GLOBAL ENVIRONMENT FACILITY
INVESTING IN OUR PLANET

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April 3, 2014

Dear Council Member:

UNEP as the Implementing Agency for the project entitled: ***Mexico: Integrating the Management of Protection and Production Areas for Biodiversity Conservation in the Sierra Tarahumara of Chihuahua***, has submitted the attached proposed project document for CEO endorsement prior to final approval of the project document in accordance with UNEP procedures.

The Secretariat has reviewed the project document. It is consistent with the proposal approved by Council in June 2012 and the proposed project remains consistent with the Instrument and GEF policies and procedures. The attached explanation prepared by UNEP satisfactorily details how Council's comments and those of the STAP have been addressed. I am, therefore, endorsing the project document.

We have today posted the proposed project document on the GEF website at www.TheGEF.org. If you do not have access to the Web, you may request the local field office of UNDP or the World Bank to download the document for you. Alternatively, you may request a copy of the document from the Secretariat. If you make such a request, please confirm for us your current mailing address.

Sincerely,

Naoko Ishii
Chief Executive Officer and Chairperson

Attachment: GEFSEC Project Review Document

cc: Country Operational Focal Point, GEF Agencies, STAP, Trustee

REQUEST FOR CEO ENDORSEMENT

PROJECT TYPE: FSP
TYPE OF TRUST FUND: GEF

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PART I: PROJECT INFORMATION

Project Title: Integrating the Management of Protection and Production Areas for Biodiversity Conservation in the Sierra Tarahumara of Chihuahua, Mexico			
Country:	Mexico	GEF Project ID:[1]	4883
GEF Agency(ies):	UNEP	GEF Agency Project ID:	00823
Other Executing Partner(s):	CONANP, WWF Mexico	Submission Date: Resubmission date: Resubmission date:	13.12.2013 14/02/2014 25/03/2014
GEF Focal Area (s):	Biodiversity	Project Duration (Months)	60
Name of Parent Program (if applicable): ➢ For SFM/REDD+ ☐ ➢ For SGP ☐ ➢ For PPP ☐	N/A	Project Agency Fee ($):	490,000

A. FOCAL AREA STRATEGY FRAMEWORK[2]

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Indicative Grant Amount ($)	Indicative Cofinancing ($)
BD-1	**Outcome 1.1** Improved management effectiveness of existing and new protected areas.	Output 1.1 New protected areas mosaic within 300,000 ha* of unprotected ecosystems Output 1.2 New coverage of 12 unprotected threatened species**	GEFTF	1,680,700	1,623,583
BD-2	**Outcome 2.1** Increase in sustainably managed landscapes and seascapes that integrate biodiversity conservation **Outcome 2.2** Measures to conserve and sustainably use biodiversity incorporated in policy and regulatory frameworks.	Output 2.1 Policies and regulatory frameworks for 2 production sectors*** Output 2.2 One regional land-use plan (Regional Action Plan) and one land-use plan for each participating municipality that incorporate biodiversity and ecosystem services valuation Output 2.3 Certified production landscapes mosaic within 300,000 ha of unprotected ecosystems	GEFTF	2,986,000	37,839,417
		Sub-total		4,666,700	39,463,000
		Project management cost	GEFTF	233,300	573,159
		Total project costs		**4,900,000**	**40,036,159**

***** This target of 300,000 hectares is a modification of the 400,000 hectares PIF-target; it is based on detailed information on relevant indicators baseline data collected during the PPG phase (see Project Results Framework, component 3 indicators)
****** In the present scenario key species in the project area are registered as threatened and requiring attention but their habitats are not protected. See II.B.1.
*** Strictly "production" sectors targeted by the project are Agriculture (SAGARPA) and Forestry (CONAFOR). The mining sector is also associated with land use change but is not a main project target. Other sectors involved include Environment (SEMARNAT, CONANP), Water

[1] Project ID number will be assigned by GEFSEC.
[2] Refer to the Focal Area Results Framework and LDCF/SCCF Framework when completing Table A.

(CONAGUA) and Social (CDI, SEDESOL) which are critical but may not be classified as "production" sectors. Further detail in this regard is found in the text below.

B. PROJECT FRAMEWORK

Project Objective: Develop and implement a participatory strategy to sustainably conserve biodiversity engaging communities, government and NGO participation.

Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Grant Amount ($)	Confirmed Cofinancing ($)
Component 1: Scientific base and tools for decision making	TA	**Outcome of component 1:** Management plans and decision making processess of key stakeholders involved in the biodiversity conservation management of the Sierra Tarahumara utilize the project's diagnostic tools and data bases	**Output 1.1:** Sierra Tarahumara Data Monitoring and Information System (DM&IS) to support conservation planning, evaluation and decision making developed, including a comprehensive GIS based bioassessment reporting mechanism (thematic layers adapted in pilots). **Output 1.2:** Sierra Tarahumara Biodiversity and Environment Assessment to support conservation planning, evaluation and decision making realized. **Output 1.3:** Awareness and capacity building program implemented for local, state and federal level stakeholders within the project area, to engage and enable them in the use of data bases and tools produced under outputs 1.1 and 1.2. **Output 1.4** Institutional, financial and technical assistance follow up program for stakeholders using the ST-DM&IS implemented.	GEF	457,800	764,000
Component 2: Environmental governance framework and policy alignment for ecosystem management	TA	**Outcome of component 2:** The environmental governance of the Sierra Tarahumara region improves in responsiveness to key issues for biodiversity conservation and ecosystem services supply following a *Regional Action Plan (RAP)* that incorporates biodiversity criteria, funding commitments, evaluation parameters and a strategy for upscaling as well as for economic sustainability beyond project completion.	**Output 2.1:** Coordination mechanism of federal, state and municipal authorities with local communities and non governmental actors for the development and implementation of the Regional Action Plan designed and established. **Output 2.2:** An agreed strategic Regional Action Plan developed which mainstreams BD and ES criteria into regional development policies and integrates the sustainable use of productive lands and the protection of areas with high value for BD conservation and ES provisioning. **Output 2.3:** Policy improvement	GEF	1,075,900	1,515,000

		- [3]METT Score at baseline/MTR/EOP: a. RPC Sierra Tarahumara: **49/56/70** b. RPC Mohinora: **37/48/77** c. Bassaseachic Waterfall National Park: **51/55/64**	strategy developed drawing from PPG findings, the Diagnostic Analysis in component 1 and the Regional Action Plan, to propose changes in sectorial development policies and programs for the Sierra Tarahumara, including new or adapted regulations affecting funding allocation criteria, that mainstream measures to conserve and sustainably use biodiversity and key ecosystem services. **Output 2.4:** An adaptive management model at the landscape level emphasizing forest lands developed and implemented, based on project learnings and best practices systematization including diffusion material in formats tailored to local stakeholders. **Output 2.5** Outreach program developed to replicate and upscale the project's progress and results from the pilot level to the wider landscape in the Sierra Tarahumara.			
Component 3: Pilot-scale interventions	TA	**Outcome of component 3:** Sustainable and integrated landscape and natural resource management effectively applied at the headwaters of the Rio Conchos, the Rio Fuerte and the Rio Mayo river basins results in a landscape mosaic of 300,000 ha[4] that combine conservation areas and productive land under biodiversity and ecosystem services friendly management -70,000 ha[5] of certified forest management areas;	**Output 3.1:** Component 1 tools adjusted to pilot site conditions: ecosystem types, landscape units, river basins, species inventories and priorization of landscape units and habitat types conforming biological corridors. **Output 3.2:** Sustainable and integrated landscape and natural resource management plans developed in project area municipalities include voluntary conservation areas and areas to optimize biodiversity friendly production and ecosystem services, emphasizing water and forest resources, drawing from the RAP in Component 2. **Output 3.3:** Pilot programs and field activities to implement pilot projects identified under 3.1 and 3.2 focussed on conservation **Output 3.4:** Pilot programs and field activities to implement pilot projects identified under 3.1 and	GEF	2,986,000	37,095,000

[3] Reflected here are the BD Objective1, Section 2 (METT) scores for the three PAs to be assessed by the project with their baseline values and targets for Mid Term (MTR) and End of Project (EOP). For further detail including area covered, refer to paragraphs 57 – 60 (including Map #3) and 120 of the Prodoc.

[4] Adding up all the areas of on-the-ground pilot interventions considered under component 3 accrues to 300,000 ha. For further detail refer to the Results Framework in Appendix 4 of the Project Document

[5] As per results framework, indicator 3 of outcome 3

			3.2 focussed on sustainable production.			
Project monitoring and evaluation	TA	**Outcome of project monitoring component:** Project implementation facilitated by results based management.	**Output 4.1:** Baseline information about indicators used in project monitoring completed. **Output 4.2:** Project monitoring system is operating, providing systematic information on progress in meeting project outcome and objective targets. **Output 4.3:** Midterm and final evaluation conducted. **Output 4.4:** Lessons learned from this and other related projects management experience identified for replication in future operations.	GEF	147,000	89,000
				Subtotal	4,666,700	39,463,000
				Project management cost (PMC)[6]	233,300	573,159
				Total project costs	**4,900,000**	**40,036,159**

C. SOURCES OF CONFIRMED COFINANCING FOR THE PROJECT BY SOURCE AND BY NAME ($)

Letters confirming cofinancing for the project with this form are included.

Sources of Co-financing	Name of Co-financier (source)	Type of Cofinancing	Cofinancing Amount ($)
Federal government	CONANP	Cash	769,230
	CONANP	In-kind	1,120,000
Federal government	CONAFOR	Cash	2,500,000
Federal government	CDI	Cash	13,076,922
Federal government	SEDESOL	Cash	20,000,000
Non-governmental organization	Pronatura	Cash	320,007
Non-governmental organization	WWF	Cash	982,424
	WWF	In-kind	367,576
International organization	UNEP	Cash	150,000
	UNEP	In-kind	750,000
Total Co-financing			**40,036,159**

D. TRUST FUND RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY

GEF Agency	Type of Trust Fund	Focal Area	Country Name/ Global	(in $)		
				Grant Amount(a)	Agency Fee (b)	Total c=a+b
UNEP	GEF TF	Biodiversity	Mexico	4,900,000	490,000	5,390,000
Total Grant Resources				4,900,000	490,000	5,390,000

F. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

[6] PMC should be charged proportionately to focal areas based on focal area project grant amount in Table D below.

Component	Grant Amount ($)	Cofinancing ($)	Project Total ($)
International Consultants			0
National/Local Consultants	190,500	170,000	360,500

G. DOES THE PROJECT INCLUDE A "NON-GRANT" INSTRUMENT? No

PART II: PROJECT JUSTIFICATION

A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN OF THE ORIGINAL PIF[7]

A.1 National strategies and plans (same as PIF, just relevant detail added)

Mexico's National Development Plan 2007-2012 defines environmental sustainability as one of its five guiding principles[8]. Environmental sustainability should be a transversal element of all public policies, improving inter-institutional coordination and sector integration. Environmental sustainability criteria must be mainstreamed in policy decision-making, particularly in the productive and in the rural sectors. The National Action Plan 2013-2018 of the new Mexican government is divided in five guiding principles, one of them being called "Mexico, a country with global responsibility" ("Un México con responsabilidad global"). The proposed project is fully consistent with these orientations, as mainstreaming environmental sustainability considerations, particularly ecosystem service conservation and global environmental benefits, into public development policies at the regional and local level is at the centre of its objectives.

The PND acknowledges Mexico´s commitments as signatory of international conventions, such as: The United Nations Convention to Combat Desertification; the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); the United Nations Millennium Development Goals; Agenda 21 and the Rio Declaration; the Border 2012 US-Mexico Environmental Program; the Convention on Biological Diversity (CBD - the Mexican Federal Government has set out a strategy to deliver on CBD commitments via State Biodiversity Strategies. In 2008, WWF-Mexico signed an MoU with the Chihuahua State Government, committing to collaborate in the development of the state's Biodiversity Strategy, as part of the National Biodiversity Strategies and Action Plans committed in Article 6 of the CBD; Action Plan still in progress); the principles and commitments stated in the United Nations Framework Conference on Climate Change (UNFCCC) and Kyoto Protocol. Project results are relevant to the mitigation, vulnerability assessments and adaptation components of these documents, adding to the goals of SEMARNAT´s Special Program on Climate Change (PECC), Mexico's Climate Change Strategy for Protected Areas and Priority Regions for Conservation (ECCANP) and the National Protected Area Program, through the increase of total surface under conservation/protection schemes.

The proposed project is also consistent with state policy plans and programs:

- The State Development Plan 2010-2016 of the current State Government, in its section on Environment and Sustainability, focuses on water management, insisting in general terms on equilibrating water extraction and recharge of water resources, without special mention of the Sierra Tarahumara water provision functions. The State Development Plan considers that the greatest threats for biodiversity in Chihuahua are habitat destruction or degradation due to unsustainable production practices in agriculture and forestry;
- the Ecology Sector Program 2010-2016 of the Secretariat of Urban Development and Ecology (*Secretaría de Desarrollo Urbano y Ecología*) proposes a catalogue of action lines, such as: Put into force and implement the Regional Ecological Land-Use Plan for the Sierra Tarahumara commissioned by the Chihuahua state government to a research team of the Autonomous University of Ciudad Juárez (UACJ) and developed from 2009 to 2011; put into force and implement the State Strategy for the Conservation and Sustainable Use of

[7] For questions A.1 –A.7 in Part II, if there are no changes since PIF and if not specifically requested in the review sheet at PIF stage, then no need to respond, please enter "NA" after the respective question.

[8] In the Spanish original: "Ejes Rectores". The National Action Plan 2013-2018 of the new Mexican government is divided in five guiding principles, one of them being called "Mexico, a country with global responsibility" ("Un México con responsabilidad global").

Biodiversity; promote the creation of new natural protected areas according to new biodiversity conservation needs in the state of Chihuahua; implement afforestation and reforestation programs to regain forest cover;

- the Forest Restoration, Protection and Development Program of the Forestry Development Direction in the Secretariat of Rural Development;
- the Integrated Management Plan for the Río Conchos Water Basin, developed by the Inter-institutional Working Group (*Grupo Interinstitucional de Trabajo* – GIT); within the framework of this Plan, water management projects at the headwaters of the río Conchos in the Sierra have been implemented;
- the State Coordination of the Tarahumara (*Coordinación Estatal de la Tarahumara* – CET) promoted by the Chihuahua State Government, is orienting, coordinating, promoting, supporting and encouraging programs and projects in favor of the indigenous towns and communities of the State of Chihuahua;
- the Tarahumara Initiative was set up to meet chronic food problems in the region, coordinated by the state Secretariat of Social Development (SEDESO).

Objectives, expected project outcomes and planned activities fit into the strategies of several key stakeholders for biodiversity and ecosystem conservation in the region:

- CONANP´s strategic objective of conserving the country's most representative ecosystems and their biodiversity, through the National Protected Areas Program with the participation of all social and institutional sectors;
- the National Forestry Program with its subprograms and the Strategic Forestry Program 2025 of the National Forestry Commission CONAFOR;
- CONAGUA´s 2030 National Water Strategy (Agenda del Agua 2030) which considers the necessity to reach equilibrium on all hydrological basins, with clean rivers, universal potable water coverage and cities without catastrophic floodings;
- the Food Security Program (PESA), the Soil and Water Conservation and Sustainable Use program (COUSSA) and the Livestock Production Program (PROGAN) of SAGARPA;
- the Territorial Management Strategy for Development with Identity and a variety of programs of the National Commission for the Development of Indigenous Peoples of CDI;
- the nation-wide Crusade against Hunger started in 2013 in five municipalities of the Sierra Tarahumara, implemented by the federal Secretariat of Social Development (*Secretaría de Desarrollo Social* – SEDESOL).

A.2 GEF focal area strategies, eligibility criteria and priorities no change

A.3 The GEF Agency's comparative advantage no change

A.4 The baseline project and the problem that it seeks to address (same as PIF but with additional detail)

Sustainability is now a generally accepted and widely used concept in Mexican public policies; so the baseline situation in the Sierra Tarahumara is characterized by a wide range of institutional programs related to the project objective. However, more specific BD and ES considerations are much less reflected in planning documents and even less by institutional implementing mechanisms. Few government agencies and civil society actors in the Sierra Tarahumara have systematically incorporated BD and ES conservation considerations into their strategies and practices. Budgets and coverage of institutional programs of different sectors applying BD and ES conservation as overarching criteria are still comparatively low. Regarding the three project components – i.e. monitoring of biodiversity and ecosystem services; environmental governance; pilot conservation and sustainable production interventions – specific stakeholder achievements and limitations are as follows:

Several government institutions and NGOs are engaged in monitoring biodiversity and status/dynamics of ecosystems and habitat. Their primary focus lies on monitoring endangered species, on one hand, and on the other hand forest cover and production capacities. CONANP has been monitoring BD indicator species, like black bear, green macaw, thick-billed parrot and Chihuahua spruce, as well as some migratory birds in some parts of the Sierra region, involving

communities and NGOs (for example CONTEC and Tierra Nativa) in field observation. The Faculty of Zootechnics and Ecology of the Autonomous University of Chihuahua (UACH) is monitoring birds in the Copper Canyons. CONAFOR and the state Direction of Forest Development have recently introduced a so-called biometric system for the assessment of forest inventories in the Sierra; results are already available.[9] The UMAFOR San Juanito has developed and applied a system for fine scale measurement and mapping of forest cover and deforestation processes.

In spite of existing monitoring efforts, results are dispersed and incomprehensive. There is a lack of inter-institutional coordination among monitoring activities and a lack of common methodologies needed to make monitoring results of different actors comparable and complementary. Information transfer from monitoring institutions to key actors in regional development policies is not fluent, so planning and decision making for BD and ES conservation management are insufficiently based on reliable and comprehensive information.

As a consequence of these institutional weaknesses, without the proposed project knowledge regarding BD and ES status and dynamics and their relation with prevailing threats, would increase in a slow and fragmented manner. This applies to the existing knowledge base as documented through monitoring of key BD and ES indicators and scientific research on the impacts of production and extraction practices (threats) on BD/ES in the project area. It also applies to slow progress in the transmission and diffusion of knowledge about these variables and their relationships among local decision-makers, particularly land and forest owner organizations and the institutional structures around them.

Sustainability and inter-institutional coordination are generally proclaimed and accepted principles within Mexican development policies. Attempts to reflect such principles in the Sierra Tarahumara are the Interinstitutional Assistance Program for the Indigenous People (PIAI) and the Interinstitutional Working Group (GIT) for integrated management of the Conchos basin. There are also frequent bilateral coordination efforts between different institutions and their programs in the region. However, the impacts of these initiatives are limited and do not truly conform a much needed common policy platform for sustainable territorial development of the Sierra, which is a central goal of the present project. As long as a common platform - in the form of a Regional Action Plan or Common Agenda for the Sustainable Development of the Sierra Tarahumara - has not been built by key actors, environmental governance of the region will remain weak. In the absence of a common policy platform, dispersed coordination efforts of regional stakeholders for BD and ES conservation will remain largely ineffective. Funding allocation regulations will not systematically incorporate BD and ES conservation criteria, and landscape management criteria will not promote the development of sustainable regional development policies. Enforcement of environmental policies and regulations will also persist on its current low level, as important institutional and social stakeholders have not been involved in the design of a common sustainable development vision for the Sierra.

Numerous local projects are carried out in the region on a variety of topics (i.e. soil and water conservation, reforestation, sustainable production and food security, eco and ethnic tourism, wildfire prevention and control, voluntary conservation of community forest areas, wildlife habitat protection, community monitoring of species, payment for environmental services, awareness-building for conservation and waste management), apparently with a tendency to grow year by year in number and funding. Most of these projects are implemented as part of federal programs with explicit sustainable development goals (see section 2.5); there are also various local initiatives carried by the state government and NGOs. However, the coverage of these projects is still limited. Projects are weakly focused on priority areas for ES and BD conservation, as selection of project sites cannot be based on a comprehensive biodiversity and environment services assessment for the Sierra. Impact assessments are scarce or superficial, as are systematization efforts to draw lessons and identify errors and good practices. The latter refers to the lack of a common platform where key actors with experience in the Sierra discuss their project planning and implementation methodologies with a view to adapting them for achieving better results and environmental and social impacts.

Actions being implemented under the "business-as-usual scenario", while significant in number and investment, are dispersed and not coordinated, so they lack the necessary impact to achieve a meaningful conservation of the natural resource base at the landscape level, as they attempt to fight poverty, create jobs and promote sustainability. Effective action that would ensure biodiversity conservation is not forthcoming because of a set of barriers including: i) rudimentary biological inventories and insufficient baseline information which are inadequate for planning, as well as very limited knowledge about the environmental services and their value, and consequently, their adequate management, ii) government support programs are carried out in a compartmentalized manner by sectors addressing

[9] For example, for the UMAFOR de Guadalupe y Calvo; see: Asociación Regional de Silvicultores de Guadalupe y Calvo (2013). *Informe de la Asociación Regional de Silvicultores de Guadalupe y Calvo A.C. Octubre 2012 – Febrero 2013*: 5

short term goals, hence do not allow an integrated view of biodiversity and ecosystemic benefits and iii) limited capacity of institutions to demonstrate and upscale interventions at the landscape level.

Without a special intervention aimed at overcoming the aforementioned deficiencies, projects and investments in the Sierra will continue their actual course. Local projects will continue covering only a limited number of areas and communities, and the most adequate sites for BD and ES conservation will not be selected; the lack of a comprehensive BD and ES assessment and monitoring system and of a corresponding information base will contribute strongly to this situation. Current inaccurate practices, especially those that have proven to be ineffective for ensuring community participation in the complex ethnic and cultural diversity of the Sierra, will keep determining project planning and execution methods. As long as BD and ES conservation efforts are not articulated within a regional strategy and common goals for sustainable development, they will remain isolated and will not achieve synergic effects.

Despite long-standing efforts by government sectors and organizations in the Sierra Tarahumara, there are still important challenges ahead in:

- The development of a functional coordination scheme that articulates a number of sectorial government efforts and optimizes available funds and technical expertise to address the people's needs and the loss of natural resouces, particularly in specific areas of high ecological value;
- Halting the rate at which natural resources are deteriorating, particularly due to the implementation of damaging activities (mainly related to unsustainable timber extraction, livestock management, agriculture, mining and tourism development);
- Implementation of economic instruments that secure the conservation of landscapes and species at risk;
- The participation of local communities in natural resources management planning, with an emphasis in forest resources;
- Implementing strategies to conserve the traditional knowledge and practices associated to biodiversity conservation, in accordance with Article 8, paragraph J of the CBD.

Under the "business-as-usual" scenario, continued degradation of forests, loss of forest cover and an aggravated tendency towards unsustainable production practices will increase threats to global, national and local environmental benefits, in particular hydrological ecosystem services and biodiversity. "Business-as-usual" in management of natural, especially forest, resources would not arrest tendencies towards reduction of water resources and soil degradation, with its negative impacts on wildlife and livelihoods for adjacent communities. Degradation and loss of forest cover will reduce carbon sequestration services and reduce habitats for threatened species like jaguar, cougar, bobcat, black bear, beaver, river otter, white-tailed deer, mule deer, collared peccary, green macaw, thick-billed parrot, eared quetzal, the magpie pint, the spotted owl and others. These species could suffer significant population losses and thereby, on a regional scale, move from endangered to a critically endangered status.

A.5 Incremental /Additional cost reasoning

The incremental cost reasoning is presented in section 3.7 of the prodoc. Also refer to the incremental cost analysis in appendix 3 of the prodoc.

A.6 Risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and measures that address these risks

The analysis of risks and proposed mitigation measures has been elaborated since the PIF. Refer to section 3.5 of the prodoc which includes Table 10. Project risks and mitigation measures.

A.7 Coordination with other relevant GEF financed initiatives

The proposed project will coordinate with a series of complementary initiatives at national and international level. Since the PIF more projects and detail has been added, including a preliminary coordination plan that will be further elaborated during implementation by partners under the leadership of the PMU. Refer to section 2.7 of the prodoc and Table 8 herein for the detail.

B. ADDITIONAL INFORMATION NOT ADDRESSED AT PIF STAGE:

B.1 Describe how the stakeholders will be engaged in project implementation

During the project preparation phase, a series of consultations was held with stakeholders as follows:

- Regular communication and consultation with institutions participating directly in the development and design of the project: CONANP, WWF, UNEP and UACJ
- A workshop to design the project logical framework in August 2012 with the participation of federal, state and municipal government representatives, NGO, academic and private sector
- Meetings and interviews with key stakeholders that will be engaged in co-financing and implementing project activities, including state (government) agencies such as DDF, SDUE, CET, PIAI; federal entities like SAGARPA-PESA, CDI, SEDESOL, SEMARNAT, CONAFOR; NGOs such as Tierra Nativa, PROFAUNA, Sierra Network, Sierra Madre Alliance, PRONATURA, SINÉ; research institutes like UACH (Faculties of Agricultural and Forestry Sciences and of Zootechnics and Ecology) and INAH; UMAFORES like those of Guadalupe y Calvo, Urique, Balleza, Guachochi and San Juanito; communities and ejidos like Mogótavo and Borochi.
- Project presentations to the State Forestry Sector in February 2013 and a special meeting with governmental stakeholders in May 2013.

As a result of these consultations, the project proponents have confirmed the interest and willingness of key stakeholders to participate in project implementation by executing or co-financing specific project activities, to engage in efforts to improve inter-institutional coordination, and to provide broad institutional support to the project as a whole.

State and federal government agencies, such as DDF, SDUE, CET, PIAI, CONANP, SAGARPA, CDI, SEDESOL, SEMARNAT, CONAFOR and CONABIO will be involved in project implementation in different ways and provide additional funding for specific activities related to their area of competence and expertise. The state Direction of Forest Development (DDF) will be a key partner in most aspects related to forest management, by introducing sustainability and biodiversity criteria in improving forest productivity and modernization of forest processing industry; for example, in certification of forest use areas, monitoring indicators of sustainable forest development and strengthening the value chain beyond primary production. The state Secretariat of Urban Development and Ecology (SDUE) and the state Coordination of the Tarahumara (CET) will be involved in strategic planning for the sustainable development of the Sierra Tarahumara. The Interinstitutional Assistance Program for the Indigenous People of the State of Chihuahua (PIAI) will be a significant partner in designing and implementing the sustainable regional development strategy promoted by the project. CONANP, apart from its leading role in overall project management, will play a key role in creating synergies between the project and local actors; conservation and sustainable development activities supported by PROCODES and PET funds will contribute considerably to achieving project results in component 3; CONANP will also provide expertise and funds for BD monitoring. SAGARPA is one of the principal project stakeholders, as its portfolio covers relevant themes that will be worked on in the project; through its PESA food security and COUSSA programs, SAGARPA will contribute to soil and water conservation, as well as to rescuing and disseminating traditional knowledge in sustainable production practices. CDI will be a relevant partner in pilot projects of alternative tourism in indigenous zones and sustainable production, especially with indigenous women; in a broader perspective, the project will derive lessons and good practices from CDI´s Territorial Management Strategy for Development with Identity. SEDESOL will be involved in the project through its Temporary Employment Program financing community development activities, including conservation, restoration or reforestation projects, and its Production Options Program subsidizing sustainable production projects, diversifying products, forming associations and building capacities. SEMARNAT´s contribution to the project will consist in two aspects: on the normative side, the institution can contribute to prevent or mitigate negative impacts on ecosystems and wildlife habitats through its competence for authorising land-use changes (for example from forest use to mining) or approving environmental impact assessments; on the executive side, SEMARNAT´s PET program will add to pilot projects for water basin restoration in agricultural areas, wildlife habitat improvement and solid waste disposal and recycling. CONAFOR´s program portfolio for the region will allow aligning and co-financing pilot projects in forest conservation and restoration, nature tourism and payment for environmental services. CONABIO will participate in the project by contributing its methodological experience and funds for developing biodiversity information and monitoring systems.

In view of the important role of municipalities in local development policies and given the function of mayors as formal presidents of Municipal Forestry Development Councils, their participation in project planning and implementation at the local and regional level is crucial. The project will raise awareness within municipal agencies of the importance of long-term perspectives in natural resources management and involve them in planning and implementing adequate BD and ES protection policies within their jurisdictions.

UMAFORES and Regional Forest Producers Associations are relevant actors as they assist ejidos, communities and individual forest owners for improving their forest management, for example by developing their forest management plans and preventive technical audits for certification of forest areas; the project will involve them not only in planning and implementing pilot projects, but also in designing regional development policies in the context of building the Common Agenda for the Sustainable Future of the Sierra Tarahumara.

Non-governmental organizations (like those mentioned in ProDoc section 2.5) will play a prominent role during project implementation by contributing their technical knowhow, knowledge of local socioeconomic and socio-cultural conditions and practical experience in different thematic areas that are relevant for the project. These include: Empowerment and capacity strengthening of communities, ejidos and local working groups; biodiversity, habitat and ecosystem monitoring; training and technical assistance for eco-friendly production practices and forest restoration activities; defence of community property rights; food and water security; sustainable protection of the community's natural resources.

Participation by institutions in the academic and research sector will focus on BD and ES monitoring, on research regarding habitat change and threats to biodiversity and ecosystem functions and services, on training for land and forest owners for introducing and managing BD and ES friendly land use practices and on capacity building for local and regional policy decision-makers in strategic planning. Important stakeholders from this sector are: UACH through its Faculties of Agricultural and Forestry Sciences in Las Delicias and of Zootechnics and Ecology in Chihuahua; the National Institute for Research on Forestry, Agriculture and Fishing (INIFAP) with its three experimental research centers in the state; the Autonomous University of Ciudad Juárez; the Center in Chihuahua of the National Institute of Anthropology and History (INAH) and the School of Anthropology of North Mexico (ENAH-Chihuahua) with its campus in Creel.

B.2 Describe the socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of global environment benefits (GEF Trust Fund/NPIF) or adaptation benefits (LDCF/SCCF)

The project is expected to have positive environmental impacts because of its focus on conserving biodiversity and ecosystem service values. By integrating biodiversity and ecosystem service considerations into natural resource use practices in the Sierra Tarahumara, the project will help to conserve many species of global concern and preserve or restore essential ecosystem functions in critical habitat areas. Restoration and conservation of watershed functions and riparian corridors in the key watershed areas of the Sierra will help increase the resilience of these landscapes to changing rainfall and water flow levels and thereby help buffer them against climate change impacts.

The project focus on improved understanding and conservation of ecosystem services is also expected to entail positive social impacts, as these services provide important benefits to communities and towns in the region, such as improved water supply and quality and more protection against soil erosion and impoverishment of agricultural lands.

Additional income from existing government-funded and market-based programs, including different mechanisms of ecosystem service payments, will improve livelihoods mainly in rural communities situated both in the upper and lower Sierra Tarahumara. Gaining access to markets for products that are produced under environmentally friendly practices, including certified forest and agriculture management, will help poor farmers, both men and women, to achieve better incomes. These positive socioeconomic impacts will be the more sustainable as they will be built increasingly on capacities to succeed in the real economy and be less dependent on time limited governmental programs.

A relevant social safeguard relates to potential risks from traditional power structures in rural zones of the Sierra Tarahumara and low social cohesion between mestizos and indigenous people in ejidos and communities that might undermine access to, or success of, projects that require stable organization and engagement of land users. The project will address this risk by carrying out social and organizational viability assessments before committing its support to pilot project initiatives in selected communities. In addition, it will address both structures – the ejido and the

indigenous communities within or outside the ejidos – in its promotion activities for pilot conservation and sustainable production projects.

B.3 Explain how cost-effectiveness is reflected in the project design

The basic assumptions of the project with regard to cost-effectiveness are that the sustainable management and conservation of natural resources, including biodiversity, is best achieved 1) through local management at the community and micro-watershed scale; 2) through an incentive-driven approach based on environmental service rewards; 3) building on existing institutional mechanisms for implementing investments in conservation and sustainable production activities; and 4) taking advantage of methodological expertise and local experience in the NGO, governmental and academic sector for supporting capacity building processes.

Strengthening the local management of natural resources at the community and micro-watershed scale is particularly cost-effective under the conditions in the Sierra Tarahumara. Experience in the region with its extremely dispersed rural communities has shown that the micro-watershed is a good scale for coordinating the efforts of different governmental and non-governmental institutions, thereby achieving synergies. One alternative would be to plan and coordinate natural resource conservation only at higher scales (e.g., the regional or state level) where it is difficult to integrate site-specific information, especially in such heterogeneous regions as the Sierra Madre Occidental and its canyons and watersheds. For this reason, the adequate alternative is to perform these tasks linking planning at municipal scale with the micro-watershed level which will be more effective in a region where water management is of predominant importance for the functioning of ecosystems and well-being of communities.

This project also favors a reward-and-incentive approach to the management of natural resources rather than an approach based exclusively on rules and policing (which are both necessary as well) for numerous reasons, including cost effectiveness. In an area of difficult access such as the Sierra Tarahumara, with security problems and low governance, it is very difficult to enforce land use regulations if these are not in the interest of the land users. The project's approach is therefore to facilitate access to incentives and rewards for communities for land use practices and activities that benefit the environment and help ensure the delivery of environmental services to downstream users. Through this approach, better results can be expected in terms of resource conservation than with a traditional approach based solely on the (often unsuccessful) enforcement of rules.

An important factor of the current design's cost efficiency is the adopted implementation and sustainability strategy that builds on existing institutional structures in the government, NGO and academic sector, instead of paying for their establishment through project funds. Project management costs associated with the project staff can be held at a low level (21,4% of GEF project cost), because involved institutions and organizations assume part of the administrative and management costs related to implementing project activities. So GEF funds will be focused on cost-effective use for planning, implementing and capacity-building on all levels, from land users to state and federal government agencies.

Another significant advantage for project cost-effectiveness consists in the methodological expertise and local experience in the region of key project partners from the NGO, academic and governmental sector, particularly CONANP and WWF. The project implementation strategy considers the involvement of these actors in all components thereby reducing substantially transaction costs which are associated with community decision processes and coordination between different participating actors.

E. DESCRIBE THE BUDGETED M&E PLAN

See costed M&E plan in the ProDoc (Appendix 7).

PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT(S) ON BEHALF OF THE GOVERNMENT(S):): (Please attach the Operational Focal Point endorsement letter(s) with this form. For SGP, use this OFP endorsement letter).

NAME	POSITION	MINISTRY	DATE *(MM/dd/yyyy)*
Claudia Grayeb Bayata	Operational GEF Focal Point, Mexico	SHCP	Dec/02/2011

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for CEO endorsement/approval of project.

Agency Coordinator, Agency Name	Signature	Date *(Month, day, year)*	Project Contact Person	Telephone	Email Address
Brenna VanDyke, Director, GEF Coordination Office, UNEP		March 25, 2014	**Robert Erath** Task Manager LAC Biodiversity and Land Degradation UNEP/GEF	+507 305 3171	robert.erath@unep.org

ANNEX A: PROJECT RESULTS FRAMEWORK *(either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).*

The Project Results Framework is provided in Appendix 4 of the UNEP ProDoc.

ANNEX B: RESPONSES TO PROJECT REVIEWS (*from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).*

All comments have been duly addressed and considered during the PPG, and issues are reflected in the ProDoc and CEO endorsement request. For the responses to reviews refer to Appendix 16 of the ProDoc.

ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS[10]

A. PROVIDE DETAILED FUNDING AMOUNT OF THE PPG ACTIVITIES FINANCING STATUS IN THE TABLE BELOW:

PPG Grant Approved at PIF: **100,000**			
Project Preparation Activities Implemented	***GEF/LDCF/SCCF/NPIF Amount ($)***		
	Budgeted Amount	***Amount Spent To date***	***Amount Committed***
1) Information system for priorization of landscape units and habitat types conforming biological corridors	26.400	26.400	0
2) Review of policy context and regulations related to environmental protection and multi-sectorial collaboration	18.400	18.400	0
3) Review of capacities among institutional stakeholders to participate in the development and implementation of the Regional Action Plan (RAP)	18.400	18.400	0
4) Engagement and capacity development for local communities and grassroots organizations	18.400	18.400	0
5) Development of monitoring and evaluation strategy	18.400	18.400	0
Total	**100.000**	**100.000**	**0**

ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used)

Provide a calendar of expected reflows to the GEF/LDCF/SCCF/NPIF Trust Fund or to your Agency (and/or revolving fund that will be set up)

N/A

[10] If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for the activities.

UNITED NATIONS ENVIRONMENT PROGRAMME

Programme des Nations Unies pour l'environnement | Programa de las Naciones Unidas para el Medio Ambiente
Программа Организации Объединенных Наций по окружающей среде | برنامج الأمم المتحدة للبيئة
联合国环境规划署

UNEP

PROJECT DOCUMENT

SECTION 1: PROJECT IDENTIFICATION

1.1. **Project title:**

Integrating the Management of Protection and Production Areas for Biodiversity Conservation in the Sierra Tarahumara of Chihuahua, Mexico

1.2.	**Project number:**	GFL/
	PMS:	
1.3.	**Project type:**	FSP
1.4.	**Trust Fund:**	GEF
1.5.	**Strategic objectives:**	
	GEF V Strategic Objective:	BD 1 Improve Sustainability of Protected Area Systems BD 2 Mainstream Biodiversity Conservation and Sustainable Use into Production Landscapes/Seascapes and Sectors
1.6.	**UNEP priority:**	Ecosystem Management
1.7.	**Geographical scope:**	National
1.8.	**Mode of execution:**	External
1.9.	**Project executing organizations:**	CONANP, WWF Mexico/MAR
1.10.	**Duration of project:**	60 months
	Commencing:	1 March 2014
	Completion:	28 February 2019

1.11. **Cost of project**	US$	%
Cost to the GEF Trust Fund	**4,900,000**	**10.9**
Co-financing (confirmed)		
Grant		
CONANP	769,230	1.7
CONAFOR	2,500,000	5.6
CDI	13,076,922	29.1
SEDESOL	20,000,000	44.5
Pronatura	320,007	0.7
WWF	982,424	2.2
UNEP	150,000	0.3
Grants sub-total	**37,798,583**	**84.1**
In-kind		
CONANP	1,120,000	2.5
WWF	367,576	0.8
UNEP	750,000	1.7
In-kind sub-total	**2,237,576**	**5.0**
Total co-financing	**40,036,159**	**89.1**
Total project cost	**44,936,159**	**100.0**

1.12. **Project summary**

The project objective is to integrate biodiversity conservation considerations into the management of protection and production areas in the Sierra Tarahumara of Chihuahua, Mexico, through the development and implementation of a participatory strategy that engages communities, government and NGOs. Achieving its objective, the project will contribute to conserve biodiversity (BD) and ecosystem services (ES) of global significance in this zone of the Sierra Madre Occidental, while improving the livelihoods and quality of life of its inhabitants. The project´s geographical scope includes 12 municipalities in the Sierra Tarahumara covering an area of 41.652 km2 of high-biodiversity ecosystems - mostly mountain pine, pine-oak and tropical deciduous forests - that are key for the provision of ecosystem services for local communities and large parts of Chihuahua and other states of Northwestern Mexico.

The project objective will be attained by achieving the following outcomes (results): (1) Management plans and decision making processess of key stakeholders involved in the biodiversity conservation management of the Sierra Tarahumara utilize the project's diagnostic tools and data bases; (2) the environmental governance of the Sierra Tarahumara region improves in responsiveness to key issues for biodiversity conservation and ecosystem services supply following a Regional Action Plan (RAP) that incorporates biodiversity criteria, funding commitments, evaluation parameters and a strategy for upscaling as well as for economic sustainability beyond project completion including protected areas under governmental, community and private management; (3) sustainable and integrated land and natural resource management effectively applied at the headwaters of the Rio Conchos, the Rio Fuerte and the Rio Mayo river basins results in a landscape mosaic of up to 300,000 hectares that combine added conservation areas and productive land under biodiversity and ecosystem services friendly management.

The first project outcome (component 1) will be achieved by developing a Sierra Tarahumara Data Monitoring and Information System (ST-DM&IS) and a Sierra Tarahumara Biodiversity and Environment Assessment to support conservation planning, evaluation and decision making, including a comprehensive GIS based bioassessment reporting mechanism. An awareness and capacity building program will be implemented for local, state and federal level stakeholders within the project area, to engage and enable them in the use of tools and data bases produced by the project. The project will also provide follow-up assistance to stakeholders monitoring systematically key indicators of BD and ES by using the ST-DM&IS.

The second outcome (component 2) is the result of establishing a coordination mechanism of federal, state and municipal authorities with local communities and non-governmental actors for the development and implementation of a Regional Action Plan (RAP), as a basis for a Common Agenda for the Sustainable Future of the Sierra Tarahumara. The RAP will mainstream BD and ES criteria into regional development policies and programs and will integrate the sustainable use of productive lands and the protection of areas with high value for BD conservation and ES provisioning. Drawing from PPG findings, the Biodiversity and Environment Assessment in component 1 and the RAP, a policy improvement strategy will be developed to propose new regulations affecting funding allocation criteria in different government sectors that mainstream measures to conserve and sustainably use biodiversity and key ecosystem services. Furthermore, an adaptive management model at the landscape level emphasizing forest lands will be developed and implemented, based on project learnings and best practices systematization. Through an outreach program the project aspires to replicate and upscale results from the pilot level to the wider landscape in the Sierra Tarahumara.

The third component will identify and assess the suitability of potential areas and sites for pilot project implementation utilizing and adapting tools and data from component 1 and PPG findings. Sustainable and integrated land and natural resource management plans will be developed in municipalities within the project´s scope, including voluntary conservation areas and areas where biodiversity friendly production and ecosystem services can be optimized. Building on these assessments and land management plans, pilot programs and field activities regarding conservation and sustainable production will be implemented in communities and micro-watersheds of the project region.

TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS

A.C.	Asociación Civil
ADR	Agencia de Desarrollo Rural (Rural Development Agency)
APR	Annual Project Report
ARS	Asociación Regional de Silvicultores (Regional Forest Producers Association)
ATP	Auditoría Técnica Preventiva (Preventive Technical Audit)
AWP	Annual Work Plan
BD	Biodiversity
CABSA	Program to Develop Environmental Services Markets for Carbon Capture and Biodiversity and to Establish and Improve Agroforestry Systems
CARC	Cuenca Alta del Rio Conchos
CBD	Convention on Biological Diversity
CCDI	Centro Coordinador pare el Desarrollo Indígena (Coordinating Centre for Indigenous Development)
CDI	Comisión Nacional para el Desarrollo de los Pueblos Indígenas (National Commission for the Development of Indigenous Peoples)
CEF	Consejo Estatal Forestal (Chihuahuan State Forestry Council)
CET	Coordinación Estatal de la Tarahumara (Chihuahuan State Coordination of the Tarahumara)
CFE	Community Forest Enterprises
CI	Conservation International
CIF	Climate Investment Fund
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMDRS	Consejo Municipal para el Desarrollo Rural Sustentable (Municipal Rural Sustainable Development Council)
COESPRIS	Comisión Estatal para la Protección Contra Riesgos Sanitarios (Chihuahuan State Commission for Sanitary Risk Protection)
CONABIO	Comisión Nacional para el Conocimiento y Uso de la Biodiversidad (National Commission for Information and Use of Biodiversity)
CONAFOR	Comisión Nacional Forestal (National Forestry Commission)
CONAGUA	Comisión Nacional del Agua (National Water Commission)
CONANP	Comisión Nacional de Áreas Naturales Protegidas (National Council for Natural Protected Areas)
CONAPO	Consejo Nacional de Población
CONEVAL	Consejo Nacional de Evaluación de la Política de Desarrollo Social (The National Council for the Evaluation of Social Development Policy)
CONTEC	Consultoría Técnica Comunitaria
COP	Conference of Parties
COPLADEMUN	Comité de Planeación para el Desarrollo Municipal (Municipal Development Planning Comittee)
COUSSA	Conservación y Uso Sustentable de Suelo y Agua (Soil and Water Conservation and

	Sustainable Use)
DEPI	Division of Environmental Policy Implementation (UNEP)
DM&IS	Data Monitoring and Information System
ECCAP	Estrategia para el Cambio Climático en Áreas Naturales Protegidas
EFC	Empresa Forestal Comunitaria (Community Forest Enterprise)
ERF	Estudio Regional Forestal (Regional Forestry Study)
ES	Ecosystem Services
EOU	Evaluation and Oversight Unit
FAO	Food and Agriculture Organization of the United Nations
FECHAC	Fundación del Empresariado Chihuahuense (Foundation of Chihuahua´s Entrepreneurs)
FGRA	Fundación Gonzalo Río Arronte
FSC	Forest Stewardship Council
FMCN	Fondo Mexicano para la Conservación de la Naturaleza (Mexican Fund for Nature Conservation)
FSP	Full Size Project
GEF	Global Environment Facility
GEFTF	GEF Trust Fund
GIS	Geographic Information System
GIT	Grupo Interinstitucional de Trabajo (Interinstitutional Work Group)
HDI	Human Development Index
ICATECH	Instituto de Capacitación para el Trabajo del Estado de Chihuahua (Chihuahua State Occupational Training Institute)
INAH	Instituto Nacional de Antropología e Historia (National Institute of Anthropology and History)
INE	Instituto Nacional de Ecología (National Institute of Ecology)
INECC	Instituto Nacional de Ecología y Cambio Climático (National Institute of Ecology and Climate Change)
INEGI	Instituto Nacional de Estadística, Geografía e Informática (National Institute of Statistics, Geography and Informatics)
INIFAP	Instituto Nacional de Investigaciones Forestales Agricolas y Pecuarias (National Institute for Research on Forestry, Agriculture and Fishing)
IUCN	International Union for Conservation of Nature
LAMM	Landscape Management Model
MAR	Mesoamerican Reef
M&E	Monitoring and Evaluation
MoU	Memorandum of Understanding
NAFTA	North American Free Trade Agreement
NBSAP	National Biodiversity Strategy and Action Plan
NC	National Communication
NGO	Non Governmental Organization

NMX	Norma Mexicana (Mexican Regulation)
NOM	Norma Oficial Mexicana (Official Mexican Regulation)
OFP	GEF Operational Focal Point
PECC	Programa Especial de Cambio Climático (Special Programme on Climate Change)
PES	Payment for Environmental Services
PESA	Programa Estratégico de Seguridad Alimentaria (Strategic Food Security Programme)
PET	Programa de Empleo Temporal (Temporary Employment Program)
PIAI	Programa Interinstitucional de Apoyo a los Indígenas del Estado de Chihuahua (Interinstitutional Assistance Program for the Indigenous People of the State of Chihuahua)
PIF	Project Identification Form
PIR	Project Implementation Review
PMC	Project Management Cost
PMU	Project Management Unit
PND	Plan Nacional de Desarrollo (National Development Plan)
PPG	Project Preparation Grant
PRC	Priority Region for Conservation
PROCAMPO	Programa de Apoyos Directos al Campo (Farmers Direct Support Programme)
PROCER	Programa de Conservación de Especies en Riesgo (Species at Risk Conservation Programme)
PROCYMAF	Programa de Conservación y Manejo Forestal (Second Community Forestry Project)
PROCODES	Programa de Conservación para el Desarrollo Sostenible
PRODEFOR	Programa de Desarrollo Forestal (Forestry Development Programme)
PRODESNOS	Proyecto de Desarrollo Sustentable para las Comunidades Rurales e Indígenas del Noroeste Semiárido (Sustainable Development Project for Rural and Indigenous Communities in the Semiarid Northwest)
ProDoc	Project Document
PROFEPA	Procuraduría Federal de Protección al Ambiente (Federal Attorney for Environmental Protection)
PROGAN	Programa de Estímulos a la Productividad Ganadera (Stimulus Programme for Livestock Productivity)
PROMAC	Programa de Conservación de Maíz Criollo ((ative Corn Conservation Programme)
PROMOBI	Programa de Monitoreo Biológico (Biological Monitoring Programme)
PRONAFOR	Programa Nacional Forestal (National Forestry Programme)
PROVICOM	Programa de Vigilancia Comunitaria (Community Surveillance Programme)
PSA	Pago por Servicios Ambientales (Payment for Environmental Services)
PSAH	Programa para Servicios Ambientales Hidrológicos (National Programme for Hydrological Environmental Services)
PSC	Project Steering Committee
RAFT	Renewing America’s Food Traditions

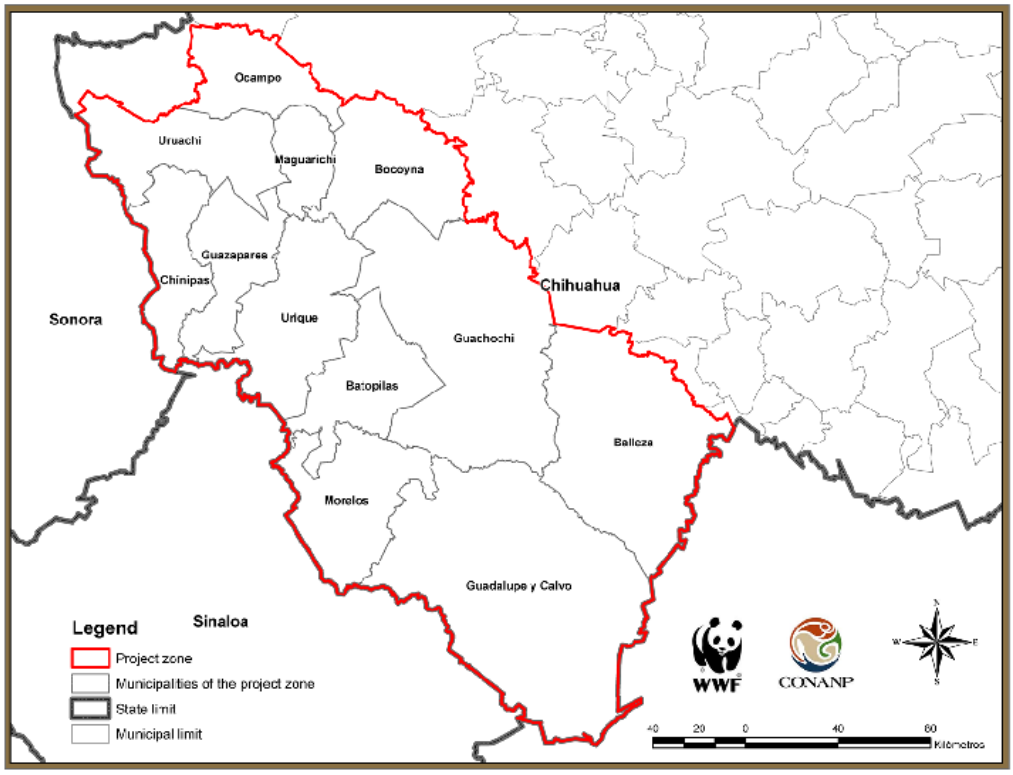
RAP	Regional Action Plan
REDD+	Reduction of Emissions from Deforestation, Forest Degradation, Conservation of Forest Carbon Stocks, Sustainable Management of Forests, and Enhancement of Forest Carbon Stocks
RFSURB	Regional Framework for Sustainable Use of the Rio Bravo
RPC	Región Prioritaria para la Conservación (Priority Region for Conservation)
RTP	Región Terrestre Prioritaria (Terrestrial Priority Region)
SAGARPA	Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación (Secretariat of Agriculture, Livestock, Rural Development, Fishing and Food)
SBS	State Biodiversity Strategy
SDUE	Secretaría de Desarrollo Urbano y Ecología (Chihuahuan state Secretariat of Urban Development and Ecology)
SECTUR	Secretaría de Turismo (federal Secretariat of Tourism)
SEDESO	Secretaría de Desarrollo Social (Chihuahuan state Secretariat of Social Development)
SEDESOL	Secretaría de Desarrollo Social (federal Secretariat of Social Development)
SEMARNAT	Secretaría de Medio Ambiente y Recursos Naturales (Secretariat of Environment and Natural Resources)
SFM	Sustainable Forest Management
SINAP	Sistema Nacional de Áreas Protegidas (National Protected Areas System)
SMART (indicators)	Specific; Measurable; Achievable and Attributable; Relevant and Realistic; Time-bound, Timely, Trackable, and Targeted
SMO	Sierra Madre Occidental
SP	Strategic Programme
ST	Sierra Tarahumara
ST-DM&IS	Sierra Tarahumara Data Monitoring and Information System
TOR	Terms of Reference
UACH	Universidad Autónoma de Chihuahua
UACJ	Universidad Autónoma de Ciudad Juárez (Autonomous University of Ciudad Juárez)
UMAFOR	Unidad de Manejo Forestal (Forest Management Unit)
UMA	Unidad de Manejo para la Conservación de la Vida Silvestre (Wildlife Conservation Management Unit)
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Conference on Climate Change
WWF	World Wildlife Fund

SECTION 2: BACKGROUND AND SITUATION ANALYSIS (BASELINE COURSE OF ACTION)

2.1. Background and context

1. The project area covers much of the Sierra Tarahumara, situated in the northwestern Mexican state of Chihuahua. As part of the Sierra Madre Occidental the area borders in the west with the states of Sonora and Sinaloa, in the south with the state of Durango and in the east with the central highlands of the state of Chihuahua. It includes 12 (out of 23) municipalities of the Sierra Tarahumara: Balleza, Batopilas, Bocoyna, Chínipas, Guachochi, Guadalupe y Calvo, Guazapares, Maguarichi, Morelos, Ocampo, Urique and Uruachi which together add up to a surface of 41.652 km2. Four of these municipalities (Balleza, Bocoyna, Guachochi and Guadalupe y Calvo) belong to the Upper Tarahumara, which is located in the higher and more forested, southern and eastern parts of the Sierra and account for 56% of the project area; the other eight municipalities are situated in the Lower Tarahumara in the western and north-western sector of the Sierra**,** including the zone of the canyons that forms the warm lands of the region.

Map 1. Municipalities of the project area[1]



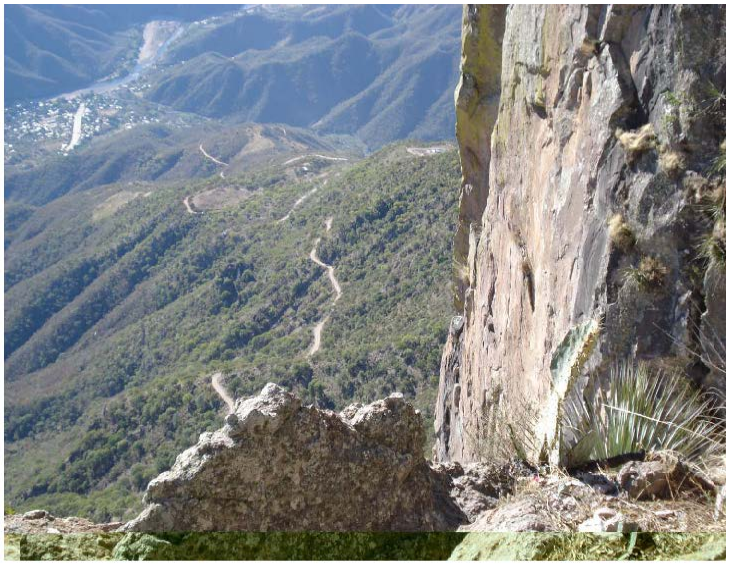
2. The highest elevation in the region is the Cerro Mohinora (3,300 m above sea level), an extinct volcano located in the municipality of Guadalupe y Calvo in the south. “Exposed rocks in the Sierra Madre Occidental are dominated by voluminous ash-flow tuffs extruded from large caldera structures…The volumetric predominance of these ash-flow tuffs has led to recognition of the SMO as the world’s largest continuously exposed, rhyolite-dominated volcanic province.”[2] Due to these

[1] Universidad Autónoma de Ciudad Juárez (UACJ) (2013). Deliverable N° 1 of Project Preparation Activities: *Geographic Information System regarding ecosystem types, landscape units, river basins, species inventories and existing information voids*: 2

[2] http://www.coppercanyonlodges.com/about-copper-canyon/

formations, there are no steep mountain peaks in the Sierra. Nevertheless, the relief of the region is extremely rugged, as canyons were produced over millennia by rivers on the soft tuffs in their long way to the Pacific Ocean. There are numerous profound canyons that constitute the Copper Canyon system, the canyons of Urique (1,879 m deep), Sinforosa (1,830 m), Batopilas (1,800 m), Candameña (1,750 m), Río Mayo (1,680 m), Huápoca (1,620 m), Chínipas (1,600 m), Septentrión (1,600 m) y Oteros (1,520 m), to mention only the deepest[3].

