



GUIDELINES TO USE

FOREST FORESIGHT IN LINE WITH HUMAN RIGHTS

October 2025

BE ONE WITH NATURE

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COLOFON

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OBJECTIVE OF THE GUIDELINES

FORESIGHT IN LINE WITH HUMAN RIGHTS

The Forest Foresight (FF) technology has been developed with the objective of benefiting people and nature. FF is an open-access, open-source data and code repository that combines high-resolution satellite data with datasets representing the main deforestation drivers to monitor landscape changes.

By providing predictions about deforestation, FF aims to support States' efforts to address this challenge and in that way contribute to the realization of the right to a healthy and clean environment as well as other human rights connected to this.¹ At the same time, all the actions taken by States to address deforestation, need to be aligned with human rights, and must follow relevant standards including accountability and transparency.

This is also the case for the use of FF. This guidance has been developed by the Forest Foresight Program (FF) as an integral component of its capacity support, to promote the use of FF by State' agencies in line with their human rights obligations and internationally recognized human rights standards. The guidance does not relate to the ethical elements considered in the construction of the FF system. It rather focuses on the relevant human rights standards to be followed by States when using FF.

KEY MESSAGES ABOUT THIS GUIDANCE:

- It is a tool to help States identify, prevent and address the potential impacts on human rights connected to the use of the deforestation prediction technology
- It provides recommendations to proactively support the rights of those individuals and groups affected by deforestation.



KEY STEPS IN THE USE OF FOREST FORESIGHT

CONSISTENT WITH HUMAN RIGHTS

To align the deforestation prevention policies with human rights standards, States must pay particular attention to right-holders, namely the individuals and communities whose human rights may be impacted by the activities to prevent deforestation. Key steps to ensure that are highlighted below.

IDENTIFYING RIGHT-HOLDERS AND DUTY-BEARERS

Prior to tailoring the use of the Forest Foresight predictions model to the local context, governments need to identify the right-holders and duty-bearers in the sites where they plan to use the tool, as well as key contextual elements including conflicts.

- This step entails identifying those people and communities whose human rights could be more impacted by activities related to the use of FF, particularly those with less influence in decision-making processes.
- Importantly, the identification should also highlight when the group self-identifies or can be characterized as Indigenous Peoples or tribal peoples, in line with the UN Declaration on the Rights of Indigenous Peoples² and the ILO Convention 169.³
- Similarly, the identification of right holders should include peasants and other people working in rural areas as per the UNDROP Declaration.⁴
- Particular attention should be paid to those segments of the population who are marginalized, including women, children and people with disabilities. During this stage it is essential to identify the existing inequalities, including unequal power relations and its root causes.
- The assessment of the local context, including potential conflicts in the area is key.
- Assessing applicable national and local legislation, as well as international standards and guidelines available.⁵

