



WWF-SER STANDARDS FOR THE CERTIFICATION OF FOREST ECOSYSTEM RESTORATION PROJECTS

1. PLANNING AND DESIGN

The restoration of forest ecosystems (hereinafter RFE) includes a diagnostic phase, which justifies the need for analysis and identifies the factors that must be considered for the reestablishment of natural processes that characterize reference ecosystems, and integrates social interests. Proposals for action are in line with the diagnosis and with the properties of the reference ecosystems. The RFE project is structured and described in a specific technical document to guarantee its application.

1.2. Context analysis

A justified delimitation and description of the area to be restored is included, taking into consideration how it integrates with its surroundings. The RFE project is compatible with the sociocultural heritage and the legal context, and with the history of the site and its immediate surroundings.

1.1.1. The area to be restored is geographically delimited and a description of its relationship with its social and ecological environment is included (in particular with regard to ecological connectivity, describing where and how it can be improved). The strategies are also specified to guarantee continuity in future management; the objective is to align and integrate the RFE project in the management of the surrounding ecosystems and landscapes.

1.1.2. The sociocultural context is described, including the cultural heritage of the area to be restored.

1.1.3. Relevant and specific local, traditional and scientific knowledge, are considered and documented.

1.1.4. The RFE project report includes directly applicable environmental regulations and an analysis of the most relevant aspects. The project report is coherent and does not contradict local, regional or national policies, nor its strategic instruments.

1.2. Inventory and diagnosis of the initial conditions

The diagnosis of the initial conditions includes an assessment of the unique features of the area to be restored and the main drivers of degradation.

1.2.1. An assessment of the unique features of the area to be restored in the context of global change is included, in terms of physiography, microclimate, soils, flora and fauna, vegetation and habitats, community dynamics, disturbance regime -in particular fires, floods, erosive processes and herbivory-, threatened species and habitats, social system and cultural heritage. Ecological aspects are linked to key ecosystem attributes.

1.2.2. The temporal sequence of land use changes is specified. In addition, the causes, intensity and extent of degradation are detailed. The impact of land use changes on biophysical conditions and organisms is described by means of key ecosystem attributes.

1.2.3. Processes limiting spontaneous ecosystem recovery are identified via analysis of soil properties and key and dominant species and those of special interest. Opportunities to favour them are identified.

1.2.4. Predictions of ecosystem change without intervention is included, considering the most probable environmental and socioeconomic scenarios. This diagnosis includes a description of changes in ecosystems structure, composition and functioning that may occur if no restoration is carried out, and justifies its need.

1.2.5. Homogeneous areas are identified within the area to be restored, in accordance with the extent and heterogeneity of the project area, and, based on this zoning, priority areas for action are established.

1.3. Assurance of land availability

Those responsible for the RFE provide evidence of the availability of the land to be restored.

1.3.1. The availability of the land to be restored is accredited with the agreement of the owners or their authorized managers to carry out the corresponding works, subsequent care, monitoring, evaluation and long-term maintenance.

1.3.2. Administrative requirements (authorizations) which stem from the legal framework are met.

1.4. Commitment to compliance with standards

Those in charge of the RFE show a long-term commitment to adhere to the principles and criteria of the RFE.

1.4.1. Leaders of the RFE and landowners or their authorized managers sign a commitment to comply with the RFE standards, and to grant access to the area to carry out restoration tasks and long-term monitoring, maintenance and management operations.

1.5. Stakeholder participation

Participation is meaningful, informed and fair. It is preferably carried out from the onset of the planning stage of the RFE project, and maintained during later phases. The RFE project includes a participation and communication plan according to the goals, scale and intensity of the project, which incorporates all key stakeholders: land and water owners, users and managers; if necessary, representatives of the economic sectors; and neighbours.

1.5.1. An identification of the interest groups and a description of the demands and aspirations of each group is incorporated. Social demand and current and potential provision of ecosystem services are analysed, in accordance with the goals, scale and intensity of the project (in line with 1.5.2 and 3.1.3).

1.5.2. A calendar for the participation of stakeholders is included, covering the entire duration of the project. When possible, participatory planning and group design of the restoration plan is implemented. Participatory processes in later phases of the project that may include training activities for the local population are developed.

