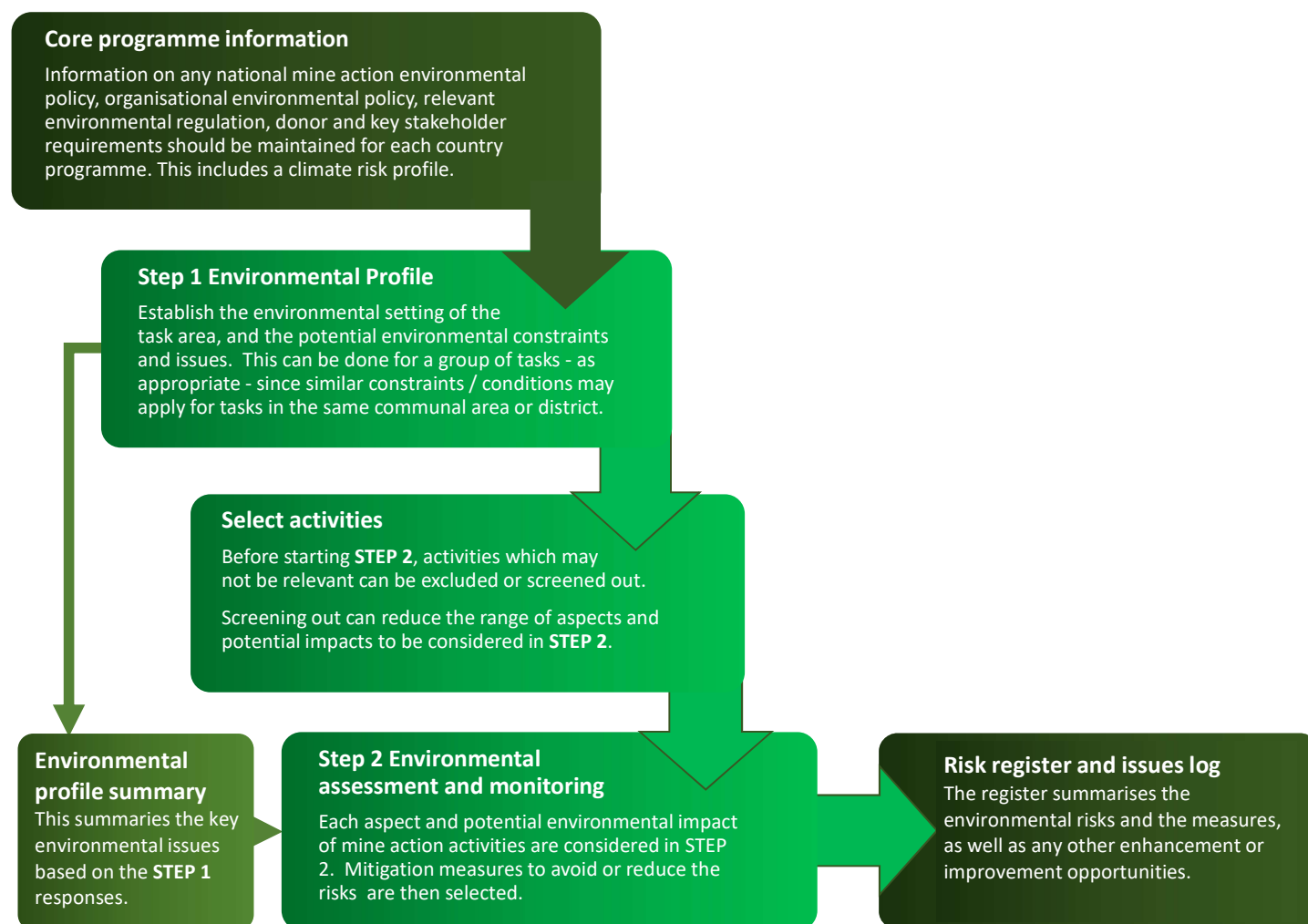
Figure 2 – GFT overview flowchart

1.4 Getting started

To get started, take the following actions:

1. Read through this guidance.
2. Designate responsibilities within the organisation (see section 1.7).
3. Choose a GFT format: Survey 123 or Excel.
4. Set out when the GFT will be used (see section 1.5).
5. Establish the core programme information and then proceed to Step 1 and Step 2.
6. Identify environmental risks, implement measures to avoid or minimise the effects and monitor.
7. Share GFT outputs and include information in handover reports.

1.5 When to use the Green Field Tool?

The GFT should be completed **as early as possible**, with climate and environmental information collected as part of programme planning, local engagement and non-technical surveys. This will allow for the early identification and implementation of appropriate mitigation or control measures necessary to plan for climate-related issues or avoid and reduce adverse other environmental impacts.

When to apply the GFT depends on the area under consideration (see Figure 3). On a **country or programme level**, information detailing high level climate data, overarching environmental policies, national standards, legislation, donor or stakeholder requirements on the environment should be reviewed and documented.

The environmental profile (Step 1) can be collected on a **district level**, covering a village or group of task areas and will include information about conditions and potential environmental constraints specific to the area.

Environmental assessment and monitoring (Step 2) is then completed for an individual **task level** and allows for each aspect and potential impact of activities to be reviewed and mitigation measures identified.

Country / programme level

Core programme information
Provide information for **the country/programme**, detailing high level climate data, overarching environmental policies, national standards, legislation, donor or stakeholder requirements on the environment.

District level

Step 1 - Environmental profile
Collect information on the environmental setting of a **district or village** based on a set of guiding questions. This should include potential constraints - such as local climate risks and vulnerabilities, protected areas due to wildlife, or areas with fragile soils.

Task level

Step 2 - Environmental assessment and monitoring
Assess each aspsect and potential impact of the mine action operations on a **task level**, as well as climate risks. Document the mitigation measures to be in place, and identify any enhancement opportunities. Any environmental incidents should also be reported on a task level.
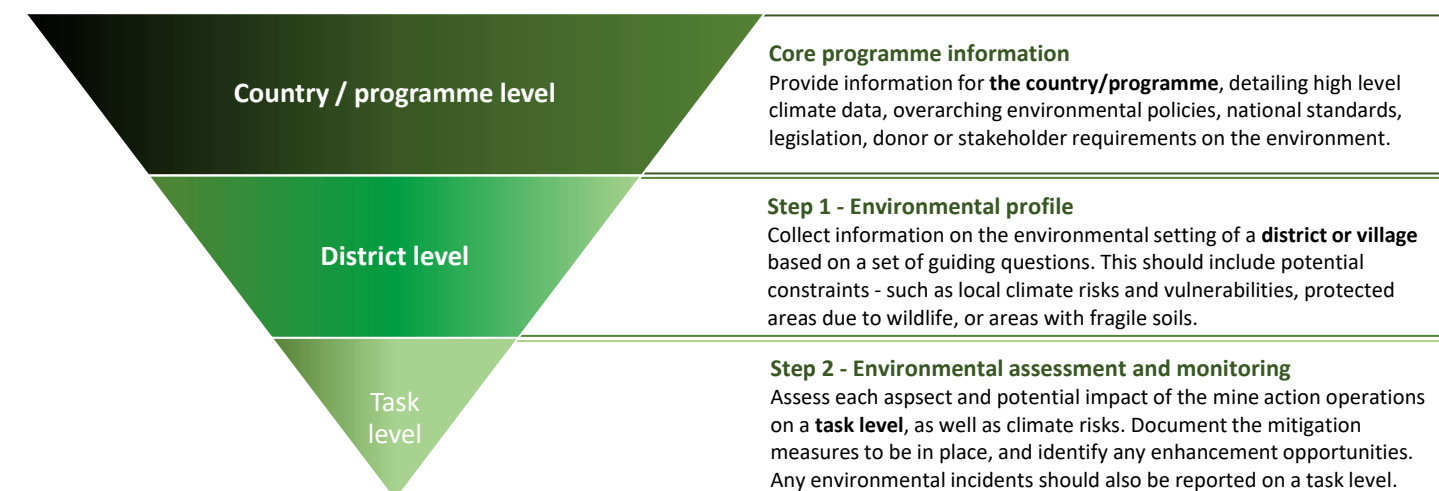
Figure 3 – When to apply the GFT occurring to the area under consideration

1.6 Alignment with IMAS guidance

The IMAS 07.13 on environmental management and climate change provides a framework for the implementation of good environmental practice across mine action. The GFT aligns with the requirements of IMAS 07.13 - in particular

the need to undertake necessary environmental and climate assessments; specifically (but not limited) to:

- select cost-effective measures to prevent and mitigate adverse environmental impacts;
- mitigate adverse impacts on people, wildlife, vegetation and other aspects of the environment;
- leave the environment in a state that is similar to or, where possible, better than before the start of mine action operations;
- include climate risk in risk management strategies;
- record, report and investigate environmental and climate-nonconformities;
- include relevant data in handover documents; and
- be open to opportunities for embedding climate adaptation and environmental initiatives which could benefit local communities and support nature and nature-based solutions following land release.

1.7 Responsibilities

The GFT can be used by any mine action organisation, including both mine action operators and mine action authorities. The GFT has been simplified – as far as possible – to encourage use by mine action staff with limited or no environmental expertise. Mine action organisations should assign staff responsibility for completing GFT assessments, checking that completed assessments remain relevant and up-to-date, compiling monitoring reports and sharing outputs.

In some cases, the GFT may identify the need for further assessment or expertise advice for tailored and area-specific measures during planning or implementation (e.g. local wildlife, conservation, water resource or agricultural specialists). Specialist technical support would be required to assist in the design and implementation of any environmental sampling or survey requirements and in the interpretation of the results. Environmental monitoring, surveys and sampling should only be carried out by trained and technically competent persons.

1.8 Gender or conflict sensitivity

Note that the GFT does not include a consideration of gender in either the assessment of climate or environmental risks or in the selection of any compensation or enhancement options. However, gender-specific considerations will need to be incorporated into the design, implementation and monitoring of any planned climate or environmental initiatives.

Any proposals or plans to implement any compensation or environmental enhancement schemes must consider and address the potential for differing opinions, land rights and the risk of creating tension and conflicts if not properly managed.

2. Structure and format of the tool

2.1 Overview

A summary outline of the GFT is given in Figure 4, with the primary goal of enhancing quality and accountability in mine action by identifying and addressing key environmental and climate issues.

What is the GFT?
An environmental assessment screening tool to identify key issues

Who uses the GFT?
Mine action staff with some environmental awareness training

How is the GFT used?
On field activities using input data from open sources, local consultation and non-technical surveys

When is the GFT used?
Early in the design and planning process, and during field implementation

Goal
to enhance quality and accountability in mine action by identifying and addressing key environmental and climate issues

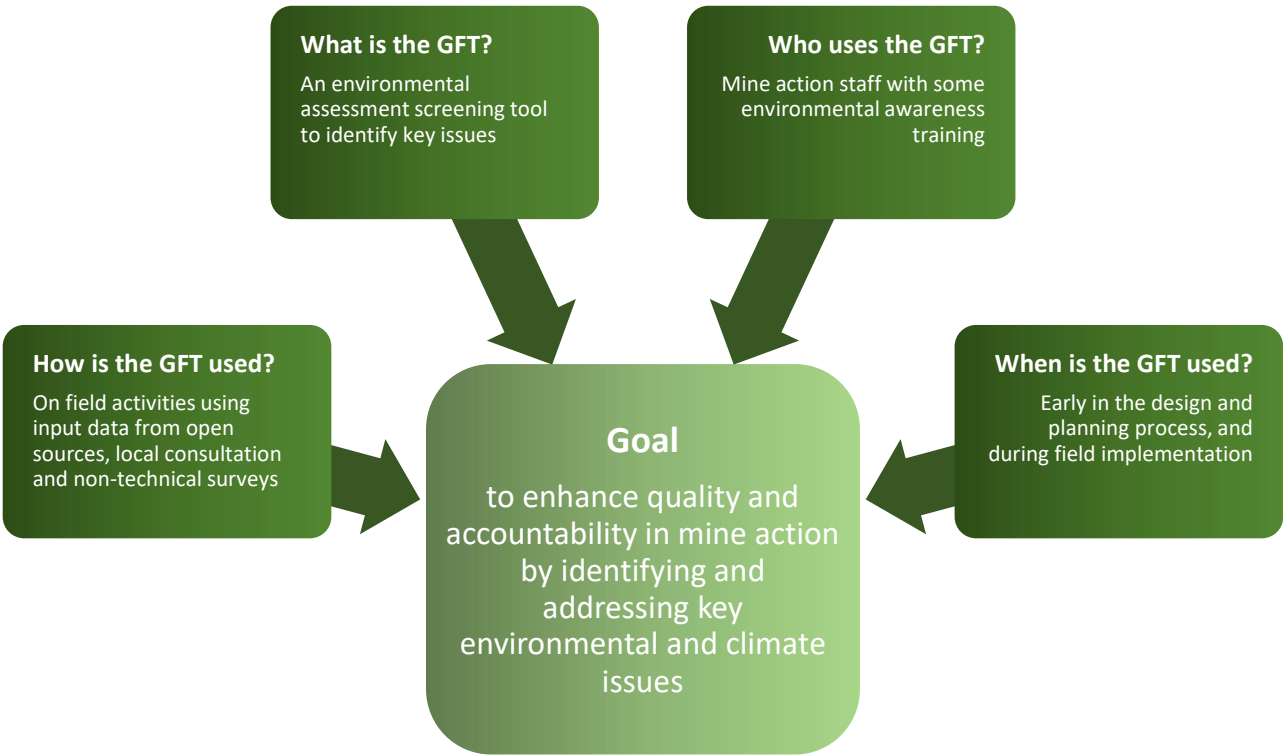*Figure 4 – GFT summary outline*

The GFT is available for use in either ArcGIS® Survey123 or as a standalone Microsoft Excel format. In both cases the GFT has two key components – **Step 1** and **Step 2** – as shown in Figure 5 and described in the sections below. These can be downloaded from the resources page of the EIMA working group website: https://environmentinmineaction. org/pages/resources
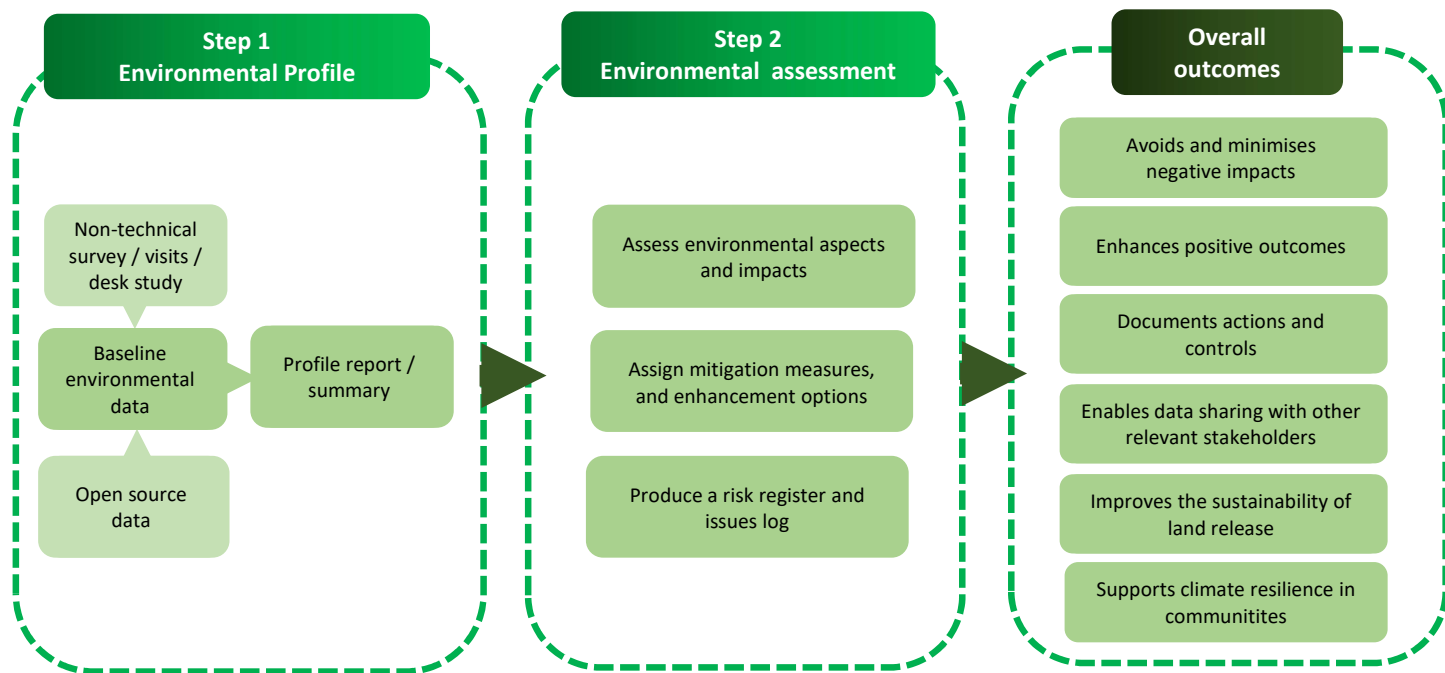
Figure 5 – GFT core components and overall outcomes

2.2 Microsoft Excel format

A standalone Excel format is available for organisations not using Survey123. The Excel version includes multiple sheets, divided into either 'general instructions', 'input or output' tabs or 'other guidance' (see Figure 6).

