

Waste Management Manual

for Sustainable Mountaineering Expeditions

“Take only photographs
and leave behind only footprints”

(Kuniyal, 2002, p. 576)



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Mountaineer Jost Kobusch

surrounded by waste he

collected during his 2019/20

solo winter expedition

attempt on Everest.

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Table of Contents

Introduction	8
Context	9
The Manual	10
Presentation	10
Guiding principles	....	11
Scope and audience	....	12

CHAPTER 1		
Organisation & Communication	....	16

Section A:		
Human Resources, Planning & Communication	....	17
The Environmental Manager	....	17
Carbon footprint evaluation	....	18
Expedition's participants and local staff involvement	....	19
Environmental impacts and mitigation measures	....	20
Review and Plan for the future....		21
Media and Call for Action	....	22

Section B:		
Waste management	....	24
Waste costs in your budget	....	24
Waste management procedures	....	25

CHAPTER 2		
Accommodation & Camps	....	32

Accommodation	....	33
Altitude Camps (base camp and high camps)	....	35

CHAPTER 3		
Travel & Approach	....	40

Travel	....	41
Approach, ascent and return	....	42

CHAPTER 4		
Equipment & Logistics	....	44

Clothing and mountaineering equipment	....	45
Equipment transportation	....	47
Equipment Maintenance and Storage	....	48
Energy system and Electronics: Headlamps, Communication devices	....	49

CHAPTER 5
Food & Cooking 50

Food 51

Cooking and eating 52

CHAPTER 6
Health & Hygiene 54

Health 55

Hygiene 56

Human Waste 58

Resources 62

Online Resources 63

Bibliography 68

Other waste management
initiatives in the context of
mountaineering 70

Image References 71

Annexes

Annex 1 -
Environmental Impact
Assessment List Example 73

Annex 2 -
Environmental
Management Plan 74

Annex 3 -
Waste Management Protocol
for Mountaineering 78

Annex 4 -
How to pee/poo
in mountain areas 80





Introduction

Context

With the rising popularity of outdoor activities around the world, high altitude and remote mountain areas are subject nowadays to a lot of pressure on their resources and ecosystems, as well as significant pollution risks. This is highly problematic, as the cold temperatures make the waste stay for a very long time and its components and chemical substances break down very slowly. This has not only a negative visual impact for visitors and inhabitants, but it also adds harmful pathogens to the soils and freshwater streams, with long term consequences on animals, vegetation and people. Due to their remoteness and lack of access, mountain areas also do not have the infrastructure to treat the waste on site. And a proper management of solid waste and wastewater creates a huge cost for local communities and governments.

Today, any visitor and expedition agency coming into mountain areas has a responsibility to preserve this sensitive environment, as on the long term, pollution of nature has an impact on mountaineering activities. If mountains are to be enjoyed by future generations of mountaineers and explorers we urgently need to preserve and restore mountain environments.

*Let's do our part and
keep the mountains clean!*

The Manual

Presentation

The **aim** of the Waste Management Manual for Mountaineering Expeditions (WMM) is to encourage expedition participants and organizers to minimize their impact on mountain areas and people, through concrete and practical actions for waste reduction. The manual sees an expedition from **a lifecycle perspective**, and addresses specific aspects throughout each stage of an expedition.

The Manual's **objectives** are:

1. to help prevent as much waste as possible before even going on an expedition
2. to provide suggestions for managing sustainably all types of waste and avoid pollution across the whole expedition's lifecycle
3. to promote responsibility, accountability and ownership among various stakeholders
4. to increase knowledge, share best practices and develop capacity for all participants for a more sustainable waste management

The following icons are used in the manual:



The phase when the action/activities take place. It can be before, during and after the expedition take place



The bin icon represents the type of waste generated by the activity



The question mark-person icon represents who is responsible for the supervision/management of the activity described



The book icon refers to the actions one should implement in order to reduce waste and minimize the environmental/social impacts of the expedition

To complete these recommendations, the **Resources chapter** at the end of the manual proposes some links and references, which can be used as a source for ideas or additional information.

Guiding principles

The Waste Manual focuses primarily on the **prevention** of waste and its **reduction**¹. These are two important concepts related to the **waste management hierarchy**, as they have a very visible impact on mountain areas and remote local communities that have limited capacity and infrastructure to manage waste sustainably. This is often the case with most popular destinations for trekking and mountaineering. From this perspective, the participants' motto should be “**Bring back down as much as possible**”.

Other important waste management principles (**Reuse, Recycle and Recover**) refer generally to activities linked to the phase following the expeditions. Most of the time, the expedition team is not very concerned about the fate of the waste produced and brought back (or left). It is important however that expeditions' participants take more responsibility when it comes to their waste and overall impact on the mountain and beyond. When planning for an expedition, agencies/mountaineers should think about how to reuse material, recycle it if they don't want it anymore and how to recover it.