View of the Urique canyon



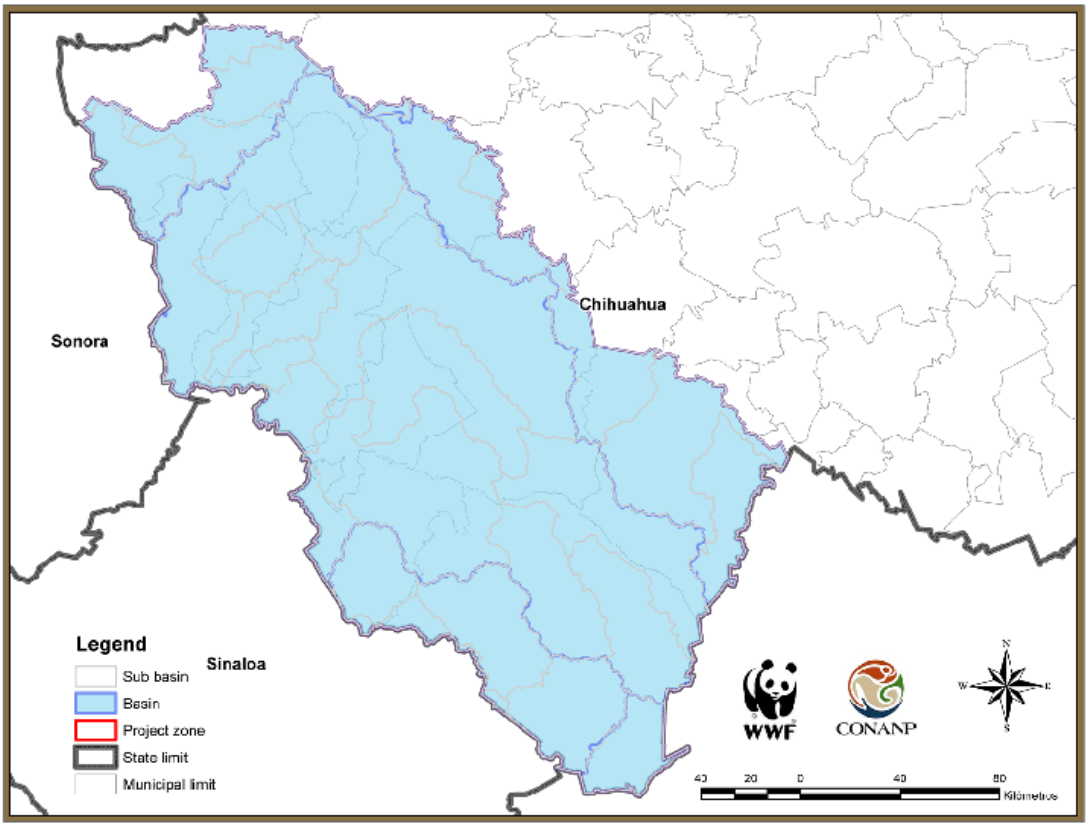
Altitude gradients in the Barranca del Cobre canyon system can exceed 1,800 meters. At the top of the canyons and on the extended high plateaus minimum temperatures in winter can reach -20°C, while in the lower areas average temperatures usually do not drop below +20°C. Such climatic disparities have led to a high biodiversity, with abundant flora and fauna characteristic of mountainous areas. In addition, the difficult accessibility of the region has served as a refuge for many nearctic species.

3. The headwaters of three of the most important perennial rivers of Northwest Mexico lay in the Sierra Tarahumara region. The river Fuerte receives the waters of the rivers Verde, Urique, Batopilas and Chínipas in the southern and western parts of the region draining into the Gulf of California at San Blas in Sinaloa. With a total extension of 35,000 km2, the Fuerte basin covers a major proportion of the project area. The principal affluent of the river Mayo which drains into the coastal plains of Sonora is the river Moris formed by the rivers Concheño y Candameña in the northwestern areas of the Sierra. In the eastern Sierra, the river Conchos receives the waters of the rivers Bocoyna, Mojasichi, Nonoava y Balleza, and after crossing the Chihuahuan desert discharges into the Rio Bravo, being its main tributary. The entire Conchos basin covers an area of approximately 77,000 km2. In the extreme south of the region lay the basins of the rivers Sinaloa (fed by the rivers San José and Basonopita) and Culiacán, draining both to the agriculturally productive coastal plains of Sinaloa. Average yearly precipitation for the Fuerte and Mayo river basins in the Sierra moves around 800 to 850 mm, whereas the Conchos basin receives about 550 mm annually, in its upper

[3] Lebgue, Toutcha, Manuel Sosa y Ricardo Soto (2005). *The Flora of the Copper Canyon, Chihuahua, Mexico*. Ecología Aplicada, 4 (1,2), 2005. Departamento Académico de Biología, Universidad Nacional Agraria La Molina, Lima – Perú

parts. However, there are high inter-annual fluctuations in rainfalls, and droughts lasting several years are not unusual in the Sierra. Generally, sufficient and good quality water provision for communities is a major problem, especially in the Upper Tarahumara during the dry season (February to May) when water from superficial sources becomes more and more scarce.[4]

Map 2. River basins in the project area[5]



4. Soil conditions in the Sierra Tarahumara are generally poor and not very suitable for the development of farming activities. Less than 5 percent of the area is used for agricultural purposes[6]; given its low productivity, it serves mainly for subsistence purposes. Traditional maize cultivation is often associated with bean, pumpkin and other vegetables for self-consumption, as well as fruit (apple and peaches) in some places. *Livestock*, mainly goats and sheep, is kept on a small scale for subsistence. However, in some parts of the region, especially in the northern municipalities of Maguarichi, Ocampo and Uruachi, and in Balleza in the south, pasture land for cattle grazing has gained importance to the detriment of forests.

[4] Universidad Autónoma de Ciudad Juárez (2011). *Ordenamiento Ecológico Regional Barrancas del Cobre, Chihuahua. Etapa Propuesta*: 41

[5] UACJ (2013). Deliverable N° 1 of Project Preparation Activities, op. cit.: 11

[6] See section 2.2 Global significance, par. 13, table 3; see also: Instituto para la Gestión Integral de Cuencas Hidrográficas, A.C. (2009). *Programa de Ordenamiento Ecológico Regional Barrancas del Cobre, Chihuahua*. Informe Final. Etapa I. Caracterización, p. 30. This study covers 9 of the 12 municipalities of the project area; not included are: Balleza, Guadalupe y Calvo and Morelos.

5. Up to 80 percent of the area is covered by pine, pine-oak and oak forests.[7] Thus, *forestry* has historically been, after mining, the main economic sector of the region, even arriving in the past to intensive logging practices by private (Mexican and foreign) logging concessionaries, but with little processing that could add value to the timber resource. The region accounts for 64 percent of the timber production in Chihuahua; more than a third is concentrated in the municipalities of Guadalupe y Calvo and Guachochi in the southern part of the region (Alta Tarahumara); Guadalupe y Calvo, Guachochi and Bocoyna have a limited processing industry, consisting of small-scale sawmills which manufacture boards, pilings and beams using obsolete and inefficient technology. At least 90 percent of the pine forest timber production of the Sierra Tarahumara leaves the region as logs or raw lumber. Three species of pine (*P. arizonica, P. engelmannii, P. durangensis*) account for 96 percent of timber production in the area; in spite of its abundance, oak represents only 4 percent of forestry production.[8] There is also a very limited furniture industry represented by a few small handicraft workshops.

6. The unique scenic beauty of the region with its mountains, canyons, waterfalls, plains and forests, bring high *tourism* potential to the area, together with the ancient Indian culture of the Raramuri and the Jesuit and Franciscan missions, like those in San Ignacio de Arareco near Creel, the Satevo mission near Batopilas or the mission in Cerocahui near Bahuichivo. The most visited tourist attractions in the region are the train from Chihuahua to Los Mochis on the Pacific coast (the *Chepe*), running in the Sierra alongside the Copper Canyon; and the Basaseachic Falls (Cascada de Basaseachic), the second tallest waterfall in Mexico with a height of 246 meters. However, security problems caused by drug violence have resulted in a sharp decline of foreign visitors during the last years.

7. The Sierra Tarahumara is part of the Western Sierra Madre *mining* belt stretching from Sonora to Oaxaca, one of the world's most prolific silver and gold mining districts. During Spanish domination and the 19th century important mining activities took place in the Sierra; one of the principal mints of silver coins of the Mexican Republic in the 19th century operated in Guadalupe y Calvo, in the Upper Tarahumara. In recent years, facilitated by the North American Free Trade Agreement (NAFTA) and soaring metal prices, an increase in mining investments and mineral exploration and exploitation by multinational (mostly Canadian) corporations has taken place in the Sierra, causing serious environmental problems and challenges that urgently call for prevention and mitigation strategies.

8. In 2000, about 205.500 people lived in the project area; in 2005 the *population* increased to 216,000, and in 2010 to 228,000.[9] With 5.5 inhabitants per square kilometre, population density is very low. Over the last 35 years, overall demographic growth was continuous, but breaking down the information at the municipal level, only the more populated municipalities and the few urban centers have grown steadily, however at low rates. Population projections from 2010 to 2030 show a trend towards demographic stagnation, and even decrease in some municipalities, like Batopilas, Ocampo, Uruachi and Guazapares. The largest municipalities by population are: Bocoyna, Guachochi, Guadalupe y Calvo and Urique; in these four municipalities 68.2% of the total population is based. Only five localities are considered as urban, having more than 2.500 inhabitants: Creel and San Juanito in the municipality of Bocoyna, Guachochi, Guadalupe y Calvo and Baborigame (municipality of Guadalupe y Calvo). With 6.998 communities or settlements, the Sierra Tarahumara has a highly dispersed population; 86% of these settlements have less than fifty people, and 49% even

[7] Op. cit.: 30

[8] Ramírez Maldonado, José Guadalupe (2013). *Análisis de la situación actual de la producción maderable, productividad y conservación de la biodiversidad en los bosques templados del estado de Chihuahua, México*. Power point presentation at the meeting of the Consejo Forestal del Consejo Municipal de Desarrollo Rural Sustentable de Guadalupe y Calvo. 15 of February 2013

[9] Information delivered by the UACJ Consulting Team (Universidad Autónoma de Ciudad Juárez), on the basis of demographic data from INEGI (Census years 2005 and 2010).

less than ten. This reflects the particular settlement structure of the indigenous population; many of these tiny communities are situated in remote zones of the intricate Sierra mountain geography.

9. Nearly half the population (44.3%) in the Sierra is indigenous, the great majority (about 90%) is Rarámuri; some localities are inhabited by other ethnic groups like the Tepehuano (Ódami), Guarojío (Makurawe) and Pima (O'oba). Table 1 shows the uneven distribution of the indigenous population in the region, where Balleza, Batopilas, Guachochi and Urique are the municipalities with the highest proportion.

Table 1. Total and indigenous population in 12 municipalities of the Sierra Tarahumara*

Municipality	Total population	Indigenous population	Indigenous population in %
Chihuahua state	3,241,444	141,337	4.4
Balleza	16,235	8,585	52.9
Batopilas	13,298	7,169	53.9
Bocoyna	29,907	9,133	30.5
Chínipas	7,471	920	12.3
Guachochi	45,881	31,895	69.5
Guadalupe y Calvo	51,854	19,127	36.9
Guazapares	8,010	2,951	36.8
Maguarichi	2,116	669	31.6
Morelos	7,172	2,315	32.3
Ocampo	6,298	84	1.3
Urique	19,566	11,113	56.8
Uruachi	7,934	1,540	19.4
Total project area	**215,742**	**95,501**	**44.3**

*Census data of 2005

10. Municipalities located in the project area present low levels of migration; only about 1 percent of households surveyed in 2005 indicated receiving remittances from relatives working abroad.[10] However, important colonies of Raramuris migrating from rural communities have developed in greater towns and in the capital of Chihuahua.

11. The Sierra Tarahumara, and particularly the project area, is the poorest and most marginalized region in the state of Chihuahua, and it is among the poorest in the entire country. 8 out of 12 municipalities are in the bottom quintile (the last 490 among 2.457 municipalities) of the national Human Development Index (HDI). Table 2 shows a high correlation between social indicators like percentage of population without social security services, illiteracy, indigenous population, rank in marginality index in the state of Chihuahua and rank in the national Human Development Index**.** The extremes are Batopilas on one side, with one of the last places in the national HDI, highest marginality index in the state and high percentage of indigenous population (marked yellow in table 2). On the other side, Ocampo, Maguarichi and Chínipas are relatively well situated in marginality, HDI and literacy and have a low percentage of indigenous population. A correlation seems also to exist between economic and social development and the remoteness and lack of accessibility of some areas in the municipalities of Batopilas, Morelos, Uruachi and Guadalupe y Calvo.

[10] Instituto para la Gestión Integral de Cuencas Hidrográficas, A.C. (2009), op. cit.: 42

Table 2. Social indicators of 12 municipalities in the Sierra Tarahumara*

Municipality	% of population without social security services	% of illiterate population	% of indigenous population	Rank in marginality index in the state	Rank in national HDI (among 2,457 municipalities)
Balleza	63.1	27.7	52.9	8	2200 (3)
Batopilas	43.9	38.6	53.9	1	2403 (1)
Bocoyna	48.2	15.3	30.5	7	1308 (11)
Chínipas	25.7	15.1	12.3	11	1828 (9)
Guachochi	37.4	26.2	69.5	6	2152 (7)
Guadalupe y Calvo	40.5	22.0	36.9	4	2176 (6)
Guazapares	29.6	21.4	36.8	9	2190 (5)
Maguarichi	39.0	20.1	31.6	10	575 (12)
Morelos	47.0	22.1	32.3	2	2099 (8)
Ocampo	41.0	9.3	1.3	14	1453 (10)
Urique	37.7	30.5	56.8	5	2270 (2)
Uruachi	38.2	21.1	19.4	3	2197 (4)

*Own elaboration based on data delivered by the Universidad Autónoma de Ciudad Juárez (UACJ) Consulting Team, on the basis of demographic data from INEGI and CONAPO (census year 2010).

2.2. **Global significance**

12. The Sierra Tarahumara is home to one of the most extense woodlands in North America and a unique and extensive system of deep canyons. Landscape heterogeneity and natural processes have resulted in a rich mixture of temperate and tropical ecosystems and species. Thus, this ecoregion is noted for its high biodiversity and large number of endemic species. It contains an estimated 4,000 plant species[11] including the richest diversity of pre-Columbian domesticated crops in the Americas. Being a reservoir of global biodiversity, and at the same time one of the world´s most endangered places (IUCN)[12], the Sierra Tarahumara is part of a biodiversity hotspot, the so called Madrean pine-oak woodlands; these are subtropical woodlands found in the western and eastern Sierra Madre of Mexico and in some enclaves in the southwestern United States. Pine and oak forests are the characteristic vegetation type in the hotspot, ranging from monospecific stands of pines (or firs) to almost pure stands of oak. In between these two extremes, different regions have varying combinations of species, with some more dominant than others. Mexico is an important center of diversity for both pines and oaks, with 44 of the 110 recognized pine species -16 of them found in the Sierra Tarahumara - and over 135 species of oak, more than 30% of the world's species in this genus. Of these oak species, more than 85 are endemic to Mexico. Two endemic species of oak are found only in the Sierra Madre Occidental, *Quercus carmenensis* and *Quercus deliquescens*.[13] The Madrean pine-oak woodlands of the Sierra Madre Occidental are surrounded at lower elevations by other ecoregions, mostly tropical and subtropical deserts (in this case the Chihuahua and Sonora deserts), xeric shrublands and grasslands.

13. The different plant communities in the Sierra Tarahumara are a significant part of the floristic richness of Mexico and the world. In the region almost every type of vegetation along the altitudinal

[11] Felger, Richard S., and Michael F. Wilson (1995?). *Northern Sierra Madre Occidental and its Apachian Outliers: A Neglected Center of Biodiversity*. http://www.fs.fed.us/rm/pubs_rm/rm_gtr264/rm_gtr264_036_059.pdf
[12] http://www.ouramazingplanet.com/134-8-of-the-worlds-most-endangered-places.html
[13] Hogan, C Michael (Conservation International) (2011). *Biological diversity in the Madrean pine-oak woodlands.* The Encyclopedia of Earth.
http://www.eoearth.org/article/Biological_diversity_in_the_Madrean_pine-oak_woodlands?topic=49597

gradient of the canyons can be found, from temperate to transitional forests, tropical deciduous forests, xerophytic scrub, open grasslands and gallery forests.

- *Temperate and transitional forests*: These forests consist of pine and oak in different proportions and species compositions, covering about 76% of the project area. Pine forests are mainly distributed in the high plateaus and constitute the predominant land use in the project area, covering more than one third of its surface. 16 species are found in the region, some of them endemic to the SMO, among which: Arizona pine (*Pinus arizonica*), Apache pine (*P. engelmannii*), Durango pine (*P. durangensis*), Herrera pine (*P. herrerae*), Chihuahua pine (*P. leiophylla, P. leiophylla var. chihuahuana*) and Chihuahua white pine (*P. strobiformis*). Pine-oak and oak-pine forests consist of different combinations of *Pinus* and *Quercus*, which depend on topographic exposure and altitude. In altitudinal belts below 1800 m oaks and juniper trees begin to dominate, at higher altitudes with north and west exposure pines prevail in combination with large-leaf oaks, and in south and east exposure areas small-leaf oaks dominate. The pine-oak and oak-pine forests cover about one third of the project area. Oak forests tend to have more open structures and are less high. Among the many species are: Arizona white oak (*Q. arizonica*), red oak (*Q. coccolobifolia*), broadleaf oak (*Q. crassifolia*), another red oak (*Q. durifolia*), Emory oak (*Q. emory*), silverleaf oak (*Q. hypoleucoides*), Mexican blue oak (*Q. oblongifolia*), netleaf oak (*Q. rugosa*). This vegetation type occupies about 14 percent of the project area. A special mention must be given to certain fir species, like Chihuahua spruce (*Picea chihuahuana)*, an endangered species with just 25 small populations in Chihuahua and Durango, none comprising more than a few hundred trees; sacred fir (Abies religiosa); and a Mexican variety of Douglas-fir (*Pseudotsuga menziesii*).
- *Tropical deciduous forests* in the Sierra Tarahumara consist of plant communities with heights between 4 and 15 meters, in which more than 75% of the trees lose their leaves for almost six months, in the driest time of the year. They are distributed on slopes in the lower parts of the canyons covering about 11% of the project area. This ecosystem is the most biodiverse in the area. A recent study resulted in a floristic checklist of about 770 species.[14]
- *Xerophytic scrub* is dominated by bushes with variable height, but generally less than five meters. They are found mainly in the bottom of the canyons, where the climate is semi-arid and warm, covering a very small area. They are dominated by species of the genus *Acacia*, other than agaves, cacti and sycamores.
- *Grasslands* are classified into three types: natural, induced and cultivated. In the project area there are natural and induced grasslands where the original vegetation (generally pine-oak forests) has been removed, usually for agriculture or livestock. This vegetation type covers about 8% of the project area.
- *Gallery or riparian forests* along the creeks and rivers in the bottom of the canyons have important functions for protecting the habitat of aquatic vegetation, invertebrates and endemic fish species, as well as stopover habitats for migratory birds. Information about the coverage and actual conservation status of this ecosystem is scarce; however, extensive goat and cattle pasture and mining activities are reportedly severely affecting this vegetation type.

[14] Lebgue, Toutcha, Manuel Sosa y Ricardo Soto (2005). The flora of the Copper Canyon, Chihuahua, Mexico. Ecología Aplicada, 4(1,2), 2005

Table 3. Distribution of vegetation types in the project area[15]

Vegetation type	Total (has)	Percent
Pine forest	1.710.803	41,1
Fir forest (*oyamel* and *picea*)	924	0
Oak forest	572.900	13,8
Oak-pine forest	270.189	6,5
Pine-oak forest	610.891	14,7
Tropical deciduous forest, including xerophytic scrub	472.330	11,3
Induced pasture land	268.690	6,5
Natural pasture land	63.584	1,5
Agriculture	192.032	4,6
Others (mainly urban areas)	2.847	0
Total	4.165.194	100,0

14. About 30% of more than 500 terrestrial mammal species recorded in Mexico are located in these plant communities, including jaguar (Panthera onca), cougar (Puma concolor), bobcat (Lynx rufus), black bear (Ursus americanus), beaver (Castor canadensis), river otter (Lontra longicaudis), white-tailed deer (Odocoileus virginianus), mule deer (Odocoileus hemionus), collared peccary (Pecari tajacu), along with a large number of species of bats, rodents and lagomorphs. The Mexican wolf is extirpated from the area, as well as the Mexican grizzly bear.

15. Nearly 300 species of birds have been registered, 24 of which are endemic, one probably extinct (imperial woodpecker, *Campephilus imperialis*); there are eight endangered species, including the green macaw (*Ara militaris*), thick-billed parrot (*Rhynchopsitta pachyrhyncha*), eared quetzal (*Euptilotis neoxenus*), the magpie pint (*Cyanocorax dickeyi*) and the spotted owl (*Strix occidentalis*), the latter only rediscovered in 1995 after it had been considered virtually extinct in the area. 162 species of migratory birds are observed in the project area. Most neotropical-nearctic migratory bird species breeding in the western United States and Canada overwinter in Mexico at the west side of the Sierra Madre Occidental.[16]

16. The herpetofauna of the region consists of 25 species of amphibians (22 frogs and 3 salamanders) and 92 reptiles (35 lizards, 52 snakes and 5 turtles) so far reported for the Sierra Tarahumara. Among the frogs there are two species that have been named after the region: *Craugastor tarahumaraensis*, a species threatened by habitat loss, and the Tarahumara frog (*Lithobates leptodactilido*) that lives in the oak and pine stands preferring moving water to pools.

17. Among the species of fish that are reported for the river Mayo and are listed as important are the Pacific charalito (*Poecilia butleri*), Fort charalito (*Poeciliopsis latidens*, threatened and endemic), Sonora charalito (*P. occidentalis*, threatened). The river Fuerte shares its fauna with neighboring drains and shows no endemics, while the river Conchos is the habitat of the endemic Tarahumara aparique or trout, a salmonid (*Oncorhynchus sp*), probably related to Yaqui trout and Mexican golden

[15] Own elaboration based on table 1 of UACJ (2013). Deliverable N° 1 of Project Preparation Activities, op. cit.: 7

[16] Skagen, Susan K., Cynthia P. Melcher and Rob Hazelwood (2005). *Migration Stopover Ecology of Western Avian Populations: A Southwestern Migration Workshop*. U.S. Geological Survey 2005, Reston, Virginia http://www.fort.usgs.gov/products/publications/21409/21409.pdf

trout (*O. chrysogaster*), and other species such as Mexican stoneroller (*Campostoma ornatum*), considered a threatened species, Conchos carp (*Notropis chihuahua*), Bravo carp (*N. jemezanus*, threatened), Chihuahua catfish (*Ictalurus lupus*), a species under a special protection category, Conchos pupfish (*Cyprinodon eximius*), considered as threatened, and Guayacón pinto (*Gambusia senilis*)[17], also threatened.

18. A total of 52 fish species are under some protected status; three of them are probably extinct in the wild, eight endangered, 31 threatened and ten under special protection. According to another source, between 1901 and 1975, more than 41% of the region's fish species have disappeared.[18] This requires paying special attention to riparian structures, as these are the areas which best contributed to conserve aquatic richness.

19. The Sierra Tarahumara lies in the midst of the large region of the North American deserts dividing the Chihuahuan and Sonoran desert; that gives a special relevance to the function of its temperate forests as main source of environmental services for this part of the country. However, the quality and quantity of environmental services produced by the Sierra Tarahumara depends essentially on the conservation status of its biota. Particularly, the supply of water captured from rain and snow in the mountains is directly related to the conservation status of its forest cover where humidity from various sources condenses and precipitates. In a significant part of the Sierra Tarahumara, we find an extraordinary number of natural springs due to the low permeability of the subsoil. This capillary hydraulic system confirms the enormous capacity of these basins to process and channel water. However, the catchment capacity of the water basins has declined due to forest degradation and deforestation.

20. The region is the source of water that irrigates through the rivers Conchos, Fuerte, Mayo, Yaqui, Sinaloa and Culiacan much of the neighboring ecoregions: more than 600,000 hectares in the Chihuahuan and Sonoran deserts and the Sinaloan coastal plains. The Fuerte and Mayo river basins are of great importance to agricultural production in the valleys and coastal areas of Sinaloa and Sonora; annually they drain 4,162 and 860 hm^3 (millions of cubic meters).[19] The river Conchos is said to be the "aquiferous artery"[20] of Chihuahua, irrigating a wide belt of arid land in the Chihuahuan desert. 70 percent of the state population lives in its basin. As a tributary to the Rio Bravo, this river also provides water for irrigation systems in Texas.

21. Watershed councils for the management of these river basins have been installed by CONAGUA (the National Water Commission) since the 1990ties. The activities of the river Fuerte watershed council are focussed on distributing water resources among users, mainly for irrigating intensive production areas in Sinaloa. However, strategies and programs for the integral management of the water basin which include its upper parts in the Sierra are poorly developed. The watershed council of the river Conchos has been largely inoperative; instead, an Interinstitutional Work Group (Grupo Interinstitucional de Trabajo - GIT) was created in 2005 to implement a watershed management plan and in its first years invested funds in projects to protect the headwaters area of the river, with important contributions from WWF.[21] Recently, an initiative has been started to reactivate the GIT. One of the main policies of the state's Direction of Forest Development is aimed to establish local PES matching funds mechanisms, co-financed by downstream water users and government, to pay forest owners for protecting upstream forest areas, especially in the Bustillos watershed which provides water to irrigated agricultural areas around the city of Cuauhtémoc.

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[17] In German this fish is called Conchos-Kärpfling, recognizing its endemism in the Conchos river basin.

[18] Commission of Solidarity and Defense of Human Rights, A.C./Texas Center for Policy Studies (2000). *The Forest Industry in the Sierra Madre of Chihuahua: Social, Economic, and Ecological Impacts. Austin, Texas* http://www.texascenter.org/publications/forestry.pdf

[19] Instituto para la Gestión Integral de Cuencas Hidrográficas, A.C. (2009). *Programa de Ordenamiento Ecológico Regional Barrancas del Cobre, Chihuahua.* Informe Final. Etapa I. Caracterización: 24

[20] http://www.unesco.org.uy/phi/aguaycultura/es/paises/mexico/pueblo-raramuris.html

[21] http://www.wwf.org.mx/wwfmex/prog_cuencas_c.php

22. Other important environmental services provided by the Sierra Tarahumara forests are carbon storage, soil retention and scenic beauty. The capacity of the region in terms of carbon sequestration, which depends on the total leaf surface areas of its forest, is still substantial, despite an estimated fifty percent of the biomass of the Sierra Madre forests has already been lost, a process that has not been contained yet.

2.3. **Threats, root causes and barrier analysis**

Threats

23. The main threats to biodiversity and ecosystem services in the Sierra Tarahumara are forest degradation; deforestation; decrease and contamination of water resources: These threats act indirectly on species and genetic loss by means of habitat and ecosystem destruction, degradation and fragmentation. Other threats, like poaching and introduction of non-native species, act directly on certain species.

24. As more than 90% of the Sierra Tarahumara is apparently covered by temperate and dry tropical forests, habitat loss seems to be a minor problem in the area. However, such a conclusion would be a fallacy since a long lasting process of forest degradation has left deep marks in the structure and functions of the Sierra Tarahumara forests, and hence in the quality of habitats, goods and ecosystem services they provide. Forest degradation means a reduction of the capacity of a forest to provide goods and services, including biodiversity.[22] It involves a process of change that has negatively affected the structural characteristics of the Tarahumara forests and its biomass density, not necessarily its coverage. Some elements of these changes are: Nearly total removal of large live trees and predominance of young ones; genetic impoverishment due to selective logging of the best specimens[23]; reduced density of forest cover; small but widespread patches without vegetation cover and even without soil; less stratification complexity (especially loss of the subcanopy, shrub and herbaceous strata) and less diverse plant communities (including near extinction of some tree species, like Douglas-firs (Pseudotsuga menziesii) or piceas (Picea chihuahuana). Much of the forest is overstocked with small diameter trees. Virtually all of the large boles have been removed by selective logging practices. Old-growth forests have become extremely rare in the Sierra Madre Occidental (SMO), a significant indicator of forest degradation. Less than 1 percent of the area is now covered by these particularly biodiverse ecosystems; remnants are found in Choriachi (Pino Gordo), the Cerro Mohinora zone and the National Park of Basaseachi Falls; isolated patches of old growth remain in roadless areas, inaccessible canyons and steep hillsides throughout the region.[24] Forest degradation and the consequent habitat loss and fragmentation, combined with indiscriminate hunting, led to the extirpation of the Imperial Woodpecker, Mexican Grizzly Bear, and Mexican Wolf from the SMO in the 20th century. Thick-billed parrots, being especially susceptible to changes in forest structure and extirpated from other mountain ranges in Mexico, are still breeding in remote and isolated sites of the SMO[25], but are considered an endangered species by SEMARNAT. Today, forest degradation in the

[22] FAO (2011). *Assessing forest degradation. Towards the development of globally applicable guidelines.* Forest Resources Assessment Working Paper 177. http://www.fao.org/docrep/015/i2479e/i2479e00.pdf

[23] Heredia, G. 1996. *Manual del bosque*. Red de Bosque Modelo. Chihuahua, México, Editorial Red de Bosques Modelo. Cit. by: Azarcoya González, Beatriz (about 2010). *La Sierra Tarahumara, el bosque y los pueblos originarios: estudio de caso de Chihuahua (México)* http://www.fao.org/forestry/17194-0381f923a6bc236aa91ecf614d92e12e0.pdf: 11

[24] Gingrich, Randall W. (1992). *The Political Ecology of Deforestation in the Sierra Madre Occidental of Chihuahua* (electronic copy received from the author): 5

[25] Cortés Montaño, Citlali (2011). *Old-growth forests of ejido Cinco de Mayo in Chihuahua. Mexico´s natural legacy*. ITESM, Campus Monterrey

Sierra Tarahumara in terms of loss of both productivity and ecological health is increasingly recognized as a problem by forest sector stakeholders.[26]

25. Deforestation

In contrast to forest degradation, deforestation means nearly total loss of the forest cover of an area;[27] generally it implies a change to a different land use type. Unfortunately, we have no reliable statistics of deforestation in the Sierra Tarahumara. Indications of a 4,9 to 9,0% loss of forest cover during the 1990´s decade or of a 20% loss in the last 20 years, are rather imprecise and unspecific.[28] However, some tendencies of deforestation are identifiable: the loss of forest cover has affected mainly pine forests, whereas oak and juniper have recovered some areas.[29] Tropical deciduous forests in the lower parts of the canyons seem to be considerably less affected by land use change and deforestation than pine forests. Some experts are even estimating that in recent years vegetation cover has slightly increased in some zones, mainly as a result of soil and water restoration programs and to natural regeneration processes in abandoned areas formerly under agricultural use.

26. Reduction and contamination of water flows and resources have become a serious threat to biodiversity, affecting directly the population of fish species and amphibians, but also birds and mammals whose habitat depend on the existence of healthy water systems. Rural communities report the drying up of springs and small rivers;[30] another indicator is waterfalls - like the Basaseachi Falls - loosing most of their capacity ever earlier in the dry season. Decrease of water resources is directly related to forest degradation and deforestation; contamination is due to an increase of solid and liquid waste without adequate waste management systems having been installed (see root causes of contamination of water resources).

27. Poaching

While speaking of poaching in the Sierra Tarahumara, a difference should be made between illegal hunting of endangered species for commercial purposes (for example parrots) and the use of forest and wildlife resources for self-consumption by rural, particularly indigenous, inhabitants of the region. Long before the Spanish conquest peoples of the Sierra have used numerous species of plants and animals for alimentary, medical, religious and other purposes. At present, many inhabitants of rural communities, mostly Rarámuri, are still using these resources as firewood or to supplement their diet or exchange them for other goods, for example. Hunted animals include deer, rabbit, opossum, squirrel, rodents, pigeon, partridge, iguana and various fish species captured by fishing rods, traps, plant poisons and sometimes even explosives.[31] While in the past, with less demographic density and mobility, these forms of wood extraction and hunting seem to have been more or less sustainable, at

[26] Ramírez, Guadalupe (2013). *Analysis of the current situation of wood production, productivity and biodiversity conservation in the temperate forests of the state of Chihuahua, Mexico*. Power point presention at the meeting of the Municipal Forest Council of Guadalupe y Calvo, 15 of february 2013

[27] One of the problems in monitoring forest cover change is the lack of an institutional consensus about the definition of deforestation versus forest degradation. Minimum areas of forest cover loss, for example 200 square meters, should be defined as separating line between the two concepts.

[28] Azarcoya (about 2010), op.cit.: 10; Universidad Autónoma de Ciudad Juárez (2013). *Integrated Environmental Assessment of the project area in Sierra Tarahumara; identification of drivers and pressures of environmental change, the state and trends of the environment and options for actions and plans.* Deliverable N° 3 of Project Preparation Activities: 13.

[29] Rodríguez-Pineda et al. (2012). *Evaluación de la Conservación de Suelo y Agua en la Cuenca Alta del Río Conchos Desierto Chihuahuense 2005-2010*. Dirección de Desarrollo Forestal de la Secretaría de Desarrollo Rural del Gobierno del Estado de Chihuahua-WWF-Fundación Gonzalo Río Arronte: 15

[30] Universidad Autónoma de Ciudad Juárez (2011). *Ordenamiento Ecológico Regional Barrancas del Cobre, Chihuahua*. Etapa Propuesta: 41

[31] Almanza Alcalde, Horacio, Víctor Martínez Juárez, Augusto Urteaga Castro Pozo (2006?). *Diagnóstico sociocultural de diez municipios de la Sierra Tarahumara:* 23 and 26
http://www.academia.edu/529739/Diagnostico_sociocultural_de_diez_municipios_de_la_sierra_tarahumara

present the selective elimination of certain links of the plant and food chain has already had an impact on the rest of the flora and fauna communities. Forests apparently in good condition are now short of elements such as predators or seed dispersers, changing their structure and composition. The lack of pertinent studies and monitoring of forest density and wildlife in the region has been an obstacle to knowing the whole dimension of this long-term degradation and "defaunation" and its impact on ecosystem health.[32]

Root causes

28. Root causes of forest degradation are mainly (1) unsustainable logging practices; (2) illegal logging; (3) grazing in forests; (4) wildfires; (5) road construction; (6) expansion of mining.

29. (1) Unsustainable logging practices have a long history in the Sierra Tarahumara. Since the end of the 19th century and until about 1930, big foreign companies exploited the forests cutting big trees selectively, without any reforestation or forest management. Between 1930 and 1950, a heavy demand for railroad ties produced a logging boom and local companies began to enter the business. Having obtained large concessions from the government, local firms began to dominate the timber sector until the sixties and seventies when the owners of the forests, the *ejidos*, increasingly took over the control and use of their resources. However, the forest industry has typically made lucrative deals with *ejido* leaders involving federal officials from the Secretariats of Agriculture or Agrarian Reform, with devastating social and ecological impacts.[33]

30. Since then until present days, in the most cases *ejido* officials are *mestizos*, even when the majority of *ejido* members are indigenous (mostly Rarámuri) people. Power inequalities in *ejidos* are based on better links of *mestizos* with external political authorities and on the concentration of assets for timber extraction in the hands of a minority of *ejido* members, most of them being *mestizos*. Such power inequalities lead to more illegal logging by excluded *ejido* members and to more forest degradation.[34] In some areas, up to 40% of wood extraction is for firewood. "Forests near large pueblos and towns in the highlands, such as Creel and Guachochi, are completely devoid of oak and madron used for firewood. … These valuable, but slow growing, hardwoods are never replanted because the labor and costs required will not benefit the current generation".[35]

31. Federal and state government agencies are still tightly regulating the *ejido* forest sector. Forest management plans are the main regulation instruments which apparently ask for sustainable use of forest resources; however, perverse incentives for technical service providers who develop the management plans and are paid proportionally to the volume of timber harvests, have created a tendency to inflate logging capacities and to mark more trees for logging way beyond sustainable limits. It is still common practice to harvest only trees with a minimum diameter. Few *ejidos* are clearing young trees. Reforestation programs have until recently given preference to monocultures of only two or three species of pines, like *Pinus durangensis and Pinus arizonica.* Another underlying cause of these unsustainable practices is the exclusive timber production approach shared by a majority of professional service providers, as a result of the traditional forestry doctrine taught in universities, that omits other forest values besides wood, such as biodiversity, water production, recreation, visual quality, erosion control, and greater social participation and equity in decisions and

[32] Universidad Autónoma de Ciudad Juárez (2013). Deliverable N° 3 of Project Preparation Activities, op. cit.:16-17
[33] Gingrich 1992, op. cit.: 13
[34] A representative study of 38 *ejidos* in the Sierra Tarahumara found evidence that 83 percent of assets for timber extraction are owned by 5 percent of ejido members, and 10 percent of ejido members accumulate 58 percent of the realized income. Pérez-Cirera, Vanessa, Jon C. Lovett. 2006. *Power distribution, the external environment and common property forest governance: A local user groups model*. Ecological Economics, Volume 59, Issue 3, 20 September 2006, Pages 341-352
[35] Gingrich 1992, op. cit.: 6

benefits.[36] Community-based forest management (*forestería comunitaria*) is still in its infancy in the Sierra Tarahumara, whereas in other Mexican states like Oaxaca, Guerrero, Michoacán, Quintana Roo or Durango about 2400 *ejidos* and communities are reported to practice this participatory approach.[37]

32. Different forms of (2) illegal logging have heavy impacts on pine and oak forests contributing to forest degradation. Especially in areas where forests are still relatively well conserved, organized and armed groups extract considerable amounts of lumber, selecting the best trees. Groups allied with drug dealers are reported to include timber sales in their business model, as a way to launder money proceeding from illicit activities; this explains ongoing timber extraction and transportation from remote areas where the costs are higher than the income received from sale.[38] - Firewood harvesting by locals, when exceeding the permitted volume, exerts considerable pressure on oak and pine forests in more populated zones.

33. (3) Cattle and goat grazing is another important root cause of forest degradation. Cattle is grazing in pine and pine-oak forests, affecting saplings and young trees, many plants of the subcanopy and herbaceous strata; hooves and footsteps of grazing animals contribute to soil erosion. A common problem is that livestock generally exceeds permitted carrying capacities in *ejido* areas. Many cattle farmers are aware of the problem, as they are also *ejido* forest owners; but enforcement of rules by the *ejidos* and the Secretariat of Agriculture (SAGARPA) is weak, if not inexistent. - Impact of goat grazing can be observed mainly in the pine-oak and tropical dry forests on the canyon slopes, as well as in xeric scrublands. After their introduction by the Spaniards in the 16th century, goats are an important part of the livelihoods of the Rarámuri in the Sierra and the canyons. So it remains a challenge to develop both socially and ecologically responsible strategies for goat management in these areas.

34. (4) Wildfires have largely contributed to forest degradation in the Sierra Tarahumara, although mostly affecting grasslands and shrubs, and to a lesser degree, forests. Catastrophic fires covering thousands of hectares are seldom; generally wildfires in the Sierra are limited to, or can be contained within, less than 20 hectares. Nevertheless, burned forest areas, mainly of pine, can be observed throughout the Sierra. The most affected municipalities in the project area are Guadalupe y Calvo, Bocoyna and Urique. Years of severe drought (like 2012) bring sharp increases in wildfires. One of the causes of the vulnerability of the Tarahumara forests to fires is the predominance of young wood. When a fire moves through the forest it does not affect each tree equally. Older trees of many species show high tolerance to fire activity and can survive even when 90% of the crown has been burned. As an analysis of wildfires in the Pacific Northwest of the USA puts it: "Decades of militaristic fire fighting and suppression, intensive logging practices, and harmful grazing practices have created a situation where more than 88 percent of the naturally fire-resistant, old growth trees in the Pacific Northwest have been cut, and fast-burning fuels such as pine trees less than 10 inches in diameter and exotic invasive annuals and grasses, have grown in their place".[39] Therefore, frequent wildfires are

[36] A multidimensional approach to forest management in the SMO is proposed by Concepción Luján Álvarez, professor and researcher at the Faculty of Agricultural and Forestry Sciences of the Universidad Autónoma de Chihuahua in Ciudad Delicias. See: Luján Álvarez, Concepción, Jesús Miguel Olivas García, Hilda Guadalupe González Hernández, Oscar Gómez Soto, María de los Angeles Cuautle Coyac (2008). *Desarrollo forestal sustentable en Chihuahua, México: Una estrategia multidimensional*. Región y Sociedad / Vol. XX / N° 42. 2008. El Colegio de Sonora. ISSN 1870-3925

[37] Azarcoya González, Beatriz (about 2010). *La Sierra Tarahumara, el bosque y los pueblos originarios: estudio de caso de Chihuahua (México)* http://www.fao.org/forestry/17194-0381f923a6bc236aa91ecf614d92e12e0.pdf: 5, 6 and 13

[38] Cortés Montaño, Citlali, Mauro Ramos Gómez, Enrique Carreón Hernández, Nick Smith (2007). *Diagnóstico de los bosques antiguos en Pino Gordo-Choreachi.* CONANP, en colaboración con Alianza Sierra Madre, A.C. Chihuahua, Chihuahua. Diciembre del 2007

[39] Crag Law Center (2013). *Public Lands Program: Healthy Forests*. http://crag.org/our-work/public-lands/healthy-forests/**.** See also: Cortés Montaño, Citlali, P. Z. Fulé, D. A. Falk, J. Villanueva-Díaz, and L. L. Yocom (2012).

not only a cause of forest degradation, but also its consequence. - As a response to the damage caused by wildfires, government resources for fire prevention and control have been incremented in recent years, especially for local fire brigades, early detection and alert systems and the opening of firebreak lines in the forests of the Sierra Madre Occidental.

35. (5) Road construction has a double degrading effect on forests; firstly, because it makes logging in formerly inaccessible forests possible; secondly, because the construction itself destroys broad bands of vegetation. In this respect, road construction is the continuation and aggravation of the former impacts of railway construction. Impacts are particularly severe when roads are built on the steep canyon slopes of the region. Formerly, construction techniques facilitated adapting roads to the terrain, but nowadays heavy machinery is employed causing enormous scars in the landscape and covering thousands of square meters of slope vegetation with removed soil and rocks.

36. (6) Expansion of mining: Mining activity in the Sierra Madre, and particularly in the Sierra Tarahumara, has boomed in the last 3 years. The current high value of gold, silver, copper, nickel and other metals is motivating important investments, mainly from Canadian mining companies, for long term exploration and exploitation of the region´s mining potential. Mining investments in the project area are concentrated in the municipalities of Ocampo, Chínipas, Uruachi, and Maguarichi.[40] Using open pit techniques, mining has had devastating effects, mostly in forest degradation and pollution of soil and water sources, throughout the ten large-scale projects currently operating across the headwaters of the Fuerte river.[41] Opening new mines has also caused heavy impacts by road construction.

Root causes of deforestation

37. Three main causes of deforestation are clearly distinguishable: (1) Expansion of cattle pasture land in the northern municipalities of Maguarichi, Ocampo and Uruachi and in the Conchos river basin, especially in the municipality of Ballezas, as an effect of the proximity of the central highlands of Chihuahua where cattle ranching is predominant.[42] (2) Growth of urban centers like San Juanito, Creel, Guachochi and Batopilas is creating belts of deforested zones in their surroundings.[43] (3) Clearing of small areas for agricultural and housing purposes in rural zones is widespread, but not represented in current land use change measurement and mapping.[44]

Root causes of decrease and contamination of water resources

38. Forest degradation and deforestation have reduced enormously the capacity of water retention of the Sierra, with visible and measurable consequences on water provision for communities in the Upper Tarahumara during the dry season (February to May) when water from superficial sources becomes more and more scarce.[45] – Contamination of water resources has grown exponentially during recent years throughout the Sierra Tarahumara, driven by multiple causes: (1) Changing consumer habits not only of urban, but also of rural and indigenous people, have led to a dispersion of plastic bottles, bags of junk food and diapers, among other waste, everywhere along roads and creeks, inside forests, until down to the depths of the canyons. For example, it is estimated that the 31.500 inhabitants of the municipality of Guachochi, a majority of them Rarámuri, produce up to 1 kg/person of solid waste

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Linking old-growth forest composition, structure, fire history, climate and land-use in the mountains of northern México. Ecosphere 3(11): 106. http://dx.doi.org/10.1890/ES12-00161.1

[40] Universidad Autónoma de Ciudad Juárez (2011). *Ordenamiento Ecológico Regional Barrancas del Cobre, Chihuahua. Etapa Propuesta*. Pág. 42 sgs.

[41] PIF: 11

[42] Universidad Autónoma de Ciudad Juárez (2011). *Ordenamiento Ecológico Regional Barrancas del Cobre, Chihuahua*. Etapa Propuesta: 35

[43] Idem: 37

[44] A pilot project for monitoring such processes has been realized by the UMAFOR San Juanito.

[45] Universidad Autónoma de Ciudad Juárez (2011). *Ordenamiento Ecológico Regional Barrancas del Cobre, Chihuahua. Etapa Propuesta*: 41

each day.[46] Municipalities and communities throughout the Sierra are far from coping with this challenge; waste management is still on a very rudimentary level or nonexistent.

Open dump in the municipality of Guachochi, Chihuahua *Norawa* **Foto periódico**
MIROSLAVA BREACH VELDUCEA

(2) The same lack of adequate policies and installations applies to liquid waste management. Wastewaters are not treated and pollute directly creeks and groundwater. (3) Growing use of fertilizers and pesticides in agriculture contributes to water contamination. (4) Cattle are grazing near rivers and creeks without protective riparian zones to avoid or reduce pollution. (5) In mining, the use of acids and dissolved contaminants (heavy metals) kills most aquatic life, leaves the rivers almost sterile and makes water inappropriate for human consumption.[47]

Root causes of poaching

39. As shown above (par. 27), hunting, fishing and firewood harvesting by rural inhabitants for self-consumption should not necessarily be considered as poaching. Nevertheless, there is evidence that these practices are increasingly having negative impacts on ecosystem equilibrium and biodiversity conservation. Root causes of such practices are poverty and scarcity of food, combined with cultural traditions. Hence, strategies must be designed for improving livelihoods, for example Wildlife Management Units (UMAs), or awareness-building about the pernicious consequences of the loss of certain species for ecosystem services. – With regard to illegal hunting and poaching of species with a high market value for commercial purposes, general security problems and weak law enforcement have created a favorable environment for such practices.

Barrier analysis

40. The following have been identified as main barriers for an effective management of threats to biodiversity in the Sierra Tarahumara: (1) Planning and decision making for biodiversity (BD) and ecosystem services (ES) conservation management are insufficiently based on relevant and reliable information, due to a lack of diagnostic tools and information systems. (2) Environmental governance of the Sierra Tarahumara is weak: there are great deficiencies in stakeholder participation, co-ordination and enforcement of policies and regulations. (3) Local BD and ES friendly management of productive land and conservation areas is limited to a few small and isolated sites.

41. Planning and decision making for BD and ES conservation management are insufficiently based on relevant and reliable information, due to a lack of diagnostic tools and accessible and unified

[46] La Jornada (Lunes 16 de julio de 2012). *Mal manejo de desechos en 22 municipios. Basura contamina cuerpos de agua de la Tarahumara. La infraestructura consta de tiraderos a cielo abierto sin membranas para evitar filtraciones.*

[47] Almanza Alcalde, Horacio, Víctor Martínez Juárez, Augusto Urteaga Castro Pozo (2006?). *Diagnóstico sociocultural de diez municipios de la Sierra Tarahumara:* 50 and 51
http://www.academia.edu/529739/Diagnostico_sociocultural_de_diez_municipios_de_la_sierra_tarahumara

information systems: Relevant institutions with presence in the area, such as CONANP, CONABIO, CONAFOR, CONAGUA, SEMARNAT as well as their counterparts at state level, and non governmental actors like WWF, have individually developed information data bases for the region but a comprehensive system is urgently required to unify, update and expand and, very importantly, make it accessible to local stakeholders. Information is fragmented and limited to a few species or areas where work and research has been carried out. For actors in the environment, productive and social sector at the federal, state and local level, this represents a significant knowledge gap which affects adequate decision making regarding the incorporation of protection and sustainable use of BD and ES in the programs and projects to be implemented in the area. Therefore, a sound scientific and technical basis which is unified and accessible will be essential to develop innovative management interventions for the Sierra Tarahumara and for coordinated action among relevant actors under an adequate, shared framework.

42. One of the underlying causes of this barrier for effective threat management are diagnostic tools and data bases about BD and ES being incomplete and not systematic; for example, a comprehensive GIS- based bioassessment reporting mechanism is still missing. As a consequence, institutional and social stakeholders are insufficiently provided with information useful for conservation planning and decision making. Another reason is that local stakeholders, especially municipal officials, members of municipal development committees, *ejido* officials, traditional leaders of Rarámuri and other indigenous communities, as well as local officials of federal and state agencies and NGO, lack skills to use, or simply have no access to information systems regarding the status and dynamics of BD and ES and their interrelations with land use and other uses of natural resources. In addition, there is low understanding and few scientific studies regarding such interrelations.

43. The particularly low level of environmental governance of the Sierra Tarahumara has various dimensions and reasons: Among those which stand out and will be addressed by this project are: Coordination mechanisms among governmental and social actors for BD and ES conservation are nonexistent or do not operate; it is common to observe duplication of functions, as well as program objectives contrary to BD and ES conservation; social and economic development programs are strongly influenced by political campaigns; distrust exists towards official institutions and programs (lack of institutional capital); participation of local stakeholders, particularly indigenous communities, in planning and implementing development programs is low; a regional consensuated strategy for BD and ES conservation, especially to reinforce sustainable land use and protected areas, has not been developed; funding allocations for development programs in the region do not, or do so only in a superficial and subordinated way, incorporate biodiversity criteria; the few programs that include BD and ES criteria are underfunded; environmental landscape management is not incorporated in regional development policies; local pilot programs, for example those to improve forest coverage, have little impact as they are not replicated and upscaled at a landscape development level. Enforcement of environmental laws is weak, due to various reasons: General insecurity, lack of resources of enforcement agencies like PROFEPA (Federal Attorney for Environmental Protection) and lack of information among local stakeholders about the laws related to BD and ES protection.

44. In spite of a growing number of governmental and non-governmental programs and projects in the Sierra Tarahumara to introduce or reinforce BD and ES friendly management of productive land and conservation areas, their impact is still limited to a few small and disperse sites. This is partly a consequence of the afore-mentioned barriers (lack of existence of, and access to, relevant information about BD and SE and their interrelations with land use and other factors; low levels of environmental governance, especially lack of coordination between governmental and non-governmental actors and relative underfunding of programs that incorporate BD and ES criteria). However, there are other underlying factors, like a general lack of awareness among local actors about the mid- and long-term impacts of unsustainable management of natural resources and biodiversity loss; lack of BD and SE information for specific local intervention areas, attributable in part to diagnostic tools and information systems not adapted to particular local conditions; lack of systematization and exchange of experience about local conservation and sustainable production projects among actors in the Sierra

Tarahumara; (sometimes intentional) misinformation about the implications of putting an area under BD and ES conservation rules and management; local stakeholders who see their interests affected by a stronger application of sustainability and conservation criteria; local governments (municipalities, *ejidos*, communities) whose priorities lie outside of BD and ES conservation and promotion of sustainable production practices.

2.4. **Institutional, sectorial and policy context**

45. Mexico has the necessary legal instruments to ensure conservation of biodiversity and ecosystems; however, there are still serious institutional weaknesses for an effective implementation and enforcement of environmental legislation. The principal laws at the federal and state level are:

- General Law of Ecological Equilibrium and Environmental Protection (*Ley General de Equilibrio Ecológico y Protección al Ambiente* - 1989);
- General Wildlife Law (*Ley General de Vida Silvestre* - 2000);
- Law of Sustainable Rural Development (*Ley de Desarrollo Rural Sustentable* - 2002);
- General Law of Sustainable Forest Development (Ley General de Desarrollo Forestal Sustentable - 2003);
- Law of National Waters (Ley de Aguas Nacionales - 2004);
- Official Mexican Regulations (Normas Oficiales Mexicanas – NOM) of the Secretariat of Environment and Natural Resources *(Secretaría de Medio Ambiente y Recursos Naturales* – SEMARNAT) cover a broad spectrum of environmental issues; NOM-059-SEMARNAT-2010 aims to protect Mexican species of flora and fauna, enlisting risk categories and species within them;
- Chihuahua State Law of Ecology Equilibrium and Environmental Protection;
- Chihuahua State Law for the Promotion of Sustainable Forest Development.