The Excel version includes standard responses for the user to select for the majority of questions. These standard responses can be amended if necessary by editing the 'response library'. Open text boxes are also provided to allow more detailed or specific response and external links to be added where appropriate. It is recommended that a system (such as Power BI) is used to report and analyse the data from completed GFT assessments. This was not been developed as part of the current GFT version.

2.3 ArcGIS® Survey123

ArcGIS® Survey123 is widely used across mine action and the GFT is alternatively available to upload as Survey123 Excel templates. The template forms can be adapted and are currently set up as follows:

- Environmental profile – Step 1
- Environmental assessment and monitoring – Step 2
- Environmental incident report

The ArcGIS® Survey123 templates cover the same information presented in the standalone Excel spreadsheet but do not mimic the format (see Figure 7). The current ArcGIS® Survey123 templates also do not include a form for adding 'core programme information' detailing overall environmental policy, regulations and other requirements for the programme – see section 2.5.

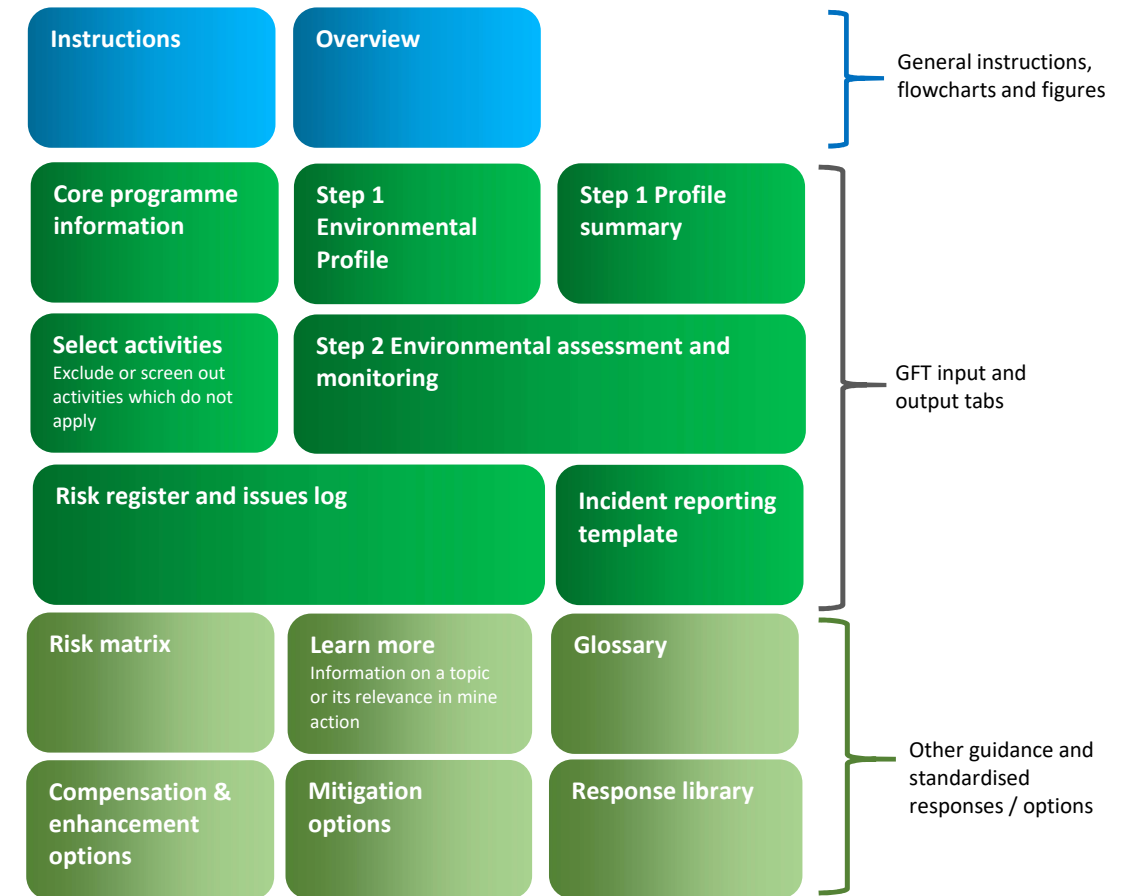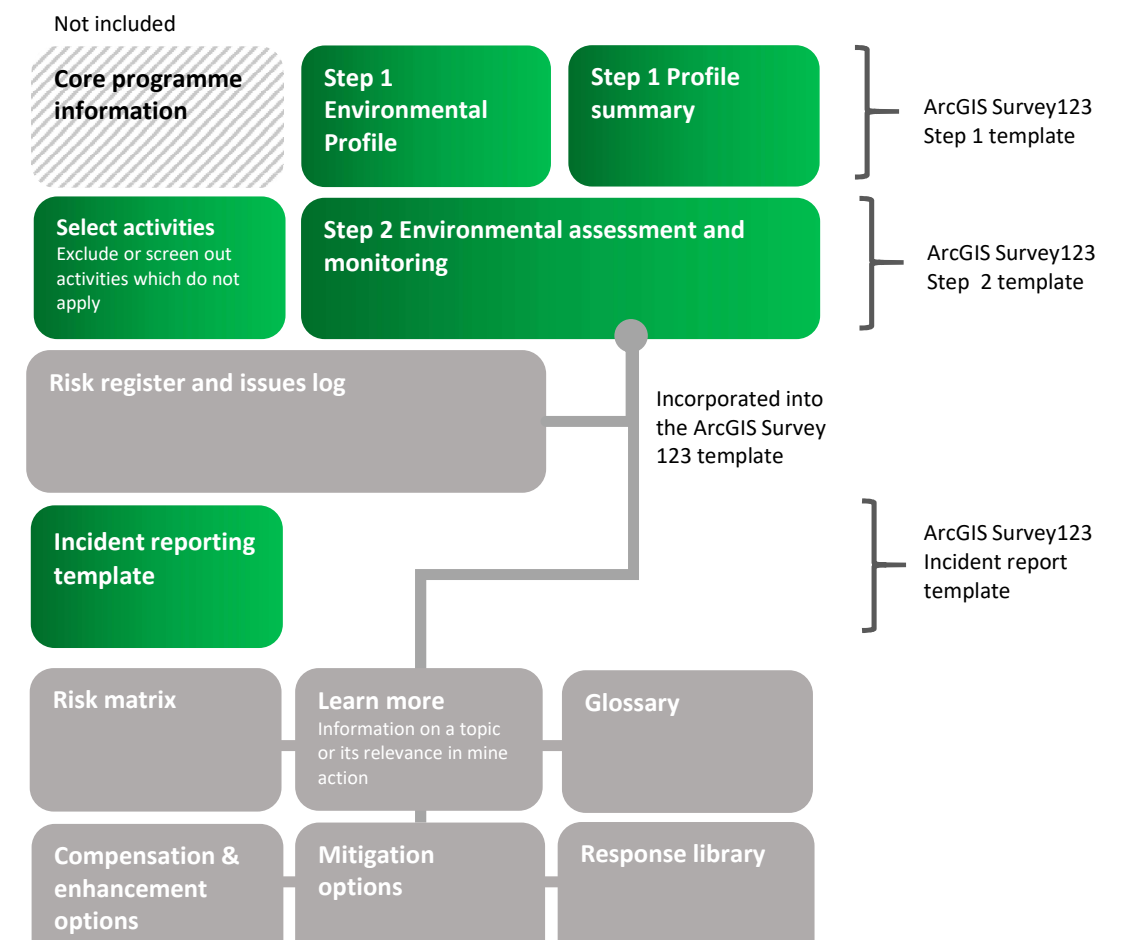*Figure 6 – Standalone Microsoft Excel format*

Figure 7 – ArcGIS® Survey123 format

The ArcGIS® Survey123 templates also include standard responses for the user to select for the majority of questions. These responses can be amended in the templates if necessary. Open text boxes are also provided to allow more detailed or specific response where appropriate. Explanatory text and links to other external guidance are also included.

The three GFT templates can be integrated into the organisation's standard Survey123 reporting procedures for operations, with support from Information Management staff.

2.4 Amendments and revisions

The GFT is flexible and can be amended, with questions adapted to reflect regional issues and revised if not relevant in certain contexts or for specific activities.

Ensuring that the GFT is relevant and tailored for specific circumstances should improve uptake, roll-out and adoption across programmes. Whilst questions and the responses can be amended, any macros and links should be checked. Changes should only be made through the Environmental focal point or co-ordinator in the respective organisation.

The Excel sheet is password protected to prevent accidental changes. To make changes:

1. First unprotect the sheet on the 'Review tab', and select 'Unprotect sheet'. The password is **greenfieldtool**.
2. If any columns and rows are inserted or changed, or worksheet names are changed, the VBA code for the corresponding worksheet may also need editing. To access the VBA code, go to 'File', then go to Options > Customize Ribbon and select the 'Developer' check box.

2.5 Core programme information

Core information relating to any national mine action environmental policy, organisational environmental policy, relevant environmental regulation, any donor environmental requirements or other key stakeholders´ requirements should be maintained for each country programme.

This should include a review of the climate risk profile for the country to ensure that the programme takes account of the overarching key issues facing the region due to the impact of climate change, that relevant parties are consulted and the correct, available information is reviewed. This may affect the planning of mine action activities, with prioritisation driven due to the impact of climate change and vulnerability in some areas. This should be completed by relevant staff during initial task planning and programming. As a minimum, core programme information should be reviewed every 12 months.

Links to policies, documentation and legislative requirements relating to the climate and the environment should be recorded and maintained here under core programme information.

The core programme information which should be included as part of the Information Management System in Mine Action (IMSMA) is given in **Annex C**.

2.6 Step 1 Environmental Profile overview

Step 1 includes a set of questions to establish the environmental setting of the task area and the potential environmental constraints and issues. This can be carried out for a group of tasks as appropriate, since similar constraints or conditions may apply for tasks in the same communal area or district. The size of this area will depend on the location and should be selected with caution. If too large, it will be difficult to provide focused responses to the profile questions. This environmental profile then informs Step 2 and the evaluation of risks.

Step 1 should be completed as early as possible by the relevant key staff during initial task planning and programming and feed into the operational planning done by the Operations Manager. Completed profiles should be reviewed every 6 months in case an update is required. Further detail is given in section 3.

2.7 Step 2 Environmental assessment and monitoring overview

In Step 2, each aspect and potential environmental impact of mine action field activities are considered. This should ideally be carried out for each Task Area. There are 14 topic areas to consider, with the GFT user selecting all aspects and impacts which may apply for the Task Area in question.

The likelihood and severity of each impact is then estimated by the GFT user, taking into consideration the environmental profile and sensitivity of the area, whether the impact happens in the short or long term and whether it could cause a temporary or permanent impact. The GFT then allocates an environmental risk score - high, medium or low.

Mitigation measures are then selected by the GFT user to avoid or reduce environmental risks. In some cases, there may an opportunity to put in place - or recommend - environmental enhancement or other improvement options which can add-value and environmental benefit.

Step 2 should be completed by operational leader for each work area, such as the Task Manager or Team Leader and at the planning stage before mobilising. This should be kept under review during tasks. Further detail is given in section 5.

2.8 Register

Completing Step 2 generates the components for a risk register, detailing the environmental risks and the measures to be put in place. Where a positive environmental benefit has been identified due to an enhancement or improvement, these are recorded, together with any residual risks or outstanding issues. Further detail is given in section 6.1.

2.9 Incident reporting

Reporting environmental incidents, events or near-misses helps to understand how and why something happened and what could be put in place to prevent it happening again. An Incident Reporting template is provided for ArcGIS® Survey 123 and is included in the standalone Excel version – see section 7.

Agriculture can be a driver of deforestation in regions where mine action operates

Credit: Norwegian People's Aid/Giovanni Diffidenti

3. Step 1: Environmental Profile

3.1 Introduction

An environmental profile sets out the environmental characteristics of an area before activities or project work takes place and provides an understanding of the environmental setting and its sensitivity.[i] This is established through a set of profile questions.
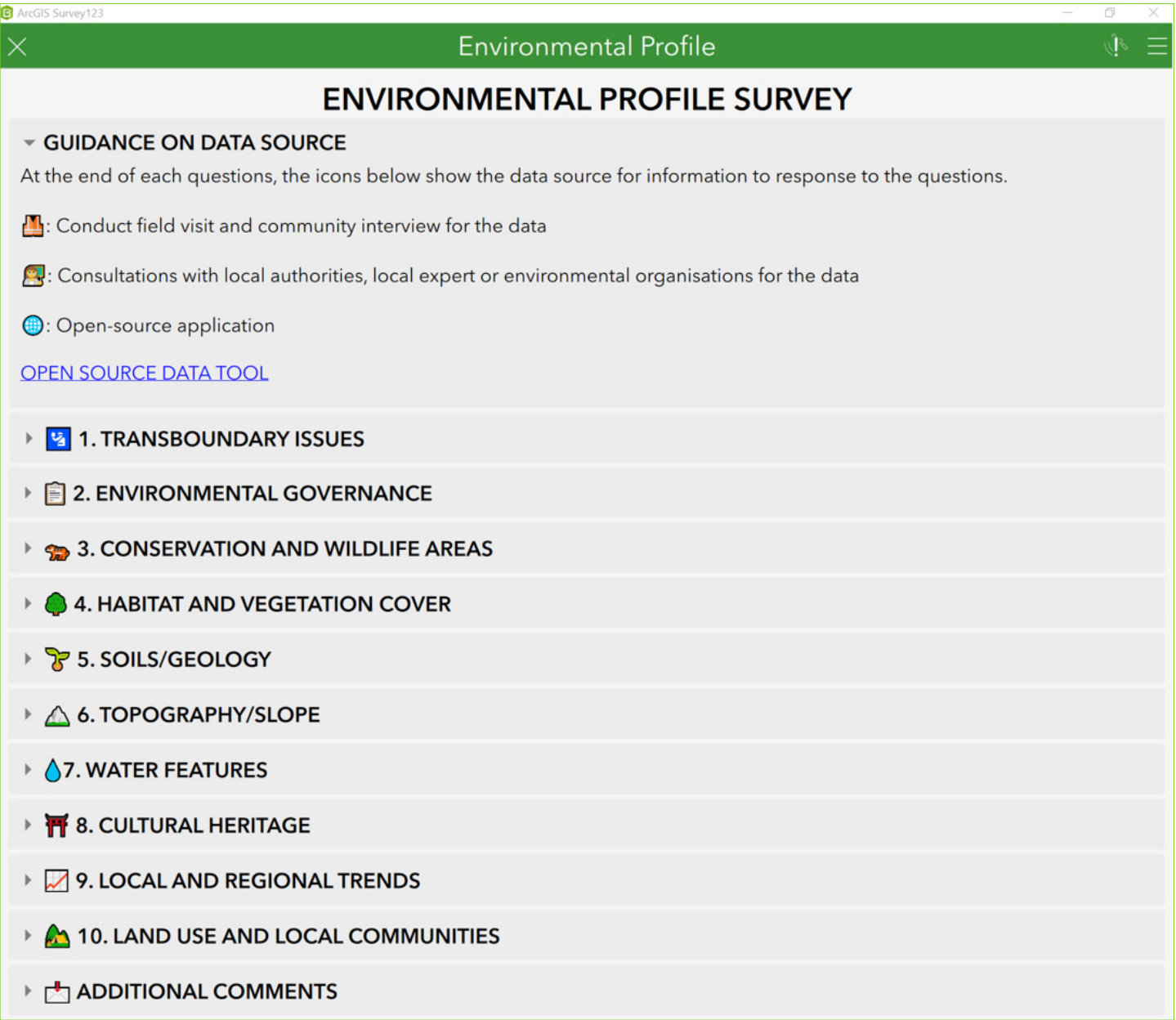
Understanding the environmental setting and its sensitivity is necessary for making informed decisions, predicting potential impacts and choosing effective mitigation or management strategies. Environmental sensitivity depends on tolerance and vulnerability and how it can respond to change, stress or disturbance. For example, the sensitivity of a habitat may be based on the species present and how they may be affected by disturbance from noise, detonations and vegetation clearance. The environmental setting and its sensitivity affect the significance of an environmental impact.

If using ArcGIS® Survey 123, upload and use the Environmental profile template.6 This template form has 4 pages:

1. Administration,
2. Profile Survey (see screenshot),
3. Enhancement and Compensation Options, and
4. Profile summary.

There are 10 subject areas covered by the profile questions.