1.5.3. Potential conflicts that may arise between stakeholders are recorded and analysed, and mechanisms to resolve them are proposed.

1.6. Reference ecosystems

Reference ecosystems (hereinafter RE) are identified in each zone. Restoration goals are formulated and the natural processes necessary to achieve them are promoted.

1.6.1. RE are identified, including semi-natural ecosystems, which integrate ecological dynamics, landscape spatial variability and social interests, characterizing them and establishing objectives and goals for each one. Thus, the biodiversity to be restored (including species, communities and relevant landscapes) and the ecosystem services whose supply will be enhanced (including support, regulation, provision and cultural services), are identified. Evidence supporting the criteria to select and prioritize ecosystem services is provided.

1.6.2. RE are compatible with land history and community and ecosystem dynamics under global change.

1.6.3. The goals of restoration are formulated in terms of measurable indicators, which allow the degree of compliance to be assessed throughout the project. It is recommended that the indicator system reports on [six key ecosystem attributes](#): (i) removing pressures and threats causing degradation, (ii) recovering abiotic conditions, (iii) recovering species composition, (iv) recovering ecological structure, (v) recovering ecological functions, and (vi) restoring connectivity and biotic and abiotic exchanges with the surrounding landscape.

1.7. Design and logistics of proposals for actions

Proposals for actions address potential solutions to the problems identified and are described in sufficient detail. The technical and ecological feasibility of the proposed actions is justified and the use of economic and technical resources is optimized.

1.7.1. In each homogeneous zone, the proposals for actions are sufficiently detailed and derive from the analysis of the different options considered in the definition of objectives and goals.

1.7.2. A justification of the selected restoration options is included and it is based on the existing conditions, including temporary ones, and on the human and financial resources available for each option.

1.7.3. The human resources involved in the planning and design of the RFE are appropriately qualified.

1.7.4. The proposals for actions define the specifications required for the machinery and further material resources.

1.7.5. The temporal sequence of the restoration actions, which is properly planned, is consistent with ecological requirements and regulations (e.g., nesting periods, dormant period, fire risk, etc.).

1.7.6. The RFE project budget includes the work units required for the implementation, aftercare, monitoring, evaluation, and long-term maintenance. There is sufficient funding committed to guarantee the planned activities for at least 5 years after execution.

1.7.7. Planning includes a comprehensive assessment of associated risks and the strategies to cope with them, which include procedures to face unexpected changes in environmental conditions or the availability of human, technical and economic resources.

1.8. Aftercare and long-term maintenance

The minimum level of post-project care (up to 5 years) and long-term maintenance (more than 5 years) required until the restoration objectives and goals are achieved is established.

1.9. Monitoring and evaluation

A monitoring and evaluation plan to account for what is projected and executed is established. Its purpose is to report on the degree of achievement, using measurable indicators.

1.10. Information management

Procedures are defined to guarantee the accessibility, public dissemination, and custody of the information, including all documentation.

1.11. Reports

A technical document containing the relevant information for planning and designing the RFE project, as needed to implement and evaluate it, is prepared.

1.11.1. There is a specific technical document which contains: (i) the report of the project, (ii) the maps, (iii) the schedule, (iv) the budgets, (v) the technical specifications (if necessary), (vi) the participation and communication plan, (vii) the aftercare and long-term maintenance plan and (viii) the monitoring and evaluation plan. This documentation is coherent and contains complementary information that is sufficient to justify, plan, execute and evaluate the RFE project.

In addition, the document will include health, safety, waste management and environmental impact studies, when necessary.

2. EXECUTION

The execution of the RFE is carried out in accordance with the requirements of the specific technical document.

2.1. Ecological protection of the site

Partial or temporary negative impacts may be acceptable when they do not hinder the long-term recovery of the ecological processes and avoid lasting damage. Those responsible for the RFE must document, justify and strictly control the use of synthetic chemicals, biological control agents and nonnative species, in accordance with regional and state regulations and internationally accepted scientific protocols. The RFE project does not use genetically modified organisms.

2.1.1. Treatments respect natural processes (including natural disturbances, trophic networks and organism dispersal), and promote and protect the potential for natural and assisted recovery. Since the recovery period can be long, interim treatments should be planned and implemented, if necessary, to reduce any negative effects or to enhance positive effects.