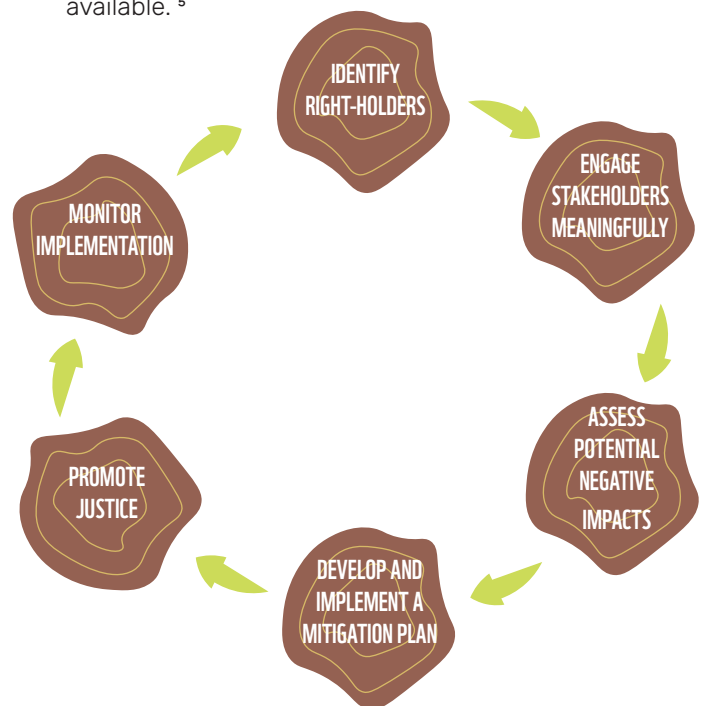


Figure 1. Key steps to mainstream human rights in the use of Forest Foresight



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KEY ELEMENTS TO LOOK WHEN IDENTIFYING RIGHT HOLDERS

Right holders are the individuals and communities who have rights (including customary rights) to the lands and resources in the sites covered by the activities. A good assessment of right holders includes identifying, among others:

- Customary rights, actual access and use practices,
- Participation rights, governance and practices,
- Cultural rights and practices
- Groups in situation of vulnerability
- Needs and priorities
- Relation with other groups
- Conflicts