46. The Environmental Sustainability policy axis described in Mexico´s National Development Plan (PND) is the general strategy document for national public policy. Goal 4.4 of the PND states the necessity to promote and guide **inclusive green growth** to preserve its natural heritage while generating wealth, competitiveness and employment effectively. Successful project implementation will contribute to the achievement of the national goals related to water management, forests, biodiversity and climate change. The PND acknowledges Mexico´s commitments as signatory of:

- The United Nations Convention to Combat Desertification;
- CITES;
- UN‘s Millennium Goals;
- Agenda 21and the Rio Declaration;
- The Convention on Biological Diversity (this project will support implementation of the CBD in Mexico –particularly articles 6-8– and directly address Aichi biodiversity targets 1, 2, 4, 5, 7, 9, 11-15, 18 and 19); the Mexican Federal Government has set out a strategy to deliver on CBD commitments via State Biodiversity Strategies. In 2008, WWF-Mexico signed an MoU with the Chihuahua State Government, committing to collaborate in the development of the state’s Biodiversity Strategy (in progress), as part of the National Biodiversity Strategies and Action Plans (NBSAPs) committed in Article 6 of the CBD;
- The principles and commitments stated in the United Nations Framework Conference on Climate Change (UNFCCC) and Kyoto Protocol. Mexico is the only non-Annex 1 country which has submitted 4 National Communications. NC5 was presented during COP18 in 2012. Project results are relevant to the mitigation, vulnerability assessments and adaptation components of these documents, adding to the goals of the Special Program on Climate Change (PECC), Mexico’s Climate Change Strategy for Protected Areas and Priority Regions for Conservation (ECCAP) and

the National Protected Area Program, through the increase of total surface under conservation/protection schemes;

- Mexico is the second country in the world to have a General Law on Climate Change, published in June, 2012. Regarding the topic of biodiversity it states the follow:
    - As to conservation of ecosystems and its biodiversity, it gives priority to wetlands, mangroves, coral reefs, sand dunes and coastal lakes that offer ES;
    - Programs for conservation and sustainable use of biodiversity will be considered as adaptation actions;
    - Achieve the protection and sustainable management of biodiversity in the face of climate change, in the framework of the National Biodiversity Strategy;
    - The Climate change information system will generate, with the support of the government agencies, a group of key indicators that will attend the protection, management and adaptation of the biodiversity;
    - The resources of the Climate Change fund will be destined to projects contributing simultaneously to mitigation and adaptation of climate change, increasing natural capital, with actions aimed, to reverse deforestation and degradation, conserve and restore land for enhancing carbon sequestration, implementing sustainable agriculture practices; recharge of subterranean waters; promote ecosystem connectivity through biological corridors, preserve riparian vegetation and make use of biodiversity sustainably.
- The National Strategy on Climate Change was published on June 2013 and establishes a vision for 10-20- 40 years in the future by adapting, mitigating and developing national public policies;
- The "Sectorial Programme for the Environment and Natural Resources 2013-2018" is designed and implemented by SEMARNAT and is aligned with the National Development Plan. This Programme establishes 6 main goals: 1) Promote and facilitate sustained and sustainable low carbon growth, that is socially inclusive and equitable; 2) Increase the resilience to the effects of climate change and reduce the emissions of greenhouse gases; 3) Strengthen the integrated and sustainable management of water resources, securing its access for the population and ecosystems; 4) Recover watershed and landscapes functionalities through conservation, restoration and sustainable use of the natural heritage; 5) Halt and reverse the pollution of water, air and land; 6) Develop , promote and implement policy instruments, data , research, education, training, capacity building, participation and human rights to strengthen the environmental governance.
- The Border 2012 US-Mexico Environmental Program.

47. Other national plans relevant for the project or to which the project will contribute include:[48]

- The National Forestry Program with its subprograms and the Strategic Forestry Program 2025 of the National Forestry Commission CONAFOR;
- CONAGUA´s 2030 National Water Strategy (*Agenda del Agua 2030*) which considers the necessity to reach an equilibrium in all hydrological basins, with clean rivers, universal potable water coverage and cities without catastrophic floodings;
- The National Protected Areas Program and the Strategy of Conservation for Development followed by CONANP;
- The Food Security Program (PESA), the Soil and Water Conservation and Sustainable Use program (COUSSA) and the Livestock Production Program (PROGAN) of SAGARPA;
- The Territorial Management Strategy for Development with Identity and a variety of programs of the National Commission for the Development of Indigenous Peoples of CDI;

[48] See for more details about the enlisted policies and programs section 2.5 Stakeholder mapping and analysis.

- The nation-wide Crusade against Hunger started in 2013 in five municipalities of the Sierra Tarahumara, implemented by the federal Secretariat of Social Development (*Secretaría de Desarrollo Social* – SEDESOL).

48. At the state level, policies, plans and programs with relevance for the project are:

- the State Development Plan 2010-2016 of the Chihuahuan government. In its section on Environment and Sustainability the Plan focuses on water management, insisting in general terms on balancing water extraction and recharge of water resources. The State Development Plan considers that the greatest threats for biodiversity in Chihuahua are habitat destruction or degradation due to unsustainable production practices in agriculture and forestry;

- the Ecology Sector Program 2010-2016 of the Secretariat of Urban Development and Ecology (*Secretaría de Desarrollo Urbano y Ecología*) proposes a catalogue of action lines, such as: put into force and implement the Regional Ecological Land-Use Plan for the Sierra Tarahumara;[49] put into force and implement the State Strategy for the Conservation and Sustainable Use of Biodiversity; promote the creation of new natural protected areas according to new biodiversity conservation needs in the state of Chihuahua; implement afforestation and reforestation programs to regain forest cover;

- the Forest Restoration, Protection and Development Program of the Forestry Development Direction in the Secretariat of Rural Development;

- the Integrated Management Plan for the Río Conchos Water Basin, developed by the Interinstitutional Working Group (*Grupo Interinstitucional de Trabajo* – GIT); within the framework of this Plan, water management projects at the headwaters of the river Conchos in the Sierra have been implemented;

- the State Coordination of the Tarahumara (*Coordinación Estatal de la Tarahumara* – CET) promoted by the Chihuahua State Government, is coordinating, promoting and supporting programs and projects in favor of the indigenous towns and communities of the State of Chihuahua;

- the Tarahumara Initiative was set up to meet chronic food problems in the region, coordinated by the state Secretariat of Social Development (SEDESO).

49. Some of the federal programs, like the National Forestry Program (CONAFOR), water basin management (CONAGUA) or PESA, COUSSA and PROGAN (SAGARPA) are implemented through, or in coordination with, corresponding state institutions; however, this sort of coordination remains within sectorial limits and does not gain inter-sectorial levels.

50. Relevant governmental institutions of all sectors and levels are present in the region implementing a considerable number of programs. This institutional plurality and complexity of the region provides not only an opportunity but also a challenge. Policies and programs are scarcely coordinated between actors, as sector policies are not subordinated to overarching visions and goals under a common regional and sustainable development perspective. Policy contradictions exist between the environmental and the economic, infrastructure and social sectors of government, presenting obstacles to mainstreaming BD and ES conservation policies.

51. Other policy gaps worth mentioning are: The National Biodiversity Strategy of Mexico coordinated by CONABIO envisages preparing State Biodiversity Strategies (SBS), as a long term public policy planning tool which establishes actions, actors and the necessary resources for the conservation and sustainable use of biodiversity. Up to now, this State Biodiversity Strategy for Chihuahua has not

[49] This Plan was commissioned by the Chihuahua state government to a research team of the Autonomous University of Ciudad Juárez (UACJ) and developed from 2009 to 2011; its title in Spanish is: "Ordenamiento Ecológico Regional Barrancas del Cobre, Chihuahua".

been published. - The Regional Ecological Land-Use Plan for the Sierra Tarahumara presented in 2011 by the Autonomous University of Ciudad Juárez (UACJ) has not been published until now in the Official Gazette, and hence has not been put into force; as a consequence, recommendations for land-use zoning and conflict resolution strategies put forward by this Plan are not implemented. - An initiative for a State Law of Indigenous Rights has been discussed for some time between official institutions and civil society actors; the project of this Law is still waiting approval from the State Congress. Among other achievements of the Law, indigenous traditional authorities would gain a stronger position in their relations with official institutions.

52. A serious institutional weakness is seen in the insufficient capacity of governmental actors to address and involve adequately indigenous communities, as well as women and youth, in development programs and projects. As a consequence, many programs, in spite of being provided sometimes with substantial budgets, have very low impacts on local and regional development. Some of the reasons adduced for this weakness are: Prevalent attitudes and practices of assistentialism; political instrumentation of assistance programs; insufficient involvement of communities in project planning; addressing selectively non-indigenous ejido leaders as interlocutors of funding institutions; insufficient awareness and knowledge of gender and generational aspects; too short planning and preparation phases, not giving time and opportunity to indigenous communities and underrepresented social sectors, like women and youth, to assimilate and appropriate projects.

2.5. Stakeholder mapping and analysis

53. The following paragraphs provide an analysis of characteristics, policies, programs and actions of project key stakeholders, as part of the baseline scenario in the Sierra Tarahumara. The Intervention Strategy exposed in Section 3, as well as Section 5: Stakeholder Participation, describe how the three project components include these stakeholder groups and actions, involving more actors with more actions and more funds (quantitative increment) in a better coordinated strategy with synergic effects and enhanced environmental governance for sustainably conserving biodiversity and ecosystem services (qualitative increment).

54. Key project stakeholders at the social level are ejidos and indigenous communities. Rural communities in the Sierra are mostly composed of indigenous people with their own decision-making structures and traditional authorities. Ejido refers to a land tenure figure which is an area that has been titled to a rural population nucleus after the Mexican revolution, in the Sierra Tarahumara since the decade of the thirties. Ejidos are governed by an assembly of all ejidatarios (mostly adult or older men) and a comisariado ejidal elected every three years. The ejido is a more recent structure which was legally and practically superposed on the indigenous communities' traditional governance mechanisms, so both organizational structures coexist within the same territory.[50] Some indigenous communities are recognized legally outside the ejidos and have their own property rights. In many ejidos in the project area, the inhabitants of indigenous communities situated within the ejido constitute the majority of its members; nonetheless, ejidos are generally governed by male mestizos, i.e non-indigenous members, called chabochis by the rarámuri or other indigenous groups. As a consequence, decisions – for example about forest management plans or governmental projects – taken by the ejido plenary assembly or by formal ejido leaders do not necessarily represent the thinking and will of the indigenous portion of the ejido members, nor of women and younger people.

[50] A clear analysis of this territorial superposition of colonial characteristics is given in: Crespo Oviedo, Luis Felipe (1993?). *Ejidos, pueblos indios y desarrollo sustentable.* http://www.paginaspersonales.unam.mx/files/231/EJIDOS_PUEBLOS_INDIOS_DESARROLLO_SUSTENTABLE.pdf See also: Gingrich, Randall Wayne, Ricardo Anaya, Edgar Lozoya, Juan Rios and Pavel García (2012). *Ordenamiento eco-cultural turístico de la comunidad indígena de Mogótavo, Municipio de Urique, Chihuahua.* Estudio PROCODES elaborado para el Comité Pro-Obra de la comunidad de Mogótavo. December 2012. Chapter on the concept of territory among indigenous peoples of north Mexico

The present project, applying a participative approach, will take into account this complex situation and address both structures – the ejido and the indigenous communities within the ejido – in its promotion activities, as well as underrepresented social sectors, mainly women and youth. Ejidos are owners of about 80% of the forest land in the Sierra, about 10% is privately owned, 7% belongs to indigenous agrarian communities;[51] so the project strategy developed under component 3 aiming at improving forest management in a sustainable and biodiversity friendly sense envisages a dialogue and agreements with them and the communities they comprise. Adding complexity to this challenge, a growing part of the inhabitants of communities and towns in the Sierra are not ejido members, and have a sort of "neighbour" status (as avecindados) with no property rights and limited rights to use the natural resources of the ejido, for example gathering small amounts of firewood.

55. Since 2003, when the new General Law of Sustainable Forest Development was promulgated, CONAFOR divided the country in Forest Management Units (Unidades de Manejo Forestal – UMAFORES) and has promoted the creation of Regional Forest Producers Associations (Asociaciones Regionales de Silvicultores - ARS) incorporating the ejidos and communities of a determined area within an UMAFOR. There are seven UMAFORES in the project area:

Table 4. Distribution of number of members and number of owners per ownership form between seven Forest Management Units in the project area[52]

UMAFOR (Forest Management Unit)	N° of members	N° of owners per ownership form		
		Ejido	Community	Private
0803 Silvicultores Unidos de Occidente de Chihuahua A.C.	4,222	52	13	3
0804 Baja Tarahumara	2,340	39	3	78
0805 San Juanito	2,976	78	9	673
0806 ARS de Morelos A.C.	706	32	11	89
0807 Región de Manejo Silvícola de Guachochi A.C.	9,880	35	1	0
0808 Asociación Regional de Silvicultores de Guadalupe y Calvo	7,500	30	8	782
0809 Balleza	694	75	1	784
TOTAL	28,318	341	46	2,409

ARS are now the main interlocutors for implementing federal and state forest development programs. Each UMAFOR has technical staff, including a coordinator and several professional advisors, generally foresters. Some of their functions are: Develop a Regional Forestry Study (*Estudio Regional Forestal* - ERF) as a basis for sustainable forest management; develop strategic and annual operational plans for the UMAFOR; assist ejidos to develop their forest management plans and preventive technical audits for certification of forest areas; in general, provide technical assistance to ejidos, communities and individual forest owners for improving their forest management and prevent and control contingencies, such as wildfires and pests. Regional Forest Producers Associations (ARS) and the technical service teams accompanying them are among the most important stakeholders to be involved in the present project, especially in pilot project component 3.

56. Key project stakeholders at the federal level with direct presence in the region are CONANP, CONAFOR, SAGARPA, CDI and SEDESOL. Other important federal actors are CONABIO and CONAGUA. Most of the federal institutions involved (CONANP, CONAGUA, CONAFOR and in

[51] Azarcoya González, Beatriz (about 2010). *La Sierra Tarahumara, el bosque y los pueblos originarios: estudio de caso de Chihuahua (México)* http://www.fao.org/forestry/17194-0381f923a6bc236aa91ecf614d92e12e0.pdf: 9. Figures of the author refer to an area of 19 municipalities of the Sierra Tarahumara.

[52] UACJ (2013). *Recommendations of management strategies and pilot projects to be implemented by local communities.* Deliverable N° 14 of Project Preparation Activities

part CONABIO) are decentralized entities falling under the general authority of the Secretariat of Environment and Natural Resources (SEMARNAT).

57. This project has been developed under the guidance and with the active participation of the National Commission for Natural Protected Areas (Comisión Nacional de Áreas Naturales Protegidas - CONANP), both at state and federal levels. CONANP is permanently present in the Sierra Tarahumara with protected area directors and technical staff and planning and monitoring capacities, as well as years of project cooperation experience in the region with all kinds of actors, from federal and state entities, communities and producer organizations, to non-governmental actors and research institutions. Five areas under varying protection status are actually managed by CONANP in the Sierra:

Table 5a. Areas under protection status managed by CONANP in the project polygon

Area	Hectares	Management
Priority Region for Conservation (PRC) Sierra Tarahumara	845,000	Joint direction of both PRCs
Priority Region for Conservation (PRC) Cerro Mohinora	9,875	
Basaseachic Falls National Park	5,803	Sub-direction

Table 5b. Areas under protection status managed by CONANP[53] situated marginally in the project polygon

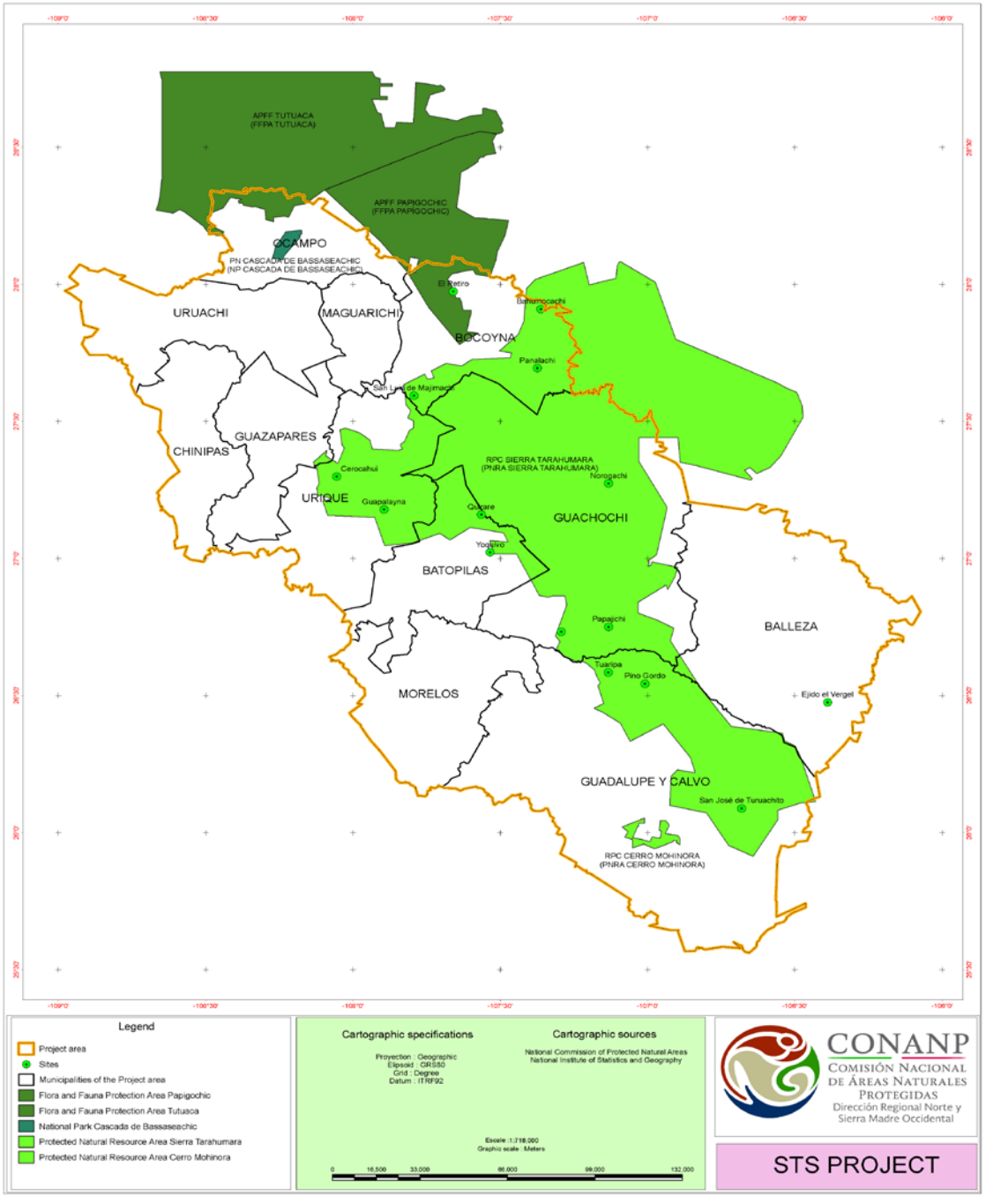
Flora and Fauna Protection Area (FFPA) Papigochic	222,763	Joint direction of both FFPA
Flora and Fauna Protection Area (FFPA) Tutuaca	436,985	

58. In 2004, an advanced visionary initiative to establish a natural protected area (biosphere reserve) in the Sierra Tarahumara which counted with the formal approval of 9 municipalities and many ejidos and indigenous communities, had to be cancelled due to the opposition of some sectors who saw their interests affected. In its place, part of the area was declared by CONANP as a Priority Region for Conservation. PRC Sierra Tarahumara covers 845,000 hectares, situated mainly within the present project polygon and covering more or less extended areas of the municipalities of Balleza, Batopilas, Bocoyna, Guachochi, Guadalupe y Calvo and Urique). PRC Sierra Tarahumara has its own direction and technical staff in Creel (municipality Bocoyna). The management of the PRC covers six main lines of action: Monitoring of species (including monitoring by local communities); wildfire prevention and control; soil and water restoration and sustainable use; awareness-building for conservation and waste management; voluntary conservation of community forest areas; land-use planning in cattle ranching zones. PRC Cerro Mohinora, managed by PRC Sierra Tarahumara staff, lies in the municipality of Guadalupe y Calvo, and is now in an advanced phase of being declared Natural Protected Area.[54] Basaseachic Falls National Park, located in the municipality of Ocampo, is defined to 5,803 hectares along the surrounding area of the Falls and Barranca de Candameña.

59. The two Flora and Fauna Protection Areas Papigochic and Tutuaca fall only with small fringes within the project area (in parts of the municipalities of Ocampo and Bocoyna); nevertheless, the management of these two protected areas[55] could participate in the future in some project implementing activities.

[53] Based on: Gavito, Fernando (2012). CONANP - Dirección Regional Norte y Sierra Madre Occidental 2008 – 2012. *A cinco años de conformada la Dirección Regional Norte y Sierra Madre Occidental*: 9 (table 2)
[54] Gavito (2012): 25
[55] The two protected areas have their own common direction and technical staff.

60. Map 3. Project polygon and protected areas managed by CONANP



61. With this background of field experience in the Sierra, CONANP will play a key role in creating synergies between the project and local actors. In the areas under protection status in the Sierra Tarahumara, CONANP is generating knowledge about BD and SE with a participative approach,

involving NGOs and communities in field observation of species, habitats and threats to them. Conservation and sustainable development activities supported by PROCODES and PET funds from CONANP will contribute considerably to achieving project results in component 3 by orienting and co-financing pilot conservation and sustainable production projects.

62. The National Forestry Commission (Comisión Nacional Forestal - CONAFOR) is a highly present and dynamic actor, having expanded its federal budget since its founding in 2001 from US$27 million to US$486 million in 2011. CONAFOR operates a range of thematic, community-based incentive programs, collectively known until 2012 as ProÁrbol, now PRONAFOR (National Forestry Program). Sub-programs of PRONAFOR are: Forest Development; Commercial Forest Plantations; Conservation and Restoration; and Environmental Services. The Forest Development program includes forest management plans, projects and certification;[56] the Conservation and Restoration program refers to integrated restoration of forest areas, protection of reforested areas and soil conservation. The Environmental Services program covers water and biodiversity services provided by forest areas.[57] Two special projects operated in the Sierra are PRODESNOS (Sustainable Development Project for Rural and Indigenous Communities in the Semiarid Northwest) and the Restoration, Protection and Development Program for the Tarahumara region. CONAFOR spent during 2012 approximately US$5,000,000 in the project region, distributed among the Conservation and Restoration program (called Environmental Compensation program) with 55% of the total investment, the Restoration, Protection and Development Program for the Tarahumara region with a percentage of 20%, PRODESNOS with 17% and Environmental Services with 7%.[58] These programs have been implemented by CONAFOR in coordination or cooperation with the principal local actors in the forestry sector: ejidos, communities, UMAFORES, technical service providers and the state Forestry Development Direction. In 2013, PRODESNOS has already approved some 170 projects for communities in the project area with funding for each one between US$3,500 and US$40,000;[59] projects cover environmental sanitation, rural micro-enterprises, nature tourism, capacity building and technology transfer.[60] - The aforementioned CONAFOR programs offer highly pertinent opportunities for being integrated in pilot project component 3, contributing to create a landscape mosaic that combines added conservation areas and productive land under biodiversity and ecosystem services friendly management.

63. The Secretariat of Agriculture, Livestock, Rural Development, Fishing and Food (Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación – SAGARPA) is one of the main project stakeholders, as its portfolio covers relevant themes that will be developed in the project. The main programs with activities in the Sierra are: the Strategic Food Security Program (PESA), the Soil

[56] Nationwide, the forests of only 50 communities are independently certified by the Forest Stewardship Council (FSC) – an indicator that hurdles for this certification scheme are difficult to overcome, and a partial explication that only four ejidos in the Sierra Tarahumara have succeeded to certify their forest management, two of them by FSC standards and two by the Mexican norm NMX 143 administered by SEMARNAT. See: The World Bank (2012). *Using natural resources in an optimal way.* Mexico policy note 7 – Draft, July 28, 2012

[57] Carbon sequestration services are not included now. However, CONAFOR is leading negotiations with the Worldbank and the Interamerican Development Bank for implementing in Mexico REDD+ (Reducing Emissions from Deforestation and Forest Degradation, as well as Sustainable Management of Forests, and Conservation and Enhancement of Forest Carbon Stocks), as approved in the Cancun COP 16 in December 2010. A series of concept documents for installing Climate Investment Funds (CIF) and designing projects has been developed; one of the main expected results is to "strengthen local communities' and indigenous people's participation in the management of forest landscapes and strategic evaluation platforms".

[58] UACJ (2013). *Comprehensive analysis of baseline investments and securing of cofinancing commitments* Deliverable N° 11 of Project Preparation Activities

[59] Source: http://www.conafor.gob.mx/portal/index.php/tramites-y-servicios/apoyos-2013

[60] CONAFOR (2012). *Logros y perspectivas del desarrollo forestal en México 2007-2012*. http://www.conafor.gob.mx/biblioteca/documentos/LOGROS_Y_PERSPECTIVAS_DEL_DESARROLLO_FORESTAL_EN_MEXICO.PDF

and Water Conservation and Sustainable Use program (COUSSA) and the Livestock Production Program (PROGAN).[61] By far the most important program in the Sierra is PESA, covering 362 communities in 16 municipalities in 2013; its budget in 2012 amounted to US$8.5 million, and in 2013 comes to US$9.5 million.[62] PESA aims to ensure food security through sustainable production projects mainly for self-consumption. Projects are co-financed by different sources, CONAFOR among others. PESA works with a methodical approach developed by FAO which attaches great importance to community participation, particularly of women, in project planning.[63] Projects in communities are supported technically by so-called Rural Development Agencies; in the Sierra Tarahumara these are now 12 NGOs or other organizations being trained with an emphasis on capacity-building criteria. As a result of this bottom-up approach, 80 percent of communities, most of them Rarámuri, decided to prioritize water security projects. - COUSSA is highly relevant for the project, as it implements rather effective water and soil conservation projects. Available figures show that only 5.2% of COUSSA projects in Chihuahua (35 out of a state total of 670) were operated in the Sierra, with a budget of US$193,000 in 2011.[64] However, most COUSSA funds and projects in the Sierra are implemented via PESA. – About 9% (538 out of 5,953) of PROGAN beneficiaries in Chihuahua are farmers in the Sierra, principally in the municipalities of Guachochi, Balleza and Guadalupe y Calvo.[65] PROGAN, in spite of proclaiming a sustainable approach, in many cases is still financing projects which are not very sensitive to possible negative impacts of livestock husbandry. In this respect, the project will take the opportunity – particularly in the context of component 2 Environmental governance framework and policy alignment for ecosystem management – for enhancing the effectiveness of sustainability and conservation criteria in defining and executing policies and programmes for rural development in the region.

64. The National Commission for the Development of Indigenous Peoples (Comisión Nacional para el Desarrollo de los Pueblos Indígenas – CDI) is present in the project region with four Coordinating Centers for Indigenous Development (CCDI) in Guachochi (covering Batopilas y Guachochi), Turuachi (covering Guadalupe y Calvo), San Rafael (covering Urique, Chínipas, Uruachi and Guazapares) and Carichí (covering Bocoyna and Carichí). Projects are implemented in 416 indigenous communities[66] and are funded principally from CDI programs like Alternative Tourism in Indigenous Zones, Coordination Program for Production Aid, Productive Organization of Indigenous Women, Regional Indigenous Funds (for financing production initiatives), Aid for the Development of Indigenous Culture (mainly arts and crafts) and School Hostels (for pupils from distant communities). In 2011, CDI managed federal funds for the Sierra Tarahumara amounting to some US$823,000.[67] - From a broader perspective, CDI is committed to a Territorial Management Strategy for Development with Identity. This territorial development strategy implies that CDI should be consulted by all federal, state and municipal institutions in their planning and funding programs and actions addressing indigenous communities. The present project will explore the possibilities to derive lessons and good practices from the CDI strategy for building joint institutional action in the

[61] The *Procampo* program is also present in the region, but not included here as it is a classic subvention payment depending on the area under production.

[62] Direct information received from Juan Paulo Romero, director of PESA in Chihuahua, and Manuel Guizar Fuentes, subdelegate of SAGARPA in Chihuahua.

[63] SAGARPA (2013). *Proyecto Estratégico para la Seguridad Alimentaria PESA*. Power Point Presentation

[64] UACJ (2013). *Comprehensive analysis of baseline investments and securing of cofinancing commitments* Deliverable N° 11 of Project Preparation Activities: Table 2

[65] See list of PROGAN beneficiaries in 2011:
http://www.sagarpa.gob.mx/ganaderia/Documents/PROGAN_11/progan_chih_2011.pdf

[66] See list of communities in the CDI website www.cdi.gob.mx
http://www.cdi.gob.mx/index.php?option=com_content&view=article&id=2109

[67] UACJ (2013). *Integrated Environmental Assessment of the project area in Sierra Tarahumara; identification of drivers and pressures of environmental change, the state and trends of the environment and options for actions and plans.* Deliverable N° 3 of Project Preparation Activities: 19.

context of component 2 aimed at improving environmental governance and the development of a Common Agenda for the Sustainable Future of the Sierra Tarahumara.

65. The Secretariat of Social Development (Secretaría de Desarrollo Social – SEDESOL) is present in the region mainly through four programs:[68]

- The Human Development Program *Oportunidades:* Gives monetary and in-kind aid to extremely poor families, as an incentive to improve school attendance and health care, mainly addressing women;
- Priority Zones Development Program: Gives assistance to municipalities with high and very high marginality for basic community infrastructure and housing services;
- Temporary Employment Program (PET): Pays minimum salaries during limited time to persons working in community development programs, including conservation, restoration or reforestation projects;
- Production Options Program: Gives subsidies to poor people to develop their productive capital for sustainable production projects, diversifying products, forming associations and building capacities. – In the context of component 3, particularly output 3.2: Sustainable and integrated land and natural resource management plans developed in project area municipalities, the project will identify areas of cooperation, local actors and cofinancing opportunities with SEDESOL´s Production Options Program.

The nation-wide Crusade Against Hunger started in 2013 in five municipalities of the Sierra Tarahumara, under the coordination of SEDESOL.

66. The intersecretarial National Commission for the Knowledge and Use of Biodiversity (Comisión Nacional para el Conocimiento y Uso de la Biodiversidad – CONABIO) was created in 1992, after Mexico signed the Convention on Biological Diversity (CBD). CONABIO's Priority Regions for Conservation program identifies five terrestrial priority regions (RTP - nationwide there are 110) in the Sierra Tarahumara; these are areas with physical and biotic characteristics particularly important from the point of view of biodiversity conservation. RTPs are distinguished by a specific ecosystem richness and higher presence of endemic species than in the rest of the country, thus offering a real opportunity for conservation. Each one of the 12 municipalities in the project region is represented in one or more of the five terrestrial priority regions, as shown in the following table:

Table 6. The five terrestrial priority regions (RTP) identified by CONABIO in the Sierra Tarahumara[69]

Terrestrial Priority Region	Municipalities	Area in km2
RTP-27: Barranca Sinforosa	Balleza, Batopilas, Guachochi, Guadalupe y Calvo, Morelos	1,583
RTP-28: Rocahuachi-Nanaruchi	Balleza, Nonoava, Rosario	3,194
RTP-30: Alta Tarahumara-Barrancas	Balleza, Batopilas, Bocoyna, Carichi, Guachochi, Guazapares, Guerrero, Maguarichi, Morelos, Nonoava, Ocampo, Urique	11,246
RTP-32: Cañón de Chínipas	Chínipas, Guazapares, Uruachi	1,459
RTP-33: Bassaseachi	Guerrero, Moris, Ocampo, Temosachi	1,432

[68] UACJ (2013). *Stakeholder map and participation plan*. Deliverable N° 8 of Project Preparation Activities: 3

[69] The table is a slightly modified version of a corresponding table in: UACJ (2013). *Stakeholder map and participation plan***.** Deliverable N° 8 of Project Preparation Activities: 7.

The CONABIO fund for emergency costs has financed activities to control threats to biodiversity in the RTPs of the Sierra – an instrument that has permitted quick responses to contingencies like wildfires.[70] Moreover, CONABIO provides technical support and funding aimed at developing biodiversity information and monitoring systems. In the context of component 1, the project will benefit from CONABIO´s capacities for developing its Sierra Tarahumara Data Monitoring and Information System (ST-DM&IS), including monitoring of Tracking Tools for biodiversity projects. - As pointed out under section 2.4, the National Biodiversity Strategy of Mexico coordinated by CONABIO envisages preparing State Biodiversity Strategies (SBS) for the conservation and sustainable use of biodiversity. The State Biodiversity Strategy for Chihuahua is well advanced, and may be published shortly; it is based on a compendium of specialized studies about biodiversity in the Sierra Tarahumara.[71]

67. The National Water Commission (Comisión Nacional del Agua – CONAGUA) has some presence in the region, implementing policies of drinking water provision and sewage treatment in rural areas. Recently, a Technical Committee has been installed to design drinking water and sewage treatment projects in Rarámuri communities. The members of this Committee are CET (the State Coordination of the Tarahumara), CDI, COESPRIS (State Commission for Sanitary Risk Protection) and CONTEC, a non-governmental organization in representation of communities.[72]

68. The responsibilities of the Secretariat of Environment and Natural Resources (Secretaría de Medio Ambiente y Recursos Naturales – SEMARNAT) lie essentially in normative aspects, like authorising land-use changes (for example, from forest use to mining), wildlife related permits or approving environmental impact assessments. Nevertheless, SEMARNAT is implementing a direct development program in the Sierra, financed with PET (Temporary Employment Program) funds. The program works with more than 200 indigenous communities in the municipalities of Guadalupe y Calvo, Balleza, Guerrero, Guachochi and Bocoyna; its three components are: 1) water basin restoration projects in agricultural areas (soil and water conservation); 2) wildlife habitat improvement; 3) solid waste disposal and recycling. SEMARNAT gives follow up to the projects controlling its sustainability and impacts. Actions are coordinated with CONANP, SAGARPA, WWF and other institutions to avoid duplication of projects in the same communities. Soil and water conservation activities, as well as projects for wildlife habitat improvement will be integrated into project component 3, in particular output 3.3: Pilot programs and field activities to implement pilot projects regarding conservation. Wildlife habitat improvement projects will be monitored delivering data relevant for biodiversity tracking tools.

69. The Direction of Forest Development of the Chihuahua state government plays a central role in forest development policies and programs in the region, coordinating projects and actions with CONAFOR, UMAFORES, SAGARPA and municipalities. A considerable proportion of Chihuahua state funds for the Sierra Tarahumara is channelled through this Direction,[73] to implement projects along five action lines:[74]

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[70] Barragán, Laura Nayeli (2012). *Atención de un incendio forestal en la RPC Sierra Tarahumara, Municipio de Guachochi, Chihuahua*. Informe final del Proyecto JR001.
http://www.conabio.gob.mx/institucion/proyectos/resultados/InfJR001.pdf

[71] Lavín, Pablo and Miroslava Quiñones. *Biodiversidad de la Sierra Tarahumara* (unpublished). Personal information from Ricardo Soto, researcher at the Faculty of Zootechnics and Ecology of the UACH. WWF has cooperated in this effort (see paragraph 69).

[72] http://diarioportal.com/2013/03/21/conagua-protegera-agua-en-la-sierra-tarahumara/

[73] UACJ (2013). *Comprehensive analysis of baseline investments and securing of cofinancing commitments*. Deliverable N° 11 of Project Preparation Activities: 2. According to this source, 99 percent of state expenditures for the Sierra in 2011 (about US$ 6,540,000) correspond to programs of the Direction of Forest Development.

[74] Information on DDF action lines and budgets received from Víctor Manuel Guzmán, Forest Development Director.

(1) Incrementing forest production and productivity, by modifying ejido and private producers' forest management plans, with emphasis on international certification (by FSC); sustainability and biodiversity criteria must be integrated in management plans, for example by maintaining native forest structures; the goal is to increase wood production from 1.8 in 2012 to 3.5 million cubic meters in 2015, and productivity from 1 cubic meter per hectare and year to 3 cubic meters/ha/year in 2025; the budget available for changing management plans in 2013 is US$3.4 million (US$1.2 million state funds, US$2.2 million federal funds from CONAFOR in 2013) and for certification US$1.7 million (US$0.5 million state funds, US$1.2 million from CONAFOR).
(2) Modernizing forest industry, mainly by introducing modern equipment in sawmills to reduce wood waste and saw dust and procuring more and better (paid) raw materials for wood products, in particular MDF (medium-density fibreboard) panels; this action line is totally financed with state funds, amounting to US$3 million.
(3) Sustainable and integrated use of natural resources in arid zones: medicinal plants, candelilla wax, lechugilla fiber, oregano (US$300,000 state funds in 2013).
(4) Payments for ecosystem services, mainly water provision, establishing matching-funds with agricultural water users, for example in the Conchos river basin, particularly the Bustillos lake watershed; state funds: US$1.2 million, CONAFOR funds: US$1.2 million in 2013
(5) Promotion of ecotourism (funds included in action line 3).

These action lines and the sustainability and biodiversity criteria on which they are based make the Direction of Forest Development an important project partner, not only regarding cooperation and cofinancing pilot projects under component 3, but also with respect to component 1: Scientific base and tools for decision making and component 2: Environmental governance framework and policy alignment for ecosystem management.

70. The Forest Development Direction has a leading role in the **State Forestry Council** (Consejo Estatal Forestal – CEF), a public-private body where most relevant actors in the forest sector are represented, from ejido leaders, private forest owners, technical service providers (foresters) at the UMAFOR level, to municipalities and other state and federal entities. **Municipal Forestry Development Councils** are also important actors for implementing federal and state forest development strategies in the region. It seems that sustainability and conservation criteria have gained in significance in the agenda of these actors in recent years.

71. The **State Coordination of the Tarahumara** (Coordinación Estatal de la Tarahumara – CET) is an institution of the Chihuahua state government founded in 1987, responsible of coordinating and promoting actions and programs in favor of the indigenous towns and communities in the region. Main coordinating partners of CET are CDI and SEDESOL. Among CET´s activities are distributing food and (organic) fertilizer for crops; providing potable water to communities and families and protecting their water sources; administrating a scholarship program for elementary school students; maintenance of school dining rooms. – This background of coordination will be an entry point for building up the coordination mechanism of federal, state and municipal authorities with local communities and non governmental actors for the development and implementation of the Common Agenda for the Sustainable Future of the Sierra Tarahumara (project component 2), as well as for component 3 to change paradigms from assistential actions to promotion of self-reliance.

72. **Municipalities** are important actors at the local level, having gained competencies and budget disposal in the last 20 years. Nevertheless, technical capacities of municipal administrations are still weak and need to be enforced by corresponding capacity building activities. Relevant actors with regard to the project objectives are the Municipal Development Planning Councils (COPLADEMUN) and the Municipal Rural Sustainable Development Councils (CMDRS) within which the above mentioned Municipal Forestry Development Councils are situated.

73. A highly relevant stakeholder for the project, especially with regard to the coordination mechanism for the development of the Common Agenda for the Sustainable Future of the Sierra Tarahumara, is the Interinstitutional Assistance Program for the Indigenous People of the State of Chihuahua

(*Programa Interinstitucional de Apoyo a los Indígenas del Estado de Chihuahua* – **PIAI**). This Program is managed as a public-private partnership body promoted and financed by the Foundation of Chihuahua´s Entrepreneurs (*Fundación del Empresariado Chihuahuense* – FECHAC) and Christensen Fund. Members of PIAI´s Natural Resources Working Table are the state Direction of Forest Development, CDI, CONANP, CET, WWF, Sierra Madre Alliance (representing a group of NGOs) and farmer organizations in the Sierra, among others. Subjects treated by this table are: Water provision and conservation policies, including water basin management; monitoring and coordination of development programs and projects in the Sierra Tarahumara; assistance to sustainable production projects, especially oriented to food security and to women. PIAI is also leading the initiative of an Interinstitutional Working Group (GIT) for integrated management of the river Conchos basin.

74. Important **civil society groups** and **NGO**s with presence in the Sierra Tarahumara are: Alianza Sierra Madre (ASMAC); Mujeres Indígenas Tepehuanas y Tarahumaras (MITYTAC); Defensa de Indígenas Rarámuri en la Lucha por la Tierra (BOWERASA); Centro de Acopio para la Tarahumara (CAPTAR); Centro para el Fortalecimiento de la Sociedad Civil (CFOSC); Comisión de Solidaridad y Defensa de los Derechos Humanos, Fuerza Ambiental; Alternativas de Capacitación para el Desarrollo Comunitario (ALCADECO); Tierra Nativa; Protección de la Fauna Mexicana A.C. (PROFAUNA); Servicios Integrales Émuri (SINÉ). The Sierra Network (*Red Serrana*) is composed of five organizations: Centro de Desarrollo Alternativo Indígena (CEDAIN); Consultoría Técnica Comunitaria (CONTEC); la Fundación Tarahumara José A. Llaguno; la Fundación Educativa Marista Tarahumara AC; y la Comisión de Pastoral Indígena de la Diócesis de la Tarahumara. Although not all of these organizations have the same ideological bases, they share some common objectives and methodological principles. Objectives generally are focused on: Defence of indigenous rights, especially community property rights; gender aspects; food and water security; sustainable production practices mainly for self-consumption, but also for local and regional markets (including handicraft); protection of the community's natural resources; monitoring of species and habitat of high conservation value. Methodologically, NGOs generally insist on empowerment of communities, their organizations and leaders, and women; also on capacity-building to enable them to be protagonists of their own way of improving human well-being. Most NGOs cooperate with government programs at the local level; however, they use to criticize government interventions for their tendency to impose and hastily implement programs, without giving time to indigenous communities to take ownership of the proposed projects and adapt them to their own vision, needs and way of doing things. – Broad cooperation with NGOs is envisaged, especially in project component 3, where they will assume important functions as local partners for accompanying community based pilot projects in technical and organizational capacity building, and in the inclusion of women and younger people in such processes.

75. **WWF** as international non-governmental partner has ongoing programs in the project area, with objectives ranging from sustainable forest management including certification, integrated watershed management, to building consensus for voluntary protection of key biodiversity, ecosystems and ethnic-cultural areas and diversification of income related to ecosystem services. Locally, WWF has signed a cooperation agreement with the government of the State of Chihuahua, in order to coordinate strategies and actions to contribute to the sustainable development of the State of Chihuahua and improve the quality of life of its inhabitants through the rational use of natural resources and biodiversity conservation.

    WWF has been co-signer of the following agreements with the government of the State of Chihuahua:

    - Letter of intent to coordinate actions for the comprehensive management of the Rio Conchos basin;
    - Interagency collaboration agreement for the Integrated Management of the Rio Conchos basin;
    - Letter of intent for conservation of natural resources, including native grasslands of the Chihuahuan Desert, and the pursuit and promotion of measures for sustainable use;

- Cooperation agreement for carrying out a biodiversity study of the State of Chihuahua, as an input for the formulation of the State Biodiversity Strategy for Chihuahua, in the context of the National Biodiversity Strategy of Mexico coordinated by CONABIO.

Since 2004, the alliance WWF-FGRA has developed a management model in the upper basin of the Rio Conchos (CARC), through agreements for sustainable water extraction (establishment of environmental flow; recovery of micro water-basins in the ST), the generation of scientific and technical knowledge (new species identified such as aparique trout - Oncorhynchus sp. or Julimes pupfish - Cyprinodon Julimes), the development of water-basin health indicators, interinstitutional coordination of programs and funds, BD conservation for the benefit of communities and the establishment of demonstration projects for sustainable water management in rural areas.

Since 2005, WWF in cooperation with FGRA has established 24 demonstration models for rainwater capture and vegetable production in indigenous and *mestizo* communities of the *ejidos* Sisoguichi and Panalachi (municipality Bocoyna) in the upper Rio Conchos basin, under an integrated water-basin management plan.

In 2013, the WWF-FGRA alliance started a new phase of its work in the ST, including the Coca Cola Foundation and HSBC Bank as partners for the integrated management of the Rio Conchos basin. The construction of rainwater collection systems and the establishment of family gardens will help to reduce the long-term vulnerability caused by drought, allowing the population to satisfy its needs in water and food. In this context, special attention is paid to the organization and empowerment of women in indigenous communities. This project is coordinated with the PESA program for communities in the Bocoyna municipality.

76. PRONATURA as a non-governmental organization with nationwide presence will begin working in the Sierra Tarahumara in 2013 focussing its attention on forest restoration activities in the upper Rio Conchos basin.

77. The presence of the **academic community** and **research centers** is notable, not only in view of research projects and studies carried out in the region, but also due to their participation in policy advising, civil society initiatives and concrete development projects. Universities and research institutes that have contributed to an increased knowledge and policy design for the Sierra Tarahumara: The Faculty of Agricultural and Forestry Sciences of the Universidad Autónoma de Chihuahua (UACH) in Ciudad Delicias has developed a multidimensional approach to forest management in the Sierra Madre Occidental; other faculties of the UACH, like the Faculty of Zootechnics and Ecology, are engaged in monitoring and sustainable management projects regarding species at risk; the National Institute for Research on Forestry, Agriculture and Fishing (INIFAP) with its three experimental research centers in Chihuahua is managing a broad research program including subjects like: Use and conservation of forest species in arid zones or assessment of soil and water retention projects; the Institute for Professional Training (ICATECH) with its centers in Bocoyna and Guachochi offers training courses in subjects like carpentry and tourism; many university teachers and researchers are participating actively in different NGOs; the School of Anthropology of North Mexico (ENAH-Chihuahua) is operating a campus in Creel providing opportunities for indigenous students to pursue a university career; eight universities have joined in the program *Repabé Benéame* to award scholarships to indigenous students for financing their studies in the capital of the state; a research team of the Autonomous University of Ciudad Juárez has presented in 2012 a Regional Ecological Land-Use Plan for the Sierra Tarahumara.

Table 7. Estimation of relevant federal and state program investments in the Sierra Tarahumara 2013

Institution	Program (implemented in the Sierra Tarahumara)	Budget 2013* in US$ (for the Sierra Tarahumara only)

CONANP	1) Conservation Program for Sustainable Development (PROCODES)	211,500
	2) Wildfire contingencies	75,000
	3) Native corn conservation program (PROMAC)	22,900
	4) Species in risk conservation program ((PROCER)	42,300
	5) Biological monitoring program (PROMOBI)	32,300
	6) Community surveillance program (PROVICOM)	15,700
	7) Temporary employment program (PET)	53,400
	CONANP total:	**453,100**
CONAFOR	1) Environmental Compensation	2,750,000
	2) Restoration, Protection and Development	1,000,000
	3) PRODESNOS	850,000
	4) Environmental Services	350,000
	Others	50,000
	CONAFOR total (2012 figures):	**5,000,000**
SAGARPA	PESA (COUSSA program is included)	9,050,000
	SAGARPA total	**9,050,000**
CDI	1) Alternative Tourism in Indigenous Zones	
	2) Coordination Program for Production Aid	307,700
	3) Productive Organization of Indigenous Women	
	4) Regional Indigenous Funds (for financing production initiatives)	
	5) Aid for the Development of Indigenous Culture (mainly arts and crafts)	
	6) School Hostels	2,308,000
	Others (management and conservation of natural resources in indigenous areas)	385,000
	CDI total:	**3,000,700**
SEDESOL	1) Priority Zones Development Program	**4,000,000**
	2) Temporary Employment Program (PET)	
	3) Production Options Program	
	Others	
	SEDESOL total:	
CONABIO	1) Fund for emergency costs	Definitive Figures pending
	2) State Biodiversity Strategy for Chihuahua	
	CONABIO total:	
CONAGUA	Turuachi dam (municipality Guadalupe y Calvo)	117,700
	CONAGUA total (2012 figure)**:**	**117,700**
SEMARNAT	Temporary Employment Program	Definitive Figures

	Others	pending
	SEMARNAT total:	
Direction of Forest Development (state government)	1) Incrementing forest production and productivity	3,400,000
	2) Certification of sustainable forest production	1,700,000
	3) Modernizing forest industry	3,000,000
	4) Sustainable and integrated use of natural resources in arid zones (includes ecotourism)	300,000
	5) Payments for ecosystem services	2,400,000
	Direction of Forest Development total:	**10,800,000**
Pronatura	Reforestación	20,000
WWF	1) Decrease drought vulnerability in indigenous communities of the ST	296,000
	2) Integrated management of micro water-basins in the Upper River Conchos	225,000
	WWF total:	**521,000**
Estimated total investment for relevant programs in the Sierra Tarahumara in 2013		at least **32,942,500**

2.6. Baseline analysis and gaps

78. Sustainability is now a generally accepted and widely used concept in Mexican public policies; so the baseline situation in the Sierra Tarahumara is characterized by a wide range of institutional programs related to the project objective. However, more specific BD and ES considerations are much less reflected in planning documents and even less by institutional implementing mechanisms. Few government agencies and civil society actors in the Sierra Tarahumara have systematically incorporated BD and ES conservation considerations into their strategies and practices. Budgets and coverage of institutional programs of different sectors applying BD and ES conservation as overarching criteria are still comparatively low. Regarding the three project components – i.e. monitoring of biodiversity and ecosystem services; environmental governance; pilot conservation and sustainable production interventions – specific stakeholder achievements and limitations are as follows:

79. Several government institutions and NGOs are engaged in monitoring biodiversity and status/dynamics of ecosystems and habitat. Their primary focus lies on monitoring endangered species, on one hand, and on the other hand forest cover and production capacities. CONANP has been monitoring BD indicator species, like black bear, green macaw, thick-billed parrot and Chihuahua spruce, as well as some migratory birds in some parts of the Sierra region, involving communities and NGOs (for example CONTEC and Tierra Nativa) in field observation. The Faculty of Zootechnics and Ecology of the Autonomous University of Chihuahua (UACH) is monitoring birds in the Copper Canyons. CONAFOR and the state Direction of Forest Development have recently introduced a so-called biometric system for the assessment of forest inventories in the Sierra; results are already available.[75] The UMAFOR San Juanito has developed and applied a system for fine scale measurement and mapping of forest cover and deforestation processes.

[75] For example, for the UMAFOR de Guadalupe y Calvo; see: Asociación Regional de Silvicultores de Guadalupe y Calvo (2013). *Informe de la Asociación Regional de Silvicultores de Guadalupe y Calvo A.C. Octubre 2012 – Febrero 2013*: 5

80. In spite of existing monitoring efforts, results are dispersed and incomprehensive. There is a lack of inter-institutional coordination among monitoring activities and a lack of common methodologies needed to make monitoring results of different actors comparable and complementary. Information transfer from monitoring institutions to key actors in regional development policies is not fluent, so planning and decision making for BD and ES conservation management are insufficiently based on reliable and comprehensive information.

81. As a consequence of these institutional weaknesses, without the proposed project knowledge regarding BD and ES status and dynamics and their relation with prevailing threats, would increase in a slow and fragmented manner. This applies to the existing knowledge base as documented through monitoring of key BD and ES indicators and scientific research on the impacts of production and extraction practices (threats) on BD/ES in the project area. It also applies to slow progress in the transmission and diffusion of knowledge about these variables and their relationships among local decision-makers, particularly land and forest owner organizations and the institutional structures around them.

82. Sustainability and inter-institutional coordination are generally proclaimed and accepted principles within Mexican development policies. Attempts to reflect such principles in the Sierra Tarahumara are the Interinstitutional Assistance Program for the Indigenous People (PIAI) and the Interinstitutional Working Group (GIT) for integrated management of the Conchos basin. There are also frequent bilateral coordination efforts between different institutions and their programs in the region. However, the impacts of these initiatives are limited and do not truly conform a much needed common policy platform for sustainable territorial development of the Sierra, which is a central goal of the present project. As long as a common platform - in the form of a Regional Action Plan or Common Agenda for the Sustainable Development of the Sierra Tarahumara - has not been built by key actors, environmental governance of the region will remain weak. In the absence of a common policy platform, dispersed coordination efforts of regional stakeholders for BD and ES conservation will remain largely ineffective. Funding allocation regulations will not systematically incorporate BD and ES conservation criteria, and landscape management criteria will not promote the development of sustainable regional development policies. Enforcement of environmental policies and regulations will also persist on its current low level, as important institutional and social stakeholders have not been involved in the design of a common sustainable development vision for the Sierra.

83. Numerous local projects are carried out in the region on a variety of topics (i.e. soil and water conservation, reforestation, sustainable production and food security, eco and ethnic tourism, wildfire prevention and control, voluntary conservation of community forest areas, wildlife habitat protection, community monitoring of species, payment for environmental services, awareness-building for conservation and waste management), apparently with a tendency to grow year by year in number and funding. Most of these projects are implemented as part of federal programs with explicit sustainable development goals (see section 2.5); there are also various local initiatives carried by the state government and NGOs. However, the coverage of these projects is still limited. Projects are weakly focused on priority areas for ES and BD conservation, as selection of project sites cannot be based on a comprehensive biodiversity and environment services assessment for the Sierra. Impact assessments are scarce or superficial, as are systematization efforts to draw lessons and identify errors and good practices. The latter refers to the lack of a common platform where key actors with experience in the Sierra discuss their project planning and implementation methodologies with a view to adapting them for achieving better results and environmental and social impacts.

84. Actions being implemented under the “business-as-usual scenario”, while significant in number and investment, are dispersed and not coordinated, so they lack the necessary impact to achieve a meaningful conservation of the natural resource base at the landscape level, as they attempt to fight poverty and gender inequality, create jobs and promote sustainability. Effective action that would ensure biodiversity conservation is not forthcoming because of a set of barriers including: i) rudimentary biological inventories and insufficient baseline information which are inadequate for

planning, as well as very limited knowledge about the environmental services and their value, and consequently, their adequate management, ii) government support programs are carried out in a compartmentalized manner by sectors addressing short term goals, hence do not allow an integrated view of biodiversity and ecosystemic benefits and iii) limited capacity of institutions to demonstrate and upscale interventions at the landscape level.

85. Without a special intervention aimed at overcoming the aforementioned deficiencies, projects and investments in the Sierra will continue their actual course. Local projects will continue covering only a limited number of areas and communities, and the most adequate sites for BD and ES conservation will not be selected; the lack of a comprehensive BD and ES assessment and monitoring system and of a corresponding information base will contribute strongly to this situation. Current inaccurate practices, especially those that have proven to be ineffective for ensuring community participation (in particular, inclusion of women and youth) in the complex ethnic and cultural diversity of the Sierra, will keep determining project planning and execution methods. As long as BD and ES conservation efforts are not articulated within a regional strategy and common goals for sustainable development, they will remain isolated and will not achieve synergic effects.

86. Despite long-standing efforts by government sectors and organizations in the Sierra Tarahumara, there are still important challenges ahead in:

- The development of a functional coordination scheme that articulates a number of sectorial government efforts and optimizes available funds and technical expertise to address the people's needs and the loss of natural resouces, particularly in specific areas of high ecological value;
- Halting the rate at which natural resources are deteriorating, particularly due to the implementation of damaging activities (mainly related to unsustainable timber extraction, livestock management, agriculture, mining and tourism development);
- Implementation of economic instruments that secure the conservation of landscapes and species at risk;
- The participation of local communities in natural resources management planning, with an emphasis in forest resources;
- Implementing strategies to conserve the traditional knowledge and practices associated to biodiversity conservation, in accordance with Article 8, paragraph J of the CBD.

87. Under the "business-as-usual" scenario, continued degradation of forests, loss of forest cover and an aggravated tendency towards unsustainable production practices will increase threats to global, national and local environmental benefits, in particular hydrological ecosystem services and biodiversity. "Business-as-usual" in management of natural, especially forest, resources would not arrest tendencies towards reduction of water resources and soil degradation, with its negative impacts on wildlife and livelihoods for adjacent communities. Degradation and loss of forest cover will reduce carbon sequestration services and reduce habitats for threatened species like jaguar, cougar, bobcat, black bear, beaver, river otter, white-tailed deer, mule deer, collared peccary, green macaw, thick-billed parrot, eared quetzal, the magpie pint, the spotted owl and others. These species could suffer significant population losses and thereby, on a regional scale, move from endangered to a critically endangered status.