2.1.2. Potential negative impacts, be they partial or temporary, associated with restoration, including social impacts, are minimized and justified when needed.

2.1.3. Before applying biological control agents to combat pests or disease, the need to use such methods is justified, with preference being given to native agents. The use of any biological control agent will be selective and adjusted to the circumstances of the project.

2.1.4. The use of synthetic chemicals is minimized and justified.

2.1.5. A list of all chemicals and biological control agents used must be kept and information on the positive and negative effects of their application must be compiled.

2.1.6. In the event of using chemical products, an emergency protocol which establishes the surveillance, control and correction of possible impacts, such as accidental spills and collateral damage, is available.

2.1.7. The use of nonnative species is avoided except in strictly necessary and adequately justified cases, and provided that these species are not classified as invasive.

2.1.8. Genetically modified organisms are not used.

2.2. Hiring suitable personnel

The human resources involved in the execution of the RFE are appropriately qualified.

2.2.1. All personnel involved in the RFE project have the training, technical qualifications and accreditations (such as experience in similar jobs) required in the technical document. Depending on the scale of the RFE, it may include:

- (i) a technical manager appointed by the lead organization of the RFE, with the required technical qualification, who guarantees and certifies that all restoration actions are carried out in accordance with the technical conditions of the project;
- (ii) a technical manager appointed by the executing organization, with the required technical qualifications, who leads the execution of the project in accordance with the technical prescriptions;
- (iii) an on-site supervisor who organizes and distributes the execution of the restoration actions and transmits all the orders received from (i) and (ii) to other personnel.

2.2.2. Should the RFE project receive public funding, open competition is guaranteed through the contracting processes.

If privately financed, local hiring options are prioritized in order to boost labour and social activity in rural areas where the restoration actions are carried out.

2.3. Specifications on machinery and materials

The material resources involved in the execution of the RFE meet the specifications required in the RFE project.

2.3.1. The machinery and the other material resources meet the specifications required in the RFE project.

2.3.2. Plant propagation materials meet legal requirements and the technical requirements described in the RFE project. Likewise, evidence is provided of correct on-site handling.

2.3.3. Plant traceability is guaranteed with adequate legal documentation.

2.3.4. Plant delivery on site is duly documented and, when appropriate, damage control is implemented and recorded.

2.4. Compliance with planning and design

The execution of the RFE is in accordance with the technical document.

2.4.1. The RFE is executed in accordance with the contracts, agreements and conditions included in the RFE project report, plans, budgets, technical specifications (if necessary) and schedule.

2.4.2. Depending on the scale of the RFE project, the following actions are carried out prior to the start of the works: (i) the layout verification certificate, where the geometric reality of the action and the availability of the land are verified on the ground, as is the technical feasibility for the execution of the RFE; (ii) the works schedule, stating the execution periods foreseen for the different phases of the project and (iii) the health and safety plan. These actions are documented by those responsible for the RFE (lead and executing organization).

2.4.3. For each phase of the RFE project there is documentary evidence of the control carried out by those responsible for it.

Particularly, when implemented: The minimum phases being:

- (i) actions to promote natural regeneration: according to the description of the technical document
- (ii) suppressing competing vegetation (if applicable): controlling plant abundance, slash management, clearing height, species selection, etc.
- (iii) land preparation: soil preparation depth, distance between holes, furrows, land preparation intensity, land to be ploughed, etc.
- (iv) sowing: density, frame, distribution in the surface and correct placement.
- (v) planting: seedling density, planting frame, distribution by sectors, correct placement and, if necessary, correct placement of herbivory protect systems.
- (vi) forest management for restoration: according to the description of the technical document.
- (vii) actions to promote the recovery of fauna: according to the description of the technical document.
- (viii) extensive livestock farming: according to the description of the technical document.
- (ix) other actions: according to the description of the technical document.

2.4.4. In the event that any action by the RFE is not carried out in accordance with the specifications contained in the project report, those in charge of the RFE define the corrective measures and provide evidence that the changes respect the original project goals. All deviations from the schedule are documented. Changes must be notified to stakeholders and legally approved, if necessary.

2.5. Compliance with environmental, labour and health and safety regulations

The execution of the RFE complies with the legal requirements in terms of environmental, labour and health and safety regulations.