Having in mind the ongoing debate about the concepts of sustainability and sustainable development, the WMM refers to the **Sustainability Principles** according to the Framework for Strategic Sustainable Development (adapted from Robèrt et al., 2018):

- ✓ In a sustainable society, nature is not subject to systematically increasing concentrations of substances from the earth's crust; concentrations of substances produced by society and degradation by physical means (ecological sustainability).
- ✓ In that society, there are no structural obstacles to people's health, influence, competence, impartiality and meaning making (social sustainability).

This Manual also refers to and encourages mountaineers to adopt the **Leave No Trace principles**²:

1. Plan ahead and prepare
2. Travel and camp on durable surfaces
3. Dispose of waste properly
4. Leave the place clean and undisturbed
5. Minimize camp fire impacts
6. Respect wildlife
7. Be considerate to other visitors

1 Wilson et al. (2015).

2 <https://lnt.org/why/7-principles/>, accessed on January 2023.

Another important aspect is the **social dimension** and how an expedition can have a positive impact on communities and cultures where they take place. Always bear in mind that whether you are there for 10 days, three weeks, or months, you should respect the local culture and habits, not spoil any sacred place, respect the locals as equals. Do not only **consume and go**, take the time to discuss, to be interested in others and, if you have the opportunity, to support the local communities.

Scope and audience

The Manual is focused on waste in the mountains in relation to mountaineering expeditions, including wastewater (liquid waste).

Solid waste in general can be categorized as:

- Compostable or biodegradable
- Recyclable (plastic, metal, paper, clothes, some batteries etc.)
- Inert (from construction and demolition, debris and stones)
- Hazardous (paints, chemicals, pesticides, some medical waste, electric/electronic equipment, animal carcasses/corpses)

Due to the high altitude and conditions into which mountaineers climb, even organic items need to be brought back to lower altitude³, so that they can be easily collected and treated appropriately.

Initially drafted around alpine-style solo mountaineering expeditions in the Greater Ranges focusing on Nepalese Himalaya and Everest region, the WMM could be applied to mountaineering expeditions and trips in various mountain ranges.

The manual targets the following audience:

- **expedition leaders and expedition members**, as they are directly organizing and executing the expedition
- **independent mountaineers, climbers, trekkers**
- **expedition outfitters, tour operators**, all those who organize and facilitate commercial expeditions and activities in remote mountains
- **guides**, in the case of commercial expeditions, as key facilitators of interaction between their clients, nature and local people
- **local staff, porters and agents**, in order for them to get additional information
- **other stakeholders**, for example sponsors, encouraging them to require that expeditions they sponsor minimize their waste and contribute to local sustainability.

³ In any sub-zero areas, it is highly recommended not to leave any solid, human or water waste, as the degradation is very slow, the biological activity being lower.

Some important questions related to a more sustainable form of mountaineering that the manual is concerned with are:

What are the benefits of going for eco-friendly expeditions? Why should I protect nature when I climb a mountain? Why should I limit my environmental impact? Why should I be the “only” one to do this or to care about this?

Here is a list showing how outdoor companies, mountaineers, expedition agencies, local tour operators can benefit from an eco-friendly engagement:

1. Preserve the health of locals... and tourists
2. Increase the beauty of natural environment and contribute to biodiversity conservation
3. Improve your brand image and reputation
4. Find new business opportunities
5. Attract new talents to your team
6. Provide competitive advantage, reduce business costs⁴
7. Boost investment attractiveness
8. Increase bottom line
9. Enhance the climbing experience⁵
10. Become an innovator

4 Saving money by reducing waste (not having to pay for the extra weight, waste collection, disposal, etc.).

5 Proper planning can reduce considerably the weight by reducing individual packaging, and therefore, avoiding unnecessary waste generation and not having to bring down a lot of waste as well.





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Chapter

1

Organisation & Communication

Section A:

Human Resources, Planning & Communication

The Environmental Manager



Planning Phase, before the expedition



Responsible: Expedition Leader; Tour Operator/Local Agent



Aim: *appoint one person responsible for all waste and environmental issues*

- ✓ The Tour Operator or expedition team chooses or hires an Environmental Manager. This person shall participate in all the phases of the expedition.