ArcGIS® Survey123 – *the 10 profile survey subject areas.*

If using the standalone Excel version, go to the Environmental profile either through the 'Instructions' worksheet (see screenshot) and click on 'Step 1' box, or select the 'Step 1 Profile' worksheet. The ten subject areas covered by the profile question are given in the 'Step 1 Profile' worksheet.

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i. Refer to section 5.3.2 of the TNMA 07.13.

What is the Green Field Tool (GFT)?
The GFT is designed to support the planning and implementation of mine action field operations, and is split into two key components - **Step 1** and **Step 2**.

The GFT may be completed for any field activity - survey and clearance operations, disposal areas, and for worksite, work access routes and accommodation facilities.

The GFT should be completed at a local-level, by staff with regional and local knowledge.

Periodic reviews of completed GFT assessments is recommended.

An overview of the GFT components is given here.

Core programme information
Core information on any national mine action environmental policy, organisational environmental policy, relevant environmental regulation, donor and key stakeholder requirements should be maintained for each country programme.

This should include a review of the **climate risk profile** for the country, and links to documentation and legislative requirements.

As a minimum, core programme information should be reviewed every 12 months, and the remaining GFT every 6 months.

Understanding a country's **climate risk profile** is important since this may affect planning, with prioritisation driven due to the impact of climate change in some areas.

Step 1 - Environmental Profile
This includes a set of questions to establish the environmental setting of the task area, and the potential environmental constraints and issues.

First define the area that the profile covers. This can be carried out for a group of tasks - as appropriate - since similar constraints / conditions may apply for tasks in the same communal area or district. Complete **Step 1** as early as possible during planning.

Step 1 is to be completed by the Programme's Environmental Co-ordinator or focal point during **initial task planning and programming.**

Step 1 includes questions on **climate related issues.**

Open source data can be used to answer some highlighted questions in **STEP 1**. The **GREEN FIELD TOOL - OPEN SOURCE APPLICATION** can be used to access the datasets

Select activities
Before starting **STEP 2**, you can screen out or exclude activities which may not apply.

This can reduce the range of aspects and potential impacts to be considered.

Aspects can also be screened out if not relevant for a specific task during **STEP 2**.

Step 2 is to be completed by the Task Manager for each work area, and at the planning stage before mobilising.

Environmental data, including the environmental profile, risk register/issues log, and incidents records should be included in any **handover reports**

Environmental profile summary
This summaries the key environmental issues based on the STEP 1 responses, and can inform STEP 2.

Step 2 - Environmental assessment and monitoring (EAM)
Each aspect and potential environmental impact of mine action activities are considered in STEP 2 for a Task Area. Select all aspects and impacts which apply.

The likelihood and severity of each impact is then estimated, taking into consideration the environmental profile and sensitivity of the area, and whether the impact happens in the short or long term, and could cause a temporary or permanent impact.

Mitigation measures are then selected to avoid or reduce environmental risks. Also check to ensure actions are addressed in existing Standard Operating Procedures (SOP). In some cases, there may an opportunity to put in place - or recommend - environmental enhancement or other improvement option which add-value and benefits.

This generates the components for a risk register, detailing the environmental risks and the measures to be put in place. Where a positive environmental benefit has been identified due to an enhancement or improvement, these can be recorded here. Any residual risks or outstanding issues at completion of field work are also set out.

Risk register and issues log
This sets out the environmental risks and the measures put in place, as well as any other enhancement or improvement opportunities.

This records any residual risks or outstanding issues at completion of field work, and can be provided in any **handover reports.**

Excel – *Step 1 can be accessed by clicking on the 'Step 1' box in the Instructions worksheet.*

Excel – *The 10 subject areas covered by the profile questions are given in the 'Step 1 Profile' worksheet.*

LOCATION (DISTRICT/VILLAGE):
Co-ordinates:
Completed by:
Date completed:

Complete this environmental profile to provide baseline information on the environmental setting of the area, including ecologically important or any protected or conservation areas, vegetation cover, water resources etc. This then informs the evaluation of the environmental risk in **STEP 2**, and can be provided in any **handover reports** to inform others.

Open source data can be used to help answer some questions. The **GREEN FIELD TOOL - OPEN SOURCE APPLICATION** can be used to access useful datasets

SUBJECT	QUESTION		Sources?			RESPONSE
			NTS / field visit	Consultation	Open Source	
Transboundary issues	Is the programme close to an international border, which could lead to transboundary environmental issues?	Learn more?	✓	✓	✓	
Environmental governance	How effective is environmental governance in the region?	Learn more?	✓	✓		
	Are any necessary environmental licences or permits in place? *This could include regulations covering any plans to plant trees, manage invasive species, etc...*	Learn more?	✓	✓		
	What is the overall provision of waste management infrastructure in the region?	Learn more?	✓	✓		
Conservation and wildlife areas	Is the area of operation located in or close to an environmentally sensitive, ecologically important or protected area?	Learn more?	✓	✓	✓	
	Are there any endangered or protected wildlife species in or near to the area of operation?		✓	✓	✓	
	Are there any other known conservation or ecological management activities in the area?		✓	✓	✓	
	Have any wildlife or conservation issues been raised through community engagement?		✓	✓		

3.2 Environmental setting and subject areas

Step 1 provides a set of questions to help establish the environmental setting (or profile) for the area of interest.[i] The subject areas, together with an explanation on why the information is relevant for mine action field activities is summarised in Table 1.

Subject	Description and relevance for mine action
Transboundary issues	Mine action could increase access to important ecological areas or result in land-use changes close to the border. Changes in land use could increase the use of natural resources or generate pollution, with cross-border implications, e.g. for water bodies shared between countries or ecologically important areas. This could lead to cross-border sensitivities around environmental impacts and transboundary conservation, water resource or pollution management may be needed in some cases.
Environmental governance	This covers the provision and enforcement of national or local environmental laws or community-led codes of practice. Weak governance and waste management infrastructure will affect how well the environment and people are protected from harm. National, regional or local environmental legislation relevant for mine action can be wide ranging and failure to comply could result in a loss of reputation, programme delays or even fines and prosecution. Consultation with regulators and local authorities is essential.
Conservation and wildlife areas	These can include locally important or nature conservation areas not formally recognised or designated by regional or national authorities. As a first step, the World Database on Protected Areas (WDPA) and the World Database of Key Biodiversity Areas (WDKBA) may be checked but local consultation is also essential. Mine action in ecologically-important areas will require specific planning. This may require work to be only undertaken outside of breeding and nesting seasons, as well as other specialist measures and support from ecologists.
Habitat and vegetation cover	Details on habitat type, its density and maturity are needed to understand the impact of any planned work and clearance, as well as risks to any retained trees and vegetation. For retained trees, measures must be in place to protect root systems, aiding the chances of their survival. Clearing vegetation risks exposing large areas of soil, which can be prone to erosion and degradation. It is also important to know about invasive species which may be present. This includes animals, plants, insects or aquatic species which can cause harm where they are not native. Invasive species are an increasing problem and can damage habitats and have an economic impact.

Table 1 – Step 1 Environmental Profile subject areas and their relevance to mine action, continued overleaf

i. The questions align with section 5.3.2 of the TNMA 07.13.

Subject	Description and relevance for mine action
Soils / geology	Soil type and structure affects many factors including levels of moisture, plant growth, resistance to erosion and the risk of compaction. Soil texture ranges from coarse (sands and gravels) to fine (clays and silts), and this will affect their fertility and how readily they may drain or retain water.
	Bare ground with little vegetation cover is more prone to soil erosion by wind or water. Dust generated from degraded soils can be blown for long distances, damaging crops, water courses and wildlife. Compacted soil is caused by vehicles, machinery and livestock, degrading and otherwise affecting its productivity. Detonations and cratering will also disrupt and destroy soil structure and affect soil function. Field visits and local consultation will be needed to get information on soil type and geology.
Topography / slope	Details on the slope and terrain is needed to understand the potential for run-off, soil erosion and flooding and in extreme cases, the risk of landslides.
Water features	Nearby water resources could be impacted by mine action activities. Field visits and local consultation will be needed to fully understand their location, water flow rates and their use. Information on groundwater will also need to be determined from local consultation. Shallow groundwater will be more susceptible to activities on site, such as spills and repeat detonations. Sites with shallow groundwater may also be at risk from flooding and waterlogging. Check with the local community.
Cultural heritage	Nearby cultural assets could be impacted by mine action activities. This can include religious sites or sacred areas, historic buildings, burial grounds, ruins or archaeological sites. The information available through open source data is limited and consultation with the local community and authorities will be needed.

Subject	Description and relevance for mine action
Local and regional trends	It is important to understand regional and local trends and to engage with local people, asking them about their experience and any of changes observed over recent years. This could cover a wide range of observations: *changes in rainy / dry seasons, hot / cold seasons, notable changes in weather around national holidays / festivals, planting season and harvests, crop production and soil fertility, periods of scarce resources (e.g. food, water, fish or pasture), migration times of species, extreme weather events, increase in pests and vermin and seasonal illness (affecting people and livestock).*
	For example, information on deforestation is especially useful since it gives an oversight of the wider regional context, which may directly affect mine action activities and people. Areas affected by high rates of deforestation are likely to be more vulnerable to biodiversity loss, flood risks, soil erosion, poorer water quality, and in some cases, landslides.
	It is also useful to understand annual rainfall and temperature trends, as well as the location and frequency of landscape fires, flooding, landslides and any observed changes in the frequency of other extreme weather events.
	This section also asks questions on what local coping strategies may already be in place to address climate change and their effectiveness. Climate change and climate-related events can worsen existing local stresses such as poverty, food insecurity, land degradation and access to water shortages, as well as physical risks to extreme weather events.
	By understanding the trends and issues, opportunities for environmental enhancement may be identified to support these communities and help people adapt to climate change. Even if these cannot be implemented by mine action, this can be flagged and the options highlighted at handover. Opportunities for environmental enhancement must be explored as early as possible. A list of potential options is included for consideration.
Land use and local communities	Details on land use and any known land changes are relevant for considering land use pressures and related environmental impacts.
	In some areas, there may have been significant shifts in how land is used, with increased urbanisation, increased agriculture and reduced areas of natural habitat. An understanding of the scale and nature of these changes can help indicate the potential importance of additional enhancement measures which could be put in place and the overall land use pressures.
	This section also asks about historic land use and the likelihood that chemical contamination or pollution is present (Refer to Annex C of the TNMA 07.13.).
	Finally, this section asks for the key local community issues and environmental concerns raised or identified as affecting the local community. This may be linked to climate change, or relate to other environmental and land right issues. *Examples include: access to and use of natural resources; access to water; illegal logging; high reliance on firewood use; biodiversity loss; soil erosion; spread of invasive species; poor waste management and use of chemicals and pesticides; poor indoor and local air quality; pollution.*

The full list of all questions covered in Step 1 is given in **Annex D**.

Note that whilst information about past and recent climate trends, likely projections and potential impacts helps gain an understanding of climate risks, this information can contain uncertainties and some precautions are advised.[i] This includes taking account of climate variability and extremes to ensure decisions are robust and consider a range of future conditions. It is also important not to rely on anecdotal evidence alone and to use a combination of information sources.

3.3 Information sources and data entry

The primary information and data sources for establishing the environmental profile are:

1. Through conducting field visits, non-technical surveys (NTS), desktop studies, policy review and community interviews.
2. Through stakeholder consultations, with local authorities, national and local experts and environmental groups.
3. Using open source data (see section 4).

Questions in Step 1 may be answered using a combination of information and data sources. Questions in the GFT are flagged to indicate which information source may be useful to help answer each question in Step 1, as shown in the two screenshots overleaf.

ArcGIS® Survey123 – *icons show which data sources can help answer the profile question.*

Excel – *a tick box shows which data sources can help answer the profile question.*

Note that any relevant stakeholders who may be affected by or have an interest in the outcome of the mine action activities should be identified at an early stage. This requirement is noted in the TNMA/07.13. Stakeholder engagement should be iterative and is needed to collect local knowledge and address local concerns. The information gained may include important local and indigenous knowledge on local biodiversity and wildlife, native planting, the presence of invasive species, climate trends and other environmental data.

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i Refer to section 6.3 of the TNMA 07.13.

3.4 Data quality and reliance

Using a combination of remote sensing, satellite data and local knowledge is important to establish the environmental profile and to improve data quality and reliability. Using satellite and open source information can be especially useful where ground data is unavailable.

The limited availability or access to environmental data will reduce understanding of the environmental conditions and affect the reliability of any screening assessments. It is important to acknowledge these limitations and aim to fill data gaps through all reasonable effort.

Local perception of environmental issues and risks may also vary depending on individual or cultural attitudes to the environment and experience. A broad range of stakeholders and community representatives should be involving, including local communities and local environmental experts where possible.

3.5 Environmental profile summary

On completing Step 1, an environmental profile summary is generated by the GFT. This profile summary flags the environmental issues identified, grouping them into issues of High, Medium or Lower concern depending on the responses given and a set of standardised 'profile statement'.

The summary can be used as a guide, alongside the environmental profile report to inform Step 2. If using ArcGIS® Survey 123 (see screenshot), the profile summary is given in the sheet 4 of 4 of the environmental profile template.

ArcGIS® Survey123 – *the profile summary is presented as a list of statements under each three categories.*
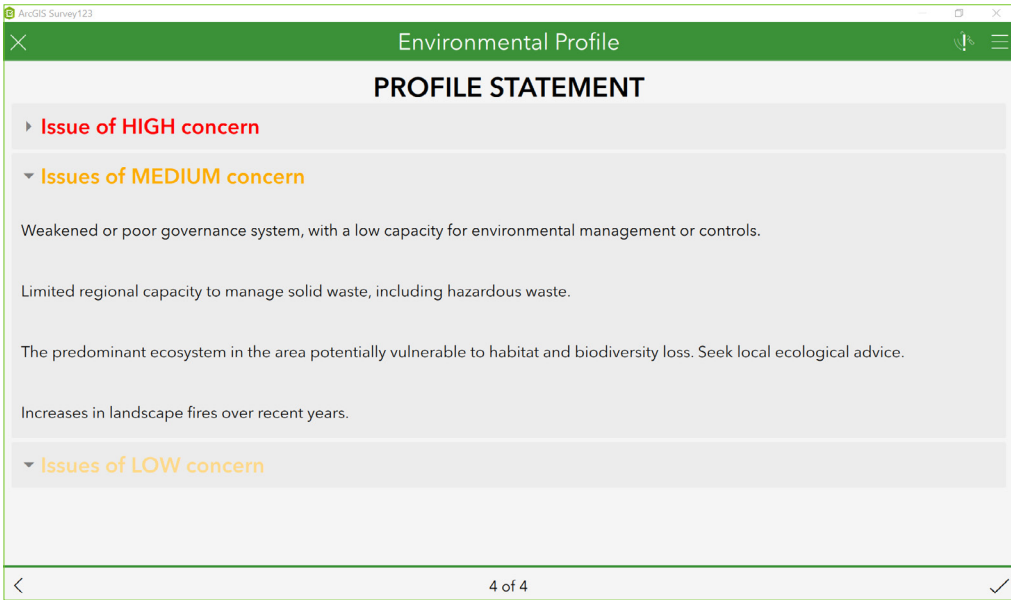
If using Excel (see screenshot), the profile summary can be seen by selecting the 'Step 1 Profile summary' worksheet.

Excel – *the profile summary is presented in columns under the 3 categories.*

4. Open source application

4.1 Introduction to using open source and geospatial data

In Step 1 of the GFT, geospatial data and open source maps can be used to collect background environmental information and help develop an understanding of environmental considerations relevant to the study area.

There is a large array of open source data available which can be useful, including some environmental data layers provided in ArcGIS® Living Atlas. The GFT-Open Source Application (OSA) was developed to bring together the more relevant datasets and simplify their interpretation for mine action. It is available at https://conflictenvironmentobservatory.projects.earthengine.app/view/gftapp

The information from open sources is a helpful starting point but should be supported by field observations and in-community engagement.

4.2 Using the Open Source Application

The data layers in the OSA have been formatted to help understand the environmental profile in an 'area of interest', with guidance for interpretation and links to the data sources provided. A summary of the layers provided in the OSA (v1.2025) is given in **Annex E**, together with an explanation on its relevance to informing the environmental profile in Step 1. Note that the format of the data presented in the OSA will vary between layers, depending on whether it is spatial or temporal data.