2.7. Linkages with other GEF and non-GEF interventions

88. The proposed project will coordinate with other related initiatives at two levels: (1) international and (2) national/regional. At the international level, the proposed Sierra Tarahumara initiative will be linked to a series of ecosystem services projects undertaken by UNEP in the context of its Ecosystem Management and Environmental Governance Programs and thus benefit from their cumulative knowledge base and lessons learned. Their focus is the development of analytical work aimed at understanding variations of the different ecosystem services targeted, thus helping policy makers to

incorporate trade-offs in development policy. This cluster of initiatives will contribute to a critical mass of knowledge management in support of this program's strategy in different settings. The Ecosystem Management Program will take advantage of opportunities for collaboration and cross fertilization among the initiatives, with programmatic coordination carried out at UNEP's headquarters at a global level.

89. Related projects offering opportunities for interchange of experience include:

- UNEP´s GEF-funded Project for Ecosystem Services (ProEcoServ), which will take the lead in developing and applying appropriate ecosystem management tools within sectoral planning frameworks and macroeconomic planning models in close coordination with its Division of Environmental Policy Implementation (DEPI).
- UNEP and UNDP have developed a GEF project to test PES schemes in Argentina that includes strengthening access to government supported schemes and, to some extent, free market initiatives. Hence it represents an excellent opportunity for exchange of experiences and lessons with the present project.
- UNEP's Uganda PES project, which is experimental in approach, will provide valuable lessons in how a PES scheme can provide social benefits and meet environmental objectives, in particular through empirical evidence generated by the project regarding the effectiveness of the PES schemes. During implementation, cross fertilization will be fostered through contact between task managers and at the steering committee level.

90. At the national level, there are several GEF and non-GEF interventions thematically linked, and some also spatially overlapping, with the present project:

- The Sustainable Forest Management (SFM) and BD full size project "Transforming management of biodiversity rich community production forests through building national capacities for market based instruments" (GEF ID 4015) is executed jointly by CONAFOR and Rainforest Alliance, with UNDP as the implementing agency. The project aims to overcome some of the key barriers preventing sustainable forest management in Mexico. These include: the lack of organisational capacity required for producers to access markets; low competitiveness of community forest operations; fragmentation of value chains; and low market demand for certified forest products. Given these obstacles, the project aims to integrate biodiversity management into community forestry practices through the use of market based instruments, assisting communities in building more competitive enterprises while protecting biodiversity and improving social conditions. The project is active in the Sierra Tarahumara (among other regions in Durango, Michoacán, Oaxaca and Quintana Roo), assisting ejidos and technical service providers (foresters) with capacity building activities, including exchange of experience between community forest enterprises (*empresas forestales comunitarias* – EFC). Due to a lack of field staff in the Sierra Tarahumara, in 2013 the project was directly cooperating with only one EFC in the region (in Yoquivo, municipality Batopilas), but intends to cover more communities in the future, principally with forest certification and wood processing projects improving value. As the present project will also intervene in these aspects of sustainable forestry, interchange of experience and cooperation at the local level are relevant opportunities to build links between both projects.
- The GEF BD full size project "Integrating Trade offs between Supply of Ecosystem Services and Land use Options into Poverty Alleviation Efforts and Development Planning in Mixteca" implemented by UNEP (GEF ID 3813) and executed by CONANP and WWF, supports a more effective implementation of the conservation objectives of Mexico's National Biodiversity Strategy and Action Plan. In particular, the project addresses threats to the globally significant biodiversity in the Mixteca Region through interventions that overcome existing barriers to conservation, assess ecosystem services and mainstream relevant considerations into the poverty agenda, rural development and infrastructure programs. Pilot interventions at field level will help

to interconnect the Oaxacan Mixteca's biodiversity hotspots extending the total protected area, serve to co-ordinate and integrate ongoing conservation efforts ultimately leading to global environmental benefits. Forest conservation, reforestation, and regeneration through active stakeholder involvement are bringing about benefits at landscape level.

The Mixteca project is providing important lessons for the Tarahumara project being linked to it through knowledge management in UNEP at the program level. Relevant lessons to be adopted are:

- Determine baseline data as early and precisely possible, as a means to establish realistic project goals.
- Pay special attention to social viability of local projects by selecting intervention sites and communities.
- Carry out rapid participatory appraisals for assessing the viability of pilot interventions.
- Consider governance aspects of local projects at all levels (community, municipal, state, federal).
- Recognize traditional knowledge of local actors as an important input in defining pilot project strategies.
- In preparing the budget, take into account geographic and socioeconomic conditions of the project area, in order to avoid budget shortages.
- Develop the project´s communication strategy at an early stage; in particular: a) consider cultural aspects of involved communities; b) establish communication channels to keep project partners regularly informed about the progress the project has made.
- Capacity building measures at the local level are of utmost importance for successful pilot project implementation.
- Create a pool of external experts as advisors and consultants for transferring innovations and adapted technologies.
- Promote the adoption of low cost tools and technologies, to facilitate their replication.
- Establish an interinstitutional working group that helps to inform project stakeholders about planned and ongoing actions, thus facilitating institutional cooperation, cofinancing and mainstreaming project objectives.

- The GEF BD full size project “Mainstreaming the Conservation of Ecosystem Services and Biodiversity at the Micro-watershed Scale in Chiapas” implemented by UNEP (GEF ID 3816) and executed by CONANP and CI will provide valuable exchanges with the present initiative as it is establishing experiences and lessons in different aspects that are relevant for the Tarahumara project: Design and introduction of a standardized methodology using state of the art techniques and procedures for assessment and monitoring of BD and ES in the project region; mainstreaming ecosystem services and biodiversity into land use policies, planning and promotion by watershed committees and policy coordination with other key government agencies; identification and participatory planning of pilot projects for conservation and sustainable use of BD and their upscaling to broader regional development policies; increasing access by land users to public and private PES mechanisms (carbon, watershed services, biodiversity) to provide funding and incentives for the implementation of land use practices and strategies that conserve ES and BD and improve local livelihoods; the latter means piloting innovative local PES schemes in another Mexican state with many of the same institutional partners. The Chiapas project can provide also important lessons regarding best implementation practices as it is operated with a minimum of project staff (by a project manager only) while subcontracting competent and engaged partners for developing most of the activities to achieve project outputs.

- This project is geographically complementary to the project "Conservation of Coastal Watersheds in Changing Environments" submitted to GEF in September 2013 by FMCN, CONANP, CONAFOR and INECC, through the World Bank. The project development objective is to promote integrated environmental management of selected coastal watersheds as a means to conserve biodiversity, contribute to climate change mitigation, and enhance sustainable land use. Activities are organized in five components: Component 1, protected areas conservation, will be implemented by CONANP and FMCN, following the model developed in earlier GEF projects (SINAP I and II). Component 2 will support PES through CONAFOR, and forestry and agricultural subprojects for sustainable land and forest management, with GEF funds administered by FMCN and counterpart funds by CONAFOR. INECC will lead component 3, determining priority sites for project intervention, engaging local communities, and coordinating with national and state agencies to collect and manage watershed health data. Component 4 will focus on mechanisms for inter-institutional collaboration, promoting social participation, and strengthening channels for coordination and learning. Carbon stocks enhancement is a cross-cutting benefit across the four components. Component 5 includes project management. The key direct beneficiaries of the project will be local communities in the watersheds, including *ejidos*, indigenous peoples and individual residents and landowners in the Gulf of Mexico (Veracruz, Tabasco, Chiapas, Hidalgo, Puebla, and Campeche) and in the Gulf of California (Sinaloa, Nayarit, and Jalisco). With regard to the coastal areas of Sinaloa, the projects cover the upstream vs. downstream watershed sections respectively, hence rather than overlap a constructive collaboration and interchange of experience is expected.

- The project will draw important lessons from the "Environmental Services Project" (GEF ID 2443), implemented by the IBRD and executed by CONAFOR. The project objective is "to improve the provision of environmental services that bring both national benefits (primarily water services) and global benefits (primarily increased biodiversity conservation) by strengthening and expanding existing programs for payment of environmental services (PES) related to water (PSAH) and to carbon captures and biodiversity (CABSA) as well as supporting the establishment of new local PES mechanisms". In terms of thematic coverage, the present project's focus is not the establishment and piloting of PES schemes, and the considerations for their inclusion have been presented in the description of component 3. This being said, the coordination of actions with CONAFOR may well provide ad hoc opportunities of including PES schemes as one of the short term conservation incentives for bundling of livelihood supporting alternatives. For instance the management of interstate PES (Río Fuerte) represents a unique opportunity for collaboration.

- The project will also articulate with the ongoing FAO's Special Program for Food Security (PESA), which started of in Mexico in 2002 with the goal of reducing poverty and improving food security in a sustainable manner within 15 years. SAGARPA is financing and coordinating PESA all over Mexico, implementing activities in highly marginalized communities' within this project's area of inicidence. Emergency funds from State and Federal sources have been allocated as of 2012 to alleviate drought and famine impacts amongst Raramuri indigenous communities.

- A close exchange on aspects of environmental governance with the bilateral Mexican-German project (led by SEMARNAT/CONANP) in the central part of the Sierra Madre Oriental (Tamaulipas, San Luis Potosi and Hidalgo) on building an ecological corridor will be useful. Of particular importance in this regard is the effectiveness and the access to existing programs and financial mechanisms to foster ecosystem management and connectivity between protected areas.

The Mexico UNDAF 2014-2019 was officially formalized on March 13 2013. It focuses on an analysis of the national development priorities and the comparative advantages of the United Nations System (UNS). It identifies six Cooperation Areas that have been validated by the GoM: I) Equity, equality and social inclusion, II) Productive Economic Development, Competitiveness and Decent Work, III) Environmental sustainability and Green Economy, IV) Safety, Social Cohesion and Justice, V) Democratic Governance and VI) Alliance for Sustainable Development.

For the process of UNDAF Mexico, UNEP carried out interventions to strengthen the systematic integration of environmental sustainability, the analysis of the current environmental situation in the country by developing two documents: the National Environmental Summary (NES) and the Multilateral Environmental Agreements (MEA). It also took into account public consults and the development of capacity building courses on environmental sustainability for the national teams. Moreover, the incorporation of the preliminary results of the Green Economy Study for Mexico was achieved.

In particular, the cooperation area of UNDAF "Environmental Sustainability and Green Economy" is included in the fourth objective of the National Development Plan: "Prosperous Mexico", which seeks to promote and guide the inclusive green growth and facilitate the preservation of richness, competitiveness and employment. This objective also aims to strengthen national policies on climate change and to protect the environment for the transition into a competitive, sustainable, flexible and low carbon economy. It also establishes the implementation of a sustainable water and agriculture management system and the development of a more productive fishery sector to guarantee food security.

The "Environmental Sustainability and Green Growth" pillar recognizes the huge need for Mexico to mitigate the greenhouse gas emissions and to work towards a sustainable green economy. It also emphasizes the intrinsic relation that exists between poverty and environmental degradation. The United Nations must contribute to the strengthening and to developing capacities in all government levels, the private sector, the academic and civil society in order to take into account these topics.

UNEP' Program of Work includes a series of initiatives supporting the GoM sustainable development agenda. Some of these are most relevant in regards to the present project in particular in terms of tools and mechanisms for assessment on one hand, and on the other strategic guidance that results in the shaping of environmental policy:

- The Mexican Government through its Ministry of Environment and Natural Resources (SEMARNAT) and UNEP signed a Memorandum of Understanding (MoU) on September 12, 2011. This MoU on Green Economy has the objective to provide a framework of cooperation in order to facilitate the transition of Mexico towards a green, sustainable, low carbon economy and support climate resilient growth as well as the formation and future consolidation of a cooperative network for Latin America and the Caribbean. The Parties also agreed to cooperate and collaborate by supporting the development of a Green Economy Study for Mexico as well as the implementation of "The Economics of Ecosystems and Biodiversity" studies (known as TEEBs) in different areas and/or regions of the country. After two years of intense work, *Mexico´s Green Economy Study* (MX-GES) will be concluded in December, 2013 as a major project from UNEP with the support of the International Labour Organization (ILO), the United Nations Industrial Development Organization (UNIDO), the Inter-American Development Bank (IADB), Conservation International (CI) and larger private university *Tecnológico de Monterrey*. Its Synthesis Report will be launched in Dec. 2013 meantime its Final Report is expected to be published next March, 2014. The MX-GES will serve as a tool that identifies and evaluates the options for transitioning to a greener economy. It will analyse policy instruments to redirect investment from traditional brown sectors to efficient green ones. Its main objectives are four. First, it provides an overall picture of the macroeconomic state of the Mexican economy and its linkages to the use of resources (natural capital degradation and depletion, as well as emissions derived from production in several industries). Secondly, it synthesizes results from sector-specific studies and provides a literature review on alternative pathways and policy options for achieving sustainable development based on Mexico's endowments of social, physical, and natural capital. Thirdly, it assesses different macro effects of fiscal and economic policy mixes to foster investment in seven selected sectors by employing a CGE model, with the aim of stimulating inclusive growth, creating green jobs, and improving environmental sustainability and economic competitiveness. Finally, it will encourage and feed a national level dialogue between

policy makers, civil society, and private sector on policies required to mobilize investment at a scale needed to transform Mexico's economy into one which is low-carbon, resource-efficient, and socially-inclusive. The MX-GES develops also a sectorial-detailed analysis including the following key sectors: i) energy, ii) agriculture and livestock, iii) manufacturing, iv) buildings, v) transport, vi) tourism, and vii) natural capital. The sectors were selected because of their relevance to the Mexican economy in terms of output generation, job creation and emissions-reduction potential. While this initiative establishes the wider lines of action for policy making, the Tarahumara project provides on the ground application for these lines to link up with local environmental governance elements.

- Considering UNEP Mexico´s Programme of Work for 2014-2015 the development of the National TEEB (The Economics of Ecosystems and Biodiversity) Initiative is included and UNEP has been working this Initiative for Mexico. In October 2012 the first TEEB workshop was conducted with the participation of SEMARNAT, GIZ and UFZ. Additionally, UNEP Mexico has participated in two other TEEB workshops organized by CONANP, one in October 2013 and another that will take place on December 2013. It is important to state that UNEP has collaborated as well with INECC on studies related to the valuation of natural capital. Moreover, in early 2014 is expected for UNEP Mexico to collaborate alongside SEMARNAT in the creation of a Steering Committee that will begin formally the National TEEB Initiative, coordinating the public and private sectors, academia, civil society and international donor. The experienced¿ gained on the structuring and coordination of the MX-GES of UNEP Mexico Country office will be fundamental. The tools developed in this framework are directly related to what the Tarahumara project is proposing at the pilot stage and will constitute further elements for the GoM to strategically guide their investments in terms of sustainability.

- Considering UNEP Mexico´s Programme of Work for 2014-2015 the design and development of **Mexico´s BioTrade Assessment** is considered: Bio trade looks for the generation of value-added products and services that are mainly derived from biodiversity. The initiative seeks the promotion of the conservation of biological diversity and an equitable sharing of the benefits when using natural resources. Given that most of the poor (70% in the world) live and depend mostly on natural resources to cover their necessities, BioTrade could also be a tool that looks for poverty alleviation and the sustainable development of natural capital.

  BioTrade has only been put into practice in Mexico, especially within small coffee producers in rural communities located in the states of Chiapas and Oaxaca. Mexico not only has a BioTrade potential on organic agriculture, but it could also aim for the forestry sector and the tourism sector by offering diverse environmental services that contribute to the improvement of rural and indigenous communities that manage these services. This would diminish the gap between rich and poor and would also contribute to natural capital conservation and its sustainable management.

  In 2012 UNEP supported the development of Peru´s BioTrade Report with the objective of identifying new opportunities for the promotion and development of bio trade projects. As part of the Green Economy Initiative in Mexico, UNEP is planning the development of a Country assessment on BioTrade in order to generate a comprehensive portfolio of BioTrade projects. As such, the potential for applying the tools, mechanisms and lessons gained under this approach may be fundamental to the Tarahumara project and important linkages may be established between national level policy development and on the ground interventions in this project.

- UNEPs contributions in the environment sector for UN planning support to GoM development agenda. In particular, strengthening institutional and individual capacities to stop and/or revert environmental degradation, conserve the natural resource base, foster participative management and governance of natural resources and promote human development through sustainable development policies and programs and in full respect of the rights of indigenous peoples (to use

their lands' resources sustainably) and of human rights. Contributions include crosscutting application of tools, methodologies, KM and databases through materials and CB processes supports upscaling and replication processes for the GoM plans and programs.

91. For these and other related initiatives (see table 8 below) UNEP will ensure at the PSC level that collaboration continues during the implementation phase. The UNEP Task Manager is in a position to promote such interaction mainly with other relevant UNEP and GEF projects in geographic or thematic overlap. These can take place on a virtual level among specific projects or at the corporate/programmatic level as detailed elsewhere. Experience shows that proactive planning to foster exchange activities may even allow for real time events to take place amongst projects with little budgetary burden. In the present case, a small budget has been included under outputs 2.5 and 4.4 Lessons learned from this and other related projects experience identified for replication in future operations.

92. The proposal has included tasks within the project personnel TORs (Appendix 11) to implement such coordination, as outlined in section 4. In addition, the Project Steering Committee will provide a forum for institutional level coordination. The interaction in the PSC of key actors representing the most relevant institutions at this level provides an excellent opportunity for dynamic planning and coordination of activities, exchanges and cooperation/coordination of this project with other existing and emerging initiatives throughout the life of the project. As noted above, the UNEP Task Manager is in a position to promote such interaction with other relevant UNEP initiatives and GEF projects in geographic or thematic overlap at a global level. On the other hand, the other institutions participating in the PSC, such as CONANP and CONAFOR who carry out other related GEF initiatives as well within Mexico, will have the opportunity for the systematic promotion of project synergies and exchanges of experience within their portfolios at the institutional level. An indication of this is given in the coordination plan below and will be continuously updated following project dynamics and emerging opportunities.

93. The following table summarizes the main areas of coordination with relevant partners and indicates at which level (UNEP, Project Steering Committee-PSC or Project Management Unit-PMU) the responsibility for coordination lies.

Table 8. Coordination plan

Area of coordination	Involved coordinating partners	Responsible for coordination
International coordination of efforts to increase the global knowledge base on the relationship between BD, ES and human well-being and on effectiveness of PES schemes; as well as the development of tools for mainstreaming ecosystem services into development and economic decision making	- Project for Ecosystem Services (ProEcoServ) - UNEP-UNDP project to test PES schemes in Argentina - UNEP's Uganda PES project - UNEP-CONANP initiative in the Mixteca region (state of Oaxaca, Mexico) - UNEP-CONANP initiative in the Sierra Madre of Chiapas, Mexico - Worldbank-CONAFOR Environmental Services Project - Coastal Watersheds Conservation project with FMCN, CONANP, CONAFOR and INECC, through the World Bank.	UNEP UNEP/CONANP UNEP/CONANP PMU/CONANP
Methodologies for design and implementation of BD and ES monitoring systems and Biodiversity	- UNEP-CONANP initiative in the Sierra Madre of Chiapas	PMU

and Environment Assessments		
Dialogue and exchange of experience about lessons learned on integrating BD and ES considerations into regional development policies and plans	- UNEP-CONANP initiative in the Mixteca region	PSC and PMU
Exchange of experience about replicating and upscaling project results from the pilot level to a wider landscape	- UNEP-CONANP initiative in the Mixteca region - UNEP-CONANP initiative in the Sierra Madre of Chiapas - Mexican-German project (led by SEMARNAT/CONANP) in the central part of the Sierra Madre Oriental on building an ecological corridor	PSC and PMU
Dialogue and exchange of experience about lessons learned on BD and ecosystem conservation activities and on sustainable production practices	- Sustainable Forest Management project executed by CONAFOR and Rainforest Alliance - UNEP-CONANP initiative in the Sierra Madre of Chiapas - UNEP-CONANP initiative in the Mixteca region	PMU
Coordination at national level for the development and use of environmental/economic assessment tools applied to national policy development and decision making. Emphasizing considerations regarding Natural Capital and the application of related concepts for on the ground decision making further connecting policy development at the national level with local environmental governance and mainstreaming, shaping GoM support programs in the future.	- Development and outreach of the Green Economy Study (GES) for Mexico - Ongoing efforts for the implementation/application of GEI principles in policy development in relevant sectors - UNEP cooperation with partner institutions and relevant actors in the GoM structure.	UNEP
Promoting the mainstreaming of the economics of ecosystems and biodiversity in planning and policy making for different sectors in Mexico. The tools developed in this framework are directly related to what the Tarahumara project is proposing at the pilot stage and will constitute further elements for the GoM to strategically guide their investments in terms of sustainability.	- TEEB initiative, developing workshops and structuring potential studies in Mexico	UNEP
Contributions in the environment sector for UN planning support to GoM development agenda.	- Implementing the UNDAF's third pillar on Environment, Sustainability and Green Economy in Mexico in coordination with UN System agencies in Mexico and national counterparts at SEMARNAT and associated agencies.	UNEP
-Development and application of tools	- Transfer of knowledge and	UNEP

for the integrated environmental assessment process.	methodological processes for the use of assessment tools and methodologies.	
Ongoing efforts to produce a core set of indicators at the national and regional level and developing the necessary software platform to make them available to decision makers. Integration of relevant indicators at the wider scope with GEF project as on the ground piloting.	- Group on Environmental Indicators of the Latin American and Caribbean Initiative on Sustainable Development ILAC. UNEP lead in cooperation with SEMARNAT. - Definition of key environmental data sets made available on open platforms including SEMARNAT, UNEP-Life, others.	UNEP

SECTION 3: INTERVENTION STRATEGY (ALTERNATIVE)

3.1. Project rationale, policy conformity and expected global environmental benefits

94. Project rationale: Problems in the Sierra Tarahumara relate to the unsustainable extraction and use of natural resources, which are the source of income for its residents and also for many non-residents. Mining, timber extraction, cattle grazing and recently tourism have been the most important economic activities, and at the same time the main threats for biodiversity during the past century up to now. In addition to the pressure on biodiversity and habitats, the present development patterns also mean an increase in demand on ecosystem services, principally water. A growth in extractive activities and tourism has resulted in higher demand for water, competing for water use with the already stressed aquatic ecosystems.

95. The initiatives of many government agencies and social organizations working in the area, with a focus on providing immediate social assistance to poverty symptoms and threats to human rights, make up the baseline scenario. Government support from different programs includes important federal and state level funding on a regular and recurring basis implemented by the main project partners, such as SAGARPA to foster agricultural production and food security, CONAFOR in the forestry area, SEDESOL and CDI in the social area as well as SEMARNAT in the environment sector, while CONANP has the mandate to promote and manage key protected areas. CONAGUA's mandate covers the delivery side of water for human and productive uses. Inappropriate overall planning has already impacted water supplies. Instead of improving current water delivery and treatment systems and creating incentives for increased water efficiency, government agencies (municipal and state governments and water authorities) tend to simply extract more water from streams or springs until these are depleted and then move on to the next source. In addition, non government partners such as WWF and other NGOs present in the region have ongoing programs, pursuing a range of goals from communal sustainable forest management including certification, consensus building for voluntary protection of key biodiversity, ecosystem and ethno-cultural areas, to community-based projects for conserving ecosystem services, like soil retention and preservation of water supply sources in upstream water basins.

96. However, actions being implemented under the "business-as–usual" scenario, while growing in number and investment, are dispersed and not coordinated. In this form, they lack the impact to achieve a meaningful conservation of the natural resource base at the landscape level in their attempt to fight poverty, create jobs and promote sustainability. Effective action that would ensure biodiversity conservation is not forthcoming because a set of barriers including: 1) rudimentary biological inventories and insufficient baseline information which are inadequate for planning, as well as very limited knowledge about the environmental services and their value, and consequently, their adequate management; 2) weak environmental governance, as government support programs are carried out in a compartmentalized manner and development programs in the region do not incorporate biodiversity criteria in their planning and funding allocations; and 3) limited capacity of institutions to demonstrate and upscale local interventions at the landscape level. GEF support would allow overcoming such barriers.

97. Despite long-standing efforts by government sectors and organizations in the Sierra Tarahumara, there are still important challenges ahead in:

- the development of a functional coordination scheme that articulates a number of sectorial government efforts and optimizes available funds and technical expertise to address the people's needs and the loss of natural resouces, particularly in specific areas of high ecological value;
- halting the rate at which natural resources are deteriorating, particularly due to the implementation of damaging activities (mainly related to unsustainable timber extraction; livestock management, agriculture, mining and tourism development);

- implementation of sustainable development instruments that secure the conservation of landscapes and species at risk while improving human well-being;
- the participation of local communities and different social sectors, in particular indigenous people, women and youth, in natural resources management, with an emphasis in forest resources.

98. Policy conformity: The project is consistent with the Biodiversity focal area strategy. It builds on the hypothesis that rather than approaching conservation and sustainable use areas separately and as mutually exclusive concepts, both should be integrated in one and the same land use planning exercise by local stakeholders using the ecosystem approach for a defined area. The result will be a mosaic in which the human dwellers find sustainable livelihood options while preserving their natural resources, ecosystem services and biodiversity at the same time. The implementation of Strategic Objective BD-1: "Improved Sustainability of Protected Area Systems" will be supported by fostering the establishment of voluntary areas for protection as an integral part of the land use planning at the community-landscape level and incorporating these into state and local planning instruments, including their insertion into CONANP'S national system of protected areas. This is a bottom up approach involving local and indigenous people and other key stakeholders at all stages, which will deliver a more sustainable scenario than the top down imposition of protected areas, with the benefit of increased effectiveness and ownership of a PA system mosaic. In addition, this approach increases the potential for habitat connectivity in an area that has been identified by CONABIO and CONANP as a significant gap on the Mexican map of ecosystems and species requiring strategic attention in this regard. The project will build professional capacity and develop essential monitoring and planning tools as well as consultation mechanisms to support the conservation and sustainable use of globally important biodiversity in this critical geographic spot covering both protected and non-protected areas.

99. Drawing from one and the same ecosystem approach based strategy for land use planning that enables communities to create voluntary areas for protection, the integration with productive activities and well planned connection with their respective sector programs will be established thus contributing to Strategic Objective BD-2: "Mainstream biodiversity conservation and sustainable use into production landscapes, seascapes and sectors". Through its main contributing partners, the project will support interinstitutional coordination platforms. This will include the most relevant government sector representation at various levels (see section 2.4), ranging from formal municipal land management planning at the community level up to a Regional Action Plan that brings state and federal authorities together incorporating biodiversity criteria, funding commitments, evaluation parameters and a strategy for economic sustainability. The monitoring and planning tools developed by the project and their practical application in pilot areas involving communities and indigenous people and other key stakeholders will be crosscutting. Both strategic objectives will be integrated under the umbrella of land use planning at the landscape level using microwatersheds as an intervention area and strategic results duly monitored and recorded in both BD1 and BD2 tracking tools.

100. The project will increase the connectivity of the Mexican protected area system, improving the conditions of forests, agricultural lands and water ecosystems through the improvement of management practices, the maintenance of species habitat, landscape structure and extension necessary to secure evolutive and adaptive processes. Project contributions to integrated river basin management will preserve the strategic value of water ecosystems, habitat, and species that are physically and biologically interconnected by water flows and the hydrological regime.

101. As a result, the project will achieve tangible global environmental benefits for biodiversity in a pilot landscape of 300,000 hectares.[76] Integrated land use plans for these pilots will result in a mixed

[76] This target of 300,000 hectares is a modification of the 400,000 hectares PIF-target; it is based on detailed information on relevant indicators baseline data collected during the PPG phase (see Project Results Framework, component 3 indicators).

scenario, where new protected areas covering at least 30,000 hectares and BD and ES conservation and restoration projects covering 150,000 hectares will increase the connectivity of critical habitats, interspersed with productive areas that include 70,000 hectares of certified forest management areas and 120 local pilot projects for BD and ES friendly production covering 48,000 hectares. As such, the global biodiversity benefits to be derived from the project will consist mainly in the improved habitat conditions, via reduction of threats caused by unsustainable land use patterns.

102. The Sierra Tarahumara Region contains many threatened and endangered species among its extensive biodiversity. At the global scale the project contributes to the preservation of biological diversity including also numerous globally threatened and endangered species contained in the IUCN Red List, as well as to the generation of ecosystem services, including water production, soil retention and carbon storage, inherent to the largest forested area in the country. Specifically, species recognized globally as endangered and/or threatened will greatly improve their status of protection and conservation. Component 1 will capture details in the GEF BD tracking tools in this regard. Reference can be made to key species such as jaguar (*Panthera onca*), cougar (*Puma concolor*), bobcat (*Lynx rufus*), black bear (*Ursus americanus*), beaver (*Castor canadensis*), neotropical river otter (*Lontra longicaudis*), white-tailed deer (*Odocoileus virginianus*), mule deer *(Odocoileus hemionus),* collared peccary (*Pecari tajacu*), along with a large number of species of bats, rodents and lagomorphs; among birds: green macaw (*Ara militaris*), thick-billed parrot (*Rhynchopsitta pachyrhyncha*), wild turkey (*Meleagris gallopavo*), eared quetzal (*Euptilotis neoxenus*), the magpie pint (*Cyanocorax dickeyi*) and the spotted owl (*Strix occidentalis*); among herpetofauna: *Craugastor tarahumaraensis*, a species threatened by habitat loss, and the Tarahumara frog (*Lithobates leptodactilido*); among fish species, 52 are under some protected status, like: Fort charalito (*Poeciliopsis latidens*, endemic), Sonora charalito (*P. occidentalis*), Tarahumara trout (*Oncorhynchus sp*), Mexican stoneroller (*Campostoma ornatum*), Conchos carp (*Notropis chihuahua*), Bravo carp (*N. jemezanus*,), Chihuahua catfish (*Ictalurus lupus*), a species under a special protection category, Conchos pupfish (*Cyprinodon eximius*) and Guayacón pinto (*Gambusia senilis*); among flora species: Chihuahua spruce (*Picea chihuahuana*), sacred fir (Abies religiosa) and teozintle (*zea diploperennis*).

3.2. **Project goal and objective**

103. The goal or strategic objective to which the project will contribute is to conserve biodiversity and ecosystem services in the Sierra Tarahumara of Mexico, improving at the same time the livelihoods and quality of life of its inhabitants.

104. The project objective is to develop and implement a participatory strategy to sustainably conserve biodiversity (BD) and ecosystem services (ES), engaging communities, government and NGOs. Indicators for measuring the achievement of this objective are:

- number of key governmental and non-governmental actors outside the environmental sector* that have included explicitly biodiversity considerations and goals in their policies, programs, plans and actions, adopting RAP BD criteria, funding commitments and evaluation parameters (*key actors are identified in ProDoc section 2.5);
- number of communities and ejidos actively participating in programs that have defined objectives, actions and funds for conservation of biodiversity;
- amount of funds provided by different key governmental and non-governmental stakeholders for explicit biodiversity conservation programs from 2014 to 2018;
- percentage of families/women participating in project activities assessing a) an improvement in their quality of life; b) an improvement in the value of their natural resources.

3.3. Project components, expected results and activities

105. According to the main barriers identified and described under section 2.3, the project has defined three strategic components: (1) Scientific base and tools for decision making. (2) Environmental governance framework and policy alignment for ecosystem management. (3) Pilot-scale interventions. A fourth component refers to (4) Project monitoring and evaluation.

Component 1: Scientific base and tools for decision making (indicative grant amount: $457,800; indicative co-financing: $764,000)

106. Institutions with presence in the area, such as CONANP, CONABIO, CONAFOR, CONAGUA, SEMARNAT as well as their counterparts at state level, and non governmental actors like WWF, have individually developed information data bases for the region, but a comprehensive system is urgently required to unify, update, expand and, very importantly, make it accessible to local stakeholders. Information is fragmented and limited to a few species or areas where work and research has been carried out. For actors in the environment, productive and social sector at the federal, state and local level, this represents a significant knowledge gap which affects adequate decision making regarding the incorporation of protection and sustainable use of BD and ES in the programs and projects to be implemented in the area. Therefore, a sound scientific and technical basis which is unified and accessible will be essential to develop innovative management interventions for the Sierra Tarahumara and for coordinated action among relevant actors under an adequate, shared framework.

107. The project will make a significant contribution to the global knowledge base on biodiversity, ecosystem services and threats to habitats. The main increment offered by the project in this respect will consist in establishing a Data Monitoring and Information System for the Sierra Tarahumara (ST-DM&IS) that will allow for systematic monitoring of the most threatened species and the threats affecting them, as well as a representative sample of indicator species and their habitats. Another value added by the project will be a comprehensive Sierra Tarahumara Biodiversity and Environment Assessment. Thus, environmental governance for sustainably conserving biodiversity and ecosystem services in the region will be enhanced by an increase in knowledge pertinent for decision making in natural resources management. Making use of these diagnostic tools and data bases, a growing number of key stakeholders will orient their decision making processes on reliable and comprehensive information about environmental conditions in the Sierra Tarahumara. In a first moment, the project will assume the responsibility for coordinating the ST-DM&IS among key stakeholders, overcoming the current situation in which monitoring and assessment of BD and ES are dispersed among many actors using different methods and concepts. A consortium of institutions with sufficient technical and financial capacities will then assume the responsibility of coordinating the ST-DM&IS, as a step towards institutional sustainability of the monitoring process. Two options have been identified during the PPG phase as the most feasible ones: An alliance between CONANP and the Autonomous University of Chihuahua, within the framework of their already existing cooperation agreement; or an alliance between WWF and the state government of Chihuahua (in particular the Secretariat of Urban Development and Ecology – SEDUE – and the Secretariat of Rural Development – SEDR), also building on a recently signed cooperation agreement. The project will provide for a more effective and fluent transfer of information from the monitoring level to key actors in regional development policies, so planning and decision making for BD and ES conservation management, for example for regional development planning, landscape management design or selection of local project areas and sites, can be better based on reliable, pertinent and comprehensive information.

108. Hence, as **outcome of component 1** it is expected that management plans and decision making processes of key stakeholders involved in development policies, particularly in BD and ES conservation management in the Sierra Tarahumara, utilize the project's diagnostic tools, data bases

and specific information on BD and ES status and dynamics in the region assessed and delivered by implementing these tools. The achievement of the outcome will be measured by the following indicators:

- N° of BD indicator species (in some risk category* and others) and their habitat conditions and threats systematically monitored by the Sierra Tarahumara Data Monitoring and Information System (ST-DM&IS) developed by the project (*risk categories defined by NOM-059-SEMARNAT-2010), as a tool to improve sustainable production and protected area management effectiveness.
- N° of UMAFORES monitoring forest degradation (applying forest degradation index built on indicators proposed by FAO; see section 2.3 of ProDoc)
- N° of key stakeholders using the project's diagnostic tools and data bases (ST-DM&IS and Comprehensive ST Biodiversity and Environment Services Assessment) in their planning and decision making processes
- Stakeholders with sufficient technical and financial capacities have assumed the responsibility for administrating the ST-DM&IS and coordinating the monitoring process among key stakeholders.

109. The following outputs relevant for achieving the outcome of this component will be delivered by the project:

Output 1.1: Sierra Tarahumara Data Monitoring and Information System (ST-DM&IS) to support conservation planning, evaluation and decision making developed, including a comprehensive GIS based bioassessment reporting mechanism (thematic layers to be adapted in pilots).

Output 1.2: Sierra Tarahumara Biodiversity and Environment Assessment to support conservation planning, evaluation and decision making realized.

Output 1.3: Awareness and capacity building program implemented for local, state and federal level stakeholders within the project area, to engage and enable them in the use of tools and data bases produced under outputs 1.1 and 1.2.

This configuration of outputs means a slight modification with regard to the PIF: Output 1.2 has been newly introduced as it is an appropriate consequence and necessary step after having developed the monitoring system under output 1.1. Former outputs 1.2 and 1.3 have been combined as one program (output 1.3) under which awareness building about the usefulness of the ST-DM&IS and information and capacity building activities for its use are carried out; this combination seems adequate as awareness building and information and capacity building about the use of ST-DM&IS tools form a continuum of activities and events under a common methodological umbrella. Given the complexity of its audience, the program will address different user groups on the local, regional and state level.

Activities to achieve outputs and outcome of component 1:

110. *Develop tools for implementing the Sierra Tarahumara Data Monitoring and Information System (ST-DM&IS) in a participative and coordinated way (activity 1.1.1)*

The monitoring program will assess, on one hand, the health of the principal (mainly forest) ecosystems, indices of biological integrity as well as socioeconomic parameters; and on the other hand, the state of environmental governance. Both aspects are strongly related, as "good governance is required to create a political eco-system that is adequate to save the real one".[77] This approach will make it possible to keep the environment under review to continually guide decisions as well as to assess the impacts of the improved natural resources management under the new scenario well after project completion. During the

[77] Environmental Governance and Institutional Framework for the Msunduzi Local Municipality Environmental Management Framework (2008)
http://www.srk.co.za/files/File/SouthAfrica/publicDocuments/Msunduzi/SEA/Appd/376998_App%205%20EGI%20Framework_300608.pdf

project preparation phase, a series of indicators which are pertinent for the project BD and ES monitoring system, for measuring livelihoods in communities and for assessing the state and progress of environmental governance has been identified, partly drawing from monitoring activities like those presently carried out by CONANP, CONABIO, CONAFOR, CONAGUA, as well as state government actors like the Direction of Forest Development. The project will provide added value to these ongoing efforts by integrating dispersed indicators in a comprehensive monitoring system, complementing them with additional pertinent indicators and standardizing measurement methods and rules. Identified indicators are:

Under the aspect of ecosystem health

- Conservation status of a selected group of indicator species (initially 12 indicator species have been identified; this will be revised during design of the ST-DM&IS and its GIS based bioassessment reporting mechanism)
- Forest degradation and coverage (a forest degradation index will be developed)
- Sustainability level of logging practices (indicator to be constructed)
- Land use change
- Coverage of forest wildfires
- Water quantity and quality of flowing and stationary water bodies
- Soil erosion and degradation

Under the aspect of livelihoods and human wellbeing

- Human Development Index in pilot communities (gender disaggregated)
- Access of communities/households to healthy and sufficient water

Under the aspect of environmental governance:

- Number of local, state and federal institutions managing a sustainable development agenda
- Informed environmental decision-making: Actors using scientific findings and information about environmental trends and threats, especially those delivered by the project, in defining their agenda
- Existence of cooperation between various actors to agree on environmental priorities and to implement programs and projects in a coordinated way, including co-financing of activities
- Existence of initiatives to develop, implement and enforce new environmental laws and standards relevant for development policies in the Sierra Tarahumara
- Existence of efforts to divulgate and make understand the benefits of SE and BD conservation among decision-makers and communities.

111. The design of diagnostic tools and information systems will include determining how the continuum of assessments, corrective action and monitoring will function, as well as orientations on how to use the tools to support local environmental governance connecting with component 2 mechanisms and the sustainability of actions beyond project completion. This will allow the allocation of resources and areas most suitable for protection and for productive activities with biodiversity and ecosystem services in mind; the latter with an emphasis on water and soil as limiting factors affecting productive activities as well as human wellbeing in the area. The project will benefit from CONABIO´s capacities for developing its Sierra Tarahumara Data Monitoring and Information System (ST-DM&IS), including monitoring of Tracking Tools for biodiversity projects. The design of the ST-DM&IS will also include developing a practical manual for using DI&MS tools to support the capacity building process *(activity 1.1.2).* The project will allocate sufficient resources for designing the ST-DM&IS that will in turn connect with ongoing efforts and leverage additional ones during design and implementation. CONABIO, CONAFOR, CONAGUA, CONANP and other regional actors, like the Autonomous University of Chihuahua (UACH), the Direction of Forest Development (DDF) and UMAFORES like the one of San Juanito, manage monitoring systems for different indicators in this regard. Strategic cooperation will integrate the project's information platform with relevant national databases, in the first place those forming the National Information System on Biodiversity (SNIB) managed by CONABIO.

112. *Organize institutional arrangements for anchoring the ST-DM&IS sustainably in adequate government or academic structures (activity 1.1.3).*

Initially, the project will host the coordination and monitoring mechanism in order to facilitate the piloting phase of the "assessment-response-monitoring" process. Subsequently, the project will ensure the necessary provisions for sustainably anchoring this mechanism in the corresponding government or academic structure and to make them permanently available at the local level for proper planning and decision making. The available options for managing the diagnostic tools and information systems designed and established by the project are a) CONANP in cooperation with the Faculty of Zootechnics and Ecology of the Autonomous University of Chihuahua (UACH) which is already engaged in monitoring species at risk in the Sierra Tarahumara, with the continuous technical assistance of CONABIO; or b) WWF in cooperation with the Secretariat of Urban Development and Ecology (SEDUE) and the Secretariat of Rural Devlopment (SEDR) within the framework of the recently signed cooperation agreement between WWF and the state government of Chihuahua. Both options foresee permanent social and municipal participation in the monitoring process; one of the expected results of the Regional Action Plan is a permanent linkage of the ST-DM&IS to local governance bodies. Moreover, local organizations and land users will be involved in field recording of data relevant for indicator monitoring.

113. *Carry out a Biodiversity and Environment Assessment (BEA) producing baseline information for biodiversity and ecosystem services monitoring (activity 1.2.1).*

For most of the indicators identified as relevant during the PPG phase, operational definitions will be elaborated in the course of designing the Sierra Tarahumara Data Monitoring and Information System. As reliable and representative baseline data for these indicators are dispersed or partially unavailable, baseline information will be gathered at an early project implementation stage, building on existent institutional information, for example the compendium of specialized studies about biodiversity in the Sierra Tarahumara carried out by a UACH research team as a basis for developing the State Biodiversity Strategy for Chihuahua; additionally, direct field research conducted by the project will complement institutional sources of information. The BEA will be conducted by a specialised research team and provide an important input for the development of the Regional Action Plan under outcome 2.

114. *Design an awareness and capacity building program addressed to local, state and federal level stakeholders for use of data bases and DM&IS tools developed by the project (activity 1.3.1).*

The awareness and capacity building program will be designed so as to include all the elements of the monitoring system, from in-the-field observation techniques to information processing, systematization and presentation to decision makers. Outreach material explaining the usefulness and need of a monitoring and information system for the Sierra Tarahumara will be produced as part of this activity. The program will be designed by the coordinator of project component 1, together with a specialist who will moderate the awareness raising and information workshops under activity 1.3.2 (see parr. 113).

115. *Build awareness and inform stakeholders about the use of data bases and DM&IS tools developed by the project (activity 1.3.2)*

The science and information component will build awareness and inform stakeholders at federal, state and local level about the usefulness of tools and data bases for sound decision making in program, project and land use planning. The start phase of the awareness building process will be a highly concentrated campaign extended over a few months; after an interval, a second awareness building campaign will be launched to reinforce the message and tailor it to particular institutional or local circumstances. The awareness building campaign will be addressed, on the one side, to institutional actors on the state and federal level based in the state capital of Chihuahua; on the other side, to regional and local actors based in the Sierra (municipalities, NGOs, UMAFORs, ejidos and communities). Local actors already engaged in monitoring activities – like community monitors in protected areas managed by CONANP – will be included in the campaign, thus giving continuity to ongoing processes in the field while upscaling them in geographical coverage and range of indicators.

116. *Implement institutional and technical assistance follow up program for stakeholders using the Sierra Tarahumara Data Monitoring and Information System (activity 1.3.3)*

The project will provide for a follow up program to support monitoring activities and to ensure that institutional and technical capacities for managing the Sierra Tarahumara Data Monitoring and Information System are maintained and improved during the project´s lifetime and beyond. The follow up program includes periodical on-the-job-trainings and workshops for reviewing, updating and adapting skills and competences of ST-DM&IS users to supervise its adequate application and propose corrective action where necessary. The project´s monitoring component coordinator will implement directly this follow up program, assisted and accompanied ocassionally by the expert (team) who before has facilitated the process of designing the ST-DM&IS.

Component 2: Environmental governance framework and policy alignment for ecosystem management (indicative grant amount: $1,075,900; indicative co-financing: $1,515,000)

117. Enhanced local environmental governance is a central building block to support the project's objectives and their sustainability. It will be achieved by a) strengthening local capacities (ejido authorities, indigenous people, municipal and state governments and the civil society organizations) to take responsibility of the conservation of their own territories and develop well functioning territorial planning schemes. More specifically also enhancing skills in interpreting and applying scientific data to planning and conservation efforts, and awareness of the intrinsic linkage between ecosystem integrity and the resulting services essential to productivity enhancement. Livelihood improvement will in turn become a self-sustaining incentive; and b) strengthened decision-making capacities at the local level will enable the effective participation of the project's coordinating structure into existing regional and national environmental governance bodies, thereby ensuring a more cohesive, and functional environmental governance structure. Finally, the necessary knowledge management, including systematization and upscaling efforts to reinforce a new management model, will be provided by this component as well.

118. In the "business-as-usual" scenario, weak environmental governance will continue to be the dominant trait of ecosystem management in the Sierra Tarahumara. Some of the many expressions of this situation are: Few local, state and federal institutions are managing a sustainable development agenda; funding allocations for development programs in the region do not, or do so only in a subordinated way, incorporate biodiversity criteria; policy objectives are often contrary to BD and ES conservation; participation of local stakeholders, particularly indigenous communities, in planning and implementing sustainable development programs is low; local pilot programs for BD and ES conservation have little impact and are not replicated and upscaled on a landscape development level; local stakeholders have little knowledge of laws concerning BD and ES protection; enforcement of environmental laws is weak; there is a lack of coordination between governmental and social actors for BD and ES conservation, much less a regional consensuated strategy for BD and ES conservation has been developed for the Sierra Tarahumara. The latter is true in spite of the existence of policy coordination initiatives, like the Inter-institutional Assistance Program for the Indigenous People of the State of Chihuahua (PIAI), the State Coordination of the Tarahumara (CET) and CDI´s Territorial Management Strategy for Development with Identity in the Tarahumara. In view of this scenario, the expected **outcome of component 2** is defined as follows: "The environmental governance of the Sierra Tarahumara region improves in responsiveness to key issues for biodiversity conservation and ecosystem services supply following a *Regional Action Plan (RAP)* that incorporates biodiversity criteria, funding commitments, evaluation parameters and a strategy for upscaling as well as for economic sustainability beyond project completion."

119. The project will achieve these improvements in environmental governance by involving more actors with more actions and more funds (*quantitative increment*) in a better coordinated strategy with synergic effects for sustainably conserving biodiversity and ecosystem services (*qualitative*

increment). Due to targeted project efforts, more key governmental and non-governmental actors, particularly outside the environmental sector, will explicitly include biodiversity considerations and goals in their policies, programs, plans and projects, adopting BD conservation criteria, funding commitments and evaluation parameters developed under a Regional Action Plan (RAP). The RAP will be the basis for building a Common Agenda for the Sustainable Future of the Sierra Tarahumara, thus introducing an innovative public policy approach for the region. The increase in funds provided by key governmental and non-governmental stakeholders for applying this Agenda will be an indicator of their growing engagement in programs focussed on biodiversity and ecosystem services conservation. In this process, the number and population of communities and ejidos actively participating in programs that have defined objectives, actions and funds for conservation of biodiversity will grow substantially, adding social sustainability to the Common Sustainability Development Agenda. Equally, most if not all municipalities, as well as a representative group of civil society organizations (producers, NGOs) in the project region will participate in constructing and implementing the RAP and the Sustainable Development Agenda, aligning their objectives and actions to include explicitly biodiversity criteria and evaluation parameters.

120. Indicators for measuring the achievement of this outcome are:

- Number of key governmental and non-governmental actors* participating in the construction of a common and coordinated agenda based on a Regional Action Plan to sustainably conserve biodiversity in the Sierra Tarahumara (*actors identified in ProDoc section 2.5)
- Percentage of women participating in construction of the RAP
- Number of municipalities in the project region including explicitly BD considerations and goals in their policies, programs and plans (adopting RAP BD criteria, funding commitments and evaluation parameters)
- Number of civil society organizations (producers, NGO) participating in the construction of RAP and aligning their objectives and actions to include explicitly RAP BD criteria and evaluation parameters.
- The Regional Action Plan takes explicitly and specifically into account the long term needs of the protected areas in the Sierra Tarahumara including the enforcement of land use prescriptions and BD and ES criteria for development programs in these areas.
- Management effectiveness of protected areas in the project region, as measured through Management Effectiveness Tracking Tool (METT) for protected areas.

121. The following outputs relevant for achieving the outcome of component 2 will be delivered by the project:

Output 2.1: Coordination mechanism of federal, state and municipal authorities with local communities and non governmental actors for the development and implementation of the Regional Action Plan designed and established, ensuring gender equity in that body.

Output 2.2: An agreed strategic Regional Action Plan developed which mainstreams BD and ES criteria into regional development policies and integrates the sustainable use of productive lands and the protection of areas with high value for BD conservation and ES provisioning.

Output 2.3: Policy improvement strategy developed drawing from PPG findings, the Diagnostic Analysis in component 1 and the Regional Action Plan, to propose changes or new regulations affecting funding allocation criteria that mainstream measures to conserve and sustainably use biodiversity and key ecosystem services.

Output 2.4: An adaptive management model at the landscape level emphasizing forest lands developed and implemented, based on project learnings and best practices systematization including diffusion material in formats tailored to local stakeholders.

Output 2.5 Outreach program developed to replicate and upscale the project's progress and results from the pilot level to the wider landscape in the Sierra Tarahumara.

Activities to achieve outcome of component 2:

122. *Promote coordination mechanism for the design and implementation of the Regional Action Plan to mainstream BD and ES criteria among regional actors (activity 2.1.1).*

The project will propose the creation of a Regional Council for the Sustainable Development of the Sierra Tarahumara as the coordination mechanism for mainstreaming BD and ES criteria among regional actors, incorporating federal, state and municipal government agencies and civil society actors involved in natural resources management and support of rural development and production, that is, SEMARNAT, SAGARPA, CONAGUA, CONANP, CONAFOR, CDI and SEDESOL, their state government counterparts, municipal authorities, indigenous communities, ejidos, UMAFORES and NGOs, ensuring their critical participation in the development of the aforementioned Regional Action Plan. Particular emphasis will be placed on a high proportion of women participating in this body. This Regional Council will be promoted by the project creating awareness of the urgent need to overcome the serious environmental, productive and social degradation processes in the region, under the motto of a "Common Agenda for a Sustainable Future of the Sierra Tarahumara". Such promotion efforts will build on existing coordination initiatives and structures, like the the Interinstitutional Assistance Program for the Indigenous People of the State of Chihuahua (*Programa Interinstitucional de Apoyo a los Indígenas del Estado de Chihuahua* – **PIAI** – see paragraph 71), the State Coordination of the Tarahumara (*Coordinación Estatal de la Tarahumara* – **CET** – see paragraph 69) and **CDI**´s Territorial Management Strategy for Development with Identity in the Tarahumara (see paragraph 61). The Regional Council for the Sustainable Development of the Sierra Tarahumara will supply the required additionality to these coordination efforts, as well as to ongoing sector programing, by deploying a strategy to align and positively influence sector policies based on the knowledge derived from component 1 regarding biodiversity conservation and ecosystem services provisioning, with special attention to forest restoration and water supply.

123. *Establish coordination mechanism for the design and implementation of the Regional Action Plan to mainstream BD and ES criteria among regional actors (activity 2.1.2).*

Once having obtained the essential agreement and commitment of key stakeholders for establishing the Regional Council for the Sustainable Development of the Sierra Tarahumara, its installation will require a series of formal steps, particularly: a) Definition of the legal status, statutes and publication of the creation of this new organ in the Official Journal of the state government of Chihuahua; the project will accompany these procedures with a consultancy by a specialist in administrative law); b) development of working criteria and a work plan for the Regional Council. It is envisaged that the state government of Chihuahua, for example through its Secretariat of Rural Development (SDR), will assume a leadership role in this coordination body. Through these measures, the Regional Council will obtain a new quality of recognition and potential impact on development policy design for the Sierra Tarahumara, in comparison with existing coordination mechanisms.

124. *Provide technical assistance and follow up to the coordination mechanism for the design and implementation of the Regional Action Plan (activity 2.2.1)*

The project will accompany the proceedings of the coordination mechanism by providing technical assistance for the development of the Regional Action Plan which is essential to move towards sustainability in the project's area of influence. An improved regulatory framework will be thus achieved by integrating communities, all levels of government and civil society to such efforts. It will provide the planning frameworks at local levels, actively using the feedback, inputs, and data resulting from component 1. The project's technical assistance and capacity building efforts will ensure that required skills, tools and analytical abilities are delivered to stakeholders participating in the development of the Regional Action Plan. Thematic working groups involving key actors will be established by the Regional Council to develop planning scenarios and new regulatory parameters for the most relevant development

sectors. The Regional Council will decide on the specific tasks and composition of the working groups; nevertheless, the following sectors are considered as priorities for inclusion in regional planning: (1) *forestry*, with SDR-DDF, CONAFOR, UACH (campus Delicias), INIFAP, Regional Forest Producers Associations (ARS) and UMAFORES, as prominent members; the State Forestry Council of Chihuahua and the Municipal Forestry Development Councils of most municipalities in the Sierra Tarahumara will provide valuable experience and know-how to this working group; (2) *agriculture, particularly livestock farming,* with the participation of SAGARPA, SDR, PESA and Rural Development Agencies, INIFAP, the Regional Union of Livestock Farmers, representatives of ejidos and indigenous communities, and NGOs working in the sector; (3) *social development*, with SEDESOL and its state counterpart SEDESO, CDI, CET and competent NGOs; (4) *tourism*, with SECTUR, state Direction of Tourism, CONANP, CDI, state Direction of Forest Development and UMAFORES; (5) *environmental culture*, with ICATECH, CET, CRESER, UACH, CONAGUA, INAH, CONANP; (6) *gender equity,* with the Chihuahua Women Institute (ICHIMUJ), SEDESOL, CDI, PIAI AND COMPETENT NGOs. - A leading principle in these planning activities will be to build on existing programs, resources, experiences and capacities of government and non-governmental actors. The additional value will consist in the incorporation of cross-cutting criteria of BD conservation and sustainable ES provision into the sectoral policy approaches of the thematical working groups and into the Regional Action Plan. A multidisciplinary team of specialists in regional planning will accompany this process, along with the close supervision and involvement of the project´s environmental governance component coordinator.

125. *Socialize the Regional Action Plan among key actors in the Sierra Tarahumara and a broader citizenship, by the use of outreach material, a press and broadcast campaign and special information events (activity 2.2.2).*

The Regional Action Plan will be made widely known among key actors in the Sierra Tarahumara and a broader public as an innovative public policy approach with a new vision for the region, under the motto of a "Common Agenda for the Sustainable Future of the Sierra Tarahumara". For this purpose different instruments will be employed by the project, adding GEF funds to existing resources and capacities of project stakeholders. In the first place, the RAP will be published in two different versions: In book form and in a community-outreach format, the latter in Spanish and in the four indigenous languages - rarámuri, guarojío, tepehuano and pima - spoken in the Sierra Tarahumara; the National Commission for the Development of Indigenous Peoples (CDI) can assume the corresponding translation work. The RAP publications will be presented to the media and in a special event with key actors in the state capital of Chihuahua; furthermore, RAP presentation events will be held in the municipalities of the project region, in appropriate settings for broad local stakeholder participation.