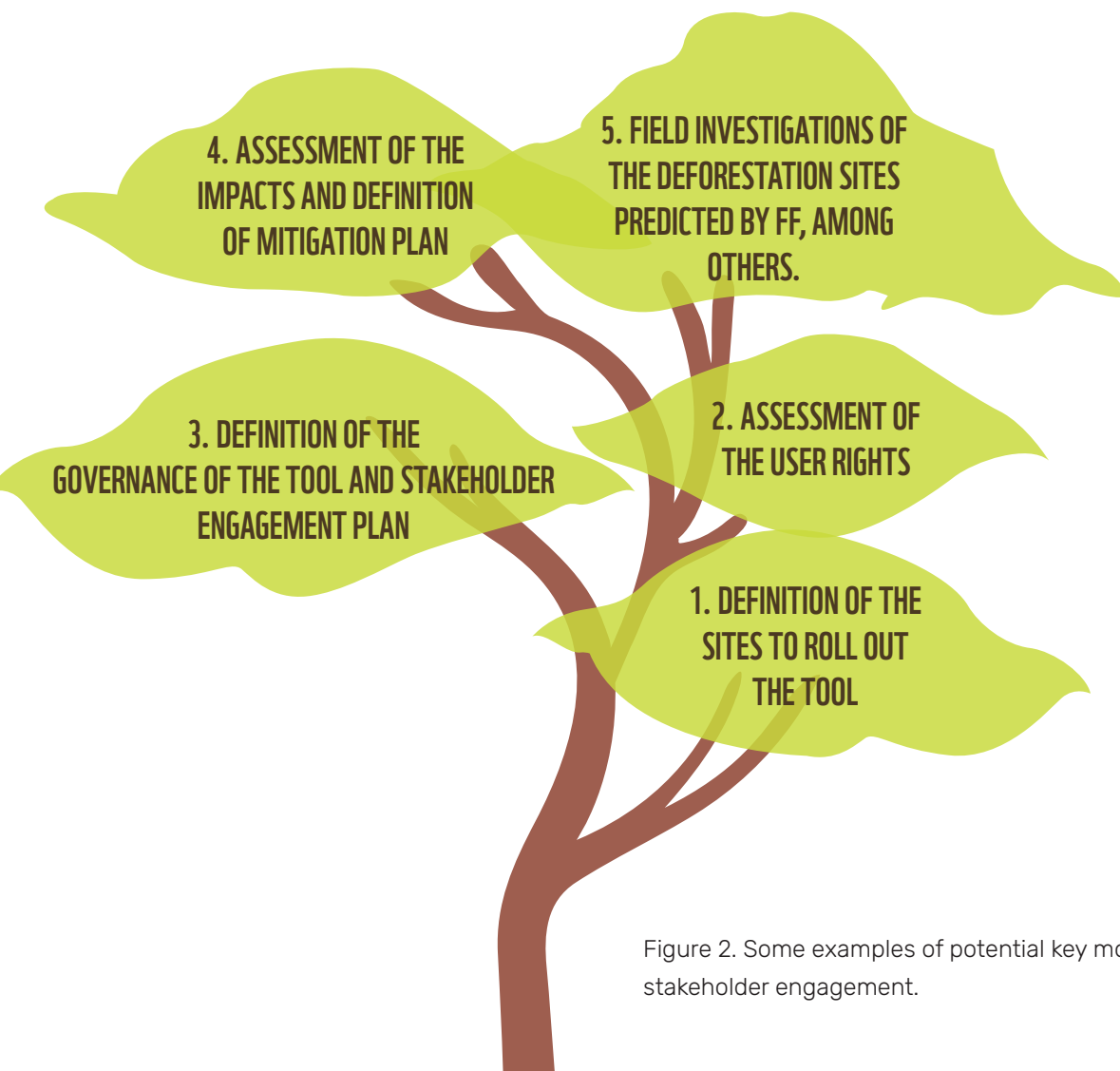


Figure 2. Some examples of potential key moments for stakeholder engagement.

PROMOTING MEANINGFUL STAKEHOLDER ENGAGEMENT

During the process of tailoring the Forest Foresight tool to the local context and throughout its roll out, States should promote meaningful stakeholder engagement of right holders.

To achieve this States need to:

- Promote and strengthen venues for meaningful participation which could include multistakeholder platforms. Such venues should be aligned and respectful of the existing forms of organization and governance of local communities.
- Ensure that marginalized right holders can participate effectively and inclusively. States must seek the involvement of individuals representing different segments of communities, as well as local organizations, and NGOs, in addition to relevant human rights entities and other interested actors.
- It is crucial that the right to Free, Prior, and Informed Consent is upheld in relation to any activity that could impact the rights and resources of Indigenous Peoples.

ASSESSING, PREVENTING, MITIGATING, AND ADDRESSING POTENTIAL HUMAN RIGHTS IMPACTS

Before rolling out the forest foresight tool States should clearly identify the potential impacts of their actions on human rights and develop a plan to prevent, mitigate and address those risks.

Key ethical and human rights considerations be included in a mitigation plan include, among others:

- A. Promoting human rights in law enforcement operations
- B. Avoiding stigmatization of groups
- C. Define clear standards for sensitive information collection and processing aligned with human rights.

Furthermore, States should consider the interconnection between all human rights in their efforts to address deforestation. This is key because the complex social, economic, and historical factors related to deforestation cannot be solved solely through prediction models and increased enforcement.



Figure 3. Examples of human rights considerations required to holistically address deforestation.

PROMOTING HUMAN RIGHTS IN LAW ENFORCEMENT

One of the salient risks of human rights impacts is associated with law enforcement operations by State officials. Law enforcement plays a key role in supporting the fight against illegal or unsustainable deforestation. However, if not conducted in line with human rights standards, there is a risk that such operations could affect the communities' health, safety, and security, and lead to gender violence and harassment.

Before rolling out law enforcement operations, States should take the following preventing measures:

- Develop a Code of Conduct for Law Enforcement Officials. It is recommended to use international standards,⁶ including the Basic Principles on the Use of Force and Firearms by Law Enforcement Officials,⁷ the Body of Principles for the Protection of All Persons under Any Form of Detention or Imprisonment,⁸ and the Basic Principles on the Treatment of Prisoners.⁹
- Provide regular trainings on human rights, if possible conducted by a specialized agency (NGO or other national agency). The trainings should include information about the code of conduct, and key human rights. Consider for example the Human Rights Training Manual for Rangers.¹⁰
- Develop a monitoring and accountability system and ensure there are judiciary and non-judiciary mechanisms and relevant sanctions for government agents in case of violations of the code of conduct and human rights.



AVOIDING STIGMATIZATION OF GROUPS

When rolling out the Forest Foresight tool, States need to take measures to prevent and address potential profiling including on the basis of ethnicity, origin or others, which could lead to discrimination of groups.¹¹

- Before tailoring the FF tool to the local context a thorough analysis is needed by States to assess the root causes, context, institutions, stakeholders and networks that may be connected to deforestation. This assessment should enable marginalized groups to have meaningful participation.