Open the OSA using Google Chrome. The steps for using the OSA are set out overleaf:

Extreme weather events pose an increasing challenge for mine clearance activities

Credit: Norwegian People's Aid

1. Navigate to a location by: *selecting a* **country***; using the* **scroll buttons***; or using the* **'search places'** *toolbar.*
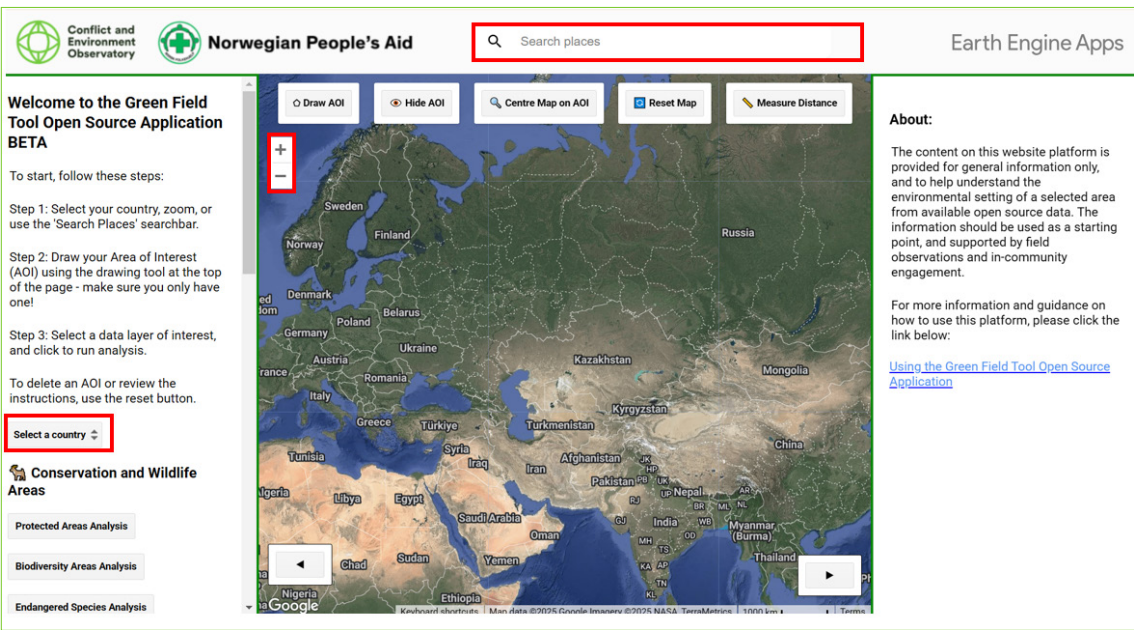

2. Select an 'area of interest' (AOI) using the 'Draw AOI' button. Only draw one AOI at a time.

If the AOI polygon obscures the data layer being shown, use the 'Hide AOI' button to leave an outline of the AOI only. Use the 'Centre Map on AOI' button to re-centre the map, and 'Reset Map' to delete the AOI outline.
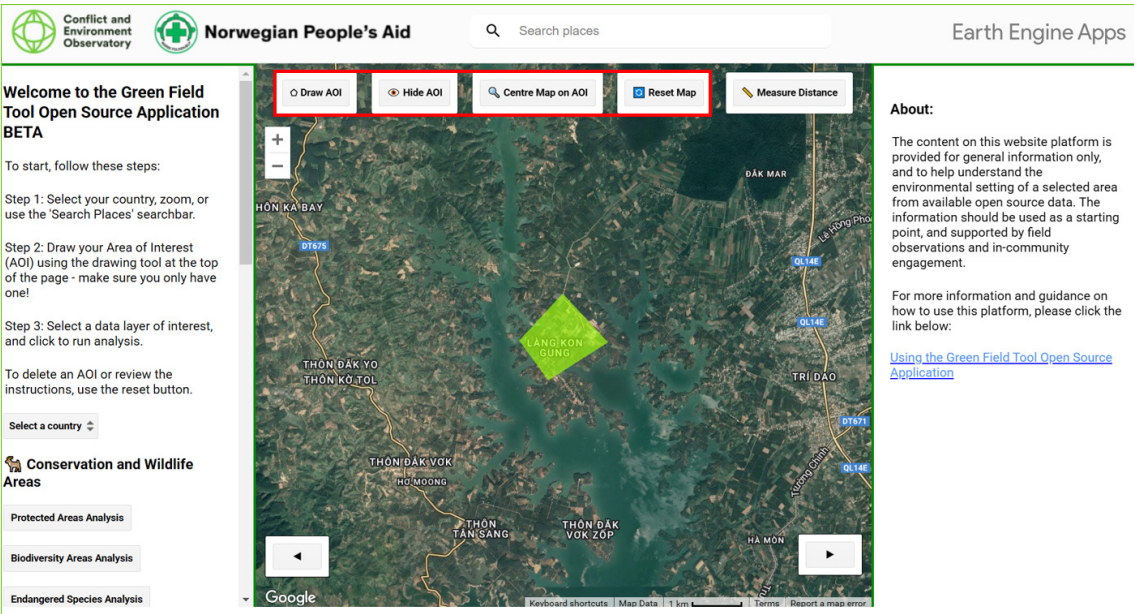

3. Once an AOI has been drawn, start to select the data layers of interest (one at a time).

The example shown here is 'Protected Areas Analysis', which gives WDPA data. Clicking on a WDPA polygon brings up an information box about the protected area.
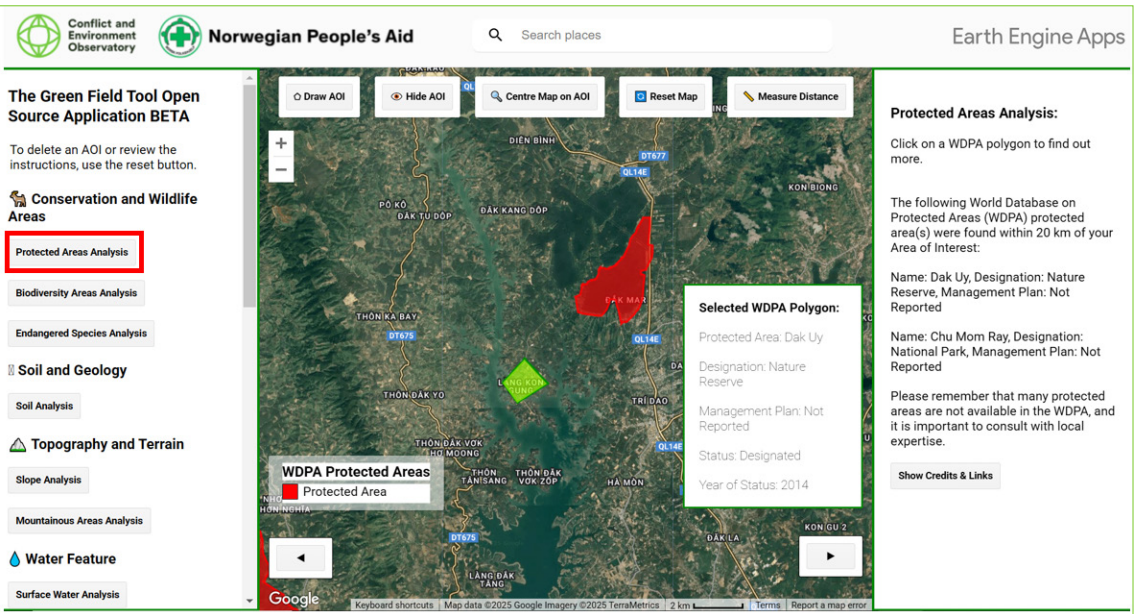
4. Go through each of the data layers to help answer the questions covered in the GFT Environmental Profile, where appropriate.

The data layer example shown here is 'Surface Water Analysis' and maps spatial data concerning surface water.
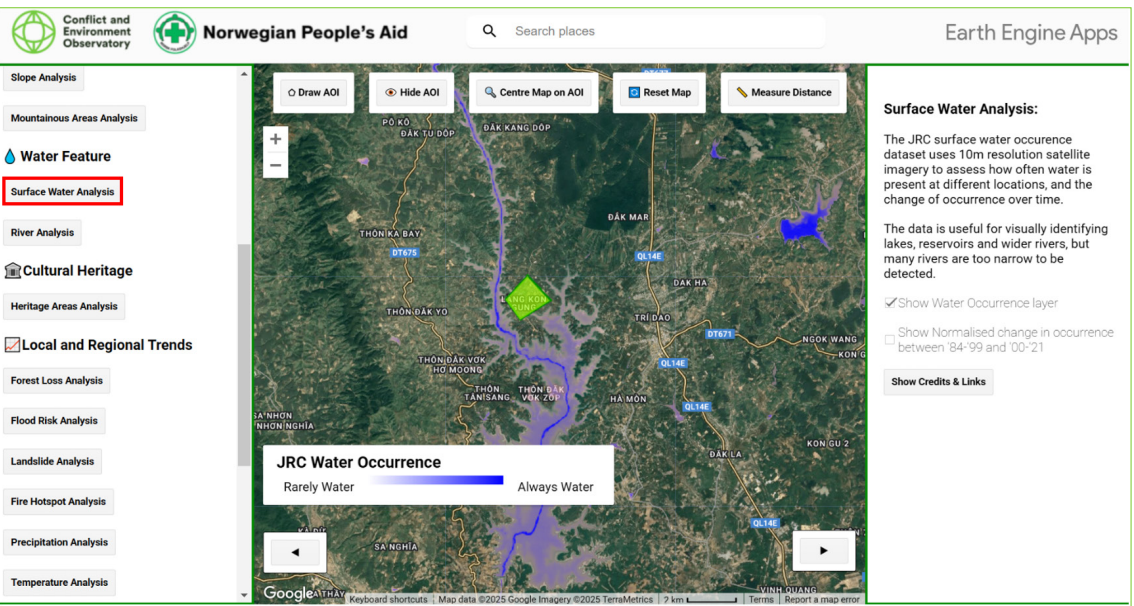
5. *The data layer example shown here is 'Precipitation Analysis' and gives temporal data in two charts for the AOI.*
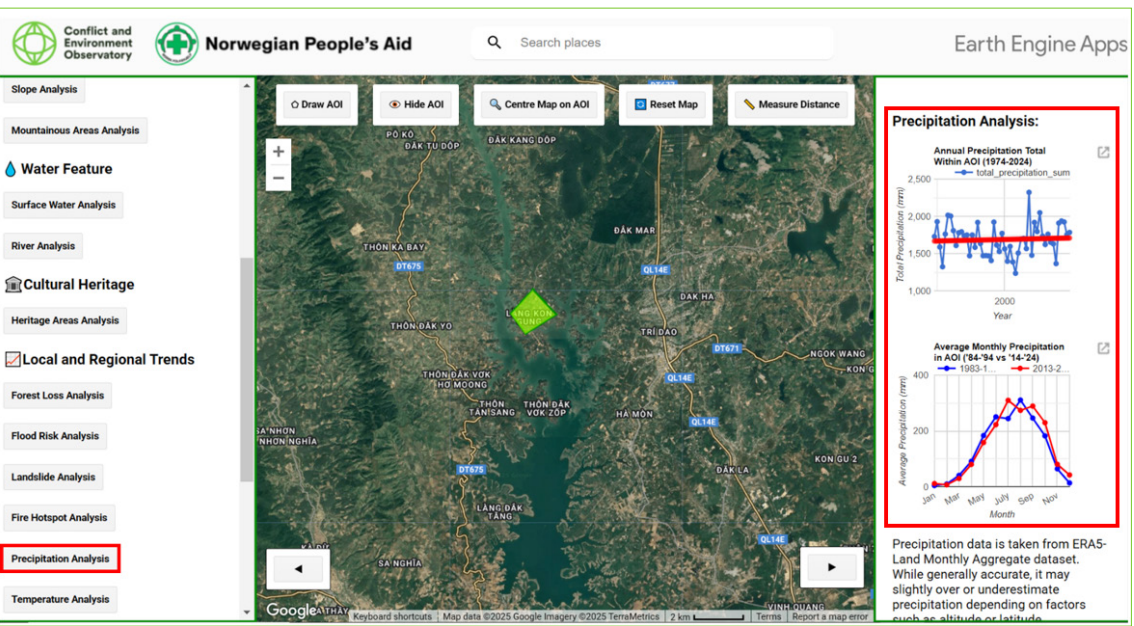
4.3 Benefits and limitations

The data in the OSA will not provide all the information needed to complete the environmental profile but it can help to highlight high level information and vulnerabilities at an early stage. These can then be used to inform the design and planning of mine action operations.

Global open source data has limitations and must be supported by other sources, including field visits, desk studies and consultation with local communities and expertise. The data layers provided in the OSA are not automatically updated. The date of the last update is given and it is recommended that the data source is checked to confirm the latest version. This can be done by clicking on the 'Show Credits & Links' button for each source.

5. Step 2: Environmental assessment and monitoring

5.1 Selecting activities

Before starting Step 2, it is possible to screen out or exclude activities which do not apply to the work area under

ArcGIS® Survey 123 – *selecting activities.*

Excel – *selecting activities.*

consideration. This will reduce the range of aspects and potential impacts to be reviewed in Step 2 and focus the review.

5.2 Environmental aspects and impacts

Once any activities not relevant have been excluded, each environmental aspect and potential impact of mine action field activities is reviewed under Step 2. An environmental aspect is an element of mine action activities which can interact with the environment. 'Climate trends' have been included here since they can directly affect mine action as external factors but are not strictly a mine action 'aspect'. The environmental aspects are listed under the following 14 categories:

Aspect	Risk/impact
Climate trends	How observed and predicted climate changes may affect activities.
Soil degradation and erosion	From the use of machinery and vehicles, detonations and soil stripping, stockpiling and replacement.
Vegetation	The removal of vegetation, damage to any retained trees and presence of invasive species.
Wildlife	Disturbance and risk of physical injury and loss of habitat.
Pre-existing pollution	Exposure to pre-existing contaminated soil or water.
Releases to land and water	From demolitions, the use of fuel, chemicals or generation of waste and wastewater.
Generation of waste	Including hazardous and non-hazardous waste generated from field activities.
Resource use	Including local water use, equipment and supplies, single-use plastics and land area.
Emissions to air	From demolitions, the use vehicles and equipment, dust and open burning of vegetation or waste.
Noise	Including disturbance to livestock, wildlife and the local community.
Local amenity	Covers nuisance to the local community, such as disruption or lack of access.
Cultural heritage	Covers nearby cultural and historical sites.
Emergency / natural disaster	Covers uncontrolled releases due to an emergency.
Local flooding, water courses	Covers increased run-off or ponding and physical barriers or the obstruction of water courses.
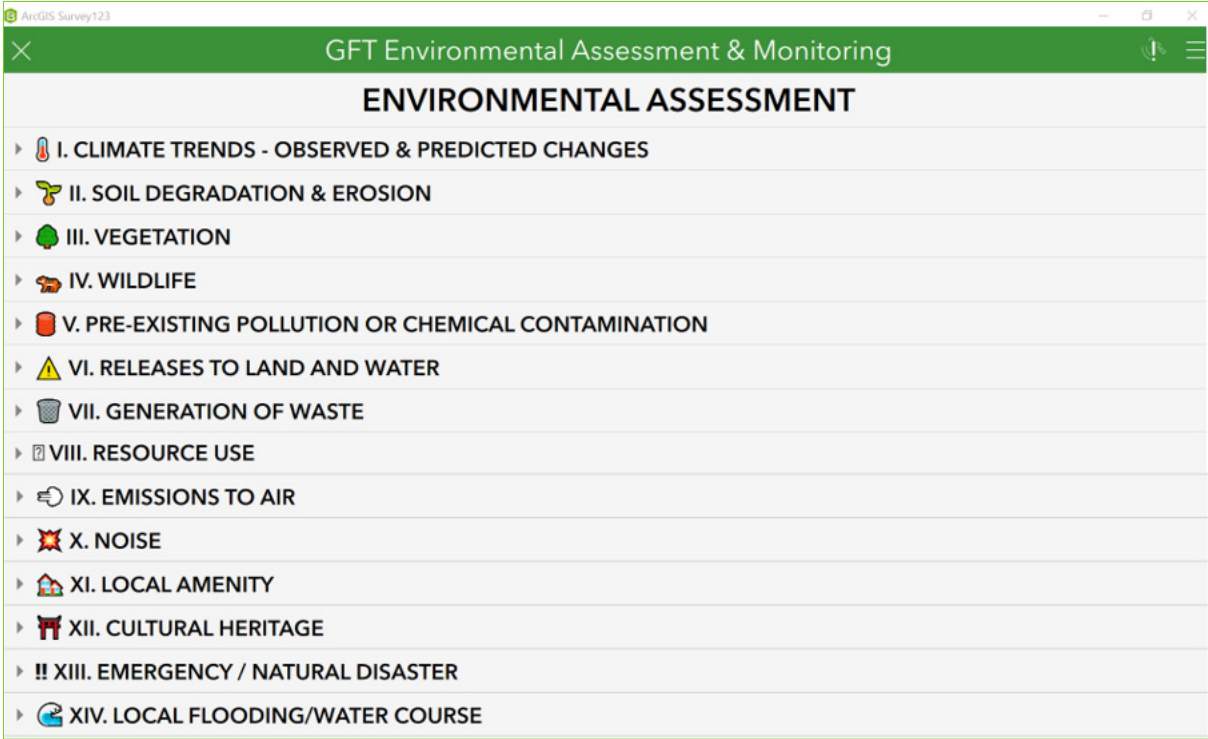
Excel – *example of
environmental aspects
categories and impacts
(full list not shown).*

For each environmental aspect, the environmental risk is then considered by estimating the duration, likelihood and severity of the environmental impact associated with each environmental aspect.