Tasks of the Environmental Manager⁶:

- ✓ Get information about the local regulations, the environmental issues of the area visited and the environmental policies of the Tour Operators⁷
- ✓ Conduct research about the possible environmental impacts of the expedition
- ✓ Plan the expedition in a way to reduce these impacts as much as possible: consider in particular transport options, accommodation options
- ✓ Develop a Waste Management Protocol or Guidelines (explanations in the Waste Management Section; template idea in Annex 3)
- ✓ Monitor the application of this protocol during and after the expedition
- ✓ Communicate with staff about environmental issues
- ✓ Report to the Tour Operator or Expedition Leader.

⁶ These tasks are non-exhaustive and can be adapted according to the expedition's constraints.

⁷ RGS Expedition Handbook page 176.



Carbon footprint evaluation



Planning Phase, before the expedition



Responsible: Expedition Leader; Environmental Manager; Tour Operator/Local Agent



Greenhouse gas emissions associated with the expedition



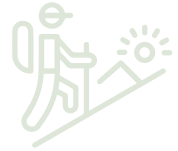
Aim: avoid first, measure and reduce as much as possible expedition's carbon footprint

- ✓ Identify the areas of your expedition where there will be carbon emissions (transport, accommodation and food) and calculate (see **Resource Chapter**)
- ✓ Offset if you can and include the costs in the Expedition's budget
- ✓ Keep in mind in your planning three main areas where to tackle carbon emissions: transport, food and accommodation
- ✓ Remember that using plane/helicopter has a huge impact: avoid as much as possible
- ✓ Book your trip through eco-friendly travel organizations.



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Expedition's participants and local staff involvement



Planning Phase, before the expedition

During and after the expedition



Responsible: Expedition Leader; Environmental Manager; Tour Operator



Aim: *encourage all participants to involve themselves in preserving the place they visit*

- ✓ Know the members' expectations and knowledge in terms of waste management and environment protection
 - ✓ Inform thoroughly the expedition members (for example digital papers, books, films, videos or podcasts) about:
 - the area's local culture, traditions and values to be visited
 - the waste collection and disposal regulations there and whether they can cope with the pressure of the expedition's additional waste
 - the possibilities to support local communities.
 - ✓ Encourage participants to measure their waste and to record data if possible
 - ✓ Encourage participants to involve themselves in community development, through support or work in community development projects⁸ (inform yourself and share information through documents, internet links, videos).
-



Aim: *the local staff included in the expedition is trained and informed about environmental issues*

- ✓ Organize training as much as possible and raise awareness about the impacts of pollution
- ✓ Encourage proactive actions, local initiatives

⁸ UNEP 2007, *Tourism & Mountains, A practical guide to Managing the environmental and Social Impacts of Mountain Tours*, <https://wedocs.unep.org/handle/20.500.11822/7687>, accessed in February 2023, page 24.

Environmental impacts and mitigation measures



Planning Phase, before the expedition



Responsible: Expedition Leader; Environmental Manager; Tour Operator/Local Agent



Focus on not only environmental impact, especially waste, but also on social, related to various local sustainability challenges



Aim: *have a clear vision about the impacts of the expedition and how to deal with them*

- ✓ List all activities related to the expedition and the potential impacts on environment and local communities (see **Annex 1** for an example)
- ✓ List what kind of mitigation measures you could apply (see **Annex 2** for an example)
- ✓ Prepare an Environmental Management Plan (see **Annex 1**)
- ✓ Implement measures during the Expedition to reduce the negative impact.

Review and Plan for the future



After the expedition



Responsible: Tour operator/Team organizer; Expedition Leader; Sponsors (if any)



All waste generated during the whole expedition, preparation included



Aim: *use lessons learnt to reduce environmental impact in future expeditions*

- ✓ Based on the performance and eventual data gathered during the completed expedition, evaluate the waste management system you implemented and overall impact of the expedition (see **Annex 2** for an example); reflect and improve
- ✓ If you managed to collect data on waste, share with the community and other interested stakeholders. It will help develop and advance the waste management system in place
- ✓ Take the lessons from the last expedition, do some research, interact with the community and test new solutions in order to improve the waste management system
- ✓ Collaborate with other mountaineers and sponsors engaged in environment protection
- ✓ Identify how you and your team can contribute to local projects aiming to improve the waste management system in the mountains you visit
- ✓ Spread the word and your knowledge, contribute to more sustainable expeditions!

Media and Call for Action



Planning Phase

During and after the expedition



Responsible: Expedition Leader, Tour Operator



Paper, ink, packaging, transport, energy, etc.