126. *Promote incorporation of RAP recommendations for mainstreaming BD and ES criteria into the sectorial development policies and regulations affecting funding allocation criteria of government, non-government and public-private bodies, along with lessons learned and best practices for conservation activities and ES and BD-friendly production practices (activity 2.3.1).*

The Regional Action Plan will be used as an instrument for the guidance of key actors in the Sierra Tarahumara, providing them with frameworks for their own planning activities. Specific recommendations for incorporating BD and ES criteria into sectorial development policies and programs will be developed and forwarded to government, non-government and public-private agencies, by sectorial and municipal task forces and by means of guidance material that will be distributed to these actors. Recommendations will include the interpretation of institutional program regulations affecting funding allocation criteria in a sense favourable to the modified sectorial development policies and programs; in spite of highly centralised government program regulations, use can and will be made at the regional and local level of financial allocation margins within these frameworks. - The Regional Council for the Sustainable Development of the Sierra Tarahumara will agree on and promote the creation of sectorial and municipal task forces that will develop specific guidelines for incorporating RAP recommendations into existing or new programs and projects of relevant stakeholders. It is planned that task forces for twelve municipalities will be established, as well as six sectorial task forces designed on the basis of previous experience with

sectorial working groups for the development of the RAP (under activity 2.2.1). This complex policy change process represents one of the major incremental values provided by the project and will be accompanied by the technical assistance of a specialised team extending over a period of at least 18 months, under the surveillance of the environmental governance component coordinator.

127. *Promote articulated and jointly funded conservation and sustainable development programs by key governmental and non-governmental stakeholders under the new or adapted regulations for funding allocation criteria (activity 2.3.2).*

Stakeholders working together is a key to a succesful modification of current degradation and poverty trends. The project will propose and promote such cooperation programs, for example in landscape management where a holistic, interdisciplinary and interinstituional approach is needed, or in more specific intervention modalities, like endangered species and wildlife habitat monitoring, soil and water conservation projects or forest wildfire prevention. In general, new opportunities for articulated and jointly funded cooperation programs will be identified by the sectorial and municipal task forces, assisted by the team of specialists mentioned under activity 2.3.1, and implemented mainly under project component 3 (pilot projects). Cooperation among two or more stakeholders can range from exchange and systematization of experiences, including application of shared impact evaluation methods,[78] passing through spatial coordination of local projects by various actors, up to jointly funded programs under a common management.

128. *Develop a landscape management model (LAMM) understood as integrating economic, ecological and social objectives into spatial development planning emphasizing forest land, as part of the Regional Action Plan (actividad 2.4.1).*

The Sierra Tarahumara is faced with complex ecosystem management problems due to competing and complementary objectives, values and interests, for example maximization of timber-production returns vs. ecological considerations. Hence for society and forest-owners or decision makers, there is an increasing need to analyze the development of the spatial structure of forests and other land use forms, and to develop means by which landscape management objectives which integrate different objectives and values can be explicitly included in territorial planning.[79] Managing an ecosystem for wildlife habitat, water quality and timber at the same time is complex and difficult to implement. The project will provide expertise by a landscape management specialist to meet this challenge, developing a landscape management model (LAMM) that will be integrated into the Regional Action Plan. The LAMM will build on previous institutional experience concerning preparation of ecological land-use plans, for example the Regional Ecological Land-Use Plan for the Sierra Tarahumara presented in 2012 by the Autonomous University of Ciudad Juárez; however, landscape management considerations will introduce a new perspective to existing land-use planning efforts.

129. *Promote adoption of the landscape management model among key stakeholders (activity 2.4.2).*

[78] For example, various governmental actors are engaged in soil and water conservation programs. However, doubts exist about the effectiveness of these programs in terms of soil quality indicators, as demonstrated by a recent study in nine communities in central Mexico. See: Cotler, Helena, Silke Cram, Sergio Martinez-Trinidad, Eduardo Quintanar (2012). *Forest soil conservation in central Mexico: An interdisciplinary assessment.* Catena 104 (2013) 280–287. journal homepage: www.elsevier.com/ locate/catena. Impact analyses of such programs in the Sierra Tarahumara can deliver lessons for improving techniques and community participation methods employed. In this regard, the study cited indicates that the observed soil conservation program only encourages participation through economic stimulus without considering that non-financial interest can play an important role.

[79] Baskent, Emin Zeki, Sedat Keles (2005). *Spatial forest planning: A review.* Ecological Modelling 188 (2005) 145–173
http://www.arcfuels.org/maggie/AGER%202011%20maggie%20Copy.Data/PDF/Baskent%202005%20Forest%20Planning.pdf

The project will promote the incorporation of landscape management criteria into policies, plans and programs of regional and local actors in the context of the sectorial and municipal task forces established and assisted under activity 2.3.1. This process will be facilitated by a manual for incorporating landscape management considerations into regional or local land-use planning.

130. *Link landscape management model with selection of sites for pilot projects under component 3 (activity 2.4.3).*

The landscape management model will be used as an instrument to assess and define more closely appropiate sites and actors for pilot projects, building a mosaic of productive and protected areas for BD and ES conservation. This activity will be linked with activities 3.1.1 and 3.2.1 through 3.2.4 under the pilot intervention component 3.

131. *Systematize project experience by identifying impacts, best practices and learning lessons for replication in future operations (activity 2.5.1, linked with output 4.4)*

As a fundament for developing the project outreach and replication strategy, impacts, best practices and lessons learned from the experience in environmental governance improving in the Sierra Tarahumara will be systematized, applying a participative methodology. The best practices catalogue will be enriched by experiences from other regions, not least from other GEF and UNEP projects.

132. *Develop and promote outreach program among key stakeholders, to replicate and upscale the project's strategy and results from the pilot level to the wider landscape in Sierra Tarahumara, drawing from results of project experience systematization (activity 2.5.2).*

Building on the systematization of this and other project experiences, an outreach and replication strategy will be developed, involving key stakeholders from government and society in this exercise. Such involvement prepares also the ground for successfully promoting the outreach program among key stakeholders.

Component 3: Pilot-scale interventions (indicative grant amount: $2,986,000; indicative co-financing: $37,095,000)

133. During the PPG phase, diagnostic studies have highlighted the following problems for BD and ES conservation at the local level: Unsustainable production and extraction practices are common and have impact on BD and ES degradation and habitat fragmentation; few areas are under BD and ES friendly land use management; activities for conservation are few in number and cover limited areas; very few local governments (municipalities, ejidos, indigenous communities) manage areas for ecosystem conservation, ES (e.g. water) protection and sustainable production; degradation of water and soil resources is among the most felt problems; river basin management is limited to a few isolated efforts; there is a lack of information relevant for BD and SE conservation, for instance for identifying specific priority intervention areas for protection and sustainable production projects; diagnostic tools and information systems are insufficient and not adapted to cover particular local information needs. This problem analysis is the background for the definition of the **expected outcome of component 3**: "Sustainable and integrated land and natural resource management effectively applied at the headwaters of the Rio Conchos, the Rio Fuerte and the Rio Mayo river basins results in a landscape mosaic of at least 300,000 hectares[80] that combine added conservation areas and productive land under biodiversity and ecosystem services friendly management."

134. Indicators for measuring the achievement of outcome 3 are:

- N° and extent in hectares of voluntary community and private protected areas (PA)

[80] This target of 300,000 hectares is a modification of the 400,000 hectares PIF-target; it is based on detailed information on relevant indicators baseline data collected during the PPG phase (see Project Results Framework, component 3 indicators).

- N° and extent in hectares of biodiversity and ecosystem conservation and restoration projects (except voluntary PAs)
- N° and extent in hectares of certified forest management areas (by different standards like FSC, Mexican national standard for sustainable forest management NMX 143 and CONAFOR certificate for good forest management by so called technical preventive audits - PTA)
- N° and area covered by local production projects under BD and ES friendly management
- Percentage of women participating in local production projects under BD and ES friendly management
- N° of municipalities having developed Integrated Landscape and Natural Resource (ILNR) Management Plans, in the framework of the RAP, combining areas for BD conservation and BD and ES friendly productive activities

The baseline of these indicators has been determined during the PPG phase (see Results Framework), with the exception of the fourth indicator (number and area covered by local production projects) which involves counting and measuring a considerable number of actors and actions. In this case, a systematic study about ongoing programs and projects in the baseline scenario will be carried out at project beginning.

135. Pilot-scale interventions will implement sustainable and integrated land and natural resource management in strategically selected pilot areas covering at least 300,000 hectares. It will do so by a) adjusting the Sierra Tarahumara Data Monitoring and Information System (ST-DM&IS), including a GIS based bioassessment reporting mechanism, developed under component 1 to local conditions and field testing its application; b) on-the-ground application of the Regional Action Plan from component 2 through the preparation and pilot implementation of municipal land management plans and c) promoting complementary on the ground programs and activities tailored to the pilot sites that will help to integrate conservation and production/sustainable use.

136. In the municipalities and communities of the Sierra Tarahumara, a considerable number of actions for conserving and restoring natural resources, as well as numerous production projects in different sectors (forestry, livestock farming, agriculture and food security, tourism and others) are already being implemented by governmental and non-governmental actors. This project will not only bring a *quantitative increase* in such development activities by levering additional resources, but also a *qualitative increment* on various aspects, through strategic contributions facilitated by GEF funds for obtaining global environmental benefits:

137. Quantitative increments produced under the pilot project component:

- Increase in funds provided by key governmental and non-governmental stakeholders for programs focussed on biodiversity and ecosystem services conservation
- Increase in area coverage of said programs
- The number and population of communities and ejidos actively participating in, and benefiting from, programs that have defined objectives, actions and funds for conservation of biodiversity and provision of ecosystem services will grow substantially.

138. Qualitative increments produced under the pilot project component:

- Federal and state government institutions, as well as municipalities and civil society organizations (producers, NGOs) present in the Sierra Tarahumara will align project objectives and actions to include explicitly biodiversity criteria and evaluation parameters in their planning, implementation and evaluation parameters.
- Projects and actions, up to now mainly intended to bring about effects in economic and social development, will also produce positive environmental impacts.

- Identification of specific priority intervention areas and actors for protection and sustainable production projects will be better based on relevant information, delivered by the Sierra Tarahumara Monitoring and Information System developed by project component 1.
- Local development projects will not longer be dispersed and isolated efforts to respond mainly to single institutional program targets and requirements, but instead be integral part of planning scenarios at the regional (Regional Action Plan) and municipal (Integrated Landscape and Natural Resource Management Plans) level where biodiversity conservation criteria are integrated into the management of protection and production areas.
- A better coordinated regional development strategy, established by the Regional Action Plan and the Common Agenda for a Sustainable Future of the Sierra Tarahumara, will produce synergic effects with regard to sustainably conserving biodiversity and ecosystem services.
- A variety of multilateral and bilateral cooperation agreements among actors in the Sierra will range from exchange and systematization of experiences, including application of shared impact evaluation methods, passing through spatial coordination of local projects by various actors, up to jointly funded programs under a common management, contributing to stronger impacts on both socioeconomic development and biodiversity conservation.

Bearing in mind the aforementioned incremental aspects, this project proposes to achieve the following outputs under component 3:

139. Outputs for achieving outcome 3: [81]

Output 3.1: Component 1 tools adjusted to pilot site conditions: ecosystem types, landscape units, river basins, species inventories and priorization of landscape units and habitat types conforming biological corridors.

Output 3.2: Sustainable and integrated land and natural resource management plans developed in project area municipalities include voluntary conservation areas and areas to optimize biodiversity friendly production and ecosystem services, emphasizing water and forest resources, drawing from the RAP in component 2.

Output 3.3: Pilot programs and field activities to implement pilot projects identified under 3.1 and 3.2 focussing on conservation.

Output 3.4: Pilot programs and field activities to implement pilot projects identified under 3.1 and 3.2 focussing on sustainable production.

Activities to achieve outcome of component 3:

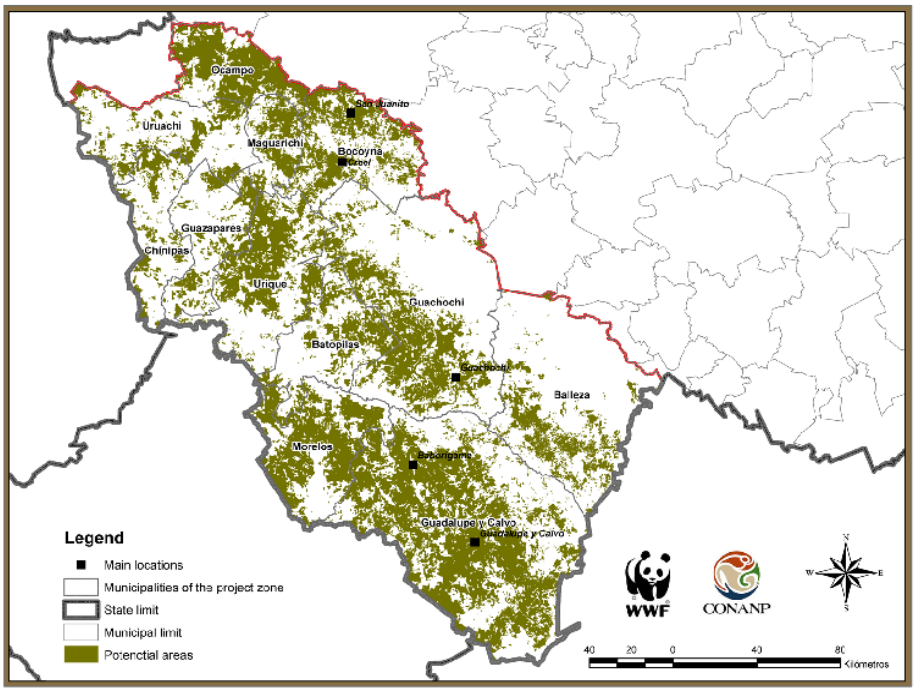
140. *Confirm and state more precisely the definition of sites and characteristics of pilot projects utilizing and adapting tools and data from component 1, RAP and PPG findings (activity 3.1.1).*

This activity will build on component 1 tools, among them the baseline study about ongoing programs and projects, and particularly on the findings of Deliverable 2 of PPG studies "Identification of target areas for the integration of production and protection frameworks". Applying criteria like certification potential, potential for productive conversion, presence of endangered species, presence of indigenous communities, municipalities engaged in conservation activities, vulnerability of water basins and accessibility, this study has delimited the most suitable zones for conservation and sustainable use projects in the project area, as shown in map 4. Nearly 1.5 million hectares, 36 percent of the total project area, are considered by the

[81] As exposed under paragraph 131, the expected outcome of component 3 is: "Sustainable and integrated land and natural resource management effectively applied at the headwaters of the Rio Conchos, the Rio Fuerte and the Rio Mayo river basins results in a landscape mosaic of at least 300,000 hectares[81] that combine added conservation areas and productive land under biodiversity and ecosystem services friendly management."

study as area apt for pilot projects; 40 percent of them are concentrated in the southern municipalities of Guadalupe y Calvo and Morelos.[82]

Map 4. Most suitable zones for conservation and sustainable production projects in 12 municipalities of the Sierra Tarahumara (Full size image on file)



141. This map and the information on which it is based give a first orientation. During the early stages of its implementation, the project will continue the process further specifying intervention sites, actors and the types of projects in involved municipalities, micro-waterbasins and communities. Priority attention will be given to areas with relatively well conserved, but endangered, ecosystems like old-growth forests, deploying special promotion and capacity-building efforts to involve nearby communities in their protection and sustainable use. A catalogue of the principal action lines and project types will be developed to this end, emphasizing the importance and giving preference to multidimensional and intersectorial interventions which integrate various single-purpose lines of action.

142. During the PPG phase, the following **lines of action for conservation** have been identified as of priority interest:

- Voluntary conservation areas at the community and private level
- Protection of priority and other key species and their habitat (for example cotorra serrana, guacamaya verde, oso negro, aguila real, Chihuahua spruce (*Picea chihuahuana*), Douglas-fir (*Pseudotsuga menziesii*), and others
- Restoration of degraded forest areas and ecosystems (including gallery forests)
- Soil and water conservation

[82] Universidad Autónoma de Ciudad Juárez (UACJ) (2013). Deliverable N° 4 of Project Preparation Activities: *Identification of target areas for the integration of production and protection frameworks:* 15 (table 3)

- Capacity building for financing conservation projects; for example payments for ecosystem services (biodiversity conservation, water provision).

143. The project will promote a bottom-up approach for the inclusion of voluntary conservation areas at the community level negotiating agreements for allocating community owned land plots for ecosystem conservation declaring them as areas protected by the ejidos or communities themselves. CONANP is the institution mandated to provide support for the management of federal, state and voluntary protected areas, delivering the necessary consulting and follow up on all actions related to ecosystem and priority species conservation. As such it will take the necessary steps to monitor and register project results in its national Protected Areas system. As the ejido structure is the most common local governance and land tenure body, no major impediments for the achievement of agreements are envisioned in terms of land tenure issues. Actually, CONANP through its direction of the Sierra Tarahuma Priority Conservation Region has already certified or is cooperating with 13 voluntary protected areas, as shown in the following table:

Table 9. Voluntary protected areas in the project region

Ejido/community	Name of conservation area	Area in hectares
Ejido Porochi (municipality Urique)	"Mesa del Cóstrabo", proposed for certification by CONANP	45
Ejido Forestal "El Retiro y Gumeachi" (mpty. Bocoyna)	"El Retiro y Gumeachi"	450
Ejido Cerocahui (mpty. Urique)	Ejido conservation area "Mesa del Pinal"	222
Ejido Cuiteco (mpio Urique)	Reserva campesina	2,324
Ejido Yoquivo (mpty. Batopilas)	Community protected area "Arroyo Tasajisa", proposed for certification by CONANP	2,256
Guapalayna		680
Pino Gordo – Choreachi (mpty. Guadalupe y Calvo)		2,500
Mogótavo (mpty. Bocoyna)		2,930
San José Turuachito (within ejido Chinatú)		Information not available
Municipality Chínipas	Private ranch	800
Tuaripa (mpty. Guadalupe y Calvo)	Forest with high conservation value	2,000
Baborígame (mpty. Gpe. y Calvo)	Protection of Cerro del Águila	1,500
Panalachi (mpty. Bocoyna)	WWF sponsored conservation area	2,000
Total		**17,707**

144. These cases demonstrate that there are local actors in the Sierra who are convinced of the benefits of protecting natural resources of high value for biodiversity and who promote successful community and private initiatives for declaring protected areas. The project will identify and support such local

actors as partners in its strategy to expand the network of community conservation areas. There is a considerable potential for local conservation projects: 25,000 has for intensive protection of fragile ecosystems have been identified; old-growth forests like the one in Pino Gordo (Choreachi) are in urgent need of effective protection; ejidos like La Pinta and Los Pilares (municipality Balleza) are interested in protecting forest areas of high conservation value. The medium to long term incentive for ensuring local buy-in for designating voluntary protection areas is recognizing the benefits derived from the interdependence of ecosystem functionality, productivity and human wellbeing. The short-term incentive for community participation will be provided by on-going government programs currently delivering a variety of fiscal and economic incentives at the local level.

145. Protection of priority and other key species and their habitat: A somewhat different biodiversity conservation action line will consist in targeting certain endangered fauna species, like black bear, beaver, river otter, green macaw, thick-billed parrot, eared quetzal, magpie pint, mountain trogon and the spotted owl; as well as some migratory birds, and endangered flora species, like Chihuahua spruce (picea) and sacred fir. Sanctuaries for such species will be promoted and installed, involving local voluntaries (youth clubs and others) in close monitoring of those protected species and their habitat. An already existing example is the arboretum of Chihuahua spruce in Arareco near Creel.

146. Restoration of degraded forest areas (including gallery forests); soil and water conservation: This includes different activities, like protection (by enclosure) of degraded forest areas to permit natural regeneration; reforestation with diverse native species; protection and restoration of gallery forests; works for soil and water conservation, like gabions retaining walls, stone or vegetal barriers along contours. In recent years, numerous programs and projects of this kind have been carried out in the Sierra Tarahumara by institutions like CONAFOR, CONANP, CONAGUA, SAGARPA, CDI and corresponding state entities,[83] also at the local or sub-water basin level by NGOs or private-public partnerships.[84] Generally, these projects are operated with the direct participation of communities, particularly women and young people, as they perceive direct benefits of such works for their territories and natural resources.[85] The value the project will add to these ongoing activities will consist in scaling them up in number of communities and people, both men and women, involved, funds invested and area covered; in spite of recent progress, coverage and impact of these works are still too low to revert significantly past and ongoing degradation processes. Additionally, the project will provide qualitative surplus by a) guiding the selection of new suitable sites with GIS based information from its Biodiversity and Environment Assessment delivered by outcome 1; b) conducting participatory program and project impact analysis; c) developing proposals for improving technical and social aspects of project implementation, by systemizing lessons learned and best practices from previous experiences and evaluations in the Sierra; d) promoting the exchange of experiences between communities; e) organizing forums with institutional and social stakeholders to further an improvement in restoration program policies.

147. Capacity building for financing conservation projects: The project will increase capacities of communities to mobilize funding for biodiversity conservation and sustainable land management from diverse sources, diversifying and bundling funding opportunities, for example payments for ecosystem services (PES), like biodiversity conservation and water sources protection. It is

[83] Baseline information about such ongoing programs will be delivered by the corresponding study to be carried out at project beginning.

[84] See for example the project conducted by an alliance of WWF with Gonzalo Río Arronte Foundation and the Secretariat of Rural Development of the Chihuahua State Government: See WWF/Fundación Gonzalo Río Arronte/Gobierno del Estado de Chihuahua (2011). *Evaluación de la conservación de suelo y agua en la cuenca alta del río Conchos 2005-2010.* Chihuahua, Mexico.

[85] Another incentive for participation is that these works are offering job opportunities not only for adult men, but also for women and young people; see WWF (2011), op. cit.: 18. However, Rarámuri communities not always respond at short notice to such programs and it can take time to involve them in the process and gain their participation.

important to note however that regionally there are different appreciations regarding the benefits or detriments of PES. Hence its application will be limited to those places where communities decide to do so, without top down impositions which is in line with the project's bottom up approach. Furthermore, new mechanisms and sources of PES, other than CONAFOR´s ProArbol PSA program, will be analyzed as to their potential and applicability under regional and local conditions. Initiatives for establishing local mechanisms with matching-funds, like that being promoted by the state Direction of Forest Development (see parr. 66), will be of foremost interest to the project.

148. Analogous to conservation pilot interventions, priority **lines of action for sustainable and BD and ES friendly production** have been identified during the PPG phase:

- Certification of forest use areas as a means to sustainably manage forest resources
- Impact reduction of cattle and goat grazing in temperate and tropical forests of the Sierra
- Monitoring indicators of sustainable forest development
- Strengthening the value chain beyond primary production, especially in forestry
- Rescue and dissemination of traditional knowledge in sustainable production methods
- Improving food security with sustainable production methods
- Agro-biodiversity protection and management projects
- Supporting ecotourism projects and initiatives to create an ecotourism network in the Sierra Tarahumara
- Mitigation of impacts by mining and big tourism projects.

149. Certification of forest use areas as a means to sustainably manage forest resources: The project considers certification of sustainable forest management as a priority instrument for BD and ES protection under the prevailing conditions in the Sierra Tarahumara. Forest certification offers the opportunity to overcome the existing distance and conflicts of interest between the productive and the environmental sector for its sound forest management standards and principles.[86] Actually, a few ejidos have obtained certification of parts of their forests; these are: La Trinidad (Guadalupe y Calvo) with 15,665 hectares certified by FSC; Ejido El Caldillo and its annex El Vergel (Balleza) with 9,326 hectares certified as Sustainable Forest by NMX 143; and Ejido San Juan de Iturralde (Balleza) with 2,949 hectares also certified by NMX 143 of SEMARNAT. Others more, many of them in the area of the UMAFOR (Forest Management Unit) San Juanito, have initiated the process towards certification by performing Preventive Technical Audits, thus demonstrating their interest in receiving the label. However, none of them has implemented the recommendations made by these audits. The project will contribute, in cooperation with federal (CONAFOR), state (Direction of Forest Development) and local (Forest Management Units) actors, to open this bottleneck for certification, developing a support strategy to overcome technical, social and financial constraints for advancing in the certification process.

150. Impact reduction of cattle and goat grazing in temperate and tropical forests of the Sierra: In some temperate forest zones of the Sierra, cattle pasturing has caused serious forest degrading impacts. Ejidos and Forest Management Units report problems of livestock overpopulation, combined with a conflict of interest between ejido forest owners and community members without ejido rights (called *avecindados*). Strategies to reduce forest cattle grazing by prohibition and control mechanisms have failed, nor will they be successful in the foreseeable future. The project will pursue a different approach that consists in developing intensification technologies which will serve to reduce environmental impact, such as silvipastoralism and semi-confined cattle raising. This approach will also be applied to develop alternatives to detrimental goat grazing in temperate and tropical deciduous forests, the latter mainly in Rarámuri and other indigenous communities.

[86] For example, two out of ten principles of certification requirements set by the Forest Stewardship Council are: Principle 6. Reduction of environmental impact of logging activities and maintenance of the ecological functions and integrity of the forest; Principle 9. Maintenance of High Conservation Value Forests (HCVFs) defined as environmental and social values that are considered to be of outstanding significance or critical importance.

151. Monitoring indicators of sustainable forest development: Some ejidos in the Sierra possess experience in monitoring indicators of forest growth, density and health, having defined monitoring sites and parcels; however, most of these efforts have been abandoned. Drawing from the Sierra Tarahumara Data Monitoring and Information System developed under component 1 and in coordination with competent actors in the forest sector, the project will take up again these precedents and support the build-up of a regional community based monitoring network for sustainable forest development (activity will be linked to component 1).

152. Strengthening the value chain beyond primary production. Especially in forestry, in less extent also in agriculture, a lot of opportunities for developing secondary products with more added value are not taken advantage of in the Sierra. For instance, sawmills which manufacture boards, pilings and beams are using obsolete and inefficient technology; wooden boxes and platforms are being produced outside the Sierra. Policies for strengthening the value chain are being designed and proclaimed by federal and state government institutions, however little has been achieved so far. The project, through its Regional Action Plan and the corresponding Agenda for a Sustainable Future of the Sierra Tarahumara, will give an impulse to such policies, coordinating resources for financial, technical, organizational and commercial support.

153. Rescue and dissemination of traditional knowledge in sustainable production methods: The project will launch a special program to rescue and promote traditional knowledge and practices from indigenous people for production and livelihood alternatives compatible with conservation.

154. Agro-biodiversity protection and management projects: For example, indigenous people in the Sierra Madre Occidental have in the past selected and saved seed from plants that expressed a diversity of traits of interest to them or their communities. However, the knowledge associated with planting, cultivating, harvesting, and using these crops long associated with these cultures is at risk of being lost. Initiatives, mainly of NGOs and research institutes,[87] for conserving crop genetic resources and the knowledge and practices associated with them, will be supported by the project.

155. Improving food security with sustainable production methods: The project will cooperate with initiatives like the PESA food security program of SAGARPA which is based on FAO's methodological principles to develop family agriculture in highly marginalized rural communities, innovate food production systems and promote local markets, applying a participative approach. This program is presently being implemented in 362 mostly Rarámuri communities of the Sierra Tarahumara. Many of PESA's solutions in the Sierra were put forward by the project beneficiaries themselves, for example the priority given to water conservation and management projects.

156. Supporting eco, nature and cultural tourism projects and initiatives to create a sustainable tourism network in the Sierra Tarahumara: As an alternative to mega tourism projects, this project will promote small, low-impact ecotourism initiatives, whose direct beneficiaries are families and communities in the Sierra. Such projects will add focus on the scenic beauty of the Sierra and its ecosystems in pilot sites and, to some degree, displace conventional tourism while adding to conservation incentives. There are numerous small ecological and cultural tourism initiatives in the Sierra, many of them presently closed or with very few visitors, due to security problems in the region. However, an expected gradual recovery of tourism in the region will probably improve conditions for re-launching these family or community-owned businesses. The project will support these projects with capacity-building in management and marketing, in coordination with relevant actors in the sector like CDI and ejidos. Some actors, for example UMAFORES, are interested in building an ecotourism network among present initiatives to create synergies. The project will conduct a feasibility study about this initiative and support it based on the results.

[87] For example, RAFT Alliance, an initiative dedicated to documenting, celebrating, and safeguarding unique foods in the southwestern US and northwestern Mexico. http://nativeseeds.org/index.php/our-work/raftalliance

157. Mitigation of impacts by mining: This is not a project that will deal with mining issues directly but with other productive sectors such as agriculture, forestry and social issues, i.e. logframe indicators are not included to reflect impact in this sector. Hence, threats from the mining industry lie outside of the project scope and intervention logic and are thus mentioned in the risk sector as an external matter. Nevertheless, while keeping the project´s particular approach to PES schemes described above, mining could possibly provide a source of incentives payments based on either the need for reforestation in mining areas and/or their use of water.

158. As said under paragraph 139, a catalogue or portfolio of the principal project types will be developed giving preference to multidimensional and intersectorial interventions which integrate various single-purpose lines of action. A typical project at the community or micro-waterbasin level will combine actions for conservation – like voluntary conservation of community and private areas or protection of key species and their habitat – with different sustainable production projects as specified under paragraphs 145 to 154. An advantage of this multidimensional and intersectorial approach consists in the creation of tangible incentives for implementing conservation projects by combining them with sustainable production and income-generating activities. The integrated pilot project approach will thus constitute a step beyond "business as usual" where single-purpose activities are predominating. – The product of this exercise is a preliminary map and description of pilot projects, created for consultation and revision by the involved actors, particularly the concerned communities and funding institutions.

159. *Hold an open and intense dialogue with pilot project stakeholders identified under activity 3.1.1, analyzing with them the relevance and social, economic and ecological viability of proposed pilot interventions (activity 3.2.1).*

The preliminary map and description of pilot interventions developed under activity 3.1.1 (paragraphs 138 through 154) will be presented to project stakeholders, in a first moment to the concerned communities. The project will inform about the environmental and social benefits and conditions of conservation and production projects and negotiate agreements with local partners, generally ejidos or indigeneous communities as they are the direct resource owners and users. Being aware of the significance of involving communities in pilot project planning to ensure social sustainability, the project staff, with the aid of a partner specialized in community work, will enter into an open and, where necessary, time-intensive dialogue with local actors, paying special attention to indigenous communities and inclusion of women in the process. The dialogue or consultation with communities is considered as a sort of social viability test to make sure that proposed pilot projects are locally adapted and developed using local knowledge. The project will add value to ongoing practices and methods of institutional program implementation applying lessons from experiences of such programs which are often hastily implemented, without giving time to indigenous and, in general, rural communities to assume ownership of the proposed projects and adapt them to their own vision, needs and ways of doing things.[88] The intended dialogue for project planning involving local actors will follow a flexible approach, combining informal contacts to key persons in selected localities and micro-waterbasins with formal meetings attending community

[88] As exposed in section 2.4 Institutional, sectorial and policy context, a "serious institutional weakness is seen in the insufficient capacity of governmental actors to address and involve adequately indigenous communities in development programs and projects. As a consequence, many programs, in spite of being provided sometimes with substantial budgets, have very low impacts on local and regional development. Some of the reasons adduced for this weakness are: Prevalent attitudes and practices of assistentialism; political instrumentation of assistance programs; insufficient involvement of communities in project planning; addressing selectively non-indigenous ejido leaders as interlocutors of funding institutions; too short planning and preparation phases, not giving time and opportunity to indigenous communities to assimilate projects." (see paragraph 52)

A best practice in this regard that will be taken into account by the project is the PESA program´s methodological approach developed by FAO which attaches great importance to community participation in project planning (see paragraph 61).

assemblies and authorities. The project team will capitalize in this process on collaborative links of project partners with local actors, in the first place CONANP and WWF, but also CONAFOR, CONAGUA, SEMARNAT, SAGARPA, CDI and SEDESOL, their state government counterparts, and non-governmental organizations (including their networks) with local experience and personnel.

160. *Building on the results of the dialogue with communities held under activity 3.2.1, modify and specify the portfolio of projects identified under activity 3.1.1 (activity 3.2.2).*

The preliminary portfolio of pilot interventions developed under activity 3.1.1 is a first hypothesis based on tools and data from the scientific knowledge component 1, the RAP and PPG findings. After having passed the "social viability test" under activity 3.2.1, a modified portfolio is developed by the project staff taking into account local knowledge and interests. This modified pilot project portfolio will in turn be submitted to an "institutional and financial viability test" under the following activity 3.2.3.

161. *Negotiate and agree on co-financing and supporting pilot projects, including governmental and non-governmental partners (activity 3.2.3).*

Agreements will be negotiated and made for project types and specific local projects with co-financing partners and other governmental and non governmental actors with presence in the area and experience in capacity building for conservation and sustainable production activities. Local actors, like municipalities, UMAFORES and producer organisations, even when generally short of funds, will also be involved in these negotiations, as they can exert important project supporting functions in institutional, logistical and capacity-building aspects.

162. The main co-financing partners, their lines of action and funding potential* are:

Table 10. Co-financing partners

Co-financing partner	Relevant programs implemented in the Sierra Tarahumara (ST)	Co-financing potential* for ST project implementation (US$)
CONANP	1) Monitoring of species (including monitoring by local communities) 2) Wildfire prevention and control 3) Soil and water restoration and sustainable use 4) Awareness-building for conservation and waste management 5) Voluntary conservation of community and private forest areas 6) Land-use planning in cattle ranching zones	1,890,000
SAGARPA	1) PESA – Food security 2) COUSSA – Soil and water conservation	15,000,000
CONAFOR	1) Environmental Compensation 2) Restoration, Protection and Development 3) PRODESNOS 4) Environmental Services	2,500,000
CDI	1) Alternative Tourism in Indigenous Zones 2) Coordination Program for Production Aid 3) Productive Organization of Indigenous Women 4) Regional Indigenous Funds (for financing production initiatives) 5) Aid for the Development of Indigenous Culture (mainly arts	13,077,000

	and crafts) 6) School Hostels (includes school gardens and environmental education) Others (e.g. management and conservation of natural resources in indigenous areas)	
SEDESOL	1) Priority Zones Development Program 2) Temporary Employment Program (PET) 3) Production Options Program	20,000,000
SEMARNAT	1) Temporary Employment Program Others	580,000
State government (Direction of Forest Development, among others)	1) Incrementing forest production and productivity 2) Certification of sustainable forest production 3) Modernizing forest industry 4) Sustainable and integrated use of natural resources in arid zones (includes ecotourism) 5) Payments for ecosystem services	15,000,000
WWF	1) Decrease drought vulnerability in indigenous communities of the ST 2) Integrated management of micro water-basins in the Upper River Conchos	1,350,000
Pronatura		320,000
Total co-financing potential for pilot projects in the ST		**69,717,000**

*Co-financing potential is higher than formal co-financing commitments. See for co-financing potential Table 7 Estimation of relevant federal and state program investments in the Sierra Tarahumara 2013.

163. Under activity 3.2.4, the committed co-financing funds by project partners will be allocated to the different pilot projects and activities identified previously. This implies a negotiation and decision-making process during which institutional operative rules (*reglas de operación*) must be taken into account and adapted to particular regional and local conditions. The project can build here on recommendations developed under project component 2 (activity 2.3.1), which include the interpretation of institutional program regulations affecting funding allocation criteria in a sense favourable to adapted sectorial programs and projects.

164. *Develop sustainable and integrated landscape and natural resource management plans in project area municipalities, determining objectives, expected results, activities, and other central elements of pilot projects (activity 3.2.4).*

An important step in the process of pilot project planning is the involvement of local authorities, by applying the Regional Action Plan framework to local environmental conditions. The project will provide technical assistance to municipal administrations for developing Integrated Landscape and Natural Resource (ILNR) Management Plans in a participative way (including Rarámuri and other indigenous communities), building on information delivered by PPG studies and the GIS based biodiversity and environmental assessment under component 1. ILNR Management Plans in project area municipalities will be an innovation and a step beyond the routine triennial Municipal Development Plans by providing a long-term perspective and sustainability considerations and conservation objectives to local planning. The design of ILNR Management Plans will be linked to activity 2.3.1 in project component 2 under which municipal task forces will develop specific guidelines for using the Regional Action Plan as a framework for providing key actors in the Sierra Tarahumara with an instrument for their own planning activities.

Municipal ILNR Management Plans will also determine expected results, activities, budgets and other central elements of pilot projects.

165. *Design and implement specific pilot project plans und budgets for both conservation and sustainable production activities, involving communities, municipalities, NGO, state and federal dependencies and research centres (activity 3.3.1).*

In a participative process, the project will design implementation plans for each integrated pilot project and single-purpose action. This will include distribution of funding responsibilities among project stakeholders: In general terms, most of the funding for physical investment in pilot projects will be contributed by governmental partners, whereas capacity-building activities for pilot project owners (communities), but also for supporting actors, will be mainly financed by GEF funds which in this way add value to conventional implementation of development programs where capacity-building activities are generally absent or weakly developed. Under this activity, the project will also give follow-up to funding commitments by project partners, ensuring sufficient and timely financing for different phases of pilot project implementation.

166. *Provide capacity-building services to pilot project implementing actors, in particular to owners of natural resources: communities, ejidos and special community working groups in charge of pilot projects; this activity includes training of local promoters (including women and youth), management of institutional support and monitoring of pilot project advance (activity 3.3.2).*

The project coordination *modus operandi* for managing local conservation and sustainable production pilot projects will consist in cooperating, via sub-grant contracts, with local partners who will assume training, technical assistance and supervision functions at the community level. It is planned that 9-10 sub-contract partners will work in the project area, covering up to 120 integrated or single-purpose pilot projects per year in twelve municipalities, a quantity that will depend on the complexity and duration of pilot projects. Pilot project territorial coverage will take into consideration micro water-basin, ecosystem and biological corridor criteria. Sub-contract partners will form teams of five local promoters in the average, each one responsible for attending various pilot projects. Local promoter teams will be continuously trained by the project in technical aspects of pilot projects and in community work methodology; furthermore, the project will build awareness in local promoter teams about the innovative approach of GEF cooperation, adding value to conventional development strategies by integrating biodiversity and ecosystem services considerations into project design and implementation. Local promoter teams will acquire skills and knowledge how to articulate governmental programs and funds with GEF project objectives and the expected global environmental benefits. – Capacity-building under activity 3.3.2 will include a) meetings of promoter teams for exchange and systematization of experiences; b) design and printing of eight practical guides for pilot project practices concerning conservation and sustainable production in Spanish, Rarámuri, Guarojío, Tepehuano and Pima.

167. **Project monitoring and evaluation component** (indicative grant amount: $147,000)

The expected outcome of the project monitoring and evaluation component is that project implementation has been facilitated by results and information based management.

Four outputs will contribute to achieving this outcome:

- Baseline information about indicators used in project monitoring is completed.
- Project monitoring system is operating, providing systematic information on progress in meeting project outcome targets.
- Midterm and final evaluation conducted.
- Lessons learned from project experience identified for replication in future operations.

Further detail of the present dispositions for M&E is contained in Section 6 ahead and in Appendices 7 and 8.

3.4. Intervention logic and key assumptions

168. The intervention logic of the proposed project is founded on the identification of three major barriers for biodiversity (BD) conservation and ecosystem services (ES) supply in the Sierra Tarahumara: (1) Planning and decision making for BD and ES conservation management are insufficiently based on relevant and reliable information, due to a lack and poor knowledge of diagnostic tools and information systems. (2) Environmental governance of the Sierra Tarahumara is weak, attributable mainly to deficiencies in stakeholder coordination. (3) The consequence of barriers 1 and 2 is a) that planning of local conservation and sustainable production projects is not sufficiently based on reliable and comprehensive analytical information and b) that local projects remain dispersed and isolated initiatives without achieving synergic effects.

169. Derived from this assessment, the project intervention logic consists in removing these barriers working along three lines or components whose expected results or outcomes are: (1) Management plans and decision making processess of key stakeholders involved in the biodiversity conservation management of the Sierra Tarahumara utilize the project's diagnostic tools and data bases. (2) The environmental governance of the Sierra Tarahumara region improves in responsiveness to key issues for BD conservation and ES supply following a Regional Action Plan (RAP) that incorporates biodiversity criteria, funding commitments, evaluation parameters and a strategy for upscaling as well as for economic sustainability beyond project completion. (3) Sustainable and integrated land and natural resource management effectively applied at the headwaters of the Rio Conchos, the Rio Fuerte and the Rio Mayo river basins results in a landscape mosaic of 110,000 hectares that combine conservation areas and productive land under BD and ES friendly management.

170. An essential element in the intervention logic of the proposed project is that achieving the project objective will *contribute* to realise the strategic objective of sustainably conserving biodiversity (BD) and ecosystem services (ES) while at the same time improving quality of life for communities in the Sierra Tarahumara. The extent of this contribution is difficult to assess, as external factors to the project can intervene, supporting or impeding the achievement of the project´s strategic objective. Such external factors are:

- Policy support for unsustainable land use and production practices is decreasing.
- Political and personnel changes following election processes at the local and state level do not affect the continuity of programs and projects initiated by former administrations in the context of the present project.
- Impact of wildfires and forest plagues on forest cover and density remains on 2012 level or lessens.
- Extreme meteorological events, especially droughts, will not occur or have a light impact in the Sierra Tarahumara.
- The mining sector will comply with environmental regulations and compensation measures for the impacts of mining.

171. Outcome 1 "Key stakeholders utilizing the project's diagnostic tools and data bases" will result mainly from project activities designed and implemented under component 1. However, some relevant factors are not under project control, as different circumstances during the process of constructing and adopting the project's diagnostic tools and data bases cannot be determined in advance by the project. The assumptions about these circumstances are:

- Most key stakeholders are willing to participate in the construction and application of a common Sierra Tarahumara Data Monitoring and Information System (ST-DM&IS) and in the Comprehensive ST Biodiversity and Environment Assessment.
- Operative rules and budgets of key stakeholders do not impede, or are adapted for, the use of the project's diagnostic tools and data bases in their program planning and operation.

- An institution is willing and able to assume the responsibility for coordinating the monitoring process among key stakeholders beyond project lifetime.

172. The expected result of component 2 is to improve environmental governance by building a policy framework – a Regional Action Plan or Agenda – for ecosystem protection and management in the Sierra Tarahumara. The achievement of this outcome depends essentially on the willingness of key actors present in the Sierra to cooperate in this effort to build a common platform or masterplan for sustainable regional development, including explicitly BD conservation considerations. Project activities can only partially influence the commitment of key actors with this plan, and certain assumptions must be valid for the component to be successful:

- A critical mass of key stakeholders participates proactively in the design of the RAP, including state and federal agencies of all sectors, municipalities, communities, producer organizations, private sector, NGO and research centres.
- Indigenous communities can assert their proposals and rights in the design of the RAP.
- Differences over the strategy for sustainable development of the ST between sectors of key stakeholders can be negotiated and sound agreements are found.
- Key stakeholders undertake effective efforts and measures to incorporate RAP BD and ES criteria in their own programs, operative rules und budgets.

173. The expected outcome of project component 3 is the effective application of component 1 and 2 findings and results at the headwaters of the Rio Conchos, the Rio Fuerte and the Rio Mayo river basins in the Sierra, combining conservation areas and productive land under BD and ES friendly management resulting in a landscape mosaic of 300,000 hectares. Underlying assumptions relate mainly to the willingness of municipalities and communities to commit themselves to cooperate with pilot project initiatives, but also to state and federal government actors to align their programs at the local level with requirements set by the Regional Action Plan and municipal action plans in the framework of the RAP:

- Key actors, especially in the economic and public infrastructure sector, are willing to coordinate and co-finance pilot projects for conservation and sustainable production.
- Municipalities are willing to cooperate with the pilot project strategy, developing specific action plans in the framework of the RAP.
- Community and ejido authorities are interested to cooperate with pilot project initiatives.
- Problems of low social cohesion between *mestizos* and Rarámuri in many communities will not severely affect planning and implementation of pilot projects, and can be managed in a constructive way.
- Security conditions in most suitable and selected sites are acceptable and do not impede implementation of pilot projects.

3.5. Risk analysis and risk management measures

174. Different types of risk are identified for the project objective and for each of the project components:

Table 11. Project risks and mitigation measures

Risk	Level	Mitigation measure
Policy support for unsustainable land use and production practices, as well as weak enforcement of environmental laws and regulations, continue to	High	The overall scope of the project is not to build structures and mechanisms for enforcement of rules and policing regarding natural resource use, it does however seek to minimize the risks

foster degradation of ecosystems and loss of biodiversity.		presented by contradictory policies and perverse incentives by including the relevant stakeholders into its proposed coordination mechanisms at regional and state level and into the awareness raising and communication strategies as well.
Gold, silver, copper and other metals mines using open pit techniques continue to have devastating environmental effects, mostly in forest coverage reduction and pollution of soil and water sources. The mining sector does not comply, or complies unsufficiently, with environmental regulations and compensation measures for the impacts of mining.	High	This is not a project that will deal with mining issues directly. However, in the context of its mainstreaming strategy for BD and ES conservation in public policies, the project will indirectly strengthen the sustainability component of the mining sector and the environmental regulations that affect them, helping to increase the coverage and effectiveness of existing and new land use plans and enhancing environmental compensation measures for the impacts of mining.
Political and personnel changes following election processes at the local and state level may affect the continuity of programs and projects initiated by former administrations and even be oblivious of national regulations and international commitments.	Medium	To address this potential problem mechanisms should include collaboration agreements that generate incentives for future administrations to continue ongoing programs and projects for BD and ES conservation, while strengthening the governance structures and negotiation skills of the local communities.
Extreme meteorological events, especially droughts, have a strong impact on water provision and vegetation in the Sierra Tarahumara (the dryland temperate forest is one of the most endangered ecosystems because of climate change).	Medium	These risks will be dealt with through mitigation and adaptation strategies implemented through the pilot projects, for example giving a high priority to water conservation projects, including special protection of water sources and construction of cisterns in vulnerable communities.
Impact of wildfires and forest plagues on forest cover and density increases sensibly over 2012 levels.	Medium	Institutional and social stakeholders in the forest sector of the ST have made progress during recent years in preventing and controlling wildfires, providing more funds and human resources (wildfire brigades) to programs in the field. Wildfire, as well as forest plague prevention and control programs will be included in the project monitoring and regional planning components, contributing to improve their coverage and introduce best practices.
Insecurity related to drug production and trafficking remains rampant across the ST and is affecting negatively conditions for implementing projects and activities in a critical number of municipalities and communities.	Medium	Building on field experience of key actors in the ST, the project will work in permanent communication with relevant agencies and local authorities in terms of security issues to ensure that project activities can be carried out in a secure and appropriate manner.
Certain key actors (government agencies, communities, NGO, research centers) might not be willing to participate actively, and in a coordinated manner, in the process of	Low	Participation and coordination among key stakeholders in the construction of the monitoring and information system and in the monitoring process can be influenced only partially by the project; however, the project will

designing and implementing the ST Data Monitoring and Information System (ST-DM&IS) and in the Comprehensive ST Biodiversity and Environment Assessment.		take advantage of the experience and interest in this field of key project partners such as CONANP, CONAFOR, state government, WWF and others. With their support, the project will promote regular involvement of other actors in the monitoring process, particularly municipalities and communities.
Regular monitoring and assessment of key indicators in the Sierra Tarahumara might not be sustainable and may not be continued after the end of the project because no institution with sufficient technical and financial capacities will have assumed the responsibility to coordinate the monitoring process.	Medium	The sustainability of monitoring key BD and ES indicators in the Sierra Tarahumara will be enhanced through early allocation of coordination responsibilities to actors with permanent presence in the region, particularly CONANP, WWF and the state Direction of Forest Development. The Interinstitutional Assistance Program for the Indigenous People of the State of Chihuahua (PIAI) could support the process; this group includes actors from the governmental, non-governmental and academic sectors that will participate in the project (members of the Natural Resources Working Table of PIAI are the state Direction of Forest Development, CDI, CONANP, CET, WWF, Sierra Madre Alliance representing a group of NGOs and producer organizations in the Sierra, among others).
Important actors do not participate, or participate only passively, in the process of constructing the Regional Action Plan because they do not see the relevance of such a strategic planning effort for the development of the region.	Low	This risk will be reduced by an awareness building campaign realised among key stakeholders about the importance of the master plan for the sustainable development of the ST.
Indigenous communities cannot assert their own vision, proposals and rights in the forum where the Regional Action Plan is developed.	Medium	Entrenched structures and established mechanisms tend to create dynamics where the voice of indigenous communities is not listened to or is ignored by the dominant actors. To overcome these mechanisms is a special challenge for the project and will be a criterion for the appropriate facilitation of the process.
Different strategic concepts and conflicts of interest between actors in the regional planning process cannot be overcome and the result is a Regional Action Plan that has not been appropriated by important stakeholders.	Medium	This risk presents another challenge for the appropriate facilitation of the regional planning process. Dispute and conflict resolution tools as well as negotiation skills are needed and will be applied.
Key stakeholders pay lip service to the Regional Action Plan for the ST but do not undertake effective measures to incorporate RAP BD and ES criteria in their own programs, operative rules, budgets and actions.	Medium	Within its means the project will take appropriate measures to give follow up to the commitments made by stakeholders in the regional planning process.

Key actors are reluctant to coordinate and co-finance pilot projects for conservation and sustainable production.	Medium	The project will build alliances at federal and state government, as well as NGO network levels that should help to overcome such reluctances.
Specific municipal action plans in the framework of the RAP cannot be developed in some municipalities, affecting the identification and implementation of pilot projects in the area.	Low	This risk depends on different factors, one of them being high security risk in some municipalities; this risk will be dealt with by working in permanent communication with relevant agencies and local authorities. Another factor could be passivity or unwillingness of local authorities to cooperate in this effort; promotional and awareness building activities will be realised by the project to induce them to cooperation with the pilot project strategy.
Low involvement of indigenous communities in project planning and implementation.	Medium	Traditional power structures in rural zones of the Sierra Tarahumara are difficult to overcome; the project will address both structures – the ejido and the indigenous communities within or outside the ejidos – in its promotion activities.

3.6. Consistency with national priorities or plans

175. Mexico's National Development Plan 2007-2012 defines environmental sustainability as one of its five guiding principles.[89] Environmental sustainability should be a transversal element of all public policies, improving inter-institutional coordination and sector integration. Environmental sustainability criteria must be mainstreamed in policy decision-making, particularly in the productive and in the rural sectors. The proposed project is fully consistent with these orientations, as mainstreaming environmental sustainability considerations, particularly biodiversity and ecosystem service conservation, into public development policies at the regional and local level is at the centre of its objectives.

176. The PND acknowledges Mexico´s commitments as signatory of international conventions, such as: The United Nations Convention to Combat Desertification; the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); the United Nations Millennium Development Goals; Agenda 21 and the Rio Declaration; the Border 2012 US-Mexico Environmental Program; the Convention on Biological Diversity (CBD - the Mexican Federal Government has set out a strategy to deliver on CBD commitments via State Biodiversity Strategies. In 2008, WWF-Mexico signed an MoU with the Chihuahua State Government, committing to collaborate in the development of the state's Biodiversity Strategy, as part of the National Biodiversity Strategies and Action Plans committed in Article 6 of the CBD; Action Plan still in progress); the principles and commitments stated in the United Nations Framework Conference on Climate Change (UNFCCC) and Kyoto Protocol. Project results are relevant to the mitigation, vulnerability assessments and adaptation components of these documents, adding to the goals of SEMARNAT´s Special Program on Climate Change (PECC), Mexico's Climate Change Strategy for Protected Areas and Priority Regions for Conservation (ECCANP) and the National Protected Area Program, through the increase of total surface under conservation/protection schemes.

[89] In the Spanish original: "Ejes Rectores". At completing the drafting of this Project Document (May 2013), the National Action Plan 2013-2018 of the new Mexican government has not been published yet. The government has informed, though, that the Plan will be divided in five guiding principles, one of them being called "Mexico, a country with global responsibility" ("Un México con responsabilidad global").

177. The proposed project is also consistent with state policy plans and programs:

- The State Development Plan 2010-2016 of the current State Government, in its section on Environment and Sustainability, focuses on water management, insisting in general terms on equilibrating water extraction and recharge of water resources, without special mention of the Sierra Tarahumara water provision functions. The State Development Plan considers that the greatest threats for biodiversity in Chihuahua are habitat destruction or degradation due to unsustainable production practices in agriculture and forestry;
- the Ecology Sector Program 2010-2016 of the Secretariat of Urban Development and Ecology (*Secretaría de Desarrollo Urbano y Ecología*) proposes a catalogue of action lines, such as: Put into force and implement the Regional Ecological Land-Use Plan for the Sierra Tarahumara commissioned by the Chihuahua state government to a research team of the Autonomous University of Ciudad Juárez (UACJ) and developed from 2009 to 2011; put into force and implement the State Strategy for the Conservation and Sustainable Use of Biodiversity; promote the creation of new natural protected areas according to new biodiversity conservation needs in the state of Chihuahua; implement afforestation and reforestation programs to regain forest cover;
- the Forest Restoration, Protection and Development Program of the Forestry Development Direction in the Secretariat of Rural Development;
- the Integrated Management Plan for the Río Conchos Water Basin, developed by the Interinstitutional Working Group (*Grupo Interinstitucional de Trabajo* – GIT); within the framework of this Plan, water management projects at the headwaters of the río Conchos in the Sierra have been implemented;
- the State Coordination of the Tarahumara (*Coordinación Estatal de la Tarahumara* – CET) promoted by the Chihuahua State Government, is orienting, coordinating, promoting, supporting and encouraging programs and projects in favor of the indigenous towns and communities of the State of Chihuahua;
- the Tarahumara Initiative was set up to meet chronic food problems in the region, coordinated by the state Secretariat of Social Development (SEDESO).
- The Chihuahua Women Institute (Instituto Chihuahuense de las Mujeres – ICHIMUJ) is an organism that designs and implements gender policies at the state level. It could participate in the process of developping and monitoring pilot projects.

178. Objectives, expected project outcomes and planned activities fit into the strategies of several key stakeholders for biodiversity and ecosystem conservation in the region:

- CONANP´s strategic objective of conserving the country's most representative ecosystems and their biodiversity, through the National Protected Areas Program with the participation of all social and institutional sectors;
- the National Forestry Program with its subprograms and the Strategic Forestry Program 2025 of the National Forestry Commission CONAFOR;
- CONAGUA´s 2030 National Water Strategy (Agenda del Agua 2030) which considers the necessity to reach equilibrium on all hydrological basins, with clean rivers, universal potable water coverage and cities without catastrophic floodings;
- the Food Security Program (PESA), the Soil and Water Conservation and Sustainable Use program (COUSSA) and the Livestock Production Program (PROGAN) of SAGARPA;
- the Territorial Management Strategy for Development with Identity and a variety of programs of the National Commission for the Development of Indigenous Peoples of CDI;

- the nation-wide Crusade against Hunger started in 2013 in five municipalities of the Sierra Tarahumara, implemented by the federal Secretariat of Social Development (*Secretaría de Desarrollo Social* – SEDESOL).