5.3 Assessing risks to the environment

For each aspect and potential environmental impact of mine action activities, the risk to the environment needs to be reviewed. This is done in Step 2 by considering the likelihood and severity of each impact. First the GFT user must consider whether the impact will occur in the short-term or long-term:

- **Short-term impact**: this means that the consequences are immediate, and would typically take place during field operations, such as smoke or air emissions during demolitions.
- **Long-term impact**: this would evolve over time, and more likely to cause an effect after field operations have ended, such as erosion or contamination of soil.

Next the GFT user considers whether the effect of the impact will be temporary or permanent:

- **Temporary impacts**: these do not cause a permanent change to people's health, the character of the land or environment, for example noise disturbance.
- **Permanent impacts**: these can cause irreversible change, such as the loss of important and irreplaceable habitat or loss of nutrient- or carbon-rich soils.

The **likelihood** (or probability) of the impact occurring and **severity** (or magnitude) of each impact if it occurs is then estimated by the GFT user. This should take into consideration the environmental profile and sensitivity of the area and whether the impact happens in the **short** or **long** term and could cause a temporary or permanent impact. This can include:

1. whether people are living nearby or likely to visit the area;
2. whether there are nearby local water features or wells;
3. whether soils are vulnerable to compaction or erosion;
4. whether there are locally or regionally important wildlife areas and habitats; or
5. whether an area is considered vulnerable to climate change risks.

Once the **likelihood** and **severity** of an impact is selected, the GFT assigns a risk level using a simplified risk assessment matrix for each impact (see screenshot overleaf). The following three risk levels are used:

- **High** – unacceptable and immediate mitigation is required
- **Medium** – requires monitoring and mitigation planned
- **Low** – monitor and keep under review, with mitigation remaining an option

The risk matrix and the definitions used are given in **Annex F**.

5.4 Mitigation measures

Mitigation measures must then be selected and assigned to manage and reduce the risk of environmental harm. Lists of mitigation options are provided in the GFT but these can be revised and amended where required.

The full list of mitigation options is not copied in this guidance and is best reviewed in the 'mitigation options' tab in the standalone GFT Excel template.

Select all mitigation measures which apply and then consider what residual risk may still remain. The GFT **does not calculate** these residual risks and the GFT user must review each risk and estimate whether the risk has been managed by the measures proposed or in place. If the risk has been managed, the risk level can be lowered.

The mitigation measures will not always be able to reduce the risk level and it is important to record where this is the case. Also record whether the measures are captured in Standard Operating Procedures.

ArcGIS® Survey 123 – *selecting
mitigation options, then checking if
in SOP and reviewing any residual
risk level.*

Refer to the screenshot from the ArcGIS® Survey 123 overleaf for an example entry. The same information is captured in the Excel format.

It is important to note the following:

- Any further measures in place but not given elsewhere should also be recorded.
- In some cases, there will be measures which could be applied but are not possible. There may be many constraints which limit or prevent the consideration or implementation of certain measures, including the availability of expertise and resources, timeframes, access, cost or permissions. By recording these constraints, it can help identify what may need to happen to overcome barriers.

In ArcGIS® Survey 123 this is done under the 'Further measures' for each group of aspects – refer to the screenshot from the ArcGIS® Survey 123 overleaf. The same information is captured in the Excel format.

ArcGIS Survey123

GFT Environmental Assessment & Monitoring

▼ **Further measures for CLIMATE TRENDS**

Add other measures applied
include any other measures in place not otherwise listed earlier

Are there other measures which could be applied but not possible
There may be many constraints which limit or prevent the consideration or implementation of certain measures, including the availability of expertise and resources, timeframes, access, cost, or permissions. Recording these constraints can help to identify future measures to overcome barriers.
○ Yes   ○ No   ○ Not Known   ○ Not Relevant

Give brief detail here

Are any compensation, or other enhancement measures being applied or planned?
○ Yes
○ No
○ Not Relevant / Required

5.5 Compensation or enhancement opportunities

There may also be opportunities and additional measures which could be implemented or recommended to make further improvements - or enhancements – which benefit the local community and environment. These opportunities are recorded in Step 2 under 'Further measures' and appear in the Risk Register (see section 6.1).

The opportunities are not restricted to just Task Areas and may cover wider benefits to the community, such as improvements in soil quality, habitat, wildlife conservation, the protection and quality of water resources, air quality, reduction in the use of chemicals (such as pesticides, fertilisers), the control and management of waste and measures to reduce emissions of greenhouse gases.

- **Compensation** is a way to achieve a neutral or beneficial environmental impact by restoring or improving the environment in response to any damage or loss caused by mine action activities.
- **Enhancement** is an action which provides net benefits for the environment over and above the requirement to avoid, mitigate or compensate for any adverse environmental effects.

Any opportunities must be explored as early as possible and can be varied. They can include opportunities to address climate change or historic environmental impacts caused by conflict or land use practices, such as loss, decline and removal of natural habitat or pollution. Compensation and enhancement initiatives will require input from environmental experts and stakeholders and may need to be adjusted over time.[i]

A list of suggestions which are provided in the GFT are included in **Annex G**.

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i. Refer to section 6.9 and Annex G of the TNMA 07.13.

Community engagement aids understanding of the local environmental context

Credit: Norwegian People's Aid

6. Using outputs from the Green Field Tool

6.1 Risks register and issues log

Completing Step 2 generates the components of a risk register and issues log. The risk register and issues log summarises the environmental risks and measures in place, records enhancement or compensation initiatives and the overall issues and outcomes. The risk register (see the example below) includes and requires the GFT user to:

1. record and list any compensation or enhancement measures applied or planned;
2. record if the controls in place are effective and whether further action is required;
3. qualitatively estimate the scale of any benefits; and
4. estimate and record the overall outcome.

Note that without longer-term monitoring in place, it is **not possible** to assess the outcome and success of environmental compensation or enhancement measures. It may take several years for some schemes to establish and for the benefits to be fully realised. This could include pilot projects which are trialled, and then adopted elsewhere. However, a qualitative estimate of the scale of the potential benefits can be noted, using the following 3 categories:

- small scale and localised benefit, typically restricted to the task area or immediate surroundings;
- wider benefit, extending to the broader community, with local-level engagement, buy-in and knowledge sharing; or
- larger and multiple benefits, including contribution to landscape-scale restoration, community projects or far-reaching awareness raising.

To record the overall outcome, following 5 categories are given:

- Limited measures in place and no change or reduction in risks. — options to reduce risks may be not be viable, available or unaffordable.
- Measures in place and risks minimised. — all reasonable options in place yet residual risks remain.
- Measures in place, risks minimised and some compensation measures in place. — all reasonable options in place and some additional measures, such as existing debris or waste clearance.
- Additional enhancement measures in place and overall net benefits anticipated (longer-term monitoring required to assess). — or risks minimised and well-planned initiatives in place, with aftercare provisions.
- Work stopped / not proceeding at this stage. — decision to temporarily halt or suspend work based on environmental considerations.

6.2 Using the GFT outputs

There are benefits from the reporting of environmental data, assessments and any action taken in handover reports. It enables environmental information to be provided to landowners and others, to inform them of future land use considerations and can set out any land management or aftercare requirements to maintain any planting scheme or environmental initiatives implemented.

It can also enable the sharing of environmental datasets with collaboration partners and minimise the duplication

of data collection, as well as supporting awareness-raising across local and wider communities.[i] The overall outcome of the GFT should be:

- to avoid and minimise negative impacts;
- to enhance the opportunities for positive outcomes;
- to document the actions and controls put in place;
- to enable data to be shared with all relevant parties;
- to improve the sustainability of land release; and
- to support climate resilience in communities.

The scope of the GFT **does not cover** the assessment of long-term impacts following land release and post clearance land use. However, the GFT outputs set out the baseline environmental conditions prior to mine action activities, what was done to minimise impacts during mine action activities and can help to inform decisions and promote sustainable land use practices.

6.3 Organisational environmental reporting

Outputs from the GFT can also be used for wider environmental reporting for the mine action organisations and included in relevant documentation and dialogue with national authorities, such as handover reports. A set of suggested reporting indicators forming part of an environmental reporting framework has been developed in tandem with developing the GFT, which is intended to help standardise how environmental performance is reported.

The indicators cover 8 main topic areas and outputs from the GFT would inform specific indicators on 'policy' and on 'land release outcomes.' Further details are provided in the Environmental Reporting Indicators report, which is available on the resources page of the EIMA working group website: https://environmentinmineaction.org/pages/resources.

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i. Refer to Annex H of the TNMA 07.13

7. Incident reporting

7.1 Overview

The IMAS 07.13 requires environmental or climate-related incidents to be recorded and records maintained. As set out by the TNMA/07.13, consistent reporting about environmental incidents or events is important since it *'helps to understand how and why something happened, and what may be put in place to prevent it happening or minimise the impact in case it happens again.'*[i]

An environmental incident includes any situation which has caused harm - or has the potential to cause harm - to people, property or the wider environment. This includes extreme weather and climate-related events, which may have impacted mine action site-based activities, communities and infrastructure; but it can also include incidents like oil spills or waste.

Environmental incidents which may not relate directly to a mine action activity should also be recorded since the cause and extent may need investigating and correction action taken. In some cases, other parties - such as the authorities, landowners, occupants/users and the local community - may need notifying and mine action activities themselves ruled out.

7.2 Incident reporting template

An Incident Reporting template is provided for ArcGIS® Survey 123 and is included in the standalone Excel version. The templates align with the recommendations of the TNMA/07.13 and includes standard responses. Open text boxes are also provided to allow more detailed or specific response and external links to be added where appropriate. As set out in TNMA/07.13, an incident or near-miss report should include:

1. date, time and location;
2. involved parties;
3. person(s) witnessing or reporting the incident or near-miss;
4. nature of the event (incident or near-miss);
5. description and root cause, including weather events;
6. extent and severity of the incident;
7. detail on what has been impacted;
8. detail on any visual or olfactory signs of contamination (colouration, odours, sheens);
9. any corrective or preventive action to be taken;
10. contact details of reporting party (in case any follow-up questions are needed);

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i. Refer to Annex I of the TNMA 07.13

11. photographs – to show evidence of the nature and extent of the incident;

12. detail on external parties who have been notified – for example, landowner, occupants/users, community leaders, authorities; and

13. follow-up and completion status.

It is can be difficult to qualify the extent and severity of an incident, without a full investigation, interpretation of the results and specialist knowledge. The incident report assigns the following categories to qualitatively record the extent and severity and simplify reporting:

- uncertain
- localised, minor
- localised, severe
- local community affected, minor
- local community affected, severe
- regional-scale

In the follow-up actions, the incident report should include details of any further investigation needed to quantify the cause, extent or severity of the incident.

The GFT should be applied as early as possible, before survey or clearance starts

Credit: Norwegian People's Aid

8. Implementation and roll-out

8.1 Overview

The purpose of applying the GFT is to improve the environmental management and the environmental outcome of an organisation's work.

The rollout and implementation of the GFT requires an organisational commitment on environmental stewardship. In alignment with IMAS 07.13 requirements, this should be supported by a climate and environmental policy and an environmental management system.

The GFT has been developed for use by mine action staff who are not environmental specialists but it does require some training on the tool and basic environmental awareness. Whilst some organisations may have some resourcing in place to address climate and environmental issues, other organisations will need to identify and collaborate with environmental partners for support. Since the GFT is free to use and has been provided as open source, the opportunity exists for engagement and cross-sector learning. Liaison within and between organisations is important and is encouraged. This can be done through networks such as the Environmental Issues and Mine Action Working Group meetings,[i] or country-level environmental working groups.

For successful roll out and implementation of the GFT, environmental management and stewardship should be a prioritised and resourced. A dedicated focus on improving overall environmental management and some changes in the way mine action is carried out are needed. This can be achieved using both a '**top-down**' and '**bottom-up**' approach (see Figure 8).

A '**top-down**' approach is recognised as a precondition of good environmental practice,[ii] with leadership and commitment to ensure that roles and responsibilities are assigned. The '**bottom-up**' is equally important, involving mine action operating staff and local stakeholders who understand local needs and how improved environmental practices can be best implemented.

'Top-down' approach

Actors: Governments, national mine action authorities, donors, mine action operators

Top-down approaches to increase awareness and improve environmental commitments:

- ☑ International and national legislation
- ☑ Donor requirements
- ☑ Project and contract obligations
- ☑ 'Buy-in' from leadership
- ☑ Co-ordination and integration with other sectors
- ☑ Targeted communication

Bottom-up approaches to increase awareness and improve environmental commitments:

- ☑ Harness local knowledge
- ☑ Train, and share skills and ideas
- ☑ Recruit volunteers and champions, enthusiast advocates for environmental improvements
- ☑ Implement standard operating procedures
- ☑ Highlight successes and learn from mistakes

Actors: Mine action operating staff, local community stakeholders

'Bottom-up' approach

Figure 8 – Approaches for increasing awareness and environmental commitments in mine action

8.2 Outline roll-out strategy

A recommended rollout strategy for the GFT is divided into the following stages:

Stage 1 Setting the foundations	**Stage 2** Integration into programmes	**Stage 3** Training and rollout	**Stage 4** Continued support	**Stage 5** Sharing good practice

Stage 1 - Setting the foundations for organisational rollout by building environmental awareness and understanding of the GFT

To succeed in the implementation of the GFT tool and improve environmental management in mine action operations, staff across the organisation should understand the GFT relevance and why it is important and understand the expected developments and outcomes from GFT implementation.

The background and rationale of the GFT must be well explained, as well as the potential benefits and outcomes. To apply changes in an organisation both **internal** and **external** factors can help to "push" or motivate change (see Table 2). As with all change, expect some resistance and prepare for how to overcome it.

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i. See https://environmentinmineaction.org

ii. Such as ISO 14001:2015, the internationally recognized standard for environmental management systems, https://www.iso.org/standard/60857.html

Internal factors	• Environmental and climate ambitions are a part of overall strategies and policies. • The tool is made a requirement for programmes to use. • Communicate about the potential benefits for the environment, for people (education and beneficiaries), for cost efficiency and for being innovative.
External factors and trends	• Increased donor requirements on mainstreaming the environment in organisations and projects and documenting the environmental outcomes and/or climate resilient outcomes for affected communities. • The updated IMAS 7.13 sets clear requirements for how operators, national authorities and donors should apply environmental management. The GFT will support the organisation in becoming IMAS 7.13 compliant. • Improved and strengthened environmental legislation and the need for organisational liability and documentation. • Increased requirements and public/society expectations to a minimum standard for sustainability.

Table 2 – Internal and external factors to motivate change

Stage 2 - Integration of the GFT into programmes

This stage involves identifying how the GFT can become an integral part of the operational mine action work. This will vary from organisation to organisation but the more seamless and easier to use, the greater the likelihood of successful adoption. It is recommended to discuss GFT application and use with the actual users and those that will manage and "own" the GFT in the programmes/ projects.

Stage 3 - Training and rollout

The GFT has been developed for use by staff with a non-environmental background but will still require training on environmental screenings and management and the use of the tool. Training should provide people with a good general understanding of climate change, environmental degradation and biodiversity loss, key challenges specific to a country or region and why and how actions can be taken to better protect the environment. Training on the GFT should also cover the assessment and evaluating of environmental risks, risk management and the selection and implementation of mitigation measures. Also refer to section 8.3.

The timeframes for roll-out of the GFT will depend on the size of organisation and resources available but should ideally include a combination of online and in-person training. In-country support or regional ´train the trainer workshops´ are needed to ensure that the GFT is understood, adjusted as needed and properly implemented and with a clear mandate and understanding of roles and responsibilities.

Stage 4 - Continued support and regular Quality Assurance (QA) and monitoring

Continued support will be needed for programmes rolling out the GFT. Initially, programmes should be supported by an environmental advisor or "super-user" of the GFT, with regular feedback on completed screening assessments and reports. An assigned GFT contact person is recommended within the organisation to provide such support and

drive continued improvement. Also refer to section 8.4 below.

It is also key to understand how any 'new' data generated by applying the GFT can be used either for internal environmental management or to inform local and regional authorities and to identify enhancement opportunities in affected communities. Programme management ownership is important in this regard.

Stage 5 - Sharing of good practice, results, challenges and opportunities internally and externally

The aim should be for the GFT to become an integral part of a programme or organisation and it is important to communicate internally the status of the rollout, the benefits and any potential negatives from its implementation. Sharing the data collected should be encouraged and used to identify possible areas of improvements in mine action practices or to improve the GFT itself.