Waste associated with print media, transport and accommodation for events



Aim: *avoid energy waste, unnecessary transportation, and printing*

- ✓ Prioritize digital media products and communication
 - ✓ If you have to do some printing, use recycled paper or reuse if possible
 - ✓ Recycle and dispose properly of any waste generated in the process
 - ✓ Encourage your partners to do the same (for example, include in your emails something like: “*Please avoid unnecessary printing*”)
 - ✓ Prioritize online meetings as much as possible. If any physical meeting, use public transportation or shared vehicles.
-



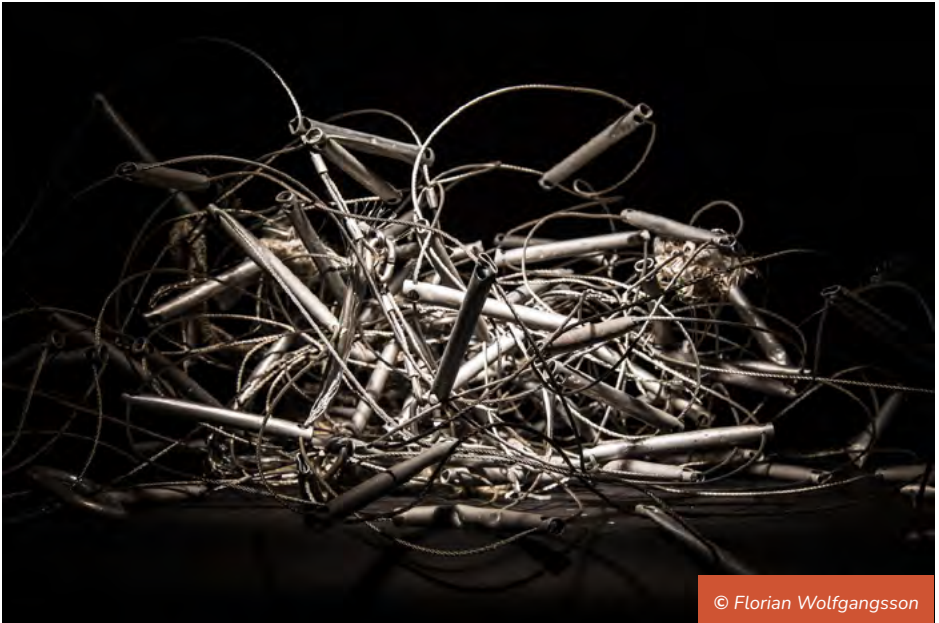
Aim: *ensure all communication promotes your eco-friendly actions and behaviors. Make the difference.*

- ✓ Prepare a communication plan about your team’s waste management strategy and your commitments to limit your environmental impact
 - ✓ Inform the clients about the conditions to participate on the expedition
 - ✓ Communicate with all stakeholders about pollution risks and how you will take measures
 - ✓ Show on media how you plan to monitor and enforce compliance to your environmental commitments
 - ✓ Make a positive difference by showing your engagement and actions: you make yourself and your team unique.
-



Aim: *promote environmental protection and sustainable solutions among network*

- ✓ Prioritize digital media products and communication
- ✓ Recycle and dispose properly of any waste generated in relation to media coverage
- ✓ Prioritize online meetings and presentations, webinars
- ✓ Use social media influence to promote better waste management practices and support initiatives for more sustainable expeditions;
- ✓ Share practices and “green” products that you used
- ✓ Lobby outdoor brands to manufacture more sustainable products, following more circular economy design;
- ✓ Support projects aimed at nature conservation and positive social impact.





Mountain Synergies is a non-profit association based in Geneva, Switzerland, that contributes towards the sustainable development, the environmental protection and regeneration of mountainous regions.

Our Mission is to facilitate positive interactions between mountain communities, the natural environment and mountain sports outdoor companies, expedition agencies, mountain researchers and practitioners.

Mountain Synergies activities are guided by the following core values:

1. Strong commitment to environmental protection, restoration and regeneration
2. Participatory approach in our relationships, engagement and collaboration with others
3. Positivity
4. Transparency of our information and communication
5. Integrated approach, connecting ecological, economic, social and cultural aspects in our project
6. Decision-making based on scientific knowledge as well as on indigenous wisdom and knowledge

The **Waste Management Manual for Sustainable Expeditions** is one of our projects on capacity development related to awareness and education in responsible mountain tourism.

Mountain Synergies supports also alpinists and expedition agencies reducing their environmental impact and helping regenerate local economies. We offer tailor-made coaching to make your “green” engagement meaningful.

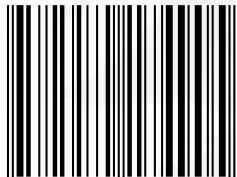
Visit our website: <https://mountainsynergies.org>,
to get more information about our activities.

Contact Us: contact@mountainsynergies.org



The Waste Management Manual for mountaineering expeditions is a non-exhaustive source of information. It aims to help any mountaineers or expedition agencies to reduce their environmental footprint, through an array of practical ideas and suggestions. It also endeavours to inspire its users to rekindle a respectful connection with nature.

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