3.7. Incremental cost reasoning

179. In the absence of the project, continued degradation of forests, loss of forest cover and ongoing tendencies towards unsustainable production and extraction would increase threats to global, national and local environmental benefits, especially biodiversity and hydrological and carbon storage services. "Business-as-usual" in management of natural, particularly forest, resources would aggravate reduction of water resources and soil degradation, with its negative impacts on wildlife and livelihoods for adjacent communities. Degradation and loss of forest cover would increase fragmentation rates of habitats for threatened species like jaguar, cougar, bobcat, black bear, beaver, river otter, white-tailed deer, mule deer, collared peccary, green macaw, thick-billed parrot, eared quetzal, the magpie pint, the spotted owl and flora species alike. These species could suffer significant population losses and thereby, on a regional scale, move from a vulnerable to an endangered and critically endangered status.

180. By reverting the tendency towards forest degradation, loss of forest cover and unsustainable production practices, the proposed project will considerably reduce the negative impact of these threats on biodiversity and ecosystem services. Conservation, protection and biodiversity friendly production practices focussing on areas with high BD and ES value will contribute significantly to habitat restoration and (re-)establishment of wildlife corridors. The increment achieved by the proposed project will consist in direct wildlife fauna and flora habitat improvement in an area of about 300,000 hectares within the project polygon.

181. The project will achieve these improvements in wildlife fauna and flora habitat conditions by involving more actors with more actions and more funds (*quantitative increment*) in a better coordinated strategy with synergic effects and enhanced environmental governance for sustainably conserving biodiversity and ecosystem services (*qualitative increment*). Due to targeted project efforts, more key governmental and non-governmental actors, particularly outside the environmental sector, will explicitly include biodiversity considerations and goals in their policies, programs, plans and projects, adopting BD conservation criteria, funding commitments and evaluation parameters developed under a Regional Action Plan (RAP). The RAP will be the basis for building a Common Agenda for the Sustainable Future of the Sierra Tarahumara, thus introducing an innovative public policy approach for the region. The increase in funds provided by key governmental and non-governmental stakeholders for applying this Agenda will be an indicator of their growing engagement in programs focussed on biodiversity and ecosystem services conservation. In this process, the number and population of communities and ejidos actively participating in programs that have defined objectives, actions and funds for conservation of biodiversity will grow substantially, adding social sustainability to the Common Sustainability Development Agenda. Equally, most if not all municipalities, as well as a representative group of civil society organizations (producers, NGO) in the project region will participate in constructing and implementing the RAP and the Sustainable Development Agenda, aligning their objectives and actions to include explicitly biodiversity criteria and evaluation parameters.

182. The project will make a significant contribution to the global knowledge base on biodiversity, ecosystem services and threats to habitats. The main increment offered by the project in this respect will consist in establishing a Data Monitoring and Information System for the Sierra Tarahumara (ST-DM&IS) that will allow for systematic monitoring of the most threatened species and the threats affecting them as well as a representative sample of indicator species and their habitats. Another value added by the project will be a comprehensive Sierra Tarahumara Biodiversity and

Environment Assessment. Thus, environmental governance for sustainably conserving biodiversity and ecosystem services in the region will be enhanced by an increase in knowledge pertinent for decision making in natural resources management. Making use of these diagnostic tools and data bases, a growing number of key stakeholders will orient their decision making processes on reliable and comprehensive information about environmental conditions in the Sierra Tarahumara. In a first moment, the project will assume the responsibility for coordinating the ST-DM&IS among key stakeholders, overcoming the current situation in which monitoring and assessment of BD and ES is dispersed among many actors using different methods and concepts. CONANP in cooperation with the Faculty of Zootechnics and Ecology of the Autonomous University of Chihuahua (UACH) will then assume the responsibility of coordinating the ST-DM&IS, as a step towards institutional sustainability of the monitoring process. The project will also provide for a more effective and fluent transfer of information from the monitoring level to key actors in regional development policies, so planning and decision making for BD and ES conservation management, for example for regional development planning, landscape management design or selection of pilot project areas and sites, can be better based on reliable, pertinent and comprehensive information.

183. Taking inputs from both the monitoring and information system in component 1 and the regional coordination and planning platform built under component 2, the project will overcome the limitations that characterize the current situation in local development project practices. In the first place, the increment to be achieved lies in the following qualitative aspects:

- Local conservation and sustainable production projects will be articulated with a regional strategy and common goals for sustainable development, so they will be part of a common effort and can achieve synergy effects.
- Local pilot projects will also be part of municipal Integrated Landscape and Natural Resource Management Plans, combining areas for BD conservation and BD and ES friendly productive activities.
- Key federal, state, municipal and non-governmental stakeholders will develop capacities to upscale pilot project interventions at the landscape level.
- Selection of project areas and sites will feed from the diagnostic tools developed under project component 1, so they will be better focused on priority areas for BD and ES conservation; project strategy design will built on better information about species status and dynamics, specific ecosystem and habitat conditions and threats to them.
- Interchange and systematization of experiences, as well as external project impact assessments will help to draw lessons and identify errors and good practices, thus contributing to improve methods of project planning, implementation and evaluation.

184. The quantitative increment achieved by the pilot project interventions component will consist in the following:

- There will be an increase in number, coverage and funds invested for local sustainable development and BD and ES conservation projects.
- The number and extent in hectares of voluntary community protected areas will grow considerably.
- The number and extent in hectares of certified forest management areas by different standards (FSC, SEMARNAT, CONAFOR) will also experience a significant growth.
- Last but not least, quality of life of families participating in pilot projects will improve.

3.8. **Sustainability**

185. Sustainability, understood as the probability of continued long-term project-derived outcomes and impacts, will be achieved by a project approach that relies on: a) identification and continuity of ongoing processes: taking advantage of local initiatives and experiences and of traditional practices; b) ownership: placement of responsibility for implementing project activities and for achieving outcomes with permanent local social and institutional stakeholders in the Sierra Tarahumara region from the outset; c) capacity-building: strengthening capacities of social and institutional stakeholders for developing and applying tools, methods and practices to be introduced or reinforced by the project to conserve and sustainably use biodiversity and ecosystem services; d) governance: lasting integration (mainstreaming) of BD and ES considerations into policy planning and implementation by institutions and civil society groups, including building and strengthening of inter-institutional coordination and synergies; e) cost-effectiveness of projects; and (f) cost-reduction and co-financing. These principles will be put into practice in the three project components.

186. Several measures will contribute to ensure continuity of activities related to monitoring and assessment of key BD/ES indicators and of threats to ecosystems and wildlife habitats. A standardized methodology and system – the Sierra Tarahumara Data Monitoring and Information System (ST-DM&IS) – across the project region for monitoring BD and ES key indicators will be introduced, including the establishment of a permanent mechanism for regular coordination among actors involved in the monitoring process. In addition, supported by actors with long monitoring experience in the region such as CONANP, WWF and CONAFOR, the project will promote regular involvement in the monitoring process of other actors, particularly municipalities and selected communities. The project will organize institutional arrangements for anchoring the ST-DM&IS sustainably in adequate government structures. An awareness and capacity building program will be implemented for local, state and federal level stakeholders in the project area, to engage and enable them in the use of data bases and tools produced by the project. In addition, the project will implement an institutional and technical assistance follow up program for stakeholders using the Sierra Tarahumara Data Monitoring and Information System, thus enhancing its sustainability.

187. Transfer of knowledge about the status and dynamics of BD and ES components to land and forest owners, planners and policy-makers will occur on a more regular basis as relevant actors will develop a broader knowledge base about these themes. This will also occur as the project will institutionalize knowledge transfer and coordination among producer organizations, technical service providers and other planners and policy decision-makers. Providing them with regular, reliable and updated information about BD and ES tendencies in the region will increase the chances that they will make a practice of integrating such knowledge into their decision-making. That will contribute to a shift from supply-driven to demand-driven information flow regarding BD, ES and their interaction with land use practices, as decision-makers will develop a better understanding of the usefulness of such information and make more targeted requests to fill their information needs.

188. At the core of the project stands the mainstreaming of biodiversity considerations into sector policies of a variety of actors in the Sierra Tarahumara. A strategic instrument for achieving sustainability of progress made by the project in this direction is the Regional Action Plan and the Common Agenda for the Sustainable Development of the Sierra Tarahumara. To the extent that important actors in the region get involved in the process of building the RAP and the Common Agenda, they will be sustainers of the spirit, objectives and practices proposed by these strategic planning documents. Another element for enhancing sustainability of BD criteria integration in sector and local policies will be the mechanism integrated by federal, state and municipal authorities together with local communities and non governmental actors for the development and implementation of the Regional Action Plan and the Common Agenda. With the backing of the Chihuahua state government and federal institutions, this coordination mechanism will be constituted as the Regional Council for the Sustainable Development of the Sierra Tarahumara, as a stable basis for integrating biodiversity concerns in territorial development policies.

189. Sustainability of pilot interventions (implemented under component 3) will be attained beyond project duration by applying the aforementioned principles of: identification and continuity of ongoing processes; ownership; gender and generational equity; capacity-building; environmental governance; cost-effectiveness; and co-financing by target groups in promoting, planning and implementing such actions. Identification and continuity of ongoing processes: As far as possible, the project will cooperate with and strengthen existing programs and initiatives of partner organizations and local groups, introducing and enhancing biodiversity and ecosystem service conservation aspects and providing support that will yield high environmental and social benefits for minimal investment. Ownership: This project will employ significant time and resources to ensure the appropriation of pilot project objectives and strategies by producers, organizations and communities, especially indigenous actors. Gender and generational equity: Inclusion and participation of women and youth not only in pilot projects, but also in strengthening and monitoring environmental governance is a crosscutting principle that will contribute to the sustainability of project results. Capacity-building: The project will strengthen the technical, administrative and organizational capacities of participating groups, by training on different subjects such as sustainable production and forest restoration techniques, quality and certification standards, product diversification and others related to the menu of field activities to implement pilot projects identified under outputs 3.3 and 3.4 regarding conservation and sustainable production. The project will also strengthen the capacity of supporting actors (government agencies, NGOs, universities) to provide adequate technical assistance to communities for enabling them to effectively manage their pilot projects. Environmental governance: The project will create a favourable institutional context for implementing pilot project interventions, principally through the aforementioned Regional Action Plan (RAP) and Common Agenda for the Sustainable Future of the Sierra Tarahumara, as well as the Municipal Integrated Landscape and Natural Resource Management Plans, in the framework of the RAP. Cost-effectiveness: The project will make sure that cash and in-kind (labour) costs, as well as transactional costs for participating communities and families stand in a reasonable proportion to economic, social and environmental benefits. Cost-reduction and co-financing: Increasing the use of local resources from institutions and social actors, to reduce dependence on external funding; co-financing not only between GEF and non-GEF funds, but also between local stakeholders, avoiding duplication or overlapping activities.

190. In this process of implementing pilot interventions, the number and population of communities and ejidos actively participating in projects that have defined objectives, actions and funds for conservation of biodiversity will grow substantially, adding social sustainability to the Common Sustainability Development Agenda.

3.9. **Replication**

191. The project is expected to produce different experiences and best practices of biodiversity and ecosystem service conservation that will offer opportunities for replication in the broader context of the Sierra Madre Occidental in Chihuahua and other states. These opportunities lie mainly in the fields of monitoring and assessment of biodiversity and ecosystem services and their relationship with threat factors and root causes; transfer of knowledge about status and tendencies of biodiversity and ecosystem services to land users and institutional decision-makers; integration of BD and ES information and considerations into land use policies, planning and promotion activities; communication of pilot project experiences at the local scale to municipal, state and federal agencies establishing new landscape management approaches; increased access of land users to government-funded and market-based mechanisms to provide incentives for the implementation of land use practices and strategies that conserve ES and BD values and improve local livelihoods. As described in the following paragraphs, the project will take measures so that actors from the governmental and non-governmental sectors will learn from the particular project approach and results and apply such learning outside the Sierra Tarahumara region.

192. The project will facilitate the replication of successful practices of BD and ES monitoring and research by developing and documenting a standardized monitoring methodology for the project region which is transferable to other areas with similar conditions. This methodology includes participation of, and coordination among, institutional and social actors in the monitoring process. Information and analysis provided by monitoring and research activities, including methods used, will be made accessible for interested actors within and outside the project region. Based on locally specific analysis of threat factors influencing biodiversity and ecosystem services, recommendations for public policies will be developed that are potentially useful in similar scenarios.

193. Training programmes that will enable land and forest users, producer organizations, technical service providers, NGO and government agencies to integrate BD and ES considerations into natural resources management policies and actions will be replicable, as training modules, materials and decision-making tools will be documented. Specific recommendations for integrating BD and ES considerations into mainstream economic development and sector policies and regulations and for improving institutional coordination will be developed. Moreover, policy and planning documents like the Common Agenda for the Sustainable Future of the Sierra Tarahumara and the Regional Action Plan will be socialized among actors in government agencies, NGOs and universities, so its contents and methods can be used for replication in other contexts with similar characteristics.

194. An outreach program will be developed to replicate and upscale the project's progress and results from the pilot level to the wider landscape in the Sierra Tarahumara and other parts of the Sierra Madre Occidental. To that end, experiences in biodiversity conservation and BD and ES friendly production practices will be systematized by identifying best practices and learning lessons for replication in future operations.

195. As the Sierra Tarahumara is part of a biodiversity hotspot, the *Madrean pine-oak woodlands* in the western and eastern Sierra Madre of Mexico and in some enclaves in the southwestern United States, there are suitable opportunities for replicating practices and methods experienced by the present project in this wider context.

3.10. **Public awareness, communications and mainstreaming strategy**

196. The project strategy is essentially a mainstreaming one, as expressed in the project title: Integrating the Management of Protection and Production Areas for Biodiversity Conservation in the Sierra Tarahumara of Chihuahua, Mexico. The principal elements of the project strategy for mainstreaming BD and ES considerations into natural resource management are: strengthening and disseminating knowledge on BD and ES dynamics and their links with threats affecting them; creating an enabling policy and institutional environment; and piloting of interventions for conservation and sustainable production with demonstration and replication effects and up-scaling potential.

197. Inclusion of and collaboration with a broad range of stakeholders and institutions is a key element of the project communications and mainstreaming strategy: Component 1 (Scientific base and tools for decision making) is targeted in the first place at the scientific community, but also at decision makers; component 2 (Environmental governance framework and policy alignment for ecosystem management) is targeted at government agencies, municipalities and NGO; and component 3 (Pilot-scale interventions) will be targeting land owners, municipalities and nongovernment stakeholders.

198. The project's communication strategy is a central element of its mainstreaming efforts and will operate at two levels. On the one hand, the project will organize specific events and make use of existing communications channels to disseminate the results, findings and recommendations produced under each component to the target audiences for those activities. For example, under component 1 the project will implement an awareness and capacity building program implemented for local, state and federal level stakeholders within the project area, to engage and enable them in the use of data bases and tools produced. The findings will also be incorporated into the training manuals that will be used in the training events for the target groups. As another example, the

Regional Action Plan and the Common Agenda for the Sustainable Development of the Sierra Tarahumara will be socialized among key actors in the Sierra Tarahumara and a broader citizenship, by the use of outreach material, a press and broadcast campaign and special information events (see parr. 117).

199. Recommendations for incorporating BD and ES into the sectorial development policies of other government, non-government and public-private bodies, along with lessons learned and best practices for conservation activities and ES and BD-friendly production practices, will be disseminated through a manual to be distributed among these agencies. The Regional Council for the Sustainable Development of the Sierra Tarahumara will serve as a platform for analyzing and adapting BD and ES policy recommendations and for disseminating them among relevant state actors and NGOs. The project will also collaborate with this Council in monitoring and communicating progress achieved in mainstreaming BD and ES considerations into sector policies and regulations.

200. On a second level, other communications materials and activities will be directed at a broader audience. The target audiences for these events will include various public and civil society organizations. Media representatives will be invited to participate in events organized to present results and exchange experiences between land users, local authorities and local organizations on topics such as reforestation, soil conservation and ecosystem restoration. In addition, a website will be created to communicate the best practices and benefits of integrating BD and ES into decision-making by communities, ejidos, UMAFORES and municipalities in the Sierra Tarahumara, among other topics.

3.11. Environmental and social safeguards

201. The project is expected to have positive environmental impacts because of its focus on conserving biodiversity and ecosystem service values. By integrating biodiversity and ecosystem service considerations into natural resource use practices in the Sierra Tarahumara, the project will help to conserve many species of global concern and preserve or restore essential ecosystem functions in critical habitat areas. Restoration and conservation of watershed functions and riparian corridors in the key watershed areas of the Sierra will help increase the resilience of these landscapes to changing rainfall and water flow levels and thereby help buffer them against climate change impacts.

202. The project focus on improved understanding and conservation of ecosystem services is also expected to entail positive social impacts, as these services provide important benefits to communities and towns in the region, such as improved water supply and quality and more protection against soil erosion and impoverishment of agricultural lands.

203. Additional income from existing government-funded and market-based programs, including different mechanisms of ecosystem service payments, will improve livelihoods mainly in rural communities situated both in the upper and lower Sierra Tarahumara. Gaining access to markets for products that are produced under environmentally friendly practices, including certified forest and agriculture management, will help poor farmers, both men and women, to achieve better incomes. These positive socioeconomic impacts will be the more sustainable as they will be built increasingly on capacities to succeed in the real economy and be less dependent on time limited governmental programs.

204. A relevant social safeguard relates to potential risks from traditional power structures in rural zones of the Sierra Tarahumara and low social cohesion between mestizos and indigenous people in ejidos and communities that might undermine access to, or success of, projects that require stable organization and engagement of land users. The project will address this risk by carrying out social and organizational viability assessments before committing its support to pilot project initiatives in selected communities. In addition, it will address both structures – the ejido and the indigenous communities within or outside the ejidos – in its promotion activities for pilot conservation and sustainable production projects.

SECTION 4: INSTITUTIONAL FRAMEWORK AND IMPLEMENTATION ARRANGEMENTS

205. The present project is the product of a partnership between CONANP and WWF, based on their common interest and experience in the application of biodiversity and ecosystem service conservation approaches in the Sierra Tarahumara. The institutional framework of the project includes numerous other actors from the government, academic and civil society sectors who will be involved in implementing the project strategy for mainstreaming biodiversity and ecosystem service considerations in the decision-making in the Sierra Tarahumara of Chihuahua.

206. The project will establish a Steering Committee (PSC) composed of CONANP and WWF, as project implementing partners, and UNEP as GEF implementing agency.[90] The formal representative of each executing partner will be the institution's general director in the state of Chihuahua or corresponding region, although they may nominate a representative to attend PSC meetings. The steering committee will be chaired by WWF and CONANP by annual rotation and meet quarterly. Its principal functions will be to analyze and approve regular work plans, terms of reference and contracting of sub-grant partners and consultancies; provide strategic guidance and oversight to project implementing organizations and consultants; review progress and evaluation reports; discuss problems or strategic issues that might arise during implementation and provide support for the necessary inter-institutional coordination and contributions to project activities. The PSC will maintain continuous exchange of information among its members by electronic means, and additional ad hoc steering committee meetings can be convened via telephone conference or other means, if necessary.

207. Project executing agencies and implementing partners: WWF as project co-executing agency will be in charge of project fund administration and accounting, contract the project director and the PMU staff and provide additional technical support through its personnel in Chihuahua and Mexico-City. CONANP as the other project co-executing agency will provide technical support through its personnel in Creel (Sierra Tarahumara) and its Regional Office in Chihuahua. To keep CONANP informed about the financial execution of the project and observing its implementation development and monitoring, WWF will send the financial reports to CONANP before submitting them to UNEP.

208. Project implementing partners: WWF, CONANP and UNEP, as members of the Project Steering Committee, will play the lead role in implementing and monitoring the project and maintaining its strategic focus. They will contribute co-financing for the project under the three project components with technical, administrative and institutional support.

209. UNEP as GEF implementing agency, will participate in the PSC and be in charge of supervision of monitoring and evaluation for the project, including overseeing the mid-term and final evaluations, review and approval of semi-annual and annual reports, technical review of project outputs and providing inputs to the PMU as needed. UNEP will provide guidance on relating the GEF-financed activities of the project to global, regional and national environmental assessments, scientific and technical analysis of ES and BD, policy frameworks and plans, and international environmental agreements. Furthermore UNEP will act as technical backstopping entity on relevant issues in particular related to Environmental Management. UNEP Mexico office will also serve as strategic liaison providing guidance in particular through its ongoing role advising Mexico's environmental policy agenda development at the national level, and supporting further development of initiatives and proposals with the GoM, GEF and others.

210. A Regional Council for the Sustainable Development of the Sierra Tarahumara will be the mechanism for coordinating key stakeholder activities in the project area. This Council will develop the Regional Action Plan and the Common Agenda for the Sustainable Future of the Sierra

[90] See for details and graphical representation of implementation arrangements Appendix 10: Decision-making flowchart and organigram.

Tarahumara, conceived as instruments for mainstreaming BD and ES criteria into institutional policies, programs and funding allocations. The Council will be composed of state and federal government entities, like DDF, SDUE, CET, CONANP, CDI, SAGARPA, CONANP, CONAFOR, CONAGUA, SEMARNAT, SEDESOL; municipalities; public-private bodies like PIAI and UMAFORES; civil society organizations, including WWF and PRONATURA; universities and research centres; and representatives of ejidos and indigenous communities. Recognized experts with both scientific knowledge and practical experience in the fields of biodiversity conservation, ecosystem service payments, sustainable production and watershed management will be invited to participate in this Council. The Council will act as an important communication platform for facilitating coordination between governmental and non-governmental actors in the project area.

211. The Project Management Unit (PMU) will be responsible for operative planning and day-to-day implementation of all project activities, as well as for management and follow-up of sub-grants and consultancies. It will prepare and support PSC meetings and manage the project budget. The PMU will be composed of a Project Director, three Component 1-3 Coordinators, a Project Administrator and a Technical and Logistics Assistant.[91]

    In addition, the PMU will receive important technical, administrative and institutional support from WWF and CONANP (see organizational chart in Appendix 10). PMU staff will be reduced in number for cost-effectiveness reasons and because an important part of project activities will be realized by contracting organized or individual specialists via sub-grants or consultancies.

212. The Project Director and Institutional Coordinator will provide overall technical and administrative leadership to the project and will pay particular attention and provide technical guidance to the project theme of integrating biodiversity and ecosystem services conservation into institutional policies and programs at the regional and local scale. Therefore, s/he will dedicate substantial efforts to support technically the main policy coordination mechanism promoted by the project, i.e. the Regional Council for the Sustainable Development of the Sierra Tarahumara. Another area of special attention will lie in capacity building of different targeted actors, from land users and their organizations to institutional stakeholders and contracted partners. The Project Director will devote special care to selecting and monitoring contracted partners and consultants, ensuring a proactive approach and the effectiveness of their activities. S/he will also ensure coordination and information exchange with related initiatives identified in section 2.7, in particular the CONAFOR project in Durango, the Mixteca project in Oaxaca and the Sierra-Costa project in Chiapas.

213. The three Component Coordinators will provide technical know-how for planning, implementation and follow-up to the activities foreseen under the respective project components. This technical input will consist on the one hand in managing activities under their direct responsibility; on the other hand selecting and accompanying technical service providers contracted by the project for implementing certain activities as planned in the Results Framework. Follow-up is understood as monitoring these contracted activities, but also includes capacity-building for enabling these service providers in applying methods and technical aspects in accordance with the project objectives and vision. A strong emphasis will be placed on taking an adequate approach to community participation in obtaining project results. The Component Coordinators will ensure, through training of the local pilot project supporting organizations, that biodiversity and ecosystem service considerations are integrated in their planning and implementation, applying RAP BD criteria and evaluation parameters, as well as goals and requirements of landscape and natural resource management plans developed in project area municipalities. In this sense, the role of the Component Coordinators is to transfer the PMU strategy of articulating different institutional programs for conservation and

[91] For detailed description of PMU personnel profiles see Appendix 11: Terms of Reference

sustainable development to the local and municipal level. The Component Coordinators will be located in Creel.

214. The Project Administrator will provide assistance to the Project Director in all administrative and financial management matters, particularly in budget management, procurement and financial reporting.

215. The project Technical and Logistics Assistant will provide support to the Project Director and the three Component Coordinators in carrying out day-to-day operational functions, particularly with regard to routine communications with partners and other stakeholders; support for PSC, Regional Council and other coordination meetings with project stakeholders and related initiatives; travel and logistical arrangements for field missions and meetings with local and regional actors. In addition, this position will include routine communications and follow-up with consultants, project partners, local and regional stakeholders, and other actors relevant for project implementation.

216. CONANP and WWF personnel in Chihuahua and Mexico, D.F. will provide additional institutional, technical and administrative support to the PMU as part of their match contribution, monitoring the progress and results of project activities and determine if any strategic or management corrective actions are needed. WWF administrative and finance staff will provide additional aid to the Project Administrator in budget administration, development and administration of sub-grants and consulting agreements, project accounting, and support for audits.

217. These formal implementation arrangements will ensure a constant exchange of information and experiences among the project implementing agencies and other key partners and organizations. The Project Management Unit will utilize a proactive communication strategy to maintain effective operational and policy coordination and to disseminate key results to target audiences (as described in section 3.10).

SECTION 5: STAKEHOLDER PARTICIPATION

218. During the project preparation phase, a series of consultations was held with stakeholders as follows:

- Regular communication and consultation with institutions participating directly in the development and design of the project: CONANP, WWF, UNEP and UACJ
- A workshop to design the project logical framework in August 2012 with the participation of federal, state and municipal government representatives, NGO, academic and private sector
- Meetings and interviews with key stakeholders that will be engaged in co-financing and implementing project activities, including state (government) agencies such as DDF, SDUE, CET, PIAI; federal entities like SAGARPA-PESA, CDI, SEDESOL, SEMARNAT, CONAFOR; NGOs such as Tierra Nativa, PROFAUNA, Sierra Network, Sierra Madre Alliance, PRONATURA, SINÉ; research institutes like UACH (Faculties of Agricultural and Forestry Sciences and of Zootechnics and Ecology) and INAH; UMAFORES like those of Guadalupe y Calvo, Urique, Balleza, Guachochi and San Juanito; communities and ejidos like Mogótavo and Borochi.
- Project presentations to the State Forestry Sector in February 2013 and a special meeting with governmental stakeholders in May 2013.

219. As a result of these consultations, the project proponents have confirmed the interest and willingness of key stakeholders to participate in project implementation by executing or co-financing specific project activities, to engage in efforts to improve inter-institutional coordination, and to provide broad institutional support to the project as a whole.

220. State and federal government agencies, such as DDF, SDUE, CET, PIAI, CONANP, SAGARPA, CDI, SEDESOL, SEMARNAT, CONAFOR and CONABIO will be involved in project implementation in different ways and provide additional funding for specific activities related to their area of competence and expertise. The state Direction of Forest Development (DDF) will be a key partner in most aspects related to forest management, by introducing sustainability and biodiversity criteria in improving forest productivity and modernization of forest processing industry; for example, in certification of forest use areas, monitoring indicators of sustainable forest development and strengthening the value chain beyond primary production. The state Secretariat of Urban Development and Ecology (SDUE) and the state Coordination of the Tarahumara (CET) will be involved in strategic planning for the sustainable development of the Sierra Tarahumara. The Interinstitutional Assistance Program for the Indigenous People of the State of Chihuahua (PIAI) will be a significant partner in designing and implementing the sustainable regional development strategy promoted by the project. CONANP, apart from its leading role in overall project management, will play a key role in creating synergies between the project and local actors; conservation and sustainable development activities supported by PROCODES and PET funds will contribute considerably to achieving project results in component 3; CONANP will also provide expertise and funds for BD monitoring. SAGARPA is one of the principal project stakeholders, as its portfolio covers relevant themes that will be worked on in the project; through its PESA food security and COUSSA programs, SAGARPA will contribute to soil and water conservation, as well as to rescuing and disseminating traditional knowledge in sustainable production practices. CDI will be a relevant partner in pilot projects of alternative tourism in indigenous zones and sustainable production, especially with indigenous women, contributing lessons in achieving gender equity; in a broader perspective, the project will derive good practices from CDI´s Territorial Management Strategy for Development with Identity. SEDESOL will be involved in the project through its Temporary Employment Program financing community development activities, including conservation, restoration or reforestation projects, and its Production Options Program subsidizing sustainable production projects, diversifying products, forming associations and building capacities. SEMARNAT´s contribution to the project will consist in two aspects: on the normative side, the institution can contribute to prevent or mitigate negative impacts on ecosystems and wildlife habitats through its competence for authorising land-use changes (for example from forest use to mining) or approving environmental impact assessments; on the executive side, SEMARNAT´s PET program will add to pilot projects for water basin restoration in agricultural areas, wildlife habitat improvement and solid waste disposal and recycling. CONAFOR´s program portfolio for the region will allow aligning and co-financing pilot projects in forest conservation and restoration, nature tourism and payment for environmental services. CONABIO will participate in the project by contributing its methodological experience and funds for developing biodiversity information and monitoring systems.

221. In view of the important role of municipalities in local development policies and given the function of mayors as formal presidents of Municipal Forestry Development Councils, their participation in project planning and implementation at the local and regional level is crucial. The project will raise awareness within municipal agencies of the importance of long-term perspectives in natural resources management and involve them in planning and implementing adequate BD and ES protection policies within their jurisdictions.

222. UMAFORES and Regional Forest Producers Associations are relevant actors as they assist ejidos, communities and individual forest owners for improving their forest management, for example by developing their forest management plans and preventive technical audits for certification of forest areas; the project will involve them not only in planning and implementing pilot projects, but also in designing regional development policies in the context of building the Common Agenda for the Sustainable Future of the Sierra Tarahumara.

223. Non-governmental organizations (like those mentioned in section 2.5, paragraph 70) will play a prominent role during project implementation by contributing their technical knowhow, knowledge

of local socioeconomic and socio-cultural conditions and practical experience in different thematic areas that are relevant for the project. These include: Empowerment and capacity strengthening of communities, ejidos and local working groups; biodiversity, habitat and ecosystem monitoring; training and technical assistance for eco friendly production practices and forest restoration activities; defence of community property rights; food and water security; sustainable protection of the community's natural resources.

224. Participation by institutions in the academic and research sector will focus on BD and ES monitoring, on research regarding habitat change and threats to biodiversity and ecosystem functions and services, on training for land and forest owners for introducing and managing BD and ES friendly land use practices and on capacity building for local and regional policy decision-makers in strategic planning. Important stakeholders from this sector are: UACH through its Faculties of Agricultural and Forestry Sciences in Las Delicias and of Zootechnics and Ecology in Chihuahua; the National Institute for Research on Forestry, Agriculture and Fishing (INIFAP) with its three experimental research centers in the state; the Autonomous University of Ciudad Juárez; the Center in Chihuahua of the National Institute of Anthropology and History (INAH) and the School of Anthropology of North Mexico (ENAH-Chihuahua) with its campus in Creel.

SECTION 6: MONITORING AND EVALUATION PLAN

225. The project will follow UNEP standard monitoring, reporting and evaluation processes and procedures. Substantive and financial project reporting requirements are summarized in Appendix 8. Reporting requirements and templates are an integral part of the UNEP legal instrument to be signed by the executing agency and UNEP.

226. The project M&E plan is consistent with the GEF Monitoring and Evaluation policy. The project Results Framework presented in Appendix 4 includes SMART indicators for each expected outcome as well as mid-term and end-of-project targets. These indicators, along with the key deliverables and benchmarks included in Appendix 6, will be the main tools for assessing project implementation progress and whether project results are being achieved. The means of verification are summarized in Appendix 7. M&E related costs are fully integrated in the overall project budget. Overall project impact will be measured, at the objective level, as follows:

Table 12. Project objective indicators and targets

Indicator	**Target** (by end of project)
Project objective: Develop and implement a participatory strategy to sustainably conserve biodiversity engaging communities, government and NGO participation.	
Number of key governmental and non-governmental actors outside the environmental sector* that have included explicitly biodiversity considerations and goals in their policies, programs, plans and actions, adopting RAP BD criteria, funding commitments and evaluation parameters.	10 federal and state government actors, 10 (out of 12) municipalities, 6 (of 7) UMAFORES and 15 NGOs have included explicitly biodiversity considerations and goals in their policies, programs, plans and actions.
Number and population of ejidos and communities actively participating in programs that have defined objectives, actions and funds for conservation of biodiversity	Baseline plus 300 ejidos and communities with 12,000 inhabitants

Amount of funds provided by different key governmental and non-governmental stakeholders for explicit biodiversity conservation programs from 2014 to 2018	Baseline plus at least US$25 million (accumulated from 2014 to 2018)
Percentage of families/women participating in project activities assessing a) an improvement in their quality of life; b) an improvement in the value of their natural capital	80 percent of families/women consider a) their quality of life, b) their natural resources have improved through participating in project activities

227. The M&E plan will be reviewed and revised as necessary during the project inception workshop to ensure project stakeholders understand their roles and responsibilities vis-à-vis project monitoring and evaluation. Indicators and their means of verification will also be fine-tuned at the inception workshop. Day-to-day project monitoring is the responsibility of the project management team but other project partners will have responsibilities to collect specific information to track the indicators. It is the responsibility of the Project Director to inform UNEP of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely fashion.

228. The project Steering Committee will receive periodic reports on progress and will make recommendations to UNEP concerning the need to revise any aspects of the Results Framework or the M&E plan. Project oversight to ensure that the project meets UNEP and GEF policies and procedures is the responsibility to the Task Manager in UNEP-GEF. The Task Manager will also review the quality of draft project outputs, provide feedback to the project partners, and establish peer review procedures to ensure adequate quality of scientific and technical outputs and publications.

229. At the time of project document presentation baseline information for 18 out of 22 (82%) project indicators is available. Baseline data gaps of four outcome indicators will be addressed during the first year of project implementation. A plan for collecting the necessary baseline data is presented in Appendix 7. The main aspects for which the project has gathered some information but for which additional details are needed, particularly at the community level, are:

- Number and population of ejidos and communities actively participating in programs that have defined objectives, actions and funds for conservation of biodiversity;
- Amount of funds provided by different key governmental and non-governmental stakeholders for explicit biodiversity conservation programs from 2014 to 2018;
- Number of local production projects under BD and ES friendly management;
- Extent in hectares covered by local production projects under BD and ES friendly management.

230. Project supervision will take an adaptive management approach. The Task Manager will develop a project supervision plan at the inception of the project, which will be communicated to the project partners during the inception workshop. The emphasis of the Task Manager supervision will be on outcome monitoring but without neglecting project financial management and implementation monitoring. Progress vis-à-vis delivering the agreed project global environmental benefits will be assessed with the Steering Committee at agreed intervals. Project risks and assumptions will be regularly monitored both by project partners and UNEP. Risk assessment and rating is an integral part of the Project Implementation Review (PIR). The quality of project monitoring and evaluation will also be reviewed and rated as part of the PIR. Key financial parameters will be monitored quarterly to ensure cost-effective use of financial resources.

231. A mid-term management review or evaluation will take place on the fourth quarter of year 2 as indicated in the project milestones. The review will include all parameters recommended by the GEF Evaluation Office for terminal evaluations and will verify information gathered through the GEF tracking tools, as relevant. The review will be carried out using a participatory approach whereby parties that may benefit or be affected by the project will be consulted. Such parties were identified during the stakeholder analysis (see section 2.5 of the project document). The project Steering Committee will participate in the mid-term review and develop a management response to the evaluation recommendations along with an implementation plan. It is the responsibility of the UNEP Task Manager to monitor whether the agreed recommendations are being implemented. An independent terminal evaluation will take place at the end of project implementation. The Evaluation and Oversight Unit (EOU) of UNEP will manage the terminal evaluation process. A review of the quality of the evaluation report will be done by EOU and submitted along with the report to the GEF Evaluation Office not later than 6 months after the completion of the evaluation. The standard terms of reference for the terminal evaluation are included in Appendix 9. These will be adjusted to the special needs of the project. The table below summarizes the M&E plan.

Table 13. Monitoring and Evaluation Plan

M&E activity	Responsible Parties	Budget US$	Period
Inception Workshop	• Project Management Unit • UNEP	2,000	Within 2 months of project start-up
Inception Report	• Project Management Unit • UNEP	None	Immediately after Inception Workshop
Measurement of progress and performance indicators	• Project Management Unit • Executing agencies and consultants	None (included in management budget)	Annually, before the APR/PIR and preparation of AWPs
Quarterly Progress Reports	• Project Management Unit	None	Quarterly
Annual Report/Project Implementation Report (APR/PIR)	• Project Management Unit • UNEP	None	Annually
Steering Committee Meetings	• Project Management Unit • UNEP • National partners	None	Quarterly
Mid-term Evaluation	• Project Management Unit • UNEP • External consultants	25,000	Project mid-term (last quarter 2nd year)
Terminal Evaluation	• Project Management Unit • UNEP • External consultants	35,000	End of project implementation
Terminal Report	• Project Management Unit • UNEP	None	At least one month before end of project
Audit	• UNEP	45,000	Annually

	• Project Management Unit		
Lessons learned	• Project Management Unit • UNEP	None	Annually
Field visits	• Project Management Unit • UNEP • National partners	None 2,000	Permanently
Total indicative cost		109,000	

232. The GEF tracking tools are attached as Appendix 15. These will be updated at mid-term and at the end of the project and will be made available to the GEF Secretariat along with the project PIR report. As mentioned above, the mid-term and terminal evaluation will verify the information of the tracking tool.

SECTION 7: PROJECT FINANCING AND BUDGET

7.1. Overall project budget

Financing Plan Summary for the project (US-$)

	Project Preparation a	**Project Grant b**	**Total c = a + b**	**For the record: Project Grant at PIF**
GEF	100.000	4.900.000	5.000.000	4.900.000
Co-financing	200.000	40.036.159	40.236.159	21.250.000
Total	**300.000**	**44.936.159**	**45.236.159**	**26.150.000**

Project Framework (US-$)

Project components	**GEF-financing***		**Co-financing***		**Total ($)**
	($) a	%	($) b	%	**c = a + b**
1. Scientific base and tools for decision making	457,800	9.3	764,000	1.9	1,221,800
2. Environmental governance framework and policy alignment for ecosystem management	1,075,900	22.0	1,515,000	3.8	2,590,900
3. Pilot-scale interventions	2,986,000	60.9	37,095,000	92.7	40,081,000
4. Project monitoring and evaluation	147,000	3.0	89,000	0.2	236,000
5. Project management	233,300	4,8	573,159	1.4	806,459

Total project costs	**4,900,000**	**100.0**	**40,036,159**	**100.0**	**44,936,159**

* Percentage refers to contribution at CEO endorsement to total financing in each component.

7.2. Project co-financing

Sources of confirmed co-financing	Classification	Type		Total US-$	%
		Grant	In-kind		
CONANP	National Government	769,230	1,120,000	1,889,230	4.7
CONAFOR	National Government	2,500,000	0	2,500,000	6.2
CDI	National Government	13,076,922	0	13,076,922	32.7
SEDESOL	National Government	20,000,000	0	20,000,000	50.0
PRONATURA	NGO	320,007	0	320,007	0.8
World Wildlife Fund (WWF)	NGO	982,424	367,576	1,350,000	3.4
UNEP	International organization	150,000	750,000	900,000	2.2
Total Co-financing		**37,798,583**	**2,237,576**	**40,036,159**	**100**

7.3. Project cost-effectiveness

233. The basic assumptions of the project with regard to cost-effectiveness are that the sustainable management and conservation of natural resources, including biodiversity, is best achieved 1) through local management at the community and micro-watershed scale; 2) through an incentive-driven approach based on environmental service rewards; 3) building on existing institutional mechanisms for implementing investments in conservation and sustainable production activities; and 4) taking advantage of methodological expertise and local experience in the NGO, governmental and academic sector for supporting capacity building processes.
234. Strengthening the local management of natural resources at the community and micro-watershed scale is particularly cost-effective under the conditions in the Sierra Tarahumara. Experience in the region with its extremely dispersed rural communities has shown that the micro-watershed is a good scale for coordinating the efforts of different governmental and non-governmental institutions, thereby achieving synergies. One alternative would be to plan and coordinate natural resource conservation only at higher scales (e.g., the regional or state level) where it is difficult to integrate site-specific information, especially in such heterogeneous regions as the Sierra Madre Occidental and its canyons and watersheds. For this reason, the adequate alternative is to perform these tasks linking planning at municipal scale with the micro-watershed level which will be more effective in a region where water management is of predominant importance for the functioning of ecosystems and well-being of communities.
235. This project also favors a reward-and-incentive approach to the management of natural resources rather than an approach based exclusively on rules and policing (which are both necessary as well) for numerous reasons, including cost effectiveness. In an area of difficult access such as the Sierra Tarahumara, with security problems and low governance, it is very difficult to enforce land use

regulations if these are not in the interest of the land users. The project's approach is therefore to facilitate access to incentives and rewards for communities for land use practices and activities that benefit the environment and help ensure the delivery of environmental services to downstream users. Through this approach, better results can be expected in terms of resource conservation than with a traditional approach based solely on the (often unsuccessful) enforcement of rules.

236. An important factor of the current design's cost efficiency is the adopted implementation and sustainability strategy that builds on existing institutional structures in the government, NGO and academic sector, instead of paying for their establishment through project funds. Project management costs associated with the project staff can be held at a low level (7.1% of GEF project cost), because involved institutions and organizations assume part of the administrative and management costs related to implementing project activities. So GEF funds will be focused on cost-effective use for planning, implementing and capacity-building on all levels, from land users to state and federal government agencies.
237. Another significant advantage for project cost-effectiveness consists in the methodological expertise and local experience in the region of key project partners from the NGO, governmental and academic sector. The project implementation strategy considers the involvement of these actors in all components thereby reducing substantially transaction costs which are associated with community decision processes and coordination between different participating actors.

APPENDICES

APPENDIX 1: GEF-BUDGET UNDER UNEP BUDGET LINES

See separate Excel file: “Appendix 1 Detailed GEF budget”

APPENDIX 2: CO-FINANCING BY SOURCE AND UNEP BUDGET LINES

See separate Excel file: “Appendix 2 Co-finance budget”

APPENDIX 3: INCREMENTAL COST ANALYSIS

	Baseline (B)	Alternative (A)	Increment (C=A-B)
Global Benefits	• Continued forest degradation, loss of forest cover, habitat destruction and population reduction of species in risk	• Conservation of globally significant ecosystems, habitats and species	• Degraded forest areas restored; forest cover stabilized or slightly increased in areas of deforestation risk within project area • Conservation status of a selected group of indicator species improved in project area
	• Ecosystem services degradation and loss of related global benefits, especially water provision and carbon storage	• Stabilization of ecosystem services and related global benefits	• Ecosystem services and related global benefits are stabilized
	• Existing knowledge base on BD and ES and their links with threats, especially forest and land use patterns do not provide sufficient elements for policy decision-making and planning	• Systematic monitoring and research for increasing the global knowledge base on BD and ES and their links with prevalent threats, especially forest and land use patterns	• Significant contribution to global knowledge base on ES and BD and their links with prevalent threats, especially forest and land use patterns, for informed policy making on defining forest and land use planning and incentive schemes
Domestic benefits	• Deterioration of local and regional benefits provided by natural, especially forest, resources	• Plans, projects and activities for conserving ecosystems and their services provide increasing benefits to local and regional population	• Increased benefits to local and regional population by policies and activities for conserving ecosystems and ES and BD they provide
	• Limited BD and ES-friendly opportunities to improve livelihoods	• Creation of opportunities to improve livelihoods through ES and BD-friendly forest and land use systems	• Local livelihoods improved through ES benefits provided by ES and BD-friendly forest and land use systems and through payments from public and private PES mechanisms
	• No systematic and inter-institutionally coordinated policies to conserve and sustainably use biodiversity by ES and BD-friendly land use planning on the regional and landscape level	• Implementation of systematic and inter-institutionally coordinated policies to conserve and sustainably use biodiversity by ES and BD-friendly land use planning on the regional and landscape level	• Policies and plans governing sectoral activities in 12 municipalities of the Sierra Tarahumara include measures to conserve and sustainably use ES and BD in a significantly higher degree than before project begin.

Component 1: Scientific base and tools for decision making	Planning and decision making for BD and ES conservation management insufficiently based on diagnostic tools and information systems, in particular: • Planning and decision making for BD and ES conservation management insufficiently based on diagnostic tools and information systems • Relevant stakeholders lack information useful for conservation planning and decision making. • Local stakeholders lack access, or skills to use, information systems about status and dynamics of BD and ES CONANP 70,000 SAGARPA 0 CONAFOR 80,000 WWF 40,000 **Component cost 190,000**	Knowledge base on BD/ES and their links with prevalent threats, especially forest and land use patterns is increased, in particular: • Comprehensive information on key indicators of BD and ES across the project region becomes available by Sierra Tarahumara Data Monitoring and Information System (ST-DM&IS). • Sierra Tarahumara Biodiversity and Environment Assessment to support conservation planning, evaluation and decision making developed. • Awareness and capacity-building program implemented for local, state and federal level stakeholders, to engage and enable them in the use of data bases and tools produced by project. **Component cost 1,411,800**	CONANP 300,000 CONAFOR 0 CDI 0 SEDESOL 0 PRONATURA 0 WWF 209,000 UNEP 255,000 **Co-financing 764,000** **Cost to GEF 457,800** **Component cost 1,221,800**
Component 2: Environmental governance framework and policy alignment for ecosystem management	Weak environmental governance of the Sierra Tarahumara: Deficiencies in stakeholder participation, co-ordination and enforcement of policies and regulations, in particular: • Coordination mechanisms of regional stakeholders for BD and ES conservation are inexistent or do not operate • Lack of regional strategy to reinforce sustainable land use and protected areas • Funding allocation does not incorporate BD and ES conservation criteria • Landscape management not incorporated in regional development policies • Small impact of local pilot programs on BD and ES conservation at a landscape	The environmental governance of the Sierra Tarahumara region improves in responsiveness to key issues for biodiversity conservation and ecosystem services supply following a Regional Action Plan (RAP), in particular: • Coordination mechanism for the development and implementation of the RAP designed and established. • An agreed strategic RAP and Sustainable Development Agenda developed which mainstreams BD and ES criteria into regional development policies • Policy improvement strategy developed,	

	development level CONANP 70,000 CONAFOR 90,000 CDI 80,000 WWF 50,000 **Component cost 290,000**	to propose changes or new regulations affecting funding allocation criteria that mainstream measures to conserve and sustainably use BD and ES • An adaptive management model at the landscape level emphasizing forest lands developed and implemented • Outreach program developed to replicate and upscale the project's progress and results from the pilot level to the wider landscape in the Sierra Tarahumara. **Component cost 2,880,900**	CONANP 165,000 CONAFOR 200,000 CDI 300,000 SEDESOL 400,000 PRONATURA 0 WWF 0 UNEP 450,000 **Co-financing 1,515,000** **Cost to GEF 1,075,900** **Component cost 2,590,900**
Component 3: Pilot-scale interventions	Limited coverage and impact of conservation and productive land use areas with effective BD and ES friendly management, in particular: • Lack of BD and SE information for priority local intervention areas • Few local governments manage areas for conservation, ES (water) protection and sustainable production • Programs and activities for conservation are few in number and cover limited areas • Unsustainable (forest) production practices are common and have impact on BD/ES degradation and habitat fragmentation CONANP 850,000 CONAFOR 1,240,000 CDI 3,400,000 SEDESOL 400,000	Sustainable and integrated landscape and natural resource management effectively applied in the project area that combine conservation areas and productive land under BD and ES friendly management, in particular: • Monitoring and Information System tools adjusted to pilot site conditions: ecosystem types, landscape units, river basins, species inventories, landscape units and habitat types • Sustainable and integrated landscape and natural resource management plans developed in project area municipalities including conservation areas and areas to optimize biodiversity friendly production and ecosystem services • Pilot programs and field activities to implement pilot projects regarding conservation • Pilot programs and field activities to implement pilot projects identified	CONANP 1,024,230 CONAFOR 2,300,000 CDI 12,776,922 SEDESOL 19,600,000 PRONATURA 320,007 WWF 923,841 UNEP 150,000 **Co-financing 37,095,000** **Cost to GEF 2,986,000**

	WWF 60,000 **Component cost 5,950,000**	under 3.1 and 3.2 regarding sustainable production **Component cost 46,031,000**	**Component cost**	**40,081,000**
Component 4: Project monitoring and evaluation		**Component cost 236,000**	WWF 44,000 UNEP 45,000 **Co-financing**	**89,000** Cost to GEF 147,000 **Component cost** **236,000**
Project Management	**Component cost** **0**	Effective coordination to achieve project outputs by active participation of key stakeholders in project activities at local and regional levels **Component cost 806,459**	CONANP 400,000 WWF 173,159 **Co-financing** 573,159 Cost to GEF 233,300 **Component cost** **806,459**	
TOTAL COST	**6,430,000**	**51,366,159**	CONANP 1,889,230 CONAFOR 2,500,000 CDI 13,076,922 SEDESOL 20,000,000 PRONATURA 320,007 WWF 1,350,000 UNEP 900,000 **Co-financing**	**40,036,159** Cost to GEF 4,900,000 **Total cost** **44,936,159**

APPENDIX 4: PROJECT RESULTS FRAMEWORK

Notes in brackets are cross references to Tracking Tools with indication of the focal area and line number in the respective BD TT Section.

Project strategy	Objectively verifiable indicators	Baseline	End of project target	Sources of verification	Assumptions
STRATEGIC OBJECTIVE: Contribute to the conservation of biodiversity (BD) and ecosystem services (ES), and improve quality of life for communities in the Sierra Tarahumara of Mexico					
PROJECT OBJECTIVE: Develop and implement a participatory strategy to sustainably conserve biodiversity engaging communities, government and NGO participation.	Number of key governmental and non-governmental actors outside the environmental sector* that have included explicitly biodiversity considerations and goals in their policies, programs, plans and actions, adopting RAP BD criteria, funding commitments and evaluation parameters *key actors are identified in ProDoc section 2.5 (BD1, section II: 198)[92]	None	10 federal and state government actors 10 (out of 12) municipalities 6 (of 7) UMAFORES 15 NGOs	Assessment of institutional plans, programs, budgets and project reports	-Policy support for unsustainable land use and production practices is decreasing. -Political and personnel changes following election processes at the local and state level do not affect the continuity of programs and projects initiated by former administrations in the context of the present project. -Impact of wildfires and forest plagues on forest cover and density remains on 2012 level or lessens. -Extreme meteorological events, especially droughts, will not occur or have a light impact in the Sierra Tarahumara. -The mining sector will comply with environmental regulations and compensation measures for the impacts of mining.
	Number and population of ejidos and communities actively participating in programs that have defined objectives, actions and funds for conservation of biodiversity in the project region (BD1, section II: 208)	Baseline 2014 to be established	Baseline plus 300 communities/ejidos with 12,000 inhabitants	Systematization of annual key stakeholder program reports and complementary interviews with program officials	
	Amount of funds provided by different key governmental and non-governmental stakeholders for explicit biodiversity conservation programs from 2014 to 2018 in the project region (BD1, section II: 184)	Baseline 2014 to be established	Baseline plus at least US$25 million (accumulated from 2014 to 2018)	Annual key stakeholder program reports	
	Percentage of families/women participating in project activities assessing a) an improvement in their quality of life; b) an improvement in the value of their natural capital (BD1, section II: 212, 216)	None	80 percent of families/women consider a) their quality of life, b) their natural resources have improved through	Stratified sample survey* in communities participating in project activities (asking if they perceive an	

[92] Notes in brackets are cross references to Tracking Tools with indication of the focal area and line number in the respective BD TT Section.

			participating in project activities	improvement, and in what does it consist) *Taking into account a special women stratum	

Project strategy	Objectively verifiable indicators				Sources of verification	Assumptions
	Indicators*	**Baseline**	**Mid-term-target at end of 2nd year**	**End of project target**		
Component 1: Scientific base and tools for decision making						
Outcome of component 1: Management plans and decision making processess of key stakeholders involved in the biodiversity conservation management of the Sierra Tarahumara utilize the project's diagnostic tools and data bases	1. N° of BD indicator species (in some risk category* and others) and their habitat conditions and threats systematically monitored by the Sierra Tarahumara Data Monitoring and Information System (ST-DM&IS) developed by the project, as a tool to improve sustainable production and protected area management effectiveness. (BD1, section II: 172, 228)	1. 7 indicator species in some risk category* monitored *NOM-059-SEMARNAT-2010	1. 10 indicator species (in some risk category* and others) and their habitat conditions and threats monitored	1. 15 species (in some risk category* and others) and their habitat conditions and threats monitored	1. Annual monitoring reports	-Most key stakeholders are willing to participate in the construction and application of a common ST-DM&IS and in the Comprehensive BD and Environment Assessment -Operative rules and budgets of key stakeholders do not impede (are adapted for) the use of the project's diagnostic tools and data bases in their program planning and operation. -An institution is disposed and able to assume the responsibility for coordinating the monitoring process among key stakeholders during and beyond project lifetime.
	2. N° of UMAFORES monitoring forest degradation (applying forest degradation index built on indicators proposed by FAO; see section 2.3 of ProDoc)	2. None	2. Two UMAFORES	2. Six (out of seven) UMAFORES	2. Annual monitoring reports	
	3. N° of key stakeholders using the project's diagnostic tools and data bases (ST-DM&IS and Comprehensive ST Biodiversity and Environment Services Assessment) in their planning and decision making processes (BD1, section II: 172, 228)	3. None	3. ST-DM&IS and Comprehensive BD&ESA for the ST becomes available during 2nd project year for use by key stakeholders	3. ST-DM&IS and Comprehensive BD&EA of the ST is used by at least 20 key stakeholders at the end of 5th year	3. Survey among key stakeholders	

	4. An institution with sufficient technical and financial capacities has assumed the responsibility for administrating the ST-DM&IS and coordinating the monitoring process among key stakeholders	4. At present, monitoring and assessment of BD and ES is dispersed among many actors using different methods and concepts.	4. Agreement has been established with competent actor for assuming responsibility to administrate and coordinate the monitoring process	4. Administration of monitoring process has been fully assumed by designated actor during project year 4	4. Agreement established with administrating actor Monitoring reports delivered by administrating actor	
OUTPUTS AND ACTIVITIES FOR COMPONENT 1						
Output 1.1: Sierra Tarahumara Data Monitoring and Information System (DM&IS) to support conservation planning, evaluation and decision making developed, including a comprehensive GIS based bioassessment reporting mechanism (thematic layers adapted in pilots)						
1.1.1 Develop tools for implementing DM&IS in a participative and coordinated way.						
1.1.2 Develop practical manual for using DM&IS tools.						
1.1.3 Organize institutional arrangements for anchoring the DM&IS sustainably in adequate government or academic structures.						
Output 1.2: Sierra Tarahumara Biodiversity and Environment Assessment to support conservation planning, evaluation and decision making realized.						
1.2.1 Carry out Biodiversity and Environment Assessment producing baseline information for biodiversity and ecosystem services monitoring.						
Output 1.3: Awareness and capacity building program implemented for local, state and federal level stakeholders within the project area, to engage and enable them in the use of data bases and tools produced under outputs 1.1 and 1.2.						
1.3.1 Design awareness and capacity building program addressed to local, state and federal level stakeholders for use of data bases and DM&IS tools developed by the project						
1.3.2 Train stakeholders in the use of information systems and tools.						
Output 1.4 Institutional, financial and technical assistance follow up program for stakeholders using the ST-DM&IS implemented.						
1.4.1 Design and implement institutional, financial and technical assistance follow up program for stakeholders using the Sierra Tarahumara Data Monitoring and Information System.						