A community of practice and sharing is encouraged across mine action to improve environmental considerations overall and document results, reduced impacts and identify environmental enhancement opportunities. The GFT information gathered should be shared with other mine action stakeholders – especially as part of the handover process with national authorities or in discussions on planning and the prioritisation of tasks. The GFT outputs can also be shared with other relevant authorities and broader among the humanitarian, environmental and development actors and donors.

8.3 Training needs

It is recommended that training should comprise the following:

1. Training of the **dedicated** Environmental Advisor/Focal Point – this should be an individual with overall responsibility for the GFT rollout and implementation and preferably with an environmental background. This individual should allocate time to prepare and deliver trainings within the organisation and be responsible for overseeing the overall rollout.

2. A **training the trainer** programme of local GFT environment champions. These individuals should receive more specific training to support the wider training of programme staff on use of the GFT.

3. Training to **all staff** that will directly use the GFT. Based on experience from NPA's GFT trials and the use of other environmental screening tool training projects within the humanitarian sector,[i] it is advised that training is based on a "learning-by-doing" approach and the tool applied on relevant case studies in training sessions.

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i NEAT+ capacity-development project

A summary of a suggested structure for training and other requirements for a "train-the-trainer" programme and feedback to senior management is given in Table 3.

Training structure	Training-the-trainer	Senior management
● **Part 1** - Theory and background on climate and environment, relevant standards in mine action and environmental screenings and assessment requirements. ● **Part 2** – Practical application of the GFT on relevant case studies and feedback. ● **Part 3** - Findings and recommendations – examining mitigation measures, enhancement options and prioritisation needs.	● A tailored training plan and content is developed. ● Include specific guidance and training on 'how to train and teach'. ● Refer to the UNEP/OCHA Global Training template – Training the Trainer (see section 9.2). Available at https://eecentre.org/wp-content/uploads/2024/11/Module-12-PPT.pptx	● Keep senior management informed on the GFT training and the feedback from trainees. ● Advised to secure ownership of responsibility and the prioritisation of implementation.

Table 3 – Suggested training structure and other requirements

8.4 Support, checks and quality assurance

Once staff are trained and implementation is in place, on-going support will be needed and quality assurance checks carried out. This should be led by the GFT Lead within the organisation, supported by for instance Monitoring and Evaluation staff. Such checks are needed to review compliance, quality and the consistency of reporting across the organisation.

Specifically, the continued support and quality assessment checks should cover:
- technical assistance;
- support with translations of any new guidance or training material into local languages;
- providing a platform for feedback and suggestions for improvements;
- providing refresher training as required;
- providing feedback on the GFT outputs, how the data has been used and the benefits;
- updates on what has been working well and where challenges may still remain; and
- support of a network of local environmental champions, with the resources and training to share good practice and disseminate to others.

Training	Specific and practical GFT training is needed on how it can be applied and its relevance in a country context. This can be done through online trainings, regional workshops and in-country follow-up visits from internal or external experts.
Resourcing	Time for training has to be set aside, as well as adequate resources to support on the GFT rollout and implementation. This requires management buy-in and ownership.
Community dialogue support the data collection and assessments	Engaging the community through community dialogue, non-technical survey or impact assessment etc, is essential to gather information on the community's perceptions and experiences of environmental issues, challenges and opportunities. Solutions and enhancement opportunities should be locally-led. This can be done by integrating relevant questions into community engagement and non-technical survey and can inform Step 1 and Step 2 of the GFT process. Assessments should be based on a combination of available information, including community feedback and open source data platforms.
Regional or district approach	A tailored approach will provide the operational management team with relevant information to take informed decisions on work plans, stand down periods and provide feedback to the national authorities.
Flexible, local context and language	The GFT can be adapted to fit specific programmes and cultural or operational contexts of a country and organisation. It should be flexible, as user friendly as possible and relevant. Programmes will need to support in the customisation of the GFT templates and process. The GFT should be translated into local languages to ensure that all relevant staff can use it and that the terminology used is understood. Support with translating the tool may be needed as it includes several terms and concepts that might be difficult to translate directly.
Continued development and improvement	Feedback from field staff and communities should be encouraged and used to refine, improve and keep the GFT relevant.
Technology and data	The use of technology, such as drones, open source data and satellite mapping can be integrated into the data collection methodology where possible to improve the overall scope, reliability and completeness. Several mine action organisations have access to data through ArcGIS® Life Atlas and open source data can also be accessed through the GFT-OSA.

Table 4 – Challenges and lessons from NPA pilots, 2023-2024

8.5 Challenges and lessons learnt to date

Lessons have been learnt and challenges identified from the pilot trials conducted within NPA programmes in 2023-2024. These are summarised in Table 4.

9. Guidance and training materials

9.1 Overview

Engagement in environmental responsibility across the wider humanitarian sector has matured and there is a range of environmental guidance and training material available. Although not specific to mine action activities, this cross-sector guidance remains broadly relevant. This includes the Global Training Templates,[i] developed by UNEP/OCHA Joint Environment Unit which can be used for environmental awareness and theme-focused environmental training relevant topics addressed by the GFT (see section 9.2).

9.2 UNEP/OCHA Global Templates

The Global Training Templates were developed to support the development and delivery of environmental training. A summary of the available modules and their relevance in supporting wider environmental awareness for GFT users is given in Table 5.

Module theme	Description
Introduction to Environment in Humanitarian Action (EHA)	This provides an overview on why integrating environmental considerations into humanitarian action is important. As a user of the GFT, this introduction sets out guiding principles and background knowledge.
Environmental screening in humanitarian action	This is an introduction to environmental screening tools, including key differences between the concepts and methodologies. Since the GFT is itself an environmental screening and assessment tool, this provides background understanding on tools used across the wider humanitarian sector and practical examples.
Sustainable waste management in humanitarian contexts	This module explores ways in which humanitarian actors can apply sustainable waste management practices, explains the different sorts of waste and their impacts on the environment and health. It also gives practical steps to address waste challenges and possible solutions.
Sustainable water resource management in humanitarian action	This module focuses on the need for humanitarian actions to establish sustainable water resource practices. It has less relevance for mine action but provides case studies and practical examples on water resource use.

Module theme	Description
Climate change adaptation and disaster risk reduction	This module focuses on climate change adaptation and how this integrates with disaster risk reduction (DDR) strategies. The module highlights the need for a comprehensive understanding of risks and vulnerabilities, which contributes to climate resilience of communities. It is relevant for GFT users and can support the understanding of how actors can be more readily prepared for climate-related risks.
Sustainable land management in humanitarian action	This module introduces sustainable land management and is relevant for GFT users to better understand land practices and how this may relate to post-clearance land use. It includes a case-study from mine action and conservation in the Okavango River Basin in Angola by The HALO Trust.
Greenhouse gas emissions and sustainable energy management	This module focuses on the impacts of greenhouse gas (GHG) emissions and strategies for reducing these emissions. The GFT does not cover travel, procurement policy, energy use and GHG accounting but this is relevant to GFT users interested in GHG emissions reduction and energy management options for the organisation.
Managing environmental impacts of humanitarian supply chain	This module focuses on supply chains in terms of their environmental impact covering 'green' logistics, sustainable procurement, resource efficiency and innovative practices. This is relevant to GFT users needing to learn more on mitigating impacts through for example adding environmental criteria in the procurement process and selecting more sustainable products, equipment and services. This can relate to expensive purchases - such as vehicles - as well as to cheaper purchases - such as sandbags.
Environmental mainstreaming and financing in humanitarian programmes	This provides background on the importance of integrating environmental considerations into humanitarian programmes and how this can be done effectively and monitored. Case studies are included. This module is relevant to GFT users needing to learn more on leveraging financing, managing associated risk and partnerships for sustainable financing on environmental mainstreaming.
Cross-sectoral collaboration and knowledge sharing	This module underlines the importance of 'cross-sectoral collaboration and effective knowledge sharing' for best results, without duplicating work. This is directly relevant to GFT users, covering partnerships to address challenges in environmental management.
Community engagement and capacity building in humanitarian action	This module covers local community engagement and its importance for the promotion of sustainability, strengthening of local capacity and development of effective monitoring and evaluation frameworks. The GFT is reliant on constructive community dialogue and this is directly relevant to GFT users to further understand the local environmental context, how this is an obligatory supplement any open source data and the importance of local engagement.
Training of trainers	This module gives guidance on the 'training of trainers' to equip trainers with the right skills to effectively train others, with a special emphasis on the environmental context. This is relevant to GFT users involved in training operations personnel and others.

Table 5 – A summary of the UNEP/OCHA Global Training templates, and relevance for mine action, continued overleaf.

i Developed under the 'Localisation and Integration of Environment in Humanitarian Action' project, and available at
https://eecentre.org/global-training-template

9.3 Other online training and guidance

Examples of other introductory and theme-focused training resources on the environment and climate change are listed below:

- Adapting to the impacts of the climate and environmental crises - International Council of Voluntary Agencies (ICVA)[i]
- Becoming a Climate-Smart Organisation - Climate and Resilience Academy (CARE)[ii]
- Embracing the Leadership of Local Actors and Communities in Climate Action - ICVA[iii]
- How to mainstream environment issues in office management (field and HQ) – DG ECHO[iv]
- Nature-based Solutions for Disaster and Climate Resilience - PEDRR[v]
- Practical tools and initiatives for reducing environmental impact in humanitarian action - CVA[vi]
- United Nations Climate Change UNCC: e-Learn modules – various themes covering circular economy, climate change, and green economy[vii]

i https://www.icvanetwork.org/elearning/adapting-to-the-impacts-of-the-climate-and-environmental-crises

ii https://careclimatechange.org/academy/courses/becoming-a-climate-smart-organisation

iii https://www.icvanetwork.org/elearning/embracing-the-leadership-of-local-actors-and-communities-in-climate-action

iv https://www.dgecho-partners-helpdesk.eu/elearning-greening-humanitarian-aid#/lessons/zijqHb9qrRJNLTkr9VLrR7--AuwSOJt0

v https://pedrr.org/mooc - based on Sphere Unpacked: Nature-based Solutions for Climate Resilience in Humanitarian Action (Sphere, FEBA, IUCN, PEDRR, EHAN, IFRC) https://spherestandards.org/resources/nbs-guide

vi https://www.icvanetwork.org/elearning/practical-tools-and-initiatives-for-reducing-environmental-impact-in-humanitarian-action

vii https://unccelearn.org/courses

Annex A - Glossary

Term	Definition
Access route	Includes the widening of an existing route or creation of new routes to access task areas with vehicles and machinery. May also include existing routes where a significant increase in use is anticipated due to mine action activities.
Acute risk	A risk which manifests in the short term and which can cause immediate harm.
Biodiversity	The variety of all living organisms within an ecosystem. Ecosystems with low biodiversity tend to be less able to recover from impacts. Areas rich in biodiversity may include many rare and endangered species.
Camp	Temporary overnight accommodation established for mine action staff for the duration of field activities.
Chronic risk	Generally, a risk which manifests over a long period of time and can cause harm for a long period.
Climate change	Long-term shifts in temperatures and weather patterns.
Climate projections	Plausible descriptions of the future climate and possible changes, based on assumptions about the rising levels of greenhouse gases.
Climate-related impacts	Climate change can impact areas affected by explosive ordnance contamination in several ways. Events such as flooding and heatwaves can increase the risks posed by contamination; remobilising explosive ordnance; degrading and affecting the stability of explosive ordnance; or triggering landscape fires. People living in communities affected by contamination will also be exposed to climate risk and its compounding impacts.
Climate risk profile	Climate-risk profiles and fact sheets are available for several countries and can be used to understand and identify the key issues. Consultation with government and local agencies is also essential, followed by community engagement to better understand issues facing communities and their concerns (refer to Annex F of the TNMA 07.13).
Climate-smart	Measures to adapt and build resilience to climate change and reduce and/or remove greenhouse gas emissions.
Community engagement	Local community engagement is important to plan and support environmental initiatives and can enhance cultural relevance, ownership and its sustainability. It can help to ensure that interventions are shaped by community needs and inputs, which should foster collaboration, build trust and empower communities. It should cover questions around environmental issues and expectations, including knowledge on biodiversity and ecologically-sensitive habitats, location and use of water resources, land use and changes, access routes, cultural heritage, waste and pollution, air quality, farming practices and use of agrochemicals and local concerns (refer to Table 5 of the TNMA 07.13).

Compensation	Actions where negative impacts cannot be avoided or mitigated and compensatory measures might be appropriate. Compensation should be seen as a last resort, when all other mitigation options have been exhausted.
Deforestation	Human-induced loss or removal of forests and conversion to non-forested land
Ecosystem	The interaction of plants, animals and micro-organisms and their non-living environment.
Ecosystem-based adaptation	Strategies which use nature-based solutions and ecosystem services to adapt to the effects of climate change. They can cover a wide range of ecosystem management activities, such as the sustainable management of forests, grasslands and wetlands, that increase the resilience and reduce the vulnerability of people and the environment to climate change.
Ecosystem services	This covers the wide range of functions which an ecosystem provides for free, such as water filtration and storage, clean air, pollination, nutrient cycling, carbon storage, natural resources etc.
Enhancement	Actions which provide net benefits for the environment over and above the requirement to avoid, mitigate or compensate for any adverse environmental effects. The goal of enhancement is to leave the environment in a better condition than before the project or activity began.
Environmental aspect	Element of an organisation's activities or products or services that interacts or can interact with the environment
Environmental degradation	Any adverse change or disturbance to the environment, including the deterioration of natural systems.
Environmental footprint	All the direct and indirect effects on natural resources, including energy consumption, water use, generation of waste, greenhouse gas emissions and pollution.
Environmental governance	Includes the framework of policy, rules and regulation used to protect, manage and control risks to human health and the environment.
Environmental impact	A change to the environment, whether adverse or beneficial.
Environmental Impact Assessment (EIA)	A formalised process of identifying, predicting, evaluating and mitigating the environmental effects of an activity or project. There is wide global variation on regulatory frameworks regarding environmental impact assessments, with legal requirements often embedded into national planning and development policy. Early consultation with regional authorities will be required to determine whether the scale and nature of mine action activities are subject to EIA regulations and if so, what level of detail for an assessment is required (refer to section 5.1.1 of the TNMA 07.13).

Environmental management system	Part of an organisation's management system used to develop and implement its environmental policy and manage its environmental aspects.
Greenhouse gas emissions	Atmospheric gases, responsible for causing global warming and climate change. The major greenhouse gases are carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O).
Harm	An adverse impact on people, the environment, infrastructure, property, animals or business.
Hazard	A potential source of harm.
Invasive species	Animals, plants, insects or aquatic species, which can cause harm where they are not native. Invasive species are an increasing problem and can damage habitats and have an economic impact.
Land (or soil) degradation	Land (or soil) in decline, with loss of biodiversity, function and ecosystem services that cannot fully recover unaided.
Land productivity	Relates to land's capacity to produce biomass and deliver a range of ecosystem services.
ND-GAIN index score	The ND-GAIN index score summarizes a country's vulnerability to climate change and other global challenges in combination with its readiness to improve resilience. Higher ND-GAIN scores are better and lower scores means a country will be more vulnerable to the effects of climate change. Recording the ND-GAIN score helps to understand the country's vulnerability in a global context. See: Notre Dame Global Adaptation Initiative, https://gain.nd.edu/our-work/country-index/rankings
Mitigation measure	An action to avoid or reduce an adverse impact.
Protected species	In some countries, certain species may be protected by law, meaning that it can be illegal to kill, injure or capture certain birds or animals or to pick or damage certain wild plants.
Remediation	An action to clean-up or rehabilitates the environment.
Risk	A function of the severity of a hazard and the likelihood that the hazard will cause harm.
Sustainable agriculture	Land use that serves the agricultural needs of people, and is protective of ecological systems.
Threatened and endangered species	Species that are listed in the IUCN Red List of Threatened Species categories as critically endangered, endangered, or vulnerable.
Vulnerability	Sensitivity to harm and the capacity to cope.

Annex B - FAQs

FAQs on using the Green Field Tool

1. When should the GFT be used?
The GFT should be used as early as possible in the design, planning and prioritisation process so that interventions or mitigation measures can be planned for and integrated during the implementation of field activities.

2. Who should use the GFT?
The GFT can be used by any mine action organisation, including both mine action operators and mine action authorities. The GFT has been simplified – as far as possible – to encourage use by mine action teams with some environmental awareness training, but not specialists.

3. What is the main purpose of the GFT?
The GFT is designed to highlight and raise awareness of environmental issues linked to mine action and ensure that measures are in place to avoid and minimise environmental impacts.

4. Are the outputs of the GFT the same as an Environmental Impact Assessment?
The GFT is an environmental assessment screening tool to qualitatively identify key issues and take steps to minimise the impacts. It is not an "Environmental Impact Assessment", which is a comprehensive process, typically requiring specialist surveys and detailed evaluation of a wide of environmental topics.