2.5.1. The execution of the RFE complies with environmental laws and regulations.

2.5.2. There is a contractual relationship for the development of the project, which is in accordance with current regulations.

2.5.3. Labour regulations are complied with when hiring workers, in terms of gender equality and non-discrimination.

2.5.4. The execution of the RFE complies with health and safety regulations. Depending on the scale of the RFE project, there is a health and safety coordinator who supervises compliance with the health and safety plan.

2.5.5. The regulations governing volunteers are complied with, should there be any.

2.5.6. Workers are free to organize trade unions and to elect their representatives.

2.6. Communication with stakeholders

Stakeholders, including local citizens, are informed of any action which may affect their interests and are provided with communication channels to present their comments and suggestions to those responsible for the RFE project. Likewise, they may participate in the execution phase.

2.6.1. The current regulations on information and public participation are complied with during the execution phase.

2.6.2. Those in charge of the RFE open a consultation period, making the summary document of the restoration project available to stakeholders, including plans for aftercare and long-term maintenance, and monitoring and evaluation. They also enable a mechanism for the reception and integration of comments and suggestions during the implementation of the project.

2.7. Documentation

The results of the implementation of the RFE project, including details of the restoration activities, are included in a report, for future consultation. The start and end of each phase of the project is documented.

3. MONITORING, EVALUATION, AFTERCARE AND LONG-TERM MAINTENANCE

The RFE applies the protocols provided in the plan for monitoring and evaluation. The main purpose is to verify the level of recovery achieved with respect to the objectives and goals defined in terms of key RE attributes. Aftercare and long-term maintenance actions are carried out in accordance with the project planning and with the results of the monitoring.

3.1. Execution of monitoring in an adaptive management framework

The protocols established in the monitoring and evaluation plan are implemented in order to (i) report on the degree of goals fulfilled, and on the possible deviations, using measurable indicators, (ii) to facilitate adaptive management, (iii) to disseminate the results to the interest groups and (iv) to promote collaboration with the scientific community when appropriate.

3.1.1. The indicators included in the monitoring and evaluation plan are measured periodically in accordance with the projected protocols and schedule. The RFE project must respond to any deviation, particularly as a consequence of climate change, applying adaptive management measures. This implies corrective changes to adapt to unexpected ecosystem responses, as well as carrying out additional actions and monitoring, if necessary.

3.1.2. Control or test plots are established, or plots subjected to alternative treatments, to contrast the quality of the works, monitor its evolution and compare alternative techniques, should the scale and characteristics of the project allow it.

3.1.3. The results obtained through the monitoring and evaluation plan are periodically analysed, measuring the evolution towards the goals set and the degree of improvement respect to the baseline conditions. Multi-criteria analysis tools such as [the 5-star system and the ecological recovery wheel](#) are recommended for this evaluation.

3.1.4. An adequate repository system for the reports, documents, maps, audio-visuals, and data generated in the monitoring and evaluation activities is implemented, and periodically updated. It is recommended that this system be digital and open for consultation.

3.1.5. The main results of the monitoring and evaluation plan are periodically communicated to stakeholders, in an accessible way, and made available to researchers and restoration experts via the appropriate platforms (web platforms, brochures, congresses, scientific publications, etc.). During the monitoring period, it is recommended that training activities for the local population are included to encourage their engagement in long-term monitoring, collaborative knowledge co-generation and dissemination.

3.1.6. The human resources involved in the monitoring and evaluation of the RFE have the appropriate qualifications.

3.2. Aftercare and long-term maintenance

Post-execution care and long-term maintenance actions are carried out as foreseen in the project planning and integrate the results of monitoring.

3.2.1. Aftercare and long-term maintenance actions necessary to achieve restoration objectives and goals are implemented, adopting the necessary measures to prevent reversal of the achievements, while avoiding maintenance tasks to become permanent.

3.2.2. There is a financial commitment that ensures the execution of aftercare and the long-term maintenance of the RFE.

3.2.3. If necessary, the aftercare and long-term maintenance plan will be updated after project completion and analysis of monitoring results.

3.2.4. Unplanned actions and their deadlines must be properly justified and recorded.

3.2.5. The human resources involved in the aftercare and long-term maintenance of the RFE have the appropriate qualifications.



Working to sustain the natural
world for the benefit of people
and wildlife.

together possible™

panda.org