Project strategy	Objectively verifiable indicators				Sources of verification	Assumptions
	Indicators	**Baseline**	**Mid-term-target at end of 2nd year**	**End of project target**		
Component 2: Environmental governance framework and policy alignment for ecosystem management						
Outcome of component 2: The environmental governance of the Sierra Tarahumara region improves in responsiveness to key issues for biodiversity conservation and ecosystem services supply following a **Regional Action Plan (RAP)** that incorporates biodiversity criteria, funding commitments, evaluation parameters and a strategy for upscaling as well as for economic sustainability beyond project completion.	1. N° of key governmental and non-governmental actors* participating in the construction of a common and coordinated agenda based on a Regional Action Plan to sustainably conserve biodiversity in the Sierra Tarahumara *actors identified in ProDoc section 2.5 (BD2: 127-162)	1.None	1. 10 federal and state govt. actors, 9 municipalities, 5 UMAFORES, 5 representatives of NGOs and 10 representatives of ejidos and communities participate in RAP building committee and implementation	1. 12 federal and state govt. actors, 12 municipalities, 7 UMAFORES, 5 representatives of NGOs and 10 representatives of ejidos and communities participate in RAP building committee and implementation	1. Minutes of proceedings of the RAP building committee	-A critical mass of key stakeholders participates proactively in the design of the RAP, including state and federal dependencies of all sectors, municipalities, communities, producer organizations, private sector, NGO and research centres. -Indigenous communities can assert their proposals and rights in the design of the RAP. -Differences over the strategy for sustainable development of the ST between sectors of key stakeholders can be negotiated and sound agreements are found. -Key stakeholders undertake effective measures to incorporate RAP BD and ES criteria in their own
	2. Percentage of women participating in construction of the RAP	2. None	2. At least 25% of participants in construction of the RAP are women	2. At least 35% of participants in construction of the RAP are women	2. Minutes of the RAP building committee	
	3. Number of municipalities in the project region including explicitly BD considerations and goals in their policies, programs and plans (adopting RAP BD criteria, funding commitments and evaluation parameters)	3. None	3. Three (out of 12) municipalities include explicitly RAP BD criteria and funding commitments in their municipal development plans	3. Eight (out of 12) municipalities include explicitly RAP BD criteria and funding commitments in their municipal development plans	3. Monitoring report about policies, programs and plans of key stakeholders in the ST	

	4. Number of civil society organizations (producers, NGO) participating in construction of RAP and aligning their objectives and actions to include explicitly RAP BD criteria and evaluation parameters	4. None	4. Eight civil society organizations are participating in construction of RAP and aligning their objectives and actions to include explicitly RAP BD criteria and evaluation parameters	4. 15 civil society organizations are aligning their objectives and actions to include explicitly RAP BD criteria and evaluation parameters	4. Monitoring report about policies, programs and plans of key stakeholders in the ST	programs, operative rules und budgets.
	5. The Regional Action Plan takes explicitly and specifically into account the long term needs of the protected areas in the Sierra Tarahumara including the enforcement of land use prescriptions and BD and ES criteria for development programs in these areas. (BD1, section II)	5. None	5. Draft of RAP text including enforcement of land use prescriptions and BD and ES criteria for development programs in protected areas presented	RAP text including enforcement of land use prescriptions and BD and ES criteria for development programs in protected areas approved by RAP building committee	Minutes of proceedings of the RAP building committee	
	6. Management effectiveness of protected areas in the project region, as measured through Management Effectiveness Tracking Tool (METT) for protected areas.	Score of METT: a. RPC Sierra Tarahumara: **49** b. RPC Mohinora: **37** c. Bassaseachic Waterfall National Park: **51**	Score at end of 2nd year: a.RPC Sierra Tarahumara: **56** b.RPC Mohinora: **48** c. Bassaseachic Waterfall National Park: **55**	Score at end of project: a.RPC Sierra Tarahumara: **70** b.RPC Mohinora: **77** c. Bassaseachic Waterfall National Park: **64**	Monitoring Tracking Tools by PA managers and project direction	
OUTPUTS AND ACTIVITIES FOR COMPONENT 2						
Output 2.1: Coordination mechanism of federal, state and municipal authorities with local communities and non governmental actors for the development and implementation of the Regional Action Plan designed and established.						
2.1.1 **P**romote coordination mechanism for the design and implementation of the Regional Action Plan to mainstream BD and ES criteria among regional actors.						
2.1.2 Establish coordination mechanism for the design and implementation of the Regional Action Plan to mainstream BD and ES criteria among regional actors						
Output 2.2: An agreed strategic Regional Action Plan developed which mainstreams BD and ES criteria into regional development policies and integrates the sustainable						

use of productive lands and the protection of areas with high value for BD conservation and ES provisioning.
2.2.1 Provide technical assistance and follow up to the coordination mechanism for the design and implementation of the Regional Action Plan.
2.2.2 Socialize the Regional Action Plan among key actors in the Sierra Tarahumara and a broader citizenship, by the use of outreach material, a press and broadcast campaign and special information events.
Output 2.3: Policy improvement strategy developed drawing from PPG findings, the Diagnostic Analysis in component 1 and the Regional Action Plan, to propose changes in sectorial development policies and programs for the Sierra Tarahumara, including new or adapted regulations affecting funding allocation criteria that mainstream measures to conserve and sustainably use biodiversity and key ecosystem services.
2.3.1 Promote incorporation of RAP recommendations for mainstreaming BD and ES criteria into the sectorial development policies and regulations affecting funding allocation criteria of government, non-government and public-private bodies, along with lessons learned and best practices for conservation activities and ES and BD-friendly production practices.
2.3.2 Promote articulated and jointly funded conservation and sustainable development programs by key governmental and non-governmental stakeholders under the new or adapted regulations for funding allocation criteria.
Output 2.4: An adaptive management model at the landscape level emphasizing forest lands developed and implemented, based on project learnings and best practices systematization including diffusion material in formats tailored to local stakeholders.
2.4.1 Develop a landscape management model (LAMM) understood as integrating economic, ecological and social objectives into spatial development planning emphasizing forest land, as part of the Regional Action Plan.
2.4.2 Promote adoption of landscape management model among key stakeholders.
2.4.3 Link landscape management model with identification of sites for pilot projects under component 3.
Output 2.5 Outreach program developed to replicate and upscale the project's progress and results from the pilot level to the wider landscape in the Sierra Tarahumara.
2.5.1 Systematize project experience by identifying impacts, best practices and learning lessons for replication in future operations (linked with output 4.4).
2.5.2 Develop and promote outreach program among key stakeholders, to replicate and upscale the project's strategy and results from the pilot level to the wider landscape in Sierra Tarahumara, drawing from results of project experience systematization.

Project strategy	**Objectively verifiable indicators**				**Sources of verification**	**Assumptions**
	Indicators	**Baseline**	**Mid-term-target at end of 2nd year**	**End of project target**		
Component 3: Pilot-scale interventions						
Outcome of component 3: Sustainable and integrated landscape and natural resource management	1. N° and extent in hectares of voluntary community and private protected areas (PAs) (BD2: 85-86)	1. 13 voluntary community and private PAs Voluntary PAs sum up to 17,707 hectares	1. 16 voluntary community and private PAs 20,000 hectares	1. At least 24 voluntary PAs At least 30,000 hectares	1. Agreements of ejido/ community assemblies to reserve areas for	-Key actors, especially in the economic and public infrastructure sector, are willing to coordinate and co-finance pilot projects for conservation and

effectively applied at the headwaters of the Rio Conchos, the Rio Fuerte and the Rio Mayo river basins results in a landscape mosaic of at least 300,000 hectares that combine added conservation areas and productive land under biodiversity and ecosystem services friendly management	2. N° and extent in hectares of biodiversity and ecosystem conservation and restoration projects (except voluntary PAs) 3. N° and extent in hectares of certified forest management areas (by different standards like FSC, Mexican national standard for sustainable forest management NMX 143 and CONAFOR certificate for good forest management by so called technical preventive audits - ATP) (BD2: 84-86) 4.N° and area covered by local production projects under BD and ES friendly management (BD2: 87-89)	2. 31 BD and ES conservation and restoration projects covering 102,650 hectares 3. Three certified forest management areas 27,930 ha of certified forest management areas 4. X local production projects under BD and ES friendly management X ha covered by local production projects under BD and ES friendly management (Baseline 2014 to be established)	2. 35 BD and ES conservation and restoration projects covering 115,000 hectares 3. Seven certified forest management areas 40,000 ha of certified forest management areas 4. X+40 local pilot projects for BD and ES friendly production are under way at end of 2nd project year X+ 16,000 ha covered by BD and ES friendly production projects	2. 60 BD and ES conservation and restoration projects covering 150,000 hectares 3. 15 certified forest management areas 70,000 ha of certified forest management areas 4. X+120 local pilot projects for BD and ES friendly production are under way at end of 5th project year X+ 48,000 ha covered by BD and ES friendly production projects	conservation 2. Local pilot project reports 3. Local pilot project reports 4. Local pilot project reports	sustainable production. -Municipalities are willing to cooperate with the pilot project strategy, developing specific action plans in the framework of the RAP. -Most community (*ejido*) authorities are interested to cooperate with pilot project initiatives. -Problems of low social cohesion between *mestizos* and *rarámuris* in many communities will not severely affect planning and implementation of pilot projects, and can be managed in a constructive way. -Security conditions in most suitable and selected sites are acceptable and do not impede implementation of pilot projects.

	5. Percentage of women participating in local production projects under BD and ES friendly management	5. None	5. At least 25% of participants in local production projects are women	5. At least 35% of participants in local production projects are women	5. Pilot project reports Reports of project partners promoting BD and ES friendly production practices	
	6. N° of municipalities having developed Integrated Landscape and Natural Resource (ILNR) Management Plans, in the framework of the RAP, combining areas for BD conservation and BD and ES friendly productive activities	6. None	6. 2 (out of 12) municipalities have developed ILNR Management Plans at the end of 2nd project year	6. 8 (out of 12) municipalities have developed ILNR Management Plans at the end of 5th project year	6. Municipal ILNR Management Plans	

OUTPUTS AND ACTIVITIES FOR COMPONENT 3
Output 3.1: Component 1 tools adjusted to pilot site conditions: ecosystem types, landscape units, river basins, species inventories and priorization of landscape units and habitat types conforming biological corridors.
3.1.1 Confirm and state more precisely the definition of sites and characteristics of pilot projects utilizing and adapting tools and data from component 1, RAP and PPG findings.
Output 3.2: Sustainable and integrated landscape and natural resource management plans developed in project area municipalities include voluntary conservation areas and areas to optimize biodiversity friendly production and ecosystem services, emphasizing water and forest resources, drawing from the RAP in Component 2.
3.2.1 Hold an open and intense dialogue with pilot project stakeholders identified under activity 3.1.1, analyzing with them the relevance and social, economic and ecological viability of proposed pilot interventions.
3.2.2 Building on the results of the dialogue with communities held under activity 3.2.1, modify and specify the portfolio of projects identified under activity 3.1.1.
3.2.3 Negotiate and agree on co-financing and supporting pilot projects, including governmental and non-governmental partners.
3.2.4 Develop sustainable and integrated landscape and natural resource management plans in project area municipalities, determining objectives, expected results, activities, and other central elements of pilot projects.
Output 3.3: Pilot programs and field activities to implement integrated pilot projects identified under 3.1 and 3.2 focussed on conservation **Output 3.4:** Pilot programs and field activities to implement integrated pilot projects identified under 3.1 and 3.2 focussed on sustainable production
3.3.1 Design and implement specific pilot project plans und budgets for both conservation and sustainable production activities, involving communities, municipalities, NGO, state and federal dependencies and research centres
3.3.2 Provide capacity-building services to pilot project implementing actors, in particular to owners of natural resources: communities, ejidos and special community working groups in charge of pilot projects; this activity includes training of local promoters, management of institutional support and monitoring of pilot project advance

Project strategy	Objectively verifiable indicators					
	Indicators	**Baseline**	**Mid-term-target at end of 2nd year**	**End of project target**	**Sources of verification**	
Project monitoring and evaluation						
Outcome of project monitoring component: Project implementation based on results based management and application of project lessons learned in future operations facilitated	1. Project implementation is based on monitoring and evaluation of objective and outcome indicators	1. None	1. PIR and mid-term evaluation can build on effective monitoring of project outcome indicators	1. End of project report and evaluation can build on effective monitoring of project objective and outcome indicators	PIR and evaluation reports	
	2. Baseline information gaps about indicators used in project monitoring are filled	2. Baseline information is lacking for 4 (out of 22) objective and outcome indicators	2. Baseline information about project indicators is completed during the 1st year		2. Completed project logical framework	
	3. Midterm and final evaluation conducted		3. Midterm evaluation conducted	3. Final evaluation conducted	3. Evaluation reports	
Project monitoring and evaluation						
Outcome of project monitoring component: Project implementation facilitated by results based management						
Output 4.1: Baseline information about indicators used in project monitoring completed.						
4.1.1 Gather data (by a specific consultancy) to complete lacking baseline information about project objective and outcome indicators.						
Output 4.2: Project monitoring system is operating, providing systematic information on progress in meeting project outcome and objective targets.						
4.2.1 Establish mechanism in project management to ensure regular monitoring of project objective and outcome indicators.						

Output 4.3: Midterm and final evaluation conducted.
4.3.1 Help organize external midterm and final project evaluation.
Output 4.4: Lessons learned from this and other related projects management experience identified for replication in future operations.
4.4.1 Systematize project management experience by identifying best practices and learning lessons for project adaptation measures and replication in future operations.
4.4.2 Carry out interchange of experience activities for collaboration and cross fertilization with other related projects.

APPENDIX 5: WORKPLAN AND TIMETABLE

Component 1: Scientific base and tools for decision making																				
Outcome of component 1: Management plans and decision making processess of key stakeholders involved in the biodiversity conservation management of the Sierra Tarahumara utilize the project's diagnostic tools and data bases																				
Outputs and activities	**Year 1**				**Year 2**				**Year 3**				**Year 4**				**Year 5**			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Output 1.1: Sierra Tarahumara Data Monitoring and Information System (DM&IS) to support conservation planning, evaluation and decision making developed, including a comprehensive GIS based bioassessment reporting mechanism (thematic layers adapted in pilots)																				
1.1.1 Develop tools for implementing DM&IS in a participative and coordinated way.																				
1.1.2 Develop practical manual for using DM&IS tools.																				
1.1.3 Organize institutional arrangements for anchoring the DM&IS sustainably in adequate government or academic structures.																				
Output 1.2: Sierra Tarahumara Biodiversity and Environment Services Assessment to support conservation planning, evaluation and decision making realized.																				
1.2.1 Realize Biodiversity and Environment Services Assessment producing baseline information for biodiversity and ecosystem services monitoring.																				
Output 1.3: Awareness and capacity building program implemented for local, state and federal level stakeholders within the project area, to engage and enable them in the use of data bases and tools produced under outputs 1.1 and 1.2.																				
1.3.1 Design awareness and capacity building program addressed to local, state and federal level stakeholders for use of data bases and DM&IS tools developed by the project																				
1.3.2 Train stakeholders in the use of information systems and tools.																				

Output 1.4 Sierra Tarahumara Data Monitoring and Information System used by stakeholders monitoring systematically key indicators of BD and ES.	
1.4.1 Implement institutional, financial and technical assistance follow up program for stakeholders using the Sierra Tarahumara Data Monitoring and Information System	
Component 2: Environmental governance framework and policy alignment for ecosystem management	
Outcome of component 2: The environmental governance of the Sierra Tarahumara region improves in responsiveness to key issues for biodiversity conservation and ecosystem services supply following a **Regional Action Plan (RAP)** that incorporates biodiversity criteria, funding commitments, evaluation parameters and a strategy for upscaling as well as for economic sustainability beyond project completion.	
Output 2.1: Coordination mechanism of federal, state and municipal authorities with local communities and non governmental actors for the development and implementation of the Regional Action Plan designed and established.	
2.1.1 Promote and establish a coordination mechanism for mainstreaming BD and ES criteria among regional actors resulting in the design and implementation of the Regional Action Plan.	
Output 2.2: An agreed strategic Regional Action Plan developed which mainstreams BD and ES criteria into regional development policies and integrates the sustainable use of productive lands and the protection of areas with high value for BD conservation and ES provisioning.	
2.2.1 Provide technical assistance and follow up to the coordination mechanism for the design and implementation of the Regional Action Plan.	
2.2.2 Socialize the Regional Action Plan among key actors in the Sierra Tarahumara and a broader citizenship, by the use of outreach material, a press and broadcast campaign and special information events.	
2.2.3 Disseminate recommendations for incorporating BD and ES into the sectoral development policies of other government, non-government and public-private bodies, along with lessons learned and best practices for conservation activities and ES and BD-friendly production practices, by means of special events and a manual that will be distributed to these agencies.	
Output 2.3: Policy improvement strategy developed drawing from PPG findings, the Diagnostic Analysis in component 1 and the Regional Action Plan, to propose changes or new regulations affecting funding allocation criteria that mainstream measures to conserve and sustainably use biodiversity and key ecosystem services.	
2.3.1 Provide technical assistance to the coordination mechanism for the Regional Action Plan to design new regulations affecting funding allocation criteria that mainstream measures to conserve	

and sustainably use biodiversity and key ecosystem services.																				
2.3.2 Propose and promote among key stakeholders the adoption of the previously designed new regulations affecting funding allocation criteria.																				
2.3.3 Promote jointly funded conservation programs by key governmental and non-governmental stakeholders under the new regulations for funding allocation criteria.																				
Output 2.4: An adaptive management model at the landscape level emphasizing forest lands developed and implemented, based on project learnings and best practices systematization including diffusion material in formats tailored to local stakeholders.																				
2.4.1 Develop a landscape management model (LAMM) understood as integrating economic, ecological and social objectives into spatial development planning emphasizing forest land, as part of the Regional Action Plan																				
2.4.2 Promote adoption of landscape management model among key stakeholders.																				
2.4.3 Link landscape management model with identification of sites for pilot projects under component 3.																				
Output 2.5 Outreach program developed to replicate and upscale the project's progress and results from the pilot level to the wider landscape in the Sierra Tarahumara.																				
2.5.1 Systematize project experience by identifying best practices and learning lessons for replication in future operations (linked with output 4.4).																				
2.5.2 Develop outreach program to replicate and upscale the project's strategy and results from the pilot level to the wider landscape in Sierra Tarahumara, drawing from results of project experience systematization.																				
2.5.3 Promote outreach program among key stakeholders.																				
Component 3: Pilot-scale interventions																				
Outcome of component 3: Sustainable and integrated landscape and natural resource management effectively applied at the headwaters of the Rio Conchos, the Rio Fuerte and the Rio Mayo river basins results in a landscape mosaic of 300,000 hectares that combine conservation areas and productive land under biodiversity and ecosystem services friendly management																				
Output 3.1: Component 1 tools adjusted to pilot site conditions: ecosystem types, landscape units, river basins, species inventories and priorization of landscape units and habitat types conforming biological corridors.																				

3.1.1 Identify and assess the suitability of potential areas and sites for pilot projects utilizing and adapting tools and data from component 1 and PPG findings.																				
Output 3.2: Sustainable and integrated landscape and natural resource management plans developed in project area municipalities include voluntary conservation areas and areas to optimize biodiversity friendly production and ecosystem services, emphasizing water and forest resources, drawing from the RAP in Component 2																				
3.2.1 Develop sustainable and integrated landscape and natural resource management plans in project area municipalities, determining sites for pilot projects.																				
3.2.2 Promote agreements with local stakeholders (communities, *ejidos*, NGO, municipalities) to implement conservation and sustainable production pilot projects.																				
3.2.3 Negotiate and agree on co-financing and supporting pilot projects, including governmental and non-governmental partners.																				
Output 3.3: Pilot programs and field activities to implement pilot projects identified under 3.1 and 3.2 focussing on conservation																				
3.3.1 Design coordinated plans und budgets, including communities, municipalities, NGO, state and federal dependencies and research centers, to implement pilot projects for habitat and ecosystem conservation and restoration.																				
3.3.2 Implement pilot projects for habitat and ecosystem conservation and restoration, including training of local promoters, provision of technical and institutional assistance and supervision of project advance.																				
Output 3.4: Pilot programs and field activities to implement pilot projects identified under 3.1 and 3.2 focussing on sustainable production																				
3.4.1 Design coordinated plans und budgets, including communities, municipalities, NGO, state and federal dependencies and research centers, to implement pilot projects of sustainable production																				
3.4.2 Implement pilot sustainable production projects, including coordination of contributions of governmental and non-governmental project partners, training of local promoters, provision of technical and institutional assistance and supervision of project advance.																				
Project monitoring and evaluation																				

Outcome of project monitoring component: Project implementation facilitated by results based management																							
Output 4.1: Baseline information about indicators used in project monitoring completed.																							
4.1.1 Gather data (by a specific consultancy) to complete lacking baseline information about project objective and outcome indicators.																							
Output 4.2: Project monitoring system is operating, providing systematic information on progress in meeting project outcome targets.																							
4.2.1 Establish mechanism in project management to ensure regular monitoring of project objective and outcome indicators.																							
Output 4.3: Midterm and final evaluation conducted.																							
4.3.1 Help organize external midterm and final project evaluation.																							
Output 4.4: Lessons learned from this and other related projects management experience identified for replication in future operations																							
4.4.1 Systematize project management experience by identifying best practices and learning lessons for management adaptation measures and replication in future operations																							
4.4.2 Carry out interchange of project management experience for collaboration and cross fertilization with other related projects.																							

APPENDIX 6: KEY DELIVERABLES AND BENCHMARKS

Project: Integrating the Management of Protection and Production Areas for Biodiversity Conservation in the Sierra Tarahumara of Chihuahua, Mexico

ACTIVITIES	DELIVERABLES	BENCHMARKS
Component 1: Scientific base and tools for decision making		
Outcome of component 1: Management plans and decision making processess of key stakeholders involved in the biodiversity conservation management of the Sierra Tarahumara utilize the project's diagnostic tools and data bases		
Output 1.1: Sierra Tarahumara Data Monitoring and Information System (ST-DM&IS) to support conservation planning, evaluation and decision making developed, including a comprehensive GIS based bioassessment reporting mechanism (thematic layers adapted in pilots)		
1.1.1 Develop tools for implementing ST-DM&IS in a participative and coordinated way.	Tools and protocols for monitoring DM&IS indicators	Tools and protocols for monitoring DM&IS indicators developed in *year 2, month 7*
1.1.2 Develop practical manual for using ST-DM&IS tools.	Practical manual for using DM&IS tools and protocols	Manual available in *year 2, month 9*
1.1.3 Organize institutional arrangements for anchoring the DM&IS sustainably in adequate government or academic structures.	Commitment of competent actor for assuming responsibility to administrate and coordinate the monitoring process	Agreement has been established with competent actor for assuming responsibility to administrate and coordinate the monitoring process in *year 2, month 12*
Output 1.2: Sierra Tarahumara Biodiversity and Environment Services Assessment to support conservation planning, evaluation and decision making realized.		
1.2.1 Realize Biodiversity (BD) and Environment Services (ES) Assessment producing baseline information for biodiversity and ecosystem services monitoring.	BD and ES Assessment providing baseline information on biodiversity and ecosystem services	Comprehensive BD and ES Assessment for the ST becomes available in *year 2, month 9* for use by key stakeholders
Output 1.3: Awareness and capacity building program implemented for local, state and federal level stakeholders within the project area, to engage and enable them in the use of data bases and tools produced under outputs 1.1 and 1.2.		
1.3.1 Design awareness and capacity building program addressed to local, state and federal level stakeholders for use of data bases and DM&IS tools developed by the project	Capacity building program and training materials for use of BD and ES data bases and DM&IS tools developed	Capacity building program and training materials for use of BD and ES data bases and DM&IS tools available in *year 2, month 6*
1.3.2 Train stakeholders in the use of information systems and tools.	Capacity building program for use of BD and ES data bases and DM&IS tools implemented	Capacity building program implemented in *year 2, month 6, through year 2, month 12; year 3, month 10-11; year 4, month 10-11*

Output 1.4 Sierra Tarahumara Data Monitoring and Information System used by stakeholders monitoring systematically key indicators of BD and ES		
1.4.1 Implement institutional, financial and technical assistance follow up program for stakeholders using the Sierra Tarahumara Data Monitoring and Information System	Technical and financial capacities of key stakeholder for monitoring BD and ES key indicators enhanced	Annual monitoring reports of stakeholders using ST-DM&IS delivered from *year 3, month 1 through year 5, month 6*
Component 2: Environmental governance framework and policy alignment for ecosystem management		
Outcome of component 2: The environmental governance of the Sierra Tarahumara region improves in responsiveness to key issues for biodiversity conservation and ecosystem services supply following a **Regional Action Plan (RAP)** that incorporates biodiversity criteria, funding commitments, evaluation parameters and a strategy for upscaling as well as for economic sustainability beyond project completion.		
Output 2.1: Coordination mechanism of federal, state and municipal authorities with local communities and non governmental actors for the development and implementation of the Regional Action Plan designed and established.		
2.1.1 **P**romote coordination mechanism for the design and implementation of the Regional Action Plan to mainstream BD and ES criteria among regional actors.	Regional Council for the Sustainable Development of the Sierra Tarahumara established	Regional Council for the Sustainable Development of the Sierra Tarahumara fully established and working from *year 1, month 9*
2.1.2 Establish coordination mechanism for the design and implementation of the Regional Action Plan to mainstream BD and ES criteria among regional actors		
Output 2.2: An agreed strategic Regional Action Plan developed which mainstreams BD and ES criteria into regional development policies and integrates the sustainable use of productive lands and the protection of areas with high value for BD conservation and ES provisioning.		
2.2.1 Provide technical assistance and follow up to the coordination mechanism for the design and implementation of the Regional Action Plan.	Agreement on Regional Action Plan and Common Agenda for the Sustainable Development of the Sierra Tarahumara Regulations affecting funding allocation criteria that mainstream measures to conserve and sustainably use BD and ES integrated in Regional Action Plan	Regional Action Plan and Common Agenda for the Sustainable Development of the Sierra Tarahumara developed and agreed in *year 2, month 6*; revisions in *years 3 and 5* Regulations affecting funding allocation criteria established and integrated in Regional Action Plan in *year 2, month 6*
2.2.2 Socialize the Regional Action Plan among key actors in the Sierra Tarahumara and a broader citizenship, by the use of outreach material, a press and broadcast campaign and special information events.	Common Agenda for the Sustainable Development of the Sierra Tarahumara known among a broader public	Outreach material available in *year 2, month 7* Press and broadcast campaign and special information events for socializing Common Agenda realized from *year 1, month 7, to year 4*
Output 2.3: Policy improvement strategy developed drawing from PPG findings, the Diagnostic Analysis in component 1 and the Regional Action Plan, to propose changes in sectorial development policies and programs for the Sierra Tarahumara, including new or adapted regulations affecting funding allocation criteria that mainstream measures to conserve and sustainably use biodiversity and key ecosystem services.		

2.3.1 Promote incorporation of RAP recommendations for mainstreaming BD and ES criteria into the sectorial development policies and regulations affecting funding allocation criteria of government, non-government and public-private bodies, along with lessons learned and best practices for conservation activities and ES and BD-friendly production practices.	Special events and manual for incorporating BD and ES into the sectorial development policies of government, non-government and public-private bodies New regulations affecting funding allocation criteria adopted by key stakeholders	Manual developed in *year 2, month 10* New regulations affecting funding allocation criteria adopted by key stakeholders from *year 2, month 12 to year 5, month 3*
2.3.2 Promote articulated and jointly funded conservation and sustainable development programs by key governmental and non-governmental stakeholders under the new or adapted regulations for funding allocation criteria.	Jointly funded conservation programs by key governmental and non-governmental stakeholders under new funding regulations	Jointly funded conservation programs by different stakeholders under new funding regulations implemented from *year 2, month 10 to year 5*
Output 2.4: An adaptive management model at the landscape level emphasizing forest lands developed and implemented, based on project learnings and best practices systematization including diffusion material in formats tailored to local stakeholders.		
2.4.1 Develop a landscape management model (LAMM) understood as integrating economic, ecological and social objectives into spatial development planning emphasizing forest land, as part of the Regional Action Plan.	LAMM developed and integrated into Regional Action Plan	LAMM developed and integrated into Regional Action Plan in *year 2, month 6*
2.4.2 Promote adoption of landscape management model among key stakeholders.	LAMM adopted by key stakeholders, in particular municipalities	LAMM adopted by key stakeholders, in particular municipalities, from *year 2 to year 5*
2.4.3 Link landscape management model with identification of sites for pilot projects under component 3.	LAMM criteria adopted in identification of areas and sites for pilot projects	LAMM criteria adopted in identification of areas and sites for pilot projects from *year 1, month 10, to year 4*
Output 2.5 Outreach program developed to replicate and upscale the project's progress and results from the pilot level to the wider landscape in the Sierra Tarahumara.		
2.5.1 Systematize project experience by identifying impacts, best practices and learning lessons for replication in future operations.	Project best practices and lessons systematized	Project best practices and lessons systematized in *year 4, month 3*
2.5.2 Develop and promote outreach program among key stakeholders, to replicate and upscale the project's strategy and results from the pilot level to the wider landscape in Sierra Tarahumara, drawing from results of project experience systematization.	Outreach program to replicate and upscale the project's strategy and results from the pilot level to the wider landscape in Sierra Tarahumara Outreach program is known among key stakeholders	Outreach program to replicate and upscale the project's strategy and results from the pilot level to the wider landscape in Sierra Tarahumara developed in *year 4, month 5* Outreach program is known among key stakeholders from *year 4, month 6*

Component 3: Pilot-scale interventions		
Outcome of component 3: Sustainable and integrated landscape and natural resource management effectively applied at the headwaters of the Rio Conchos, the Rio Fuerte and the Rio Mayo river basins results in a landscape mosaic of 300,000 hectares that combine conservation areas and productive land under biodiversity and ecosystem services friendly management.		
Output 3.1: Component 1 tools adjusted to pilot site conditions: ecosystem types, landscape units, river basins, species inventories and priorization of landscape units and habitat types conforming biological corridors.		
3.1.1 Confirm and state more precisely the definition of sites and characteristics of pilot projects utilizing and adapting tools and data from component 1, RAP and PPG findings	Proposal for pilot projects portfolio, including sites and main characteristics, developed	Sites and main characteristics of pilot projects identified from *year 2, month 1 to year 4, month 12*
Output 3.2: Sustainable and integrated landscape and natural resource management plans developed in project area municipalities include voluntary conservation areas and areas to optimize biodiversity friendly production and ecosystem services, emphasizing water and forest resources, drawing from the RAP in Component 2		
3.2.1 Hold an open and intense dialogue with pilot project stakeholders identified under activity 3.1.1, analyzing with them the relevance and social, economic and ecological viability of proposed pilot interventions.	Agreements with local stakeholders (communities, *ejidos*, NGO, municipalities) to implement conservation and sustainable production pilot projects	Agreements with local stakeholders (communities, *ejidos*, NGO, municipalities) to implement conservation and sustainable production pilot projects established from *year 2, month 2, to year 4, month 12*
3.2.2 Building on the results of the dialogue with communities held under activity 3.2.1, modify and specify the portfolio of projects identified under activity 3.1.1.	Portfolio of conservation and sustainable production pilot projects defined	Portfolio of conservation and sustainable production pilot projects defined from *year 2, month 3*
3.2.3 Negotiate and agree on co-financing and supporting pilot projects, including governmental and non-governmental partners.	Agreements on co-financing and supporting pilot projects, including governmental and non-governmental partners	Agreements on co-financing and supporting pilot projects established at *end of year 2 to 4*
3.2.4 Develop sustainable and integrated landscape and natural resource management plans in project area municipalities, determining objectives, expected results, activities, and other central elements of pilot projects.	Municipal sustainable and integrated landscape and natural resource management plans	Municipal sustainable and integrated landscape and natural resource management plans developed in *year 2, month 6*
Output 3.3: Pilot programs and field activities to implement integrated pilot projects identified under 3.1 and 3.2 focussed on conservation **Output 3.4:** Pilot programs and field activities to implement integrated pilot projects identified under 3.1 and 3.2 focussed on sustainable production		
3.3.1 Design and implement specific pilot project plans und budgets for both conservation and sustainable production activities, involving communities, municipalities, NGO, state and federal dependencies and research centres	Plans und budgets to implement pilot projects for habitat and ecosystem conservation and restoration	Plans und budgets to implement pilot projects for habitat and ecosystem conservation and restoration designed and agreed upon by stakeholders at end of *year 2 to 4 (months 10-11)*

3.3.2 Provide capacity-building services to pilot project implementing actors, in particular to owners of natural resources: communities, ejidos and special community working groups in charge of pilot projects; this activity includes training of local promoters, management of institutional support and monitoring of pilot project advance	Pilot projects for habitat and ecosystem conservation and restoration	Pilot projects for habitat and ecosystem conservation and restoration implemented *from beginning of year 3 through end of year 5*
Project monitoring and evaluation		
Outcome of project monitoring component: Project implementation facilitated by results based management.		
Output 4.1: Baseline information about indicators used in project monitoring completed.		
4.1.1 Gather data (by component 1 coordinator) to complete lacking baseline information about project objective and outcome indicators.	Lacking baseline information about project objective and outcome indicators completed	Lacking baseline information about project objective and outcome indicators completed in *year 1, month 10*
Output 4.2: Project monitoring system is operating, providing systematic information on progress in meeting project outcome targets.		
4.2.1 Establish mechanism in project management to ensure regular monitoring of project objective and outcome indicators.	System to monitor indicators of project objective and outcomes established in PMU	System to monitor indicators of project objective and outcomes established in PMU in *year 1, month 8*
Output 4.3: Midterm and final evaluation conducted.		
4.3.1 Help organize external midterm and final project evaluation.	Appropriate conditions for midterm and final project evaluation facilitated	Midterm and final project evaluations realized satisfactorily at *end of year 2 and 5*
Output 4.4: Lessons learned from this and other related projects management experience identified for replication in future operations		
4.4.1 Systematize project management experience by identifying best practices and learning lessons for management adaptation measures and replication in future operations	Project management best practices and lessons systematized Project adaption measures implemented Recommendations for replication in future operations developed	Project management best practices and lessons systematized in *year 4, month 9* Project adaption measures taken in *year 4, months 10-12*
4.4.2 Carry out interchange of project management experience for collaboration and cross fertilization with other related projects.	Best practices and lessons learned from other related projects in Mexico and abroad	Best practices and lessons learned from other related projects integrated in project management from *year 1 through year 5*

APPENDIX 7: COSTED M&E PLAN

1. Monitoring Framework and Budget [93]

Objective / Outcome [94]	Outcome / objective level indicator[95]	Baseline Conditions [96]	Mid point Target[97] (as relevant)	End of Project Target	Means of Verification[98]	Monitoring / sampling (frequency / size) [99]	Location / Group	Responsibility	Time frame [100]	Budget (Object of expenditure & cost)[101]
Project Objective: Develop and implement a participatory strategy to sustainably conserve biodiversity engaging communities, government and NGO participation.	N° of key governmental and non-governmental actors outside the environment sector that have included explicitly BD considerations and goals in their policies, programs, plans and actions, adopting RAP BD criteria, funding commitments and evaluation parameters	None	-	10 federal and state government actors 10 (out of 12) municipalities 6 (of 7) UMAFORES 15 NGOs	Assessment of institutional plans, programs, budgets and project reports	Once at end of project	Key stakeholders defined in ProDoc, section 2.5	Project Management Unit (PMU) Component 1 coordinator	Y5, months 6-9	None. Cost included in project management budget
	Number and population of ejidos and communities actively participating in programs that have defined	Baseline 2014 to be established	-	Baseline plus 300 communities/ ejidos with 12,000 inhabitants	Annual program reports and sample survey of communities indicated in	Once at end of project	Ejidos/ communities within 12 municipalities of project	Project Management Unit (PMU) Component	Y5, months 6-9	None. Cost included in project management

[93] Detailed monitoring plan should be included in the M&E project section. This table is primarily intended to reflect how the outcome level indicators will be tracked to facilitate monitoring of **results** (as opposed to monitoring of project implementation progress). The implementation of the Results-based Monitoring Framework will be assessed at mid point and at end of project (through the Mid-Term review and Terminal Evaluation processes). The quality of M&E implementation will be rated with the Project Implementation Review (PIR). The contents of this table should be validated and agreed upon at the project inception meeting.

[94] All project outcomes should be included in this column. The objective here is to provide the means to monitor progress in achieving the results set for the life of the project. Goals and long term impact indicators should not be included in this section, but may be discussed in other sections of the project document and M&E plan.

[95] Only key indicators should be included (not more than 2 or 3 per outcome). Appropriate selection of outcome indicators is essential to assess progress in achieving project results.

[96] Please note that if no baseline information for a particular indicator exists it is difficult to justify the targets. Also, please note that baseline data should be collected during the project preparation phase (PPG). If essential baseline data is not complete at the time of Work Program entry (for FSP) or CEO approval (for MSPs) the end of the first year of project implementation is the deadline for collecting the necessary data. The plan for the collection of such baseline data should be added in the next section along with its associated cost.

[97] The mid point target will be reviewed at the Mid-Term Review along with validation of other focal area Tracking Tools. It is acknowledged that mid-point targets may not be relevant to all projects or all project outcomes. Flexibility will be applied.

[98] The means of verification is the source of data that the project team will use to track the indicator (e.g., if the indicator is "forest cover diversity", the means of verification could be "field surveys data" and "satellite imagery). Reviewing of project reports alone is insufficient.

[99] This column should describe for each indicator the size (e.g., whether entire protected area or only a fraction, or, for example, in the case of a survey, how many people would be covered). The frequency (e.g., once in the lifetime of the project, quarterly during the first year, yearly, etc.)

[100] Expected date (month/year) in which the monitoring activity will take place

[101] For example, 15 satellite images @ $1,000 each = $15,000, or 4 field sampling trips by 2 staff @ $300 each= $1,200

	objectives, actions and funds for conservation of biodiversity in the project region				program reports		region	1 coordinator		budget
	Amount of funds provided by different key governmental and non-governmental stakeholders for explicit biodiversity conservation programs from 2014 to 2018 in the project region	Baseline 2014 to be established	-	Baseline plus at least US$25 million (accumulated from 2014 to 2018)	Systematization of annual key stakeholder program reports and complementary interviews with program officials	Once at end of project	Key stakeholders defined in ProDoc, section 2.5	PMU Component 1 coordinator	Y5, months 6-9	None. Cost included in project management budget
	Percentage of families participating in project activities assessing a) an improvement in their quality of life; b) an improvement in the value of their natural resources	None	-	80% of families consider a) their quality of life, b) their natural resources have improved through participating in project activities	Sample survey in communities participating in project activities (asking if they perceive an improvement, and in what does it consist)	Once at end of project	Ejidos/ communities within 12 municipalities of project region	PMU	Y5, months 6-9	None. Cost included in project management budget
Outcome of component 1: Management plans and decision making processes of key stakeholders involved in the biodiversity	1. N° of BD indicator species (in some risk category* and others) and their habitat conditions and threats systematically monitored by the Sierra Tarahumara Data Monitoring and Information System (ST-DM&IS) developed by the project	1. 7 indicator species in some risk category* monitored *NOM-059-SEMARNAT-2010	1. 10 indicator species (in some risk category* and others) and their habitat conditions and threats monitored	1. 15 species (in some risk category* and others) and their habitat conditions and threats monitored	1. Annual monitoring reports	Y2 through Y5 Entire project region	Project region	ST-DM&IS	Annual	None. Cost included in project management budget

conservation management of the Sierra Tarahumara utilize the project's diagnostic tools and data bases	2. N° of UMAFORES monitoring forest degradation (applying forest degradation index built on indicators proposed by FAO; see section 2.3 of ProDoc)	2. None	2. Two UMAFORES	2. Six (out of seven) UMAFORES	2. Annual monitoring reports	Annual Y2 through Y5 Sample areas of ejidos belonging to UMAFO	Project region	ST-DM&IS	Annual	None Cost included in project management budget
	3. N° of key stakeholders using the project's diagnostic tools and data bases (ST-DM&IS and Comprehensive ST Biodiversity and Environment Services Assessment) in their planning and decision making processes	3. None	3. ST-DM&IS and Comprehensive BD&ESA for ST becomes available during 2nd project year for use by key stakeholders	3. ST-DM&IS and Comprehensive BD&ESA of the ST is used by at least 20 key stakeholders at the end of 5th year	3. Survey among key stakeholders	Y2 and Y5 Universe of key stakeholders	Universe of key stakeholders	PMU	Y2, month 12 and Y5, month 8	None. Cost included in project management budget
	4. An institution with sufficient technical and financial capacities has assumed the responsibility for administrating the ST-DM&IS and coordinating the monitoring process among key stakeholders after project completion	4. At present, monitoring/ assessment of BD and ES is dispersed among many actors using different methods and concepts.	4. Agreement has been established with competent actor for assuming responsibility to administrate and coordinate the monitoring process	4. Administration of monitoring process has been fully assumed by designated actor during project year 4	4. Agreement established with administrating actor Monitoring reports delivered by administrating actor	Y2 and Y5	Project region	PMU	Y2, month 12 and Y4, month 10	None. Cost included in project management budget
Outcome of component 2: The environmental governance of the Sierra Tarahumara region improves in responsiveness to key issues for	1. N° of key governmental and non-governmental actors* participating in construction of a common and coordinated agenda based on a Regional Action Plan to sustainably conserve biodiversity in the Sierra Tarahumara	1.None	1. 10 federal and state govt. actors, 9 municipalities, 5 UMAFORES, 5 represent´s of NGOs and 10 represent´s of ejidos and communities participate in RAP building committee and	1. 12 federal and state govt. actors, 12 municipalities, 7 UMAFORES, 5 represent´s of NGOs & 10 represent´s of ejidos and communities participate in RAP building committee and	1. Minutes of proceedings of the RAP building committee	Y1 through Y4 Universe of key stakeholders	Project region	PMU	End of year, Y1 to Y4	None. Cost included in project management budget

biodiversity conservation and ecosystem services supply following a *Regional Action Plan (RAP)* that incorporates biodiversity criteria, funding commitments, evaluation parameters and a strategy for upscaling as well as for economic sustainability beyond project completion.	*actors identified in ProDoc section 2.5		implementation	implementation						
	2. Number of municipalities in the project region including explicitly BD considerations and goals in their policies, programs and plans (adopting RAP BD criteria, funding commitments and evaluation parameters)	2. None	2. Three (out of 12) municipalities include explicitly RAP BD criteria and funding commitments in their municipal development plans	2. Eight (out of 12) municipalities include explicitly RAP BD criteria and funding commitments in their municipal development plans	2. Monitoring report about policies, programs and plans of key stakeholders in the ST	Y2 through Y5 12 municipali-ties	Project region	PMU	End of year, Y2 to Y5	None. Cost included in project management budget
	3. Number of civil society organizations (producers, NGO) participating in construction of RAP and aligning their objectives and actions to include explicitly RAP BD criteria and evaluation parameters	3. None	3. Eight civil society organizations are participating in construction of RAP and aligning their objectives and actions to include explicitly RAP BD criteria and evaluation parameters	3. 15 civil society organizations are aligning their objectives and actions to include explicitly RAP BD criteria and evaluation parameters	3. Monitoring report about policies, programs and plans of key stakeholders in the ST	Y2 through Y5 Universe of civil society organizations operating in the project region	Project region	PMU	End of year, Y2 to Y5	None. Cost included in project management budget
Outcome of component 3: Sustainable and integrated landscape and natural resource management effectively applied at the headwaters of the Rio Conchos, the Rio Fuerte and the Rio	1. Number and extent in hectares of voluntary community and private protected areas (PA)	1. 13 voluntary community and private PA Voluntary PA sum up to 17,700 hectares	1. 16 voluntary community and private PA 20,000 hectares	1. At least 24 voluntary community PA At least 30,000 hectares	1. Agreements of ejido/ community assemblies to reserve areas for conservation	Y2 through Y5	Project region	PMU / project partner promoting voluntary community PA	End of year, Y2 to Y5	None. Cost included in project management budget
	2. N° and extent in hectares of biodiversity and ecosystem conservation and restoration projects (except voluntary PAs)	2. 31 BD and ES conservation and restoration projects	2. 35 BD and ES conservation and restoration projects covering	2. 60 BD and ES conservation and restoration projects covering 150,000 hectares	2. N° and extent in hectares of biodiversity and ecosystem conservation	Y2 through Y5	Project region	Pilot project reports by sub-contract partners Pilot project supervision	End of year, Y2 to Y5	None. Cost included in project management budget

Mayo river basins results in a landscape mosaic of 300,000 hectares that combine added conservation areas and productive land under biodiversity and ecosystem services friendly management		covering 102,650 hectares	115,000 hectares		and restoration projects (except voluntary PAs)			reports by PMU		
	3.Number and extent in hectares of certified forest management areas (by different standards like FSC, Mexican national standard for sustainable forest management NMX 143 and CONAFOR certificate for good forest management by so called technical preventive audits - PTA)	3. Three certified forest management areas 27,930 ha of certified forest management areas	3.. Seven certified forest management areas 40,000 ha of certified forest management areas	3. 15 certified forest management areas 70,000 ha of certified forest management areas	3. Local pilot project reports	Y2 through Y5	Project region	Pilot project reports Reports of project partner promoting certified forest management areas	End of year, Y2 to Y5	None. Information registered by project monitoring system
	4. N° and area covered by local production projects under BD and ES friendly management	4. X local production projects under BD and ES friendly management X ha covered by local production projects under BD and ES friendly management	4. X+40 local pilot projects for BD and ES friendly production are under way at end of 2nd project year X+ 5,000 ha covered by BD and ES friendly production projects	4. X+120 local pilot projects for BD and ES friendly production are under way at end of 5th project year X+ 15,000 ha covered by BD and ES friendly production projects	4. Local pilot project reports	Y2 through Y5	Project region	Pilot project reports Reports of project partners promoting BD and ES friendly production practices	End of year, Y2 to Y5	None. Information registered by project monitoring system
	5. N° of municipalities having developed Integrated Landscape and Natural Resource (ILNR) Management Plans, in the framework of the RAP, combining areas for BD conservation and BD and ES friendly productive activities	5. None	5. 2 (out of 12) municipalities have developed ILNR Management Plans at the end of 2nd project year	5. 8 (out of 12) municipalities have developed ILNR Management Plans at the end of 5th project year	5. Municipal ILNR Management Plans Annual local pilot projects	Y2 and Y5	12 municipalities	5. Municipal ILNR Management Plans Reports of project partner providing technical assistance to municipalities	End of year, Y2 to Y5	None. Information registered by project monitoring system

2. Cost of acquisition of essential baseline data during first year of project[102]: **$15,000** (cost is included in budget of output 4.1: "Baseline gaps addressed and project baseline information on key indicators completed").

3. Cost of project inception workshop: **$2,000** (included in component 4: Project Monitoring and Evaluation)
Proposed location: The inception workshop will be held in Chihuahua (Chihuahua)
Number of participants: 30-40

4. Cost of Mid-Term Review/Evaluation: **$25,000**

5. Cost of Terminal Evaluation: **$35,000**

6. Any additional M&E costs[103]: Apportioned cost of project director and technical assistant time spent for monitoring and evaluation activities: **$25,000**
Total costs (to be included in the consolidated project budget and in the Request for CEO endorsement/approval in the M&E budget line): **$87,000**

[102] Refer to detailed M&E work plan for additional information on what data will be collected and what activities will be undertaken. The data to be collected needs to be consistent with the indicators included in the table above.
[103] Please describe the activity and included the expected cost. Additional M&E costs could be related to the following: (i) Additional reviews and evaluation processes for phased and tranched projects; (ii) application & validation of tracking tools.

APPENDIX 8: REPORTING REQUIREMENTS

Reporting requirements	Due date	Format appended to legal instrument as	Responsibility of
Procurement plan (goods and services)	2 weeks before project inception meeting	N/A	Project Manager
Inception Report	1 month after project inception meeting	N/A	Project Manager
Expenditure report accompanied by explanatory notes	Quarterly on or before 30 April, 31 July, 31 October, 31 January	**Annex 11**	Project Manager
Cash Advance request and details of anticipated disbursements	Quarterly or when required	**Annex 7B**	Project Manager
Progress report	Half-yearly on or before 31 January	**Annex 8**	Project Manager
Audited report for expenditures for year ending 31 December	Yearly on or before 30 June	N/A	Executing partner to contract firm
Inventory of non-expendable equipment	Yearly on or before 31 January	**Annex 6**	Project Manager
Co-financing report	Yearly on or before 31 July	**Annex 12**	Project Manager

Project implementation review (PIR) report	Yearly on or before 31 August	**Annex 9**	Project Manager, TM, DGEF FMO
Minutes of steering committee meetings	Yearly (or as relevant)	N/A	Project Manager
Mission reports and "aide memoire" for executing agency	Within 2 weeks of return	N/A	TM, DGEF FMO
Final report	2 months of project completion date	**Annex 10**	Project Manager
Final inventory of non-expendable equipment		**Annex 9**	Project Manager
Equipment transfer letter		**Annex 10**	Project Manager
Final expenditure statement	3 months of project completion date	**Annex 11**	Project Manager
Mid-term review or Mid-term evaluation	Midway though project	N/A	TM or EOU (as relevant)
Final audited report for expenditures of project	6 months of project completion date	N/A	Executing partner to contract firm
Independent terminal evaluation report	6 months of project completion date	Appendix 9 to Annex 1	EOU

APPENDIX 9 STANDARD TERMINAL EVALUATION TERMS OF REFERENCE

Terminal Evaluation of the UNEP GEF project *Promoting Payments for Ecosystem Services (PES) and Related Sustainable Financing Schemes in the Danube Basin*

1. PROJECT BACKGROUND AND OVERVIEW

Project rationale

The objective was stated as:

The indicators given in the project document for this stated objective were:

Relevance to GEF Programmes

The project is in line with:.

Executing Arrangements

The implementing agency(ies) for this project was (were) UNEP; and the executing agencies were:

WWF Danube-Carpathian Programme

The lead national agencies in the focal countries were:

Project Activities

The project comprised activities grouped in 3 components.

Budget

At project inception the following budget prepared:

	GEF	Co-funding
Project preparation funds:		
GEF Medium Size Grant		
TOTAL (including project preparation funds)		

Co-funding sources:

Anticipated:

APPENDIX 9
TERMS OF REFERENCE FOR THE EVALUATION

1. Objective and Scope of the Evaluation

The objective of this terminal evaluation is to examine the extent and magnitude of any project impacts to date and determine the likelihood of future impacts. The evaluation will also assess project performance and the implementation of planned project activities and planned outputs against actual results. The evaluation will focus on the following main questions:

1. Did the project help to { } among key target audiences (international conventions and initiatives, national level policy-makers, regional and local policy-makers, resource managers and practitioners).
2. Did the outputs of the project articulate options and recommendations for { }? Were these options and recommendations used? If so by whom?
3. To what extent did the project outputs produced have the weight of scientific authority and credibility necessary to influence policy makers and other key audiences?

Methods

This terminal evaluation will be conducted as an in-depth evaluation using a participatory approach whereby the UNEP/DGEF Task Manager, key representatives of the executing agencies and other relevant staff are kept informed and consulted throughout the evaluation. The consultant will liaise with the UNEP/EOU and the UNEP/DGEF Task Manager on any logistic and/or methodological issues to properly conduct the review in as independent a way as possible, given the circumstances and resources offered. The draft report will be circulated to UNEP/DGEF Task Manager, key representatives of the executing agencies and the UNEP/EOU. Any comments or responses to the draft report will be sent to UNEP / EOU for collation and the consultant will be advised of any necessary or suggested revisions.

The findings of the evaluation will be based on the following:

1. A desk review of project documents including, but not limited to:
   (a) The project documents, outputs, monitoring reports (such as progress and financial reports to UNEP and GEF annual Project Implementation Review reports) and relevant correspondence.
   (b) Notes from the Steering Group meetings.
   (c) Other project-related material produced by the project staff or partners.
   (d) Relevant material published on the project web-site:{ }.

2. Interviews with project management and technical support including {NEED INPUT FROM TM HERE}

3. Interviews and Telephone interviews with intended users for the project outputs and other stakeholders involved with this project, including in the participating countries and international bodies. The Consultant shall determine whether to seek additional information and opinions from representatives of donor agencies and other organizations. As appropriate, these interviews could be combined with an email questionnaire.

4. Interviews with the UNEP/DGEF project task manager and Fund Management Officer, and other relevant staff in UNEP dealing with {relevant GEF focal area(s)}-related activities as necessary. The Consultant shall also gain broader perspectives from discussions with relevant GEF Secretariat staff.

5. Field visits[104] to project staff

Key Evaluation principles

In attempting to evaluate any outcomes and impacts that the project may have achieved, evaluators should remember that the project's performance should be assessed by considering the difference between the answers to two simple questions ***"what happened?***" and ***"what would have happened anyway?"***. These questions imply that there should be consideration of the baseline conditions and trends in relation to the intended project outcomes and impacts. In addition it implies that there should be plausible evidence to **attribute** such outcomes and impacts **to the actions of the project**.

Sometimes, adequate information on baseline conditions and trends is lacking. In such cases this should be clearly highlighted by the evaluator, along with any simplifying assumptions that were taken to enable the evaluator to make informed judgements about project performance.

2. Project Ratings

The success of project implementation will be rated on a scale from 'highly unsatisfactory' to 'highly satisfactory'. In particular the evaluation shall **assess and rate** the project with respect to the eleven categories defined below:[105]

A. Attainment of objectives and planned results:

The evaluation should assess the extent to which the project's major relevant objectives were effectively and efficiently achieved or are expected to be achieved and their relevance.

- *Effectiveness:* Evaluate how, and to what extent, the stated project objectives have been met, taking into account the "achievement indicators". The analysis of outcomes achieved should include, *inter alia*, an assessment of the extent to which the project has

[104] Evaluators should make a brief courtesy call to GEF Country Focal points during field visits if at all possible.
[105] However, the views and comments expressed by the evaluator need not be restricted to these items.

directly or indirectly assisted policy and decision-makers to apply information supplied by biodiversity indicators in their national planning and decision-making. In particular:

- Evaluate the immediate impact of the project on {relevant focal area} monitoring and in national planning and decision-making and international understanding and use of biodiversity indicators.
- As far as possible, also assess the potential longer-term impacts considering that the evaluation is taking place upon completion of the project and that longer term impact is expected to be seen in a few years time. Frame recommendations to enhance future project impact in this context. Which will be the major 'channels' for longer term impact from the project at the national and international scales?
    - *Relevance*: In retrospect, were the project's outcomes consistent with the focal areas/operational program strategies? Ascertain the nature and significance of the contribution of the project outcomes to the Convention on Biological Diversity and the wider portfolio of the GEF.
    - *Efficiency*: Was the project cost effective? Was the project the least cost option? Was the project implementation delayed and if it was, then did that affect cost-effectiveness? Assess the contribution of cash and in-kind co-financing to project implementation and to what extent the project leveraged additional resources. Did the project build on earlier initiatives, did it make effective use of available scientific and / or technical information. Wherever possible, the evaluator should also compare the cost-time vs. outcomes relationship of the project with that of other similar projects.