SENSITIVE INFORMATION PROCESSING AND INFORMED CONSENT

Forest Foresight does not use or provide private or sensitive data about individuals or land rights, and it encourages States to limit the processing of such data and follow the human rights principles to ensure the respect of the right to privacy.

Therefore, before rolling out the tool, Governments should:

- Define clear standards for information collection and processing of data to avoid leakages of intelligence that could undermine the measures to tackle deforestation.
- Define clear procedures to ensure that sensitive information, such as that related to personal data, is collected and used only when strictly needed and in line with national legislation and international human rights standards in relation to privacy.
- As mentioned above, it is recommended that those officials involved in collecting, processing or using the data receive appropriate training on human rights and the right to privacy.

PROACTIVELY SUPPORTING THE FULFILLMENT OF HUMAN RIGHTS

Using deforestation predictions to address the loss of biodiversity and ecosystems represents an opportunity to proactively support right-holders who have or can be affected by abuses linked to deforestation.

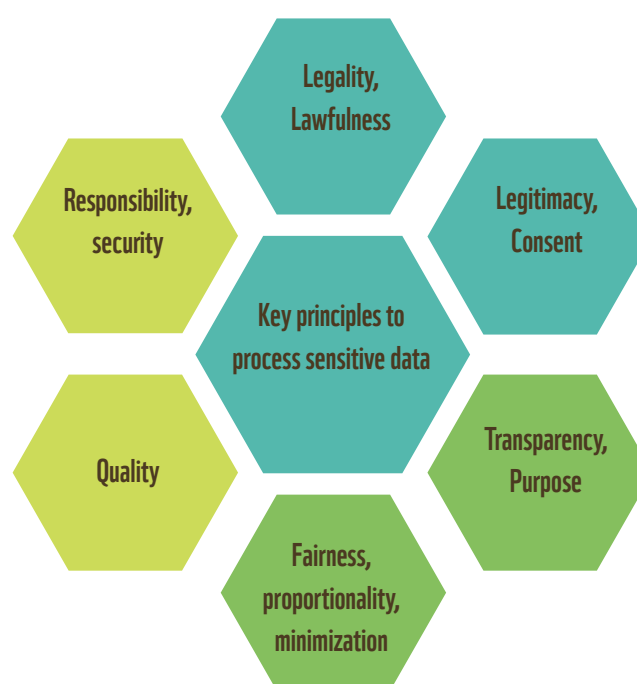


Figure 4. Key principles to process sensitive data in respect of the right to privacy

DID YOU KNOW?

In many instances, the expansion of agrobusiness, illegal and unsustainable mining operations or logging practices by businesses, among others, have led to the dispossession of individuals and communities from their lands and resources. Such activities affect multiple rights including the rights to food, health, culture, housing of many indigenous peoples and local communities. Notably, in many parts of the world, activists and environmental human rights defenders have been threatened and killed for advocating against deforestation and other connected issues.

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Throughout the roll out of the FF tool, Governments should fulfill the broad spectrum of human rights obligations and proactively promote justice. This can facilitate the coordination and alignment of different government entities, promote legitimacy and accountability of the measures, positively contributing to the long term impact of the both human rights and environmental policies. Below are highlighted two concrete measures to proactively support right holders: using early warnings to protect right holders and supporting environmental defenders.

EARLY WARNING TO PREVENT LAND GRABBING AND OTHER HUMAN RIGHTS ABUSES

Forest Foresight information can be used to complement efforts to prevent Human Rights abuses. Indeed, early warning signs of deforestation could, in some cases, be associated with land grabbing and other human rights abuses. Therefore it is recommended that States:

- Assess the overlaps regarding information on deforestation prediction provided by FF and information on human rights and land grabbing complaints.
- Include local communities in the process of interpreting FF data.
- Take measures to stop and deter illegal deforestation activities that affect local communities and indigenous peoples.

SUPPORTING ENVIRONMENTAL DEFENDERS AND PROMOTING SOUND BUSINESS PRACTICES

Throughout the rolling out of the FF tool, States have the obligation to promote measures to guarantee a safe and enabling environment for persons, groups and organizations that promote and defend human rights in environmental matters.