5. Can I modify the environmental profile questions and responses?
Questions and the responses can be amended but this may affect how the GFT produces the environmental summary profile of higher, medium or lower issues. It is important that each question is checked and that changes are only made by the Environmental Focal Point or co-ordinator. Minor changes to the terminology used will not affect how the environmental summary profile is produced.

6. Can I modify the suggested mitigation, compensation or enhancement measures?
The mitigation, compensation or enhancement measures can all be amended to fit with a regional context or challenges. It is important that advice is sought to check whether these remain valid and that changes are only made by the Environmental Focal Point or co-ordinator.

7. How should the GFT outputs be used?
Outputs from the GFT should be part of land release and handover documentation to inform stakeholders of the actions taken and any outstanding environmental issues. The environmental data collated can be used to raise issues, encourage dialogue and in some cases help identify where priority mine action may be required in areas more vulnerable to climate-related issues. It can also be used for planning and design of new projects and donor reporting.

8. How does the GFT relate to the IMAS 07.13 and its Technical Note?
The IMAS 07.13 sets out the requirement for operators, national authorities, donors and other mine action stakeholders on environmental management and climate change. The GFT can be used as an assessment tool supporting the mine action entity to become IMAS 07.13 compliant on a variety of IMAS requirements through its use.

9. How can the risk of climate change or extreme weather events be managed in the GFT?
The likelihood of climate change or an extreme weather event taking place cannot be controlled by mine action entities but steps can be taken to better understand regional vulnerabilities, the consequences and subsequent risk to either mine action programmes or local communities. By identifying the risks, mine action organisations can adapt and prepare, putting in place measures to increase resilience in the event of climate-related incidents, such as flooding or extreme heat.

10. How long does the GFT take to complete and does it require additional resources?
The time and resources needed to complete the GFT will vary, depending on the location, related environmental issues and the experience of staff using the tool. In the first instance, more time will be needed to complete the GFT for an area of interest, supported by information already collected by non-technical surveys and consultation. This will reduce with experience and repeat use.

FAQs on the Open Source Application (OSA)

1. Why was the GFT Open Source Application developed?

There is a large array of open source data (OSA) which can be useful to help establish an Environmental Profile for an 'area of interest' but it can be difficult to navigate. The OSA aims to bring together only the most relevant datasets and simplify their interpretation.

2. Will the OSA provide all the information needed to complete the environmental profile for my area of interest?

The data in the OSA will not provide all the information needed to complete the environmental profile but it can help to highlight high level information and vulnerabilities at an early stage which can then inform the design of mine action operations. Global open source data has limitations and must be supported by other sources, including field visits, consultation with local communities and expertise.

3. Can I import a polygon in the OSA to define my area of interest?

At present, the OSA does not support user-imported polygons.

4. Can I search for my Area of Interest with coordinates?

You can search for your 'area of interest' in the search bar with coordinates, formatted as longitude, latitude. You may need to swap coordinates around to search for your location in the OSA. Once entered, make sure the location is selected from the 'dropdown list' and not by clicking on the icon.

5. Can I download the data layers for my Area of Interest?

You cannot download data layers directly from the OSA but clicking the 'Show Credits & Links' button will provide links to download the data directly from the data provider and ArcGIS Living Atlas links where available.
You can also download data from any graphs in the OSA in CSV, SVG or PNG formats by clicking the expand button in the top-right of the graph.

6. Is each data layer automatically updated?

Data layers are not automatically updated and will be updated annually. The date of the last update is given and we recommend checking the last version date through the 'Show Credits & Links' button for each source.

7. Where can I find out more about each data layer in the OSA platform?

The right-hand panel and 'Credit & Links to Data' button will bring up some basic information about each data layer. Following the links provided will send you to the data provider's website and a more in-depth explanation on the data's development.

8. Can I access the data in the OSA through ArcGIS?

Most data in the OSA is not available in the ArcGIS Living Atlas but where it is, links are available via the 'Credit & Links to Data' button. You will also find links to download the data for your own analysis but please note that in both cases the data may not be formatted in the same way as the OSA.

9. What copyright and licence issues apply?

The OSA is a non-commercial product and all data comply with relevant licensing restrictions. Users must ensure that they also comply with any copyright and licence restrictions from the data providers.

10. Any other questions or queries?

If you have a question about the GFT-OSA that hasn't been answered, or have suggestions on additional datasets to add please email gft@npaid.org or contact@ceobs.org.

Annex C - Core programme information

Subject	Topic
Administrative information	Organisation name
	Other administrative information
	Funder(s)
	What field activities are taking place?
Environmental management policies and practices	Does your organisation have a climate and environment policy?
	Does your organisation have an environmental management SOP?
	Have relevant national /regional / local environmental regulations and policies been reviewed and understood?
	Have any environment and/or climate change studies been conducted in the project area in the past 3 years?
	Do the national mine action standards include environmental safeguarding measures?
	Has the funder(s) stipulated any specific environmental requirements?
	Has the programme ring-fenced / allocated any specific funding for the environment?
	Has the programme a dedicated environmental focal point / adviser?
	Has environmental training been delivered to staff?
	Describe the nature of environmental training given to staff.
Climate risk profile - high level	Has the climate-risk profile for the region been reviewed?
	What is country's ND-GAIN index score?
	What is neighbouring country's ND-GAIN index score?
	Is the climate vulnerability of country neighbours likely to be a risk to this programme and the affected communities?
	Has national and regional policy and strategy on climate change been reviewed and understood?
	What are the key potential climate-related impacts for the region?
	How could mine action be impacted from the climate-related impacts in the region?
	Have climate-risks been factored into programme planning?
Stakeholders, including information required from NTS and community engagement	Have the relevant national / local environment and climate change authorities been consulted?
	Have the national mine action authorities been consulted on environmental and climate issues?
	Have other relevant local stakeholders been consulted on environment and climate change issues (civil society organisations, community members, companies, etc.)?
	Have any stakeholder expectations or requirement about environmental management been recorded?
	Summarise any environmental concerns which may have been highlighted from the consultations carried out to date.

Annex D - Step 1 Environmental Profile Questions

Topic / Question	Response options / hints
Transboundary isues	
Is the programme close to an international border, which could lead to transboundary environmental issues?	Set responses provided: • Possible - within 10km • Unlikely - between 10-50km • Highly unlikely - more than 50km
Environmental governance	
How effective is environmental governance in the region?	Set responses provided: • Non-existent • Ad-hoc or poorly functioning structures • Functioning structures with limited capacity/representation • Representative, effective and functioning system • Not known
Are any necessary environmental licences or permits in place? *This could include regulations covering any plans to plant trees, manage invasive species, etc...*	Set responses provided: • Yes • No • Not known • Not relevant
What is the overall provision of waste management infrastructure in the region?	Set responses provided: • Non-existent • Ad-hoc or poorly functioning • Functioning, but limited capacity • Effective and well regulated • Not known
Conservation and wildlife areas	
Is the area of operation located in or close to an environmentally sensitive, ecologically important or protected area?	Set responses provided: • Yes - within boundary • Yes - nearby, less than 2 km • Yes - between 2 to 10 km away • No - not within 10 km • Not known *Also provide further detail as appropriate.*

Topic / Question	Response options / hints
Are there any endangered or protected wildlife species in or near to the area of operation?	Set responses provided: • Yes - within boundary • Yes - nearby, less than 2 km • Yes - between 2 to 10 km away • No - not within 10 km • Not known *Also provide further detail as appropriate.*
Are there any other known conservation or ecological management activities in the area?	Set responses provided: • Yes – details available • Yes – not details not available • None in place • Not known *Also provide further detail as appropriate.*
Have any wildlife or conservation issues been raised through community engagement?	Set responses provided: • Yes - details available • Yes - but no specific detail or plans in place • No issues raised or likely • Not known *Also provide further detail as appropriate.*
Habitat and vegetation cover	
What is the nature of vegetation cover in the area? - Main	Set responses provided: • Agricultural farmland • Boreal forest & tundra • Coastal & mangroves • Deserts & shrublands • Grasslands, savannas & shrublands • Mediterranean forests, woodlands & scrub • Plantation/managed forestry • Temperate forests • Tropical & sub-tropical Forest • Urban • Wetland *Images are included for guidance. Also provide further detail as appropriate.* *This information can be useful for wider understanding on the types of habitat where mine action takes place.*
What is the nature of vegetation cover in the area? - Secondary	As above

Topic / Question	Response options / hints
What is the vegetation density in the area of operation?	Set responses provided: • None • Open grassland, no trees • Occasional trees, low vegetation • Young, regenerating forest • Low density forest • Medium density forest • High density forest *This is qualitative only, and there is not a need to provide a detailed breakdown but do provide further detail as appropriate.*
Are there any local or regional issues with invasive plant or animal species?	Set responses provided: • Yes - details available • Yes - but no specific detail or control plans in place • No issues raised • Not known *Also provide further detail as appropriate.*
How old or well established is the vegetation?	Set responses provided: • Less than 5 years • Established • Mature or ancient • Not applicable - none present *Also provide further detail as appropriate.*
Soils and geology	
What is the *main* soil type in the area of operation?	Set responses provided: • Clay • Silt loam (organic-rich sand, silt, and clay) • Sand (finely coarse) • Gravel (coarse) *The response should be an overview of general soil conditions. Images are included as guidance. The information from the OSA gives a broad indication only of soil type and this should be answered by also considering local information and knowledge.* *Also provide further detail as appropriate.*

Topic / Question	Response options / hints
What are the ground conditions in the area of operation?	Set responses provided: • Vegetated • Bare – not compacted • Bare – compacted • Rocky • Waterlogged • Other (specify) *Also provide further detail as appropriate.*
Topography and slope	
What is the local topography and terrain?	Set responses provided: • Mountains • Hills, undulating • Flat • Coastal *The response should be an overview of general conditions. The information from the OSA on 'mountain analysis' can be used in part. Also provide further detail as appropriate.*
What is the average slope/gradient of the area?	Set responses provided: • Flat • Gentle slop • Moderate slope • Steep *The response should be a generalisation of overall conditions. There is no specific need to give a breakdown of slope gradients but do provide further detail if appropriate.*
Water	
Is there a surface water feature in or near to the area of operation?	Set responses provided: • None • Canal • Coast/estuary • Drainage channel/wadi • Lake • River • Stream • Not known *Also provide further detail as appropriate.*
What is the distance to the nearest surface water feature?	Set responses provided: • Within boundary • Nearby, less than 200m • Between 200m to 500m • More than 500m *Also provide further detail if appropriate.*

Topic / Question	Response options / hints
What is the flow rate in any nearby surface water features?	Set responses provided: • Dry • Stagnant – no flow • Slow flowing • Fast flowing • Not applicable *Some images are included as guidance. If the surface water is over 500m away, the flow rate is not applicable but do provide further detail if appropriate.*
What are the anticipated groundwater conditions in the area?	Set responses provided: • Shallow, less than 10 m below ground • Deep, less than 10 m below ground • Not known *Also provide further detail as appropriate.*
Where does water drain to from the area of operation?	Set responses provided: • Ground/soils • Sewer • Drainage channel/wadi • Natural water course (stream or river) • Not known *Also provide further detail as appropriate.*
What is the main water source of the local population?	Set responses provided: • Surface water (rivers, stream, ponds etc.) • Shallow wells/springs • Deep wells • Piped system • Rainwater collection system • Not known *Also provide further detail as appropriate.*
Is water scarcity and/or quality an issue for the local population?	Set responses provided: • Yes • No • Not known *Also provide further detail as appropriate.*
Cultural heritage	
Are there any significant historical or cultural sites near to the area of operation?	et responses provided: • Yes - within boundary • Yes - nearby, less than 2 km • No - not within 2 km • Not known *Also provide further detail as appropriate.*

Topic / Question	Response options / hints
Local and regional trends	
Has there been deforestation in the general area over recent decades? *Include a screenshot of mapping to highlight the extent.*	Set responses provided: • Yes – significant • Yes – some • No – not evident *A detailed breakdown of losses is not needed, although a copy of the mapping should be included to highlight areas and extent. Also provide further detail as appropriate.*
Has there been changes in rainfall amounts over recent years? *Also check any predicted changes for the area.*	Set responses provided: • Yes - an increase • Yes – a decrease • No change • Not known *Trends should be noted but there is not a need to provide specific values. Provide further detail if appropriate.*
Have seasonal patterns of rainfall changed over recent years? For example, longer rainy seasons, longer dry seasons, more droughts?	Set responses provided: • Yes • No change • Not known *Also provide further detail as appropriate. For example - it will be useful to note if there is a change in which are the wettest or driest months.*
Has there been recent or more frequent river/surface flooding in the area? *Check for areas prone to flooding and future predictions.*	Set responses provided: • Yes • No change • Not relevant to this area • Not known *Also provide further detail as appropriate.*
Has there been recent or more frequent coastal flooding in the area? *Check for areas prone to flooding and future predictions.*	Set responses provided: • Yes • No change • Not relevant to this area • Not known *Also provide further detail as appropriate.*
Has there been recent or more frequent land or mudslides in the area?	Set responses provided: • Yes • No change • Not relevant to this area • Not known *Also provide further detail as appropriate.*

Topic / Question	Response options / hints
Have there been more frequent extreme weather events?	Set responses provided: • Yes • No change • Not relevant to this area • Not known *Also provide further detail as appropriate.*
Do landscape fires take place, and has there been increased incidents of fires or burning events in the area?	Set responses provided: • Yes • No change • Not relevant to this area • Not known *Also provide further detail as appropriate.*
Has there been an increase in average annual temperatures? *Also check any predicted changes for the area.*	Set responses provided: • Yes • No change • Not known *Trends should be noted but there is not a need to provide specific values.*
Has the local community observed changes in overall weather and seasonal patterns, temperature, rainfall and extreme weather events?	Set responses provided: • Yes • No change • Not known *Also provide further detail as appropriate.*
What observed changes have been noted by the local community in overall weather and seasonal patterns, temperature, rainfall and extreme weather events?	Open text. *This could cover a wide range of observations including: changes in rainy / dry seasons, hot / cold seasons, notable changes in weather around national holidays / festivals, planting season and harvests, crop production and soil fertility, periods of scarce resources (e.g. food, water, fish, pasture), migration times of species, extreme weather events, increase in pests and vermin and seasonal illness (people and livestock).*
Are there any current community coping strategies in place to deal with climate change, or environmental degradation?	Set responses provided: • Yes • No • Not known *Also provide further detail, as appropriate.* *It is important to understand about what coping strategies are in place to help communities adapt to the effects of climate change and whether these strategies are effective.* *Climate change and climate-related events can worsen existing local stresses such as poverty, food insecurity, land degradation and access to water shortages, as well as physical risks to extreme weather events.*

Topic / Question	Response options / hints
If present, how effective are local coping strategies likely to be?	Set responses provided: ● Non-existent ● Ad-hoc and not structured ● Functioning, but limited capacity ● Well established and effective ● Not known *This is only qualitative and based on responses from the community, authorities or local NGOs. Provide further detail to support the response as appropriate.*
How are local livelihoods and assets likely to be affected by climate changes?	Set responses provided: ● No change likely ● Adverse impact likely ● Benefits likely ● Not known *This is only qualitative and based on responses from the community, authorities or local NGOs. Provide further detail to support the response as appropriate.*
How are local ecosystems likely to be affected by climate changes?	Set responses provided: ● No change likely ● Adverse impact likely ● Benefits likely ● Not known *This is only qualitative and based on responses from the community, authorities or local NGOs. Provide further detail to support the response as appropriate.*
Are there possible opportunities for introducing ecosystem-based adaptation initiatives, and other environmental options to support communities?	Set responses provided: ● Yes ● No ● Not known ● Not relevant *Also provide further detail as appropriate.* *There may be opportunities to make environmental improvements and introduce (or support the introduction) of ecosystem-based adaptation (EbA) initiatives. EbA involves using biodiversity and ecosystem services to help people adapt to climate change, as part of an overall adaptation strategy. Even if these cannot be implemented by mine action, this can be flagged and the options highlighted at handover.*
Check the list of potential opportunities which could be relevant. Select all which may apply	Select from list (see section 5.5) *This question is included, since if there are opportunities for environmental enhancement, these must be explored as early as possible. Local consultation is critical.*

Topic / Question	Response options / hints
Land use and local communities	
What is the *predominant* existing land use?	Set responses provided: ● Aquaculture ● Cultivated ● Fallow / uncultivated ● Grazing ● Residential ● Urban-commercial ● Urban-derelict ● Urban-industrial ● Urban-undeveloped ● Woodland ● Other: specify *Also provide further detail as appropriate.*
What is the *secondary* existing land use?	As above.
What has been the main feature of any changes in land use? *Consider changes over at least the previous 20 years.*	Set responses provided: ● No change evident ● Increase in natural habitat / vegetation cover ● Decline in natural habitat / vegetation cover ● Increase in development / urbanisation ● Increase in agriculture ● Decline in agriculture ● Not known ● Other: specify *This is qualitative but an understanding of the scale and nature of these changes can help indicate the potential importance of additional enhancement measures which could be put in place, along with the overall land use pressures. Also provide further detail as appropriate.*
Has there been a change in general land productivity?	Set responses provided: ● Declining ● Early signs of decline ● Stable but stressed ● Stable ● Increasing *There is open source data estimating land productivity but this should be supplemented by local information.* *Changes in land productivity reflects the net effects of changes in soil and ecosystem function and can help identify where land management interventions are needed. Also provide further detail as appropriate.*