In that line, in the use of FF information States must, among others:

- Protect environmental human rights defenders from threats and reprisals
- Provide access to information and justice to individuals and communities affected by deforestation-connected activities
- Ensure that businesses fulfill their social and environmental responsibilities, and align with national and international guidance, including the UN Guiding principles on business and Human Rights.



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PROVIDING ACCESS TO JUSTICE AND EFFECTIVE REMEDY

Access to effective remedy is a crucial component of human rights. Individuals or groups negatively impacted by measures linked to the use of deforestation predictions should be able to raise these complaints and find a remedy. That would allow addressing the issues early on and would promote trust and accountability.

In their duty to promote, protect and fulfill human rights, and throughout the roll out of the FF tool, States must take measures to investigate, punish and redress human rights abuses. To do that Governments should:

- Facilitate the existence and accessibility of State-based mechanisms (those administered by the State, both judiciary and non-judiciary)
- Facilitate access to non-state-based grievance mechanisms. It is recommended that these mechanisms be developed with the participation of relevant right-holders and when relevant, operate with the support of local human rights organizations.
- Conduct periodic awareness-raising and communication activities to sensitize stakeholders about the grievance process.

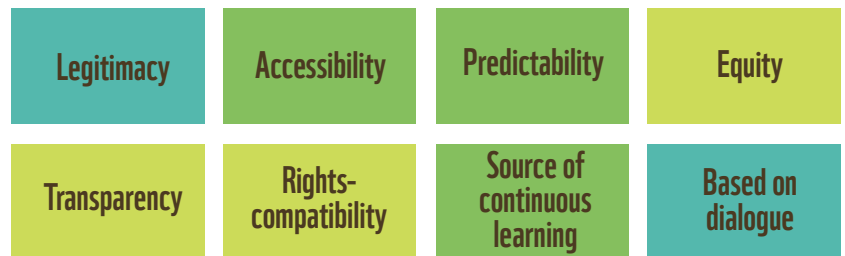


Figure 5. Effectiveness criteria of non-state grievance mechanisms.¹²

MONITORING HUMAN

RIGHTS COMPLIANCE

The implementation of the human rights approach (HRA) in the use of FF should be regularly monitored by States with the participation of key stakeholders and right-holders.

This guidance does not aim to prescribe a specific way of monitoring compliance with HRA. It also does not aim to replace more holistic and encompassing forms of HR monitoring and reporting on HR obligations, as per national and international law.

Annex II provides a list of non-exclusive elements that States and other stakeholders should include in the monitoring efforts. The annex describes the measures that the State should have in place before rolling out the Forest Foresight tool, as well as those that need to be taken throughout the use of FF.



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Examples of guiding questions for States to develop

Identifying right-holders, human rights obligations and potential impacts

- What are the duties of the different State agencies in relation to human rights? Consider international standards and national legislation.
- Have the right-holders associated with the use of FF been identified? What are their rights? Are there groups in specific situations of marginalization?
- How are the different land rights, including customary land rights considered when identifying illegal deforestation?
- What type of negative impacts could the use of the information given by FF have on right holders, with particular attention to marginalized groups? Consider for example the right to land or cultural resources.
- What procedures are in place to ensure the fulfillment of the rights of local communities, women, children, and other groups that could be impacted by the activities?
- What are the risks of stigmatizing specific groups or reinforcing marginalization in relation to the actions to prevent and deter illegal deforestation?

Promoting meaningful stakeholder engagement

- How are the key stakeholders and right-holders organized? What are the existing platforms to discuss issues of land, resources, etc.?
- What measures are taken to support and ensure regular and meaningful communication and venue for participation of right-holders in activities that may affect their rights such as investigations of deforestation, law enforcement operations or collection and use of sensitive data among others?
- How to ensure that those individuals or groups in situations of marginalization can also participate and be informed in activities that may impact them?
- How are local NGOs or mediators participating in the dialogues to facilitate the inclusion of all voices.
- How is the feedback of right-holders considered in the decisions regarding the use of the information provided by Forest Foresight.
- How is gender equality promoted in the activities?



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Preventing and mitigating negative impacts on human rights

- Have measures been identified to prevent and mitigate negative impacts from using information on rights holders? Is there a plan to follow up its implementation?
- How are the different government agencies linked to the use of the deforestation prediction data being trained or sensitized on human rights considerations?
- What NGO or other agency specialized in human rights can the Government partner with to provide regular training on human rights to government agents such as ecoguards?
- What measures are needed to ensure a code of conduct for ecoguards is available, socialized, implemented and monitored in law enforcement operations?

Proactively supporting the fulfillment of human rights

- What actions are taken to recognize and protect the human rights of indigenous peoples and other communities whose subsistence depends on forests, including their rights to land and resources?
- How is the State ensuring that business and other private entities operate in line with human rights responsibilities?.
- What measures are taken to protect environmental human rights defenders from threats and reprisals in the areas where the Government is using Forest Foresight?
- How is access to information and justice to individuals and communities affected by deforestation-connected activities guaranteed?



SUPPORTING NON-STATE GRIEVANCE MECHANISMS

- What channels in addition to the judiciary are in place for communities to raise grievances regarding impacts on their rights linked to the anti-deforestation operations by governments?

ENSURING PARTICIPATORY MONITORING OF ACTIONS

- How are potentially affected communities and human rights organizations engaged in monitoring how the Forest Foresight information is used?
- How are human rights obligations considered in reports regarding the use of forest foresight? How are those reports shared with the broader stakeholders for their feedback?

Checklist to monitor the steps taken by the State to promote a human rights approach

Before rolling out the FF technology, and in line with the requirements of Forest Foresight, States should have:

- Identified and strengthened their knowledge on human rights in connection with the use of Forest Foresight
- Identified stakeholders, including right-holders and marginalized groups potentially impacted or who have an interest in the implementation of deforestation legislation with the contribution of Forest Foresight.
- Identified in a participatory manner potential negative impacts on human rights and developed a plan to prevent and mitigate those, and to proactively promote and fulfill human rights.
- Agreed with stakeholders on meaningful participation mechanisms involving right-holder representatives and relevant CSO or community based organizations.
- Guidance, training, and capacity are in place to ensure the respect of privacy and avoid discrimination and stigmatization in relation to the collection and use of sensitive data.
- State and non-state grievance mechanisms are available, accessible, and legitimate for communities to file complaints related to anti-deforestation activities.

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THROUGHOUT THE ROLL OUT OF FOREST FORESIGHT, STATES SHOULD HAVE:

- Regularly provided guidance and trainings to relevant officials, including local government officials and eco-guards in relation to their responsibilities towards human rights in the context of their activities to prevent and address deforestation.
- Operationalized the stakeholder engagement plan, meaningful involving right holders in key decisions regarding the roll out of FF.
- Free Prior and Informed Consent is guaranteed for Indigenous Peoples that may be impacted.
- Taken actions to promote the alignment of different government entities to support the fulfillment of human rights and tackle unsustainable deforestation.
- Implemented the risk mitigation plan.
- Taken measures to strengthen the recognition and protection of the human rights of indigenous peoples, local communities and human rights defenders.
- Taken measures to ensure business and other private entities operate in line with human rights responsibilities as per the UN Guiding Principles on Business and Human Rights and other relevant instruments.
- Have taken measures to investigate, punish and redress human rights abuses
- Promoted regular participatory monitoring on the impacts of deforestation prediction data on human rights.

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¹ Forest Foresight was developed by WWF-NL in collaboration with a technology and innovation consortium. The tool combines satellite imagery data collection (Radar, Sentinel 1) with additional national datasets such as topological and forest cover data, land use data, and logging concession areas. This consolidated data is then analyzed by an advanced machine learning model that identifies current deforestation and areas with high risk of forest cover loss up to 6 months in advance.

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We, as human beings, are inseparably connected to nature. When we take good care of nature together, nature takes good care of us.

BE ONE WITH NATURE