Topic / Question	Response options / hints
What is the distance of the area of operation to the nearest residential areas / populated area?	Set responses provided: • Nearby, less than 200m • Between 200m to 500m • More than 500m *Also provide further detail as appropriate.*
Will people have ready access to the adjoining areas during the field activities?	Set responses provided: • No access • Limited access • Open and unrestricted access • Not known *Also provide further detail as appropriate.*
What is known about any previous or historic land use?	Set responses provided: • Aquaculture • Cultivated • Fallow / uncultivated • Grazing • Residential • Urban-commercial • Urban-derelict • Urban-industrial • Urban-undeveloped • Woodland • Other: specify *Also provide further detail as appropriate.*
Is there a potential for sources of pollution to be present in or adjacent to the area?	Set responses provided: • Yes • No • Not known *Also provide further detail as appropriate.*
Is there any visual evidence of pollution on or adjacent to the area?	Set responses provided: • Yes • No • Not known *The presence of contamination is not always obvious but observations on the ground conditions are very useful, including the presence of waste, discolouration, or vegetation die-back. Also provide further detail as appropriate.*

Topic / Question	Response options / hints
If so, what is the nature of the pollution or pollution incident? *Select all which may apply.*	Set responses provided: • No obvious signs or evidence of pollution • Buried drums, tanks, pipework • Evidence of leaks or spills of fuel or chemicals • Soil or water with discolouration or odour • Vegetation loss, dieback or signs of stress • Dead or gasping fish in water bodies • Sick livestock or wildlife • Fire and fire damaged assets • Iridescent sheens (e.g. oil/fuel on soil or water) • Waste and debris at ground level or buried • Asbestos containing materials reported / suspected • Radioactive materials reported / suspected • Other: specify *Pictures are given as guidance and refer to Annex C of the TNMA/07.13. Provide further detail as appropriate.*
What is the scale and extent of pollution identified?	Set responses provided: • Uncertain • Localised • Widespread • No evidence / unlikely to be present *This is qualitative but an understanding of the possible scale and extent is needed to inform others and identify additional measures which may be needed, planning or investigation. Provide further detail as appropriate.*
What is the planned or likely use of the area following land release?	Set responses provided: • Residential • Agricultural • Community / public services • Natural resources (including foraging, hunting etc.) • Infrastructure • Access (footpaths, roads, bridges) • Not known *Also provide further detail as appropriate.*
What are the main environmental concerns affecting the local community?	Open text. *There may be variety of issues directly linked to the risks from climate change or relating to other environmental and land right issues – e.g. access and use of natural resources, access to water, illegal logging, high reliance on the use of firewood, biodiversity loss, soil erosion, spread of invasive species, poor waste management, use of chemicals and pesticides, poor indoor and local air quality, and pollution. Provide further detail as appropriate.*

Annex E – Open Source App data layers

Conservation and wildlife areas	**Protected areas** - World Database on Protected Areas (WDPA) The WDPA is a comprehensive global database on terrestrial and marine protected areas but some areas may not be included. Local consultation is also essential. Some information on conservation and management plans may also be provided but again may not be conclusive. Consultation will be required to understand local conservation programmes and activities, including local NGOs or community-based projects.
	Key Biodiversity Areas - World Database of Key Biodiversity Areas (WDKBA) The WDKBA maps sites important for targeted conservation and can be used to guide the expansion of protected and conservation areas.
	Endangered species - International Union for Conservation of Nature (IUCN) The global datasets on threatened and endangered species are not exhaustive and will not necessarily include all information or have sufficient detail. Local consultation is also essential.
Soil and geology	**Soil** – Open Land Map Soil Texture Class The dataset is derived from predicted soil texture fractions and should be used as a guide only. It is difficult to obtain reliable and detailed enough information on soil type and geology and field visits and local consultation will also be needed. Soil type and structure affects many factors including levels of moisture, plant growth, resistance to erosion and the risk of compaction. Soil texture ranges from coarse (sands and gravels) to fine (clays and silts) and this will affect their fertility and how readily they may drain or retain water.
Topography and terrain	**Slope** - NASA Shuttle Radar Topography Mission (SRTM) digital elevation data The slope data is presented in a pie chart for the 'area of interest', estimating the percentage classed as either flat, gentle slope, moderate slope or steep. Details on the slope and terrain is useful to understand the potential for run-off, soil erosion and flooding and in extreme cases, the risk of landslides.
	Mountainous areas - Global Mountains K3 This gives an analysis of terrain characteristics, based 250m resolution mapping. Mountains are classed into low, low scattered, high or scattered high.
Water features	**Surface water** - Joint Research Council (JRC) surface water occurrence Two layers are available: 1) The first layer shows how often water is present at different locations and the change of occurrence over time. The data is useful for visually identifying lakes, reservoirs and wider rivers but many rivers are too narrow to be detected; 2) The second layer shows a normalised decrease or increase in occurrence between 1984-1999 and 2000-2021.
	River analysis - WWF HydroSHEDS rivers This mapping can be used as a guide alongside base satellite imagery to check if rivers are in the 'area of interest'. There may be inaccuracies, and field visits and local consultation will also be needed to fully understand their location, water flow rates and their use.

Cultural heritage	**Heritage** – UNESCO World Heritage Sites This mapping only gives UNESCO World Heritage List sites. Cultural assets may include religious sites or sacred areas, historic buildings, burial grounds, ruins or archaeological sites. The information available through open source data is limited and consultation with the local community and authorities is again essential.
Local and regional trends	**Forest** - Hansen Global Forest Change 2000-2023 The dataset shows the change in forest cover and helps to understand regional context regarding deforestation or planting. Areas affected by high rates of deforestation are likely to be more vulnerable to biodiversity loss, flood risks, soil erosion, poorer water quality and in some cases, landslides. A chart shows the overall percentage of change in forest cover in an 'area of interest'.
	Flood risk - World Resources Institute (WRI) flood hazard maps The layer shows baseline data indicating areas prone to river and coastal flooding.
	Landslides - NASA Landslide Repository and the Global Landslide hazard map The layers show recorded landslides and landslide susceptibility based on the Global Landslide hazard map. The 'high level' hazard mapping is based on global-scale data and provides an initial indication only. Local consultation and expertise will also be required to fully understand landslide risk.
	Fire hotspots – Moderate Resolution Imaging Spectroradiometer (MODIS) burned area monthly dataset This layer shows fire hotspots from 2009-2024 within 10km of the 'area of interest'. The layer produces two charts for an 'area of interest': one showing total annual burned areas and one summarising the monthly occurrence of fires.
	Precipitation - Copernicus ERA5-Land Monthly Aggregate dataset The data can be used to help understood overall trends, rather than precise values. It may over or under estimate precipitation depending on factors, such as altitude or latitude. The layer produces two charts for an 'area of interest': one showing total annual precipitation (1974-2024) and one showing a comparison between the average monthly precipitation over two decades (1984-1994 and 2014-2024).
	Temperature - Copernicus ERA5-Land Monthly Aggregate dataset The data can be used to help understood overall trends rather than precise values. It may over or under estimate temperature depending on factors, such as altitude or latitude. The layer produces two charts for an 'area of interest': one showing total annual temperature (1974-2024) and one showing a comparison between the average monthly temperature over two decades (1984-1994 and 2014-2024).
	Land productivity - Land Productivity Dynamics This mapping shows changes in land productivity between 2009 and 2024 and provides an overall indication of the health and productive capacity of the land. The layer gives five categories: declining, early signs of decline, stable but stressed, stable or increasing. Changes in land productivity reflects the net effects of changes in soil and ecosystem function. This can be a useful indication of land degradation and help to identify where land management interventions are needed or extra measures in place during mine clearance activities.

Climate projections	**Projected precipitation** - NASA Earth Exchange dataset
	This layer produces two charts for the 'area of interest'. One chart shows projected annual total precipitation for 2025 to 2075, assuming a 'middle of the road' future climate scenario of future temperature rises (SSP245).[i] The second chart gives the projected average monthly precipitation for 2050-2055.
	Projected temperature - NASA Earth Exchange dataset
	This layer produces two charts for the 'area of interest'. One chart shows projected annual average maximum temperatures for 2025 to 2075, assuming a 'middle of the road' future climate scenario of future temperature rises (SSP245).[i] The second chart gives the projected average monthly maximum temperature for 2050-2055.
Land use and local communities	**Land use** - GLAD Global Land Cover and Land Use Change dataset
	This layer can aid understanding of the scale and nature of land use changes between 2000 and 2020. Two layers are given to be able to manually compare land cover and land use in i) 2000 and in ii) 2020. This can help indicate the potential importance of additional enhancement measures which could be put in place and the overall land use pressures.
	Populated areas - WorldPop data
	This mapping estimates population densities, generated through machine learning. This can be used to give a 'high level' indication of population densities in and around an 'area of interest' and should be used alongside other mapping and local consultation.

Annex F – Risk assessment

A simplified matrix is used in the GFT to evaluate the level of risk. Risk is a function of 'severity' and the 'probability' of harm occurring.

		Severity - consequence if an impact occurs		
		High - Severe	**Medium - Moderate**	**Low - Mild**
Probability	**Likely**	High	High	Medium
	Low likelihood	High	Medium	Low
	Unlikely	Medium	Low	Low

Definitions of probability (or 'likelihood') used are given below:

Probability	Definition
Likely	It is probable that an impact will occur. It is not inevitable, but possible in the **short-term** and likely over the **long-term**.
Medium - low likelihood	Circumstances are possible under which an impact could occur. It is by no means certain that even over a longer period such an event would take place, and less likely in the short term.
Unlikely	It is improbable that an impact would occur in the very long term.

Some example definitions on the severity (or 'magnitude') of an environmental impact are given in the table below:

Severity	Affecting	Definition
High - severe	**People**	Acute and immediate physical risks to people and their health and their livelihoods or assets.
	Pollution	Immediate risk of pollution to a sensitive environment or a pollution incident of a significantly large scale.
	Waste	Large volumes of non-hazardous waste generated, volumes of hazardous waste or high levels of contamination/pollutants released. No or very limited local or regional waste management capacity.
	Biodiversity/ wildlife	Irreversible damage to an ecologically protected area or immediate risks to protected species.
	Resources	Use of scarce, mainly internationally sourced or non-recyclable materials, high carbon footprint / energy use. For soils, covers the loss and permanent damage of soil function which supports agriculture or ecologically important area.
	Climate	Several climate-change factors, such changes in rainfall, or extreme weather events compounded by regional deforestation, environmental degradation, scarce climate adaptation capacity, existing pressure of local natural resources etc.

Severity	Affecting	Definition
Medium - moderate	**People**	Chronic risks to people's health over the longer-term, and longer-term risk to their livelihoods or assets.
	Pollution	Risk of a pollution incident in the short-term or long-term.
	Waste	Volumes of non-hazardous waste generated, smaller volumes of hazardous waste or small-scale release of contamination/pollutants. Some local or regional waste management capacity.
	Biodiversity/ wildlife	Adverse damage to an ecologically protected location, risks to protected species and habitat.
	Resources	Use of materials mainly sourced on a local or national scale, some of which are sustainably sourced or recyclable, reduced carbon footprint / energy use. For soils, covers the loss and permanent damage of soil function which supports non-priority habitats or agriculture.
	Climate	Climate factors, such changes in rainfall, or extreme weather events, but some climate adaptation capacity in place.
Low - mild	**People**	Minor and non-permanent risk to people's health, and livelihoods or assets.
	Pollution	Risk of small-scale pollution incident in the short or long term of non-sensitive environment.
	Waste	Generation of low volumes of non-hazardous waste, minimal or no volumes of hazardous waste or pollutants. Waste management capacity available at local and regional waste management facilities.
	Biodiversity/ wildlife	Adverse damage to a less-sensitive environment (e.g. non-designated).
	Resources	Use of materials mainly sustainably sourced and recyclable, low carbon footprint / energy use. For soils, covers the loss and permanent damage of soil function which have been previously developed or little potential for return to agriculture.
	Climate	Climate factors, such changes in rainfall, or extreme weather events but climate adaptation capacity already in place or planned.

Annex G – Compensation and enhancement options

A list of compensation or enhancement options included in the STEP 2 dropdown lists and which could be applied to provide environmental benefits is given below. A 'benefit' category is also given, indicating how implementation could be make a positive impact. In some many cases, the benefits will be multiple if effectively implemented and monitored.

Option	Benefit category					
	Social value	Climate resilience	Conservation / biodiversity	Low carbon	Sustainable resource use	Pollution, remediation, waste
Awareness: Develop educational programs for project staff, local communities and schools to raise awareness about environmental issues.	●	●				
Awareness: Engage in community outreach to promote environmental stewardship and involve local communities in conservation efforts.	●		●			
Habitat: Creating flower-rich pollinator habitats, for example on field margins or by grassland restoration.	●		●			
Habitat: Creating seed-rich bird habitat, for example on field margins and by leaving overwinter stubble.	●		●			
Habitat: Dedicate portions of the project site as permanent conservation areas or green spaces.	●		●			
Habitat: Ensure areas are preserved in their natural state, allowing for the regeneration of native vegetation and wildlife.	●	●	●			
Habitat: Establish or contribute to protected areas, wildlife reserves or ecological corridors to safeguard habitats and species.	●	●	●			
Habitat: Identify and protect areas with high biodiversity value both within and outside the project site.	●	●	●			
Habitat: Implement wetland enhancement initiatives, such as water level management and the removal of invasive species.	●	●	●			
Habitat: Plant native trees and vegetation in areas adjacent to the project site to restore or enhance forest cover.	●	●	●			

Option	Social value	Climate resilience	Conservation /biodiversity	Low carbon	Sustainable resource use	Pollution, remediation, waste
Habitat: Provision of new ecological features or habitat which results in a net-gain in biodiversity. Includes creating nesting sites, ponds and wildlife corridors to facilitate the movement and breeding of native species.	●	●	●			
Habitat: Tree planting and woodland creation, using native species.		●	●			
Habitat: Wetland restoration. These can provide important habitats for wild flowers, insects, waders, wildfowl and aquatic species, as well as helping to store carbon and reduce the risk of downstream flooding and soil erosion.		●	●			
Habitat: Wildlife conservation and protection monitoring programmes.	●		●			
Invasive species: Identify and control the spread of invasive plant and animal species that can negatively impact the local ecosystem.	●		●			
Invasive species: Improved management of existing ecological features, including the removal of invasive species or planting and replacement with native species.	●		●			
Resources: Promote and support greener travel options, including Eco driving practices, vehicle maintenance.	●			●		●
Resources: Promote and support use of renewable energy options, such as solar panels.	●			●	●	●
Resources: Promote sustainable agricultural and forestry practices that conserve soil and water resources and reduce the use of harmful chemicals.	●	●			●	●
Social: Encourage ecotourism initiatives that allow visitors to appreciate the enhanced environment.	●		●		●	
Social: Develop land use plans that balance human needs with environmental protection.	●	●				
Soil: Apply soil stabilization methods, such as revegetation and erosion control mats, in areas where soil disturbance is a concern.	●	●			●	
Soil: Conduct soil assessments and implement soil improvement techniques to enhance soil quality.		●				●
Soil: Implement erosion control measures, such as terracing, riparian buffers and bioengineering techniques, to prevent soil erosion.	●	●			●	●
Soil: Promote and support sustainable farming and climate-smart practices including measures which reduce soil erosion, chemical use, water pollution and conserve water.	●	●	●		●	●

Option	Social value	Climate resilience	Conservation /biodiversity	Low carbon	Sustainable resource use	Pollution, remediation, waste
Waste: Fund infrastructure projects that directly benefit the environment, such as waste treatment facilities, pollution control systems and green transportation options.	●					●
Waste: Promote and support waste reduction and recycling schemes and the reduced use of single use plastics.	●				●	●
Waste: Waste or debris removal.	●					●
Water: Invest in water resource management projects, such as riverbank stabilization, watershed protection and water quality improvement.	●	●			●	
Water: Promote responsible water resource management, such as rainwater harvesting and water recycling.	●	●			●	
Water: Water resource protection, for example by use of buffer strips and planting of cover crops. Buffer strips (e.g. of perennial grasses) can help to reduce runoff or pollutants such as pesticides, fertilisers or sediment from fields into nearby watercourses. Cover crops can also help reduce pollutant runoff and soil erosion.	●	●			●	●