B. Sustainability:

Sustainability is understood as the probability of continued long-term project-derived outcomes and impacts after the GEF project funding ends. The evaluation will identify and assess the key conditions or factors that are likely to contribute or undermine the persistence of benefits after the project ends. Some of these factors might be outcomes of the project, e.g. stronger institutional capacities or better informed decision-making. Other factors will include contextual circumstances or developments that are not outcomes of the project but that are relevant to the sustainability of outcomes. The evaluation should ascertain to what extent follow-up work has been initiated and how project outcomes will be sustained and enhanced over time.

Five aspects of sustainability should be addressed: financial, socio-political, institutional frameworks and governance, environmental (if applicable). The following questions provide guidance on the assessment of these aspects:

- *Financial resources.* Are there any financial risks that may jeopardize sustenance of project outcomes? What is the likelihood that financial and economic resources will not be available once the GEF assistance ends (resources can be from multiple sources, such as the public and private sectors, income generating activities, and trends that may indicate that it is likely that in future there will be adequate financial resources for sustaining project's outcomes)? To what extent are the outcomes of the project dependent on continued financial support?
- *Socio-political:* Are there any social or political risks that may jeopardize sustenance of project outcomes? What is the risk that the level of stakeholder ownership will be insufficient to allow for the project outcomes to be sustained? Do the various key

stakeholders see that it is in their interest that the project benefits continue to flow? Is there sufficient public / stakeholder awareness in support of the long term objectives of the project?

- *Institutional framework and governance.* To what extent is the sustenance of the outcomes of the project dependent on issues relating to institutional frameworks and governance? What is the likelihood that institutional and technical achievements, legal frameworks, policies and governance structures and processes will allow for, the project outcomes/benefits to be sustained? While responding to these questions consider if the required systems for accountability and transparency and the required technical know-how are in place.
- *Environmental.* Are there any environmental risks that can undermine the future flow of project environmental benefits? The TE should assess whether certain activities in the project area will pose a threat to the sustainability of the project outcomes. For example; construction of dam in a protected area could inundate a sizable area and thereby neutralize the biodiversity-related gains made by the project; or, a newly established pulp mill might jeopardise the viability of nearby protected forest areas by increasing logging pressures; or a vector control intervention may be made less effective by changes in climate and consequent alterations to the incidence and distribution of malarial mosquitoes.

C. Achievement of outputs and activities:

- Delivered outputs: Assessment of the project's success in producing each of the programmed outputs, both in quantity and quality as well as usefulness and timeliness.
- Assess the soundness and effectiveness of the methodologies used for developing the technical documents and related management options in the participating countries
- Assess to what extent the project outputs produced have the weight of scientific authority / credibility, necessary to influence policy and decision-makers, particularly at the national level.

D. Catalytic Role

Replication and catalysis. What examples are there of replication and catalytic outcomes? Replication approach, in the context of GEF projects, is defined as lessons and experiences coming out of the project that are replicated or scaled up in the design and implementation of other projects. Replication can have two aspects, replication proper (lessons and experiences are replicated in different geographic area) or scaling up (lessons and experiences are replicated within the same geographic area but funded by other sources). Specifically:

- Do the recommendations for management of *Promoting Payments for Ecosystem Services (PES) and Related Sustainable Financing Schemes in the Danube Basin* coming from the country studies have the potential for application in other countries and locations?

If no effects are identified, the evaluation will describe the catalytic or replication actions that the project carried out.

E. Assessment monitoring and evaluation systems.

The evaluation shall include an assessment of the quality, application and effectiveness of project monitoring and evaluation plans and tools, including an assessment of risk management based on the assumptions and risks identified in the project document. The Terminal Evaluation will assess whether the project met the minimum requirements for 'project design of M&E' and 'the application of the Project M&E plan' (see minimum requirements 1&2 in *Annex 4* to this Appendix). GEF projects must budget adequately for execution of the M&E plan, and provide adequate resources during implementation of the M&E plan. Project managers are also expected to use the information generated by the M&E system during project implementation to adapt and improve the project.

M&E during project implementation

- *M&E design.* Projects should have sound M&E plans to monitor results and track progress towards achieving project objectives. An M&E plan should include a baseline (including data, methodology, etc.), SMART indicators (see Annex 4) and data analysis systems, and evaluation studies at specific times to assess results. The time frame for various M&E activities and standards for outputs should have been specified.
- *M&E plan implementation.* A Terminal Evaluation should verify that: an M&E system was in place and facilitated timely tracking of results and progress towards projects objectives throughout the project implementation period (perhaps through use of a logframe or similar); annual project reports and Progress Implementation Review (PIR) reports were complete, accurate and with well justified ratings; that the information provided by the M&E system was used during the project to improve project performance and to adapt to changing needs; and that projects had an M&E system in place with proper training for parties responsible for M&E activities.
- *Budgeting and Funding for M&E activities.* The terminal evaluation should determine whether support for M&E was budgeted adequately and was funded in a timely fashion during implementation.

F. Preparation and Readiness

Were the project's objectives and components clear, practicable and feasible within its timeframe? Were the capacities of executing institution and counterparts properly considered when the project was designed? Were lessons from other relevant projects properly incorporated in the project design? Were the partnership arrangements properly identified and the roles and responsibilities negotiated prior to project implementation? Were counterpart resources (funding, staff, and facilities), enabling legislation, and adequate project management arrangements in place?

G. Country ownership / driveness:

This is the relevance of the project to national development and environmental agendas, recipient country commitment, and regional and international agreements. The evaluation will:

- Assess the level of country ownership. Specifically, the evaluator should assess whether the project was effective in providing and communicating biodiversity information that catalyzed action in participating countries to improve decisions relating to the conservation and management of the focal ecosystem in each country.
- Assess the level of country commitment to the generation and use of biodiversity indicators for decision-making during and after the project, including in regional and international fora.

H. Stakeholder participation / public awareness:

This consists of three related and often overlapping processes: information dissemination, consultation, and "stakeholder" participation. Stakeholders are the individuals, groups, institutions, or other bodies that have an interest or stake in the outcome of the GEF- financed project. The term also applies to those potentially adversely affected by a project. The evaluation will specifically:

- Assess the mechanisms put in place by the project for identification and engagement of stakeholders in each participating country and establish, in consultation with the stakeholders, whether this mechanism was successful, and identify its strengths and weaknesses.
- Assess the degree and effectiveness of collaboration/interactions between the various project partners and institutions during the course of implementation of the project.
- Assess the degree and effectiveness of any various public awareness activities that were undertaken during the course of implementation of the project.

I. Financial Planning

Evaluation of financial planning requires assessment of the quality and effectiveness of financial planning and control of financial resources throughout the project's lifetime. Evaluation includes actual project costs by activities compared to budget (variances), financial management (including disbursement issues), and co- financing. The evaluation should:

- Assess the strength and utility of financial controls, including reporting, and planning to allow the project management to make informed decisions regarding the budget and allow for a proper and timely flow of funds for the payment of satisfactory project deliverables.
- Present the major findings from the financial audit if one has been conducted.
- Identify and verify the sources of co- financing as well as leveraged and associated financing (in co-operation with the IA and EA).
- Assess whether the project has applied appropriate standards of due diligence in the management of funds and financial audits.
- The evaluation should also include a breakdown of final actual costs and co-financing for the project prepared in consultation with the relevant UNEP/DGEF Fund Management Officer of the project (table attached in *Annex 1* to this Appendix Co-financing and leveraged resources).

J. Implementation approach:

This includes an analysis of the project's management framework, adaptation to changing conditions (adaptive management), partnerships in implementation arrangements, changes in project design, and overall project management. The evaluation will:

- Ascertain to what extent the project implementation mechanisms outlined in the project document have been closely followed. In particular, assess the role of the various committees established and whether the project document was clear and realistic to enable effective and efficient implementation, whether the project was executed according to the plan and how well the management was able to adapt to changes during the life of the project to enable the implementation of the project.
- Evaluate the effectiveness and efficiency and adaptability of project management and the supervision of project activities / project execution arrangements at all levels (1) policy decisions: Steering Group; (2) day to day project management in each of the country executing agencies and WWF Danube-Carpathian Programme.

K. UNEP Supervision and Backstopping

- Assess the effectiveness of supervision and administrative and financial support provided by UNEP/DGEF.
- Identify administrative, operational and/or technical problems and constraints that influenced the effective implementation of the project.

The ***ratings will be presented in the form of a table***. Each of the eleven categories should be rated separately with **brief justifications** based on the findings of the main analysis. An overall rating for the project should also be given. The following rating system is to be applied:

HS = Highly Satisfactory
S = Satisfactory
MS = Moderately Satisfactory
MU = Moderately Unsatisfactory
U = Unsatisfactory
HU = Highly Unsatisfactory

3. <u>Evaluation report format and review procedures</u>

The report should be brief, to the point and easy to understand. It must explain; the purpose of the evaluation, exactly what was evaluated and the methods used. The report must highlight any methodological limitations, identify key concerns and present evidence-based findings, consequent conclusions, recommendations and lessons. The report should be presented in a way that makes the information accessible and comprehensible and include an executive summary that encapsulates the essence of the information contained in the report to facilitate dissemination and distillation of lessons.

The evaluation will rate the overall implementation success of the project and provide individual ratings of the eleven implementation aspects as described in Section 1 of this TOR. *The ratings will be presented in the format of a table* **with brief justifications based on the findings of the main analysis.**

Evidence, findings, conclusions and recommendations should be presented in a complete and balanced manner. Any dissident views in response to evaluation findings will be appended in an annex. The evaluation report shall be written in English, be of no more than 50 pages (excluding annexes), use numbered paragraphs and include:

i) An **executive summary** (no more than 3 pages) providing a brief overview of the main conclusions and recommendations of the evaluation;

ii) **Introduction and background** giving a brief overview of the evaluated project, for example, the objective and status of activities; The GEF Monitoring and Evaluation Policy, 2006, requires that a TE report will provide summary information on when the evaluation took place; places visited; who was involved; the key questions; and, the methodology.

iii) **Scope, objective and methods** presenting the evaluation's purpose, the evaluation criteria used and questions to be addressed;

iv) **Project Performance and Impact** providing *factual evidence* relevant to the questions asked by the evaluator and interpretations of such evidence. This is the main substantive section of the report. The evaluator should provide a commentary and analysis on all eleven evaluation aspects (A − K above).

v) **Conclusions and rating** of project implementation success giving the evaluator's concluding assessments and ratings of the project against given evaluation criteria and standards of performance. The conclusions should provide answers to questions about whether the project is considered good or bad, and whether the results are considered positive or negative. The ratings should be provided with a brief narrative comment in a table (see *Annex 1* to this Appendix);

vi) **Lessons (to be) learned** presenting general conclusions from the standpoint of the design and implementation of the project, based on good practices and successes or problems and mistakes. Lessons should have the potential for wider application and use. All lessons should 'stand alone' and should:

- Briefly describe the context from which they are derived
- State or imply some prescriptive action;
- Specify the contexts in which they may be applied (if possible, who when and where)

vii) **Recommendations** suggesting *actionable* proposals for improvement of the current project. In general, Terminal Evaluations are likely to have very few (perhaps two or three) actionable recommendations.

Prior to each recommendation, the issue(s) or problem(s) to be addressed by the recommendation should be clearly stated.

A high quality recommendation is an actionable proposal that is:

1. Feasible to implement within the timeframe and resources available
2. Commensurate with the available capacities of project team and partners

3. Specific in terms of who would do what and when
4. Contains results-based language (i.e. a measurable performance target)
5. Includes a trade-off analysis, when its implementation may require utilizing significant resources that would otherwise be used for other project purposes.

viii) **Annexes** may include additional material deemed relevant by the evaluator but must include:

1. The Evaluation Terms of Reference,
2. A list of interviewees, and evaluation timeline
3. A list of documents reviewed / consulted
4. Summary co-finance information and a statement of project expenditure by activity
5. The expertise of the evaluation team. (brief CV).

TE reports will also include any response / comments from the project management team and/or the country focal point regarding the evaluation findings or conclusions as an annex to the report, however, such will be appended to the report by UNEP EOU.

Examples of UNEP GEF Terminal Evaluation Reports are available at www.unep.org/eou

Review of the Draft Evaluation Report

Draft reports submitted to UNEP EOU are shared with the corresponding Programme or Project Officer and his or her supervisor for initial review and consultation. The DGEF staff and senior Executing Agency staff are allowed to comment on the draft evaluation report. They may provide feedback on any errors of fact and may highlight the significance of such errors in any conclusions. The consultation also seeks feedback on the proposed recommendations. UNEP EOU collates all review comments and provides them to the evaluators for their consideration in preparing the final version of the report.

4. Submission of Final Terminal Evaluation Reports.

The final report shall be submitted in electronic form in MS Word format and should be sent to the following persons:

Segbedzi Norgbey, Chief,
UNEP Evaluation and Oversight Unit
P.O. Box 30552-00100
Nairobi, Kenya
Tel.: +(254-20)762-4181
Fax: +(254-20)762-3158
Email: Segbedzi.Norgbey@unep.org

With a copy to:

Maryam Niamir-Fuller,
Director
UNEP/Division of GEF Coordination
P.O. Box 30552-00100
Nairobi, Kenya
Tel: +(254-20)762-4166
Fax: +(254-20)762-4041/2
Email: Maryam.Niamir-Fuller@unep.org

{Name}
Task Manager
{Contact details}

The Final evaluation will also be copied to the following GEF National Focal Points.

{Insert contact details here}

The final evaluation report will be published on the Evaluation and Oversight Unit's web-site www.unep.org/eou and may be printed in hard copy. Subsequently, the report will be sent to the GEF Office of Evaluation for their review, appraisal and inclusion on the GEF website.

5. Resources and schedule of the evaluation

This final evaluation will be undertaken by an international evaluator contracted by the Evaluation and Oversight Unit, UNEP. The contract for the evaluator will begin on ddmmyyy and end on ddmmyyyy (# days) spread over # weeks (# days of travel, to {country(ies)}, and # days desk study). The evaluator will submit a draft report on ddmmyyyy to UNEP/EOU, the UNEP/DGEF Task Manager, and key representatives of the executing agencies. Any comments or responses to the draft report will be sent to UNEP / EOU for collation and the consultant will be advised of any necessary revisions. Comments to the final draft report will be sent to the consultant by ddmmyyyy after which, the consultant will submit the final report no later than ddmmyyyy.

The evaluator will after an initial telephone briefing with EOU and UNEP/GEF conduct initial desk review work and later travel to (country(ies)} and meet with project staff at the beginning of the evaluation. Furthermore, the evaluator is expected to travel to {country(ies)} and meet with representatives of the project executing agencies and the intended users of project's outputs.

In accordance with UNEP/GEF policy, all GEF projects are evaluated by independent evaluators contracted as consultants by the EOU. The evaluator should have the following qualifications:

The evaluator should not have been associated with the design and implementation of the project in a paid capacity. The evaluator will work under the overall supervision of the Chief, Evaluation and Oversight Unit, UNEP. The evaluator should be an international expert in { } with a sound understanding of { } issues. The consultant should have the following minimum qualifications: (i) experience in river basin management issues; (ii) experience with management and implementation of nature conservation and/or freshwater projects and in particular with EU targeted at policy-influence and decision-making; (iii) experience with project evaluation. Knowledge of UNEP programmes and GEF activities is desirable. Knowledge of Romania and Bulgarian is an advantage. Fluency in oral and written English is a must.

6. Schedule Of Payment

The consultant shall select one of the following two contract options:

Lump-Sum Option

The evaluator will receive an initial payment of 30% of the total amount due upon signature of the contract. A further 30% will be paid upon submission of the draft report. A final payment of 40% will be made upon satisfactory completion of work. The fee is payable under the individual Special Service Agreement (SSA) of the evaluator and **is inclusive** of all expenses such as travel, accommodation and incidental expenses.

Fee-only Option

The evaluator will receive an initial payment of 40% of the total amount due upon signature of the contract. Final payment of 60% will be made upon satisfactory completion of work. The fee is payable under the individual SSAs of the evaluator and is **NOT** inclusive of all expenses such as travel, accommodation and incidental expenses. Ticket and DSA will be paid separately.

In case, the evaluator cannot provide the products in accordance with the TORs, the timeframe agreed, or his products are substandard, the payment to the evaluator could be withheld, until such a time the products are modified to meet UNEP's standard. In case the evaluator fails to submit a satisfactory final product to UNEP, the product prepared by the evaluator may not constitute the evaluation report.

Annex 1 to Appendix 9: OVERALL RATINGS TABLE

Criterion	Evaluator's Summary Comments	Evaluator's Rating
A. Attainment of project objectives and results (overall rating) **Sub criteria (below)**		
A. 1. Effectiveness		
A. 2. Relevance		
A. 3. Efficiency		
B. Sustainability of Project outcomes (overall rating) **Sub criteria (below)**		
B. 1. Financial		
B. 2. Socio Political		
B. 3. Institutional framework and governance		
B. 4. Ecological		
C. Achievement of outputs and activities		
D. Monitoring and Evaluation (overall rating) **Sub criteria (below)**		
D. 1. M&E Design		
D. 2. M&E Plan Implementation (use for adaptive management)		
D. 3. Budgeting and Funding for M&E activities		
E. Catalytic Role		
F. Preparation and readiness		
G. Country ownership / drivenness		
H. Stakeholders involvement		
I. Financial planning		
J. Implementation approach		
K. UNEP Supervision and backstopping		

RATING OF PROJECT OBJECTIVES AND RESULTS

Highly Satisfactory (HS): The project had no shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Satisfactory (S): The project had minor shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Moderately Satisfactory (MS): The project had moderate shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Moderately Unsatisfactory (MU): The project had significant shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Unsatisfactory (U) The project had major shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Highly Unsatisfactory (HU): The project had severe shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Please note: Relevance and effectiveness will be considered as critical criteria. The overall rating of the project for achievement of objectives and results **may not be higher** than the

lowest rating on either of these two criteria. Thus, to have an overall satisfactory rating for outcomes a project must have at least satisfactory ratings on both relevance and effectiveness.

RATINGS ON SUSTAINABILITY

A. Sustainability will be understood as the probability of continued long-term outcomes and impacts after the GEF project funding ends. The Terminal evaluation will identify and assess the key conditions or factors that are likely to contribute or undermine the persistence of benefits after the project ends. Some of these factors might be outcomes of the project, i.e. stronger institutional capacities, legal frameworks, socio-economic incentives /or public awareness. Other factors will include contextual circumstances or developments that are not outcomes of the project but that are relevant to the sustainability of outcomes.

Rating system for sustainability sub-criteria

On each of the dimensions of sustainability of the project outcomes will be rated as follows.

Likely (L): There are no risks affecting this dimension of sustainability.

Moderately Likely (ML). There are moderate risks that affect this dimension of sustainability.

Moderately Unlikely (MU): There are significant risks that affect this dimension of sustainability

Unlikely (U): There are severe risks that affect this dimension of sustainability.

According to the GEF Office of Evaluation, all the risk dimensions of sustainability are deemed critical. Therefore, overall rating for sustainability will not be higher than the rating of the dimension with lowest ratings. For example, if a project has an Unlikely rating in any of the dimensions then its overall rating cannot be higher than Unlikely, regardless of whether higher ratings in other dimensions of sustainability produce a higher average.

RATINGS OF PROJECT M&E

Monitoring is a continuing function that uses systematic collection of data on specified indicators to provide management and the main stakeholders of an ongoing project with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds. Evaluation is the systematic and objective assessment of an on-going or completed project, its design, implementation and results. Project evaluation may involve the definition of appropriate standards, the examination of performance against those standards, and an assessment of actual and expected results.

The Project monitoring and evaluation system will be rated on ‘M&E Design’, ‘M&E Plan Implementation’ and ‘Budgeting and Funding for M&E activities’ as follows:

Highly Satisfactory (HS): There were no shortcomings in the project M&E system. Satisfactory(S): There were minor shortcomings in the project M&E system.

Moderately Satisfactory (MS): There were moderate shortcomings in the project M&E system.

Moderately Unsatisfactory (MU): There were significant shortcomings in the project M&E system.

Unsatisfactory (U): There were major shortcomings in the project M&E system.

Highly Unsatisfactory (HU): The Project had no M&E system.

"M&E plan implementation" will be considered a critical parameter for the overall assessment of the M&E system. The overall rating for the M&E systems will not be higher than the rating on "M&E plan implementation."

All other ratings will be on the GEF six point scale.

GEF Performance Description		Alternative description on the same scale
HS	= Highly Satisfactory	Excellent
S	= Satisfactory	Well above average
MS	= Moderately Satisfactory	Average
MU	= Moderately Unsatisfactory	Below Average
U	= Unsatisfactory	Poor
HU	= Highly Unsatisfactory	Very poor (Appalling)

Annex 2 to Appendix 9: Co-financing and Leveraged Resources

Co financing (Type/Source)	IA own Financing (mill US$)		Government (mill US$)		Other* (mill US$)		Total (mill US$)		Total Disbursement (mill US$)	
	Planned	**Actual**	**Planned**	**Actual**	**Planned**	**Actual**	**Planned**	**Actual**	**Planned**	**Actual**
– Grants										
– Loans/Concessional (compared to market rate)										
– Credits										
– Equity investments										
– In-kind support										
– Other (*) - - - - -										
Totals										

Co-financing (basic data to be supplied to the consultant for verification)

* Other is referred to contributions mobilized for the project from other multilateral agencies, bilateral development cooperation agencies, NGOs, the private sector and beneficiaries.

Leveraged Resources

Leveraged resources are additional resources—beyond those committed to the project itself at the time of approval—that are mobilized later as a direct result of the project. Leveraged resources can be financial or in-kind and they may be from other donors, NGO's, foundations, governments, communities or the private sector. Please briefly describe the resources the project has leveraged since inception and indicate how these resources are contributing to the project's ultimate objective.

Table showing final actual project expenditure by activity to be supplied by the UNEP Fund management Officer. (insert here)

Annex 3 to Appendix 9

Review of the Draft Report

Draft reports submitted to UNEP EOU are shared with the corresponding Programme or Project Officer and his or her supervisor for initial review and consultation. The DGEF staff and senior Executing Agency staff provide comments on the draft evaluation report. They may provide feedback on any errors of fact and may highlight the significance of such errors in any conclusions. The consultation also seeks agreement on the findings and recommendations. UNEP EOU collates the review comments and provides them to the evaluators for their consideration in preparing the final version of the report. General comments on the draft report with respect to compliance with these TOR are shared with the reviewer.

Quality Assessment of the Evaluation Report

All UNEP GEF Mid Term Reports are subject to quality assessments by UNEP EOU. These apply GEF Office of Evaluation quality assessment and are used as a tool for providing structured feedback to the evaluator.

The quality of the draft evaluation report is assessed and rated against the following criteria:

GEF Report Quality Criteria	**UNEP EOU Assessment**	**Rating**
A. Did the report present an assessment of relevant outcomes and achievement of project objectives in the context of the focal area program indicators if applicable?		
B. Was the report consistent and the evidence complete and convincing and were the ratings substantiated when used?		
C. Did the report present a sound assessment of sustainability of outcomes?		
D. Were the lessons and recommendations supported by the evidence presented?		
E. Did the report include the actual project costs (total and per activity) and actual co-financing used?		
F. Did the report include an assessment of the quality of the project M&E system and its use for project management?		
UNEP EOU additional Report Quality Criteria	**UNEP EOU Assessment**	**Rating**
G. Quality of the lessons: Were lessons readily applicable in other contexts? Did they suggest prescriptive action?		
H. Quality of the recommendations: Did recommendations specify the actions necessary to correct existing conditions or improve operations ('who?' 'what?' 'where?' 'when?)'. Can they be implemented? Did the recommendations specify a goal and an associated performance indicator?		
I. Was the report well written? (clear English language and grammar)		
J. Did the report structure follow EOU guidelines, were all requested Annexes included?		
K. Were all evaluation aspects specified in the TORs adequately addressed?		
L. Was the report delivered in a timely manner		

GEF Quality of the MTE report = 0.3*(A + B) + 0.1*(C+D+E+F)
EOU assessment of MTE report = 0.3*(G + H) +

0.1*(I+J+K+L)
Combined quality Rating = (2* 'GEF EO' rating + EOU rating)/3
The Totals are rounded and converted to the scale of HS to HU

Rating system for quality of terminal evaluation reports

A number rating 1-6 is used for each criterion: Highly Satisfactory = 6, Satisfactory = 5, Moderately Satisfactory = 4, Moderately Unsatisfactory = 3, Unsatisfactory = 2, Highly Unsatisfactory = 1, and unable to assess = 0.

Annex 4 to Appendix 9

GEF Minimum requirements for M&E

Minimum Requirement 1: Project Design of M&E[106]

All projects must include a concrete and fully budgeted monitoring and evaluation plan by the time of Work Program entry (full-sized projects) or CEO approval (medium-sized projects). This plan must contain at a minimum:

- SMART (see below) indicators for project implementation, or, if no indicators are identified, an alternative plan for monitoring that will deliver reliable and valid information to management
- SMART indicators for results (outcomes and, if applicable, impacts), and, where appropriate, corporate-level indicators
- A project baseline, with:
  - a description of the problem to address
  - indicator data
  - or, if major baseline indicators are not identified, an alternative plan for addressing this within one year of implementation
- An M&E Plan with identification of reviews and evaluations which will be undertaken, such as mid-term reviews or evaluations of activities
- An organizational setup and budgets for monitoring and evaluation.

[106] http://gefweb.org/MonitoringandEvaluation/MEPoliciesProcedures/MEPTools/meptstandards.html

Minimum Requirement 2: Application of Project M&E

- Project monitoring and supervision will include implementation of the M&E plan, comprising:
- Use of SMART indicators for implementation (or provision of a reasonable explanation if not used)
- Use of SMART indicators for results (or provision of a reasonable explanation if not used)
- Fully established baseline for the project and data compiled to review progress
- Evaluations are undertaken as planned
- Operational organizational setup for M&E and budgets spent as planned.

SMART INDICATORS GEF projects and programs should monitor using relevant performance indicators. The monitoring system should be "SMART":

1. **Specific**: The system captures the essence of the desired result by clearly and directly relating to achieving an objective, and only that objective.
2. **Measurable:** The monitoring system and its indicators are unambiguously specified so that all parties agree on what the system covers and there are practical ways to measure the indicators and results.
3. **Achievable and Attributable:** The system identifies what changes are anticipated as a result of the intervention and whether the result(s) are realistic. Attribution requires that changes in the targeted developmental issue can be linked to the intervention.
4. **Relevant and Realistic:** The system establishes levels of performance that are likely to be achieved in a practical manner, and that reflect the expectations of stakeholders.
5. **Time-bound, Timely, Trackable, and Targeted:** The system allows progress to be tracked in a cost-effective manner at desired frequency for a set period, with clear identification of the particular stakeholder group to be impacted by the project or program.

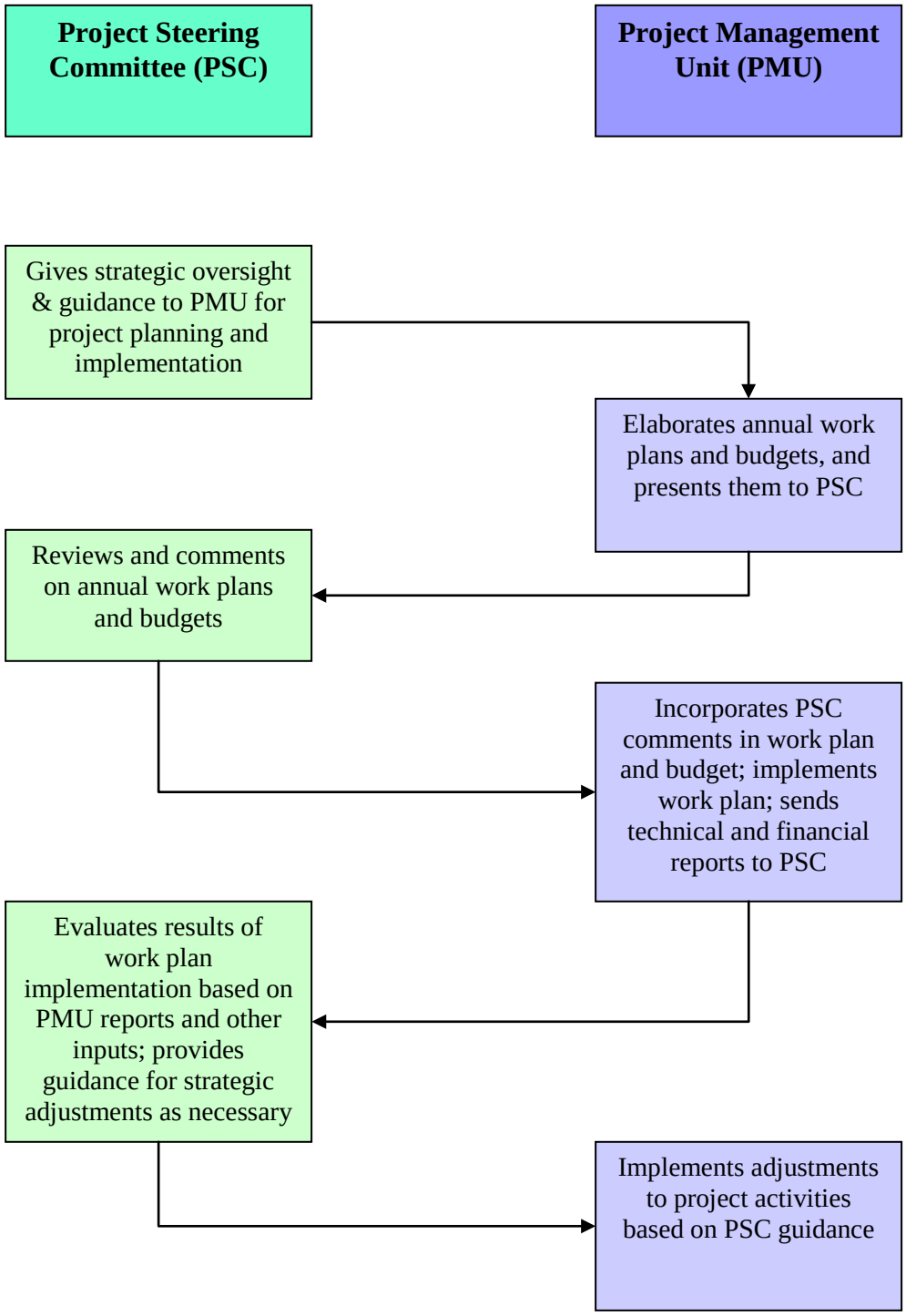
Annex 5 to Appendix 9

List of intended additional recipients for the Terminal Evaluation (to be completed by the IA Task Manager)

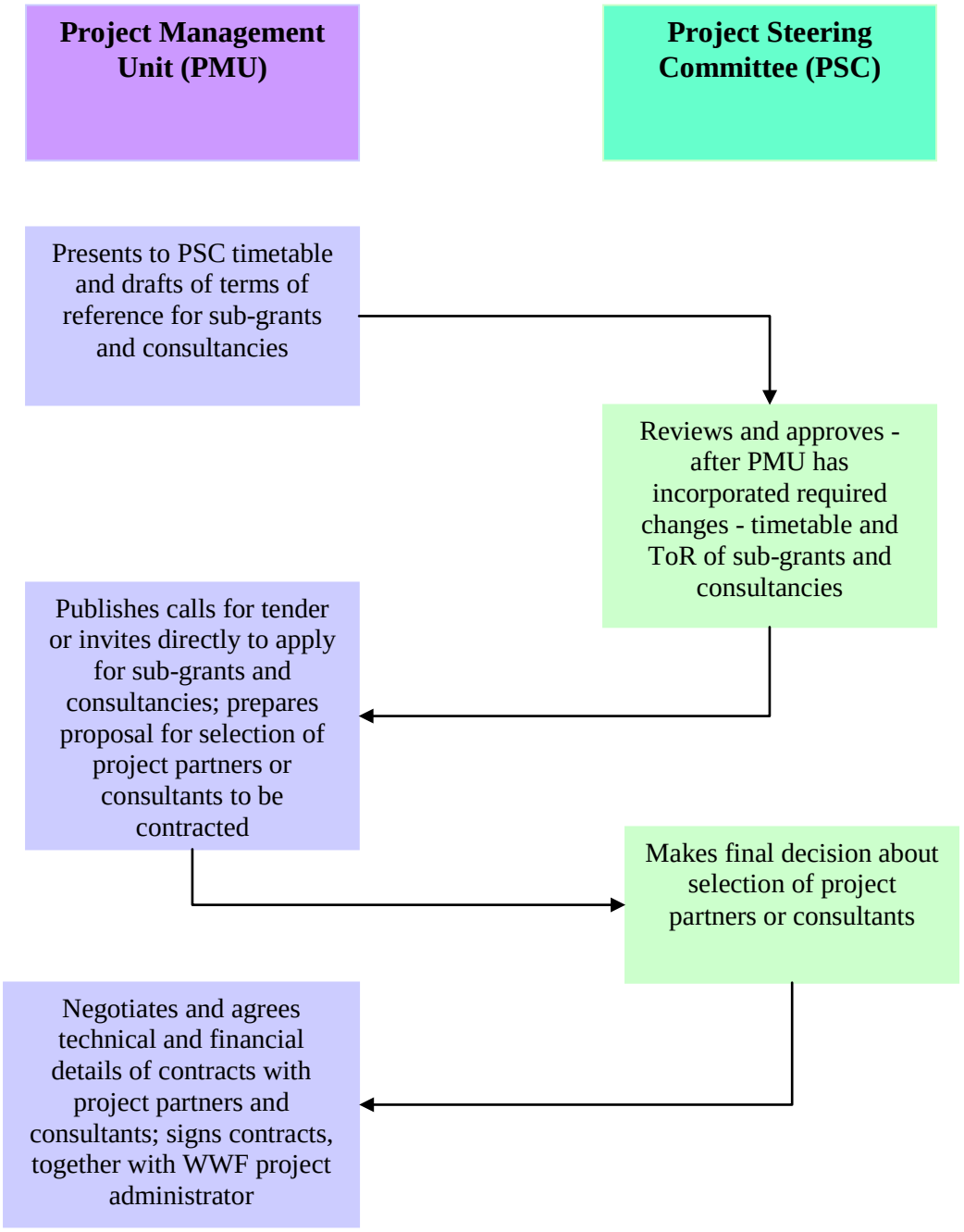
Name	Affiliation	Email
Aaron Zazuetta	GEF Evaluation Office	azazueta@thegef.org
Government Officials		
GEF Focal Point(s)		
Executing Agency		
Implementing Agency		
	UNEP DGEF Quality Assurance Officer	

APPENDIX 10: DECISION-MAKING FLOWCHART AND ORGANIGRAM

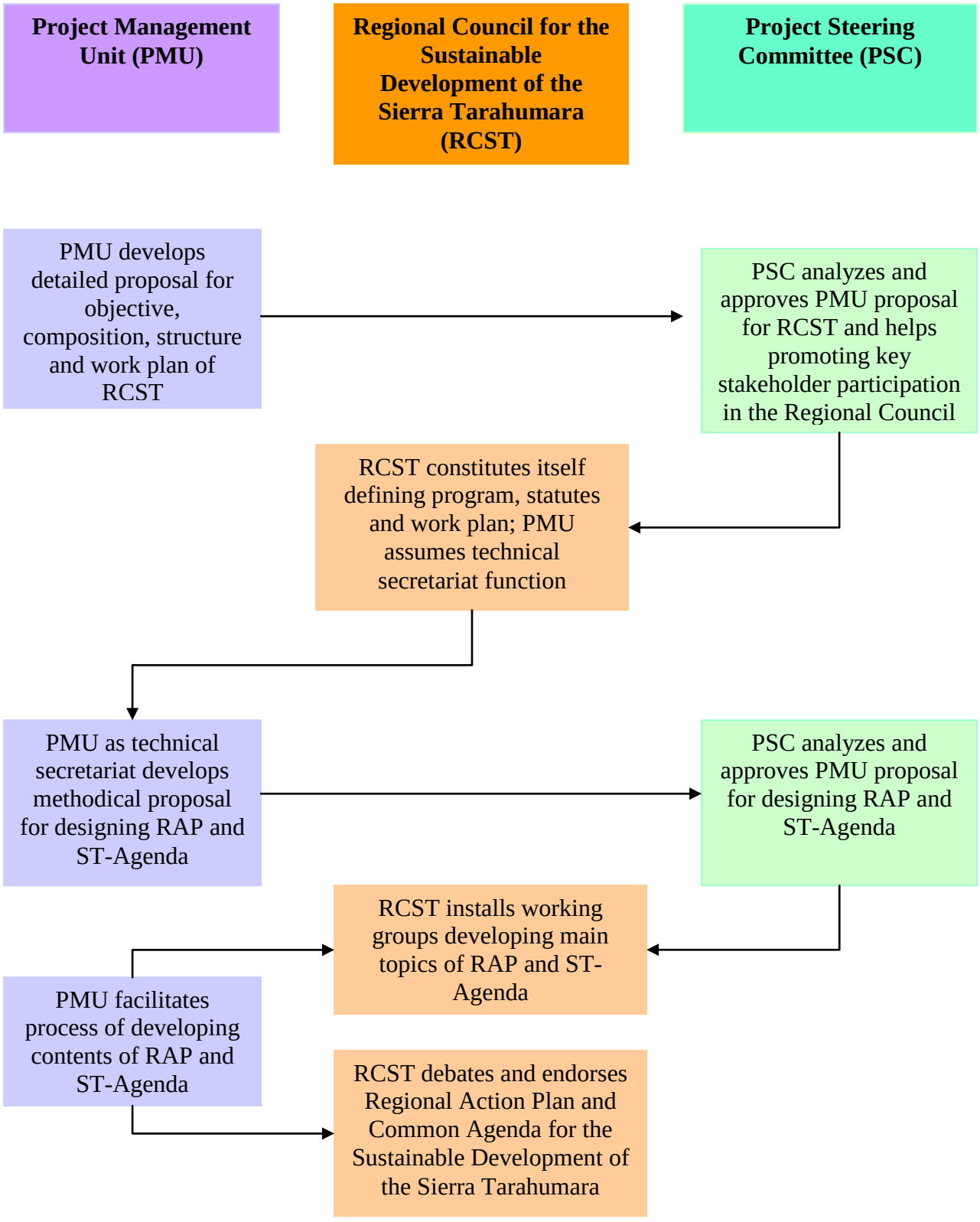
Decision-making flowchart for elaborating, implementing and adapting annual work plan



Decision-making flowchart for planning and contracting sub-grants and consultancies



Decision-making flowchart for developing the Regional Action Plan (RAP) and Common Agenda for the Sustainable Development of the Sierra Tarahumara (ST-Agenda)



Organigram

Institutional and technical support to PSC and PMU by CONANP

-Project supervision (25%)
-Institutional support (25%)
-Technical support in BD and ES monitoring (50%)
-Technical support for pilot projects (50%)

Technical and administrative support to PSC and PMU by WWF

- Project supervision (25%)
- Project accounting (50%)
- Technical support for pilot projects (50%)

Project Steering Committee (PSC)

CONANP, WWF, UNEP

Project Management Unit (PMU), based in Creel and Chihuahua

Project Director and Institutional Coordinator

3 Project Component Coordinators

1 Project Administrator

1 Technical and Logistics Assistant

APPENDIX 11: TERMS OF REFERENCE

Terms of Reference - Project Director/Institutional Coordinator (national position)

The Project Director/Institutional Coordinator will act as the head of the Project Management Unit (PMU) and will be responsible for overall project implementation and coordination with all concerned stakeholders to ensure adequate project implementation. S/he will pay particular attention and provide technical guidance to the project theme of integrating biodiversity and ecosystem services conservation into institutional policies and programs at the regional and local scale. Therefore, s/he will support technically the principal policy coordination mechanism promoted by the project, i.e. the Regional Council for the Sustainable Development of the Sierra Tarahumara. S/he will also focus on the design and implementation of capacity building activities for all actors targeted by, and involved in, the project, from land users and their organizations to institutional stakeholders and contracted partners. Given that a significant part of project activities will be implemented by sub-grant or consultancy contracts, adequate management of selecting and supervising activity implementing partners and consultants is of strategic importance for the project and requires a proactive approach of the Project Director to such tasks. So one of his/her main responsibilities will consist in identifying and, together with the Project Steering Committee, selecting the most appropriate sub-grant partners or consultants; s/he will also be responsible to take adequate follow-up measures for obtaining the expected results from their action. S/he will also ensure coordination and information exchange with related initiatives identified in ProDoc section 2.7, in particular the CONAFOR project in Durango, the Mixteca project in Oaxaca and the Sierra-Costa project in Chiapas (all of them GEF-cofinanced).

The Project Director/Institutional Coordinator will report on project implementation progress to the Project Steering Committee (PSC), composed of representatives from CONANP as implementing partner, WWF as executing agency and UNEP as implementing agency.

Main duties and responsibilities:

- Establish the PMU's internal working procedures and inter-institutional communication mechanisms.
- Ensure adequate compliance of project implementation with UNEP procedures.
- Prepare the annual work plans and budgets based on the Project Document, ensuring adequate articulation between the activities of the three project components
- Prepare quarterly work plans and activity reports and submit them for review by the Project Steering Committee.
- Draft TORs for implementing project activities via sub-grant and consultancy contracts; submit TORs for review and approval by the Project Steering Committee.
- Publish calls for tender or invite directly to apply for sub-grants and consultancies; prepare proposal to PSC for selection of sub-grant partners or consultants to be contracted.
- Negotiate and agree technical and financial details of contracts with sub-grant partners and consultants; sign contracts, together with WWF project administrator.
- Take adequate follow-up and supervising measures for obtaining the expected results of sub-grant and consultancy contracts: field visits; activity and product status reports and presentations. Require adjustments, as necessary.
- Prepare technically the meetings of the Project Steering Committee and the Regional Council for the Sustainable Development of the Sierra Tarahumara. Act as Secretary to the meetings of both instances.
- Prepare project progress reports as required by UNEP/DGEF.
- Coordinate and update the project's M&E system and ensure adequate project M&E.
- Provide support to Mid-Term and Final External Evaluations as well as to field missions by UNEP staff.
- Carry out frequent field missions to the target areas and project sites in the Sierra Tarahumara as part of the overall supervision of project implementation, especially capacity building of forest and land users,

communities/ejidos and other project stakeholders, including contracted partners providing technical assistance to pilot projects.

- Ensure adequate inter-institutional coordination and stakeholder participation mechanisms during project implementation.
- Ensure adequate dissemination of project results and lessons learned.

The Project Director/Institutional Coordinator will be based in Creel; due to his/her institutional coordinating activities, s/he will travel frequently to the state capital Chihuahua to maintain close and continuous contact with the project implementing partners and other stakeholders. S/he will receive technical, administrative and institutional support from CONANP and WWF, as part of their in-kind contributions.

Profile:

Postgraduate university studies in subjects related to social strategies for natural resources management. At least 10 years of experience in sustainable development project management. Significant experience related to the scope of the project in mainstreaming BD and ES concerns in local and regional development policies is desirable, as well as experience in environmental governance and capacity building issues, especially in the Sierra Tarahumara or similar regions. Experience in managing international public donor-funded projects highly preferred. The Project Director competencies include a strong capacity to coordinate different actors and establish alliances for achieving common goals. The kind of leadership required should be based on pertinent ethical values,[107] like empathy with different social actors, especially rural and indigenous people; sensitivity to and understanding of cultural differences; respect for nature; high valuation of social justice and honesty in public office. Strong interpersonal communication and management skills, high flexibility and capacity to work under pressure are required. Good language abilities in English (writing, reading, speaking) are necessary.

Terms of Reference – Project Component Coordinators (three national positions)

The three Project Component Coordinators will provide technical know-how for planning, implementation and follow-up to the activities foreseen under the respective project components. This technical input will consist on the one hand in managing activities under their direct responsibility; on the other hand selecting and accompanying technical service providers contracted by the project for implementing certain activities as planned in the Results Framework. Follow-up is understood as monitoring these contracted activities, but also includes capacity-building for enabling these service providers in applying methods and technical aspects in accordance with the project objectives and vision. A strong emphasis will be placed on taking an adequate approach to community participation in obtaining project results. The Component Coordinators will ensure, through training of the local pilot project supporting organizations, that biodiversity and ecosystem service considerations are integrated in their planning and implementation, applying RAP BD criteria and evaluation parameters, as well as goals and requirements of landscape and natural resource management plans developed in project area municipalities. In this sense, the role of the Component Coordinators is to transfer the PMU strategy of articulating different institutional programs for conservation and sustainable development to the local and municipal level. The Component Coordinators will be located in Creel.

As to Component 3 Coordinator in particular, s/he will give technical and administrative follow-up to the pilot activities for conserving and sustainably use biodiversity and ecosystem goods and services in Sierra Tarahumara communities. This follow-up will consist mainly in accompanying the organizations of social and technical service providers contracted by the project for directly supporting pilot project planning and implementation. Follow-up is understood in the first place as capacity-building for enabling or strengthening

[107] It is recommended that candidates for the position of Project Director should pass a written test of his/her personal competencies, including axiological aspects.

these organizations in methodical and technical aspects of community work and development. A strong emphasis will be placed on taking an adequate approach to community participation in defining the pilot project objectives. The Pilot Project Coordinator will ensure, through training of the local pilot project supporting organizations, that biodiversity and ecosystem service considerations are integrated in pilot project planning and implementation, applying RAP BD criteria and evaluation parameters, as well as goals and requirements of landscape and natural resource management plans developed in project area municipalities. In this sense, the role of the Pilot Project Coordinators is to transfer the PMU strategy of articulating different institutional programs for conservation and sustainable development to the local and municipal level.

The three Component Coordinators will be located in Creel.

Main duties and responsibilities:

- Give technical and administrative follow-up to the activities foreseen under their respective project components.
- Guide and accompany the technical service providers (consultants and sub-contract partners) contracted by the project in methodical and technical aspects.
- Ensure that biodiversity and ecosystem service considerations are integrated in methods and activities to be implemented by consultants and sub-contract partners.
- Ensure that the PMU strategy of articulating different institutional programs for conservation and sustainable development is transferred to the local and municipal level.
- Supervise and assess the effectiveness and methodical correctness in planning and implementing activities of their respective components.
- Report regularly to the Project Director about progress and problems in the implementation of component activities.

Profile:

University studies and professional experience in subjects related to:

a) Component 1 coordinator: Monitoring and evaluation methods in biological, ecosystem and socio-economic aspects. Experience with designing, planning, monitoring and evaluating projects; knowledge of information technology and monitoring tools; experience with the design and application of participatory methodologies and field tools for assessing impacts of rural development initiatives.

b) Component 2 coordinator: Social and political sciences.

c) Component 3 coordinator: Social strategies for natural resources management. Professional experience in results-based management; design, management and evaluation of natural resource management programs and projects, preferably those funded through international cooperation agreements; Logical Framework Analysis-based management; indicator development and monitoring; experience working with rural forest communities; knowledge of certification, biodiversity conservation, green markets and carbon forestry issues.

All component coordinators should have at least five years of experience in planning and implementing sustainable development projects in rural communities with a participatory approach, preferably in the Sierra Tarahumara or similar regions. Significant experience related to the scope of the project in mainstreaming BD and ES concerns in local and regional development programs and projects is desirable. Strong interpersonal communication skills are needed, as cooperating with non-governmental organizations will be at the core of his/her tasks. The Project Component Coordinators should share pertinent ethical values,[108] like empathy with different social actors, especially rural and indigenous people; sensitivity to and

[108] It is recommended that candidates for the position of Component Coordinator should pass a written test of his/her personal competencies, including axiological aspects.

understanding of cultural differences; respect for nature; high valuation of social justice and honesty in public office. High flexibility and capacity to work under sometimes difficult conditions is required.

Terms of Reference – Project Administrator (national position)

The Project Administrator will provide assistance to the Project Director in all administrative and financial management matters, particularly in budget management, procurement and financial reporting.

Terms of Reference – Technical and Logistics Assistant (national position)

The Project Technical and Logistics Assistant will provide full-time support to the Project Director in carrying out day-to-day operational and administrative functions, particularly with regard to routine communications with partners and other stakeholders, preparing and organizing meetings and all kinds of events, contracting of consultants, procurement and reporting. S/he will be based in Creel and will undertake occasional trips to project sites in the Sierra Tarahumara and to the capital of the state, as necessary in the fulfilment of these functions.

Main duties and responsibilities:

- Under the guidance of the Project Director, provide logistical and information support for meetings of the Project Steering Committee, the Regional Council for the Sustainable Development of the Sierra Tarahumara and other meetings and events organized by the project.
- Undertake routine communications and follow-up with project stakeholders and contracted partners and consultants.
- Provide information inputs for preparing TORs and reports, as required by the Project Director.
- Conduct preliminary review of technical reports and documents, provide occasional assistance in drafting regular progress reports, and perform other related support activities, as appropriate.
- Make travel and logistical arrangements for field-missions and meetings with actors in the project region.
- Undertake basic administrative functions, including initiation and follow-up on procurement and contracting procedures, payment processing, monitoring budget compliance, and others in cooperation with WWF administrative and financial staff.

Profile:

University studies, preferably with degree. At least two years of experience in technical and logistics assistant functions, for example in development, BD conservation or ES management projects. Strong communication skills, including good working knowledge of English (writing, reading, speaking); strong computer skills; pro-active problem-solving attitude. Experience and/or familiarity supporting donor-funded projects preferred.

APPENDIX 12: CO-FINANCING COMMITMENT LETTERS FROM PROJECT PARTNERS

See separate file

APPENDIX 13: ENDORSEMENT LETTER OF GEF NATIONAL FOCAL POINT

See separate file.

APPENDIX 14: DRAFT PROCUREMENT PLAN

Project title and number: Integrating the Management of Protection and Production Areas for Biodiversity Conservation in the Sierra Tarahumara of Chihuahua, Mexico

UNEP Budget Line		List of Goods and Services required	Budget	Year {Note 1}	Brief description of anticipated procurement process {Note 2}
1101	Project director	1 full time project director	245,000	Y 1-5	CVs of 3 to 6 candidates will be reviewed by a panel conformed by staff members of CONANP and WWF. Depending upon qualification, experience, etc., the candidate will be selected.
1102	Component 1 coordinator	1 full time project coordiantor of Component 1: Scientific base and tools for decision making	177,600	Y 1-5	CVs of 3 to 6 candidates will be reviewed by a panel conformed by staff members of CONANP and WWF. Depending upon qualification, experience, etc., the candidate will be selected.
1103	Component 2 coordinator	1 full time project coordiantor of Component 2: Environmental governance framework	199,800	Y 1-5	CVs of 3 to 6 candidates will be reviewed by a panel conformed by staff members of CONANP and WWF. Depending upon qualification, experience, etc., the candidate will be selected.
1104	Component 3 coordinator	1 full time project coordiantor of Component 3: Pilot project interventions	199,800	Y 1-5	CVs of 3 to 6 candidates will be reviewed by a panel conformed by staff members of CONANP and WWF. Depending upon qualification, experience, etc., the candidate will be selected.
1105	Project Administrator	1 full time project coordiantor of Project Management Cost (Component 5)	113,700	Y 1-5	CVs of 3 to 6 candidates will be reviewed by a panel conformed by staff members of CONANP and WWF. Depending upon qualification, experience, etc., the candidate will be selected.
1106	Technical and Logistic Assistant	1 full time project logistic assistant	113,400	Y 1-5	CVs of 3 to 6 candidates will be reviewed by a panel conformed by staff members of CONANP and WWF. Depending upon qualification, experience, etc., the candidate will be selected.
1201	Consultancy N° 1	Technical assistance for initial project management guidance	37,500	Y 1	CVs of 3 to 6 experts will be reviewed by a panel conformed by staff members of CONANP and WWF. Depending upon

					qualification, experience, geographical distribution, etc., the consultant will be selected.
1202	Consultancy N° 2	Workshop moderator in Activity 1.3.2 Build awareness and train stakeholders in the use of information systems and tools.	20,000	Y 2-4	CVs of 3 to 6 experts will be reviewed by a panel conformed by staff members of CONANP and WWF. Depending upon qualification, experience, geographical distribution, etc., the consultant will be selected.
1203	Consultancy N° 3	Legal advice for constitution, procedures and publication of the Regional Council in the Official Journal of the state government of Chihuahua (specialist in administrative law) (under activity 2.1.2)	30,000	Y 1	CVs of 3 to 6 experts will be reviewed by a panel conformed by staff members of CONANP and WWF. Depending upon qualification, experience, geographical distribution, etc., the consultant will be selected.
1204	Consultancy N° 4	Develop outreach program to replicate and upscale the project's strategy and results from the pilot level to the wider landscape in Sierra Tarahumara (under activities 2.5.1 and 2.5.2)	40,000	Y 3-4	CVs of 3 to 6 experts will be reviewed by a panel conformed by staff members of CONANP and WWF. Depending upon qualification, experience, geographical distribution, etc., the consultant will be selected.
1205	Consultancy N° 5	Develop a georeferenced proposal for project sites and types, based on BEA information from component 1 and RAP indicators from component 2 (under activity 3.1.1)	9,000	Y 2-4	CVs of 3 to 6 experts will be reviewed by a panel conformed by staff members of CONANP and WWF. Depending upon qualification, experience, geographical distribution, etc., the consultant will be selected.
1206	Consultancy N° 6	Develop a methodological proposal for entering into a dialogue with communities on pilot project proposals, and transfer the method to the promoter team who will facilitate the dialogue (under activity 3.2.1)	15,000	Y 2	CVs of 3 to 6 experts will be reviewed by a panel conformed by staff members of CONANP and WWF. Depending upon qualification, experience, geographical distribution, etc., the consultant will be selected.
1207	Consultancy N° 7	Update portfolio map of projects identified under activity 3.1.1, building on the results of the dialogue held with communities held (project activity 3.2.2)	3,000	Y 2-4	CVs of 3 to 6 experts will be reviewed by a panel conformed by staff members of CONANP and WWF. Depending upon qualification, experience, geographical distribution, etc., the consultant will be selected.
1208	Consultancy N° 8	Facilitate workshops for developing sustainable and integrated landscape and	36,000	Y 2-4	CVs of 3 to 6 experts will be reviewed by a panel conformed by staff members of

		natural resource management plans in project area municipalities and present results (project activity 3.2.4)			CONANP and WWF. Depending upon qualification, experience, geographical distribution, etc., the consultant will be selected.
1601	Travel on official business	Mainly project staff from Chihuahua to Mexico City, for supervision and feedback by WWF and CONANP headquarters. As well as working with project partners like CONABIO, CONAFOR, etc.	129,800	Y 1-5	
2101	Sub-contract N° 1	Carry out Biodiversity and Environment Assessment (BEA) producing baseline information for biodiversity and ecosystem services monitoring (project activity 1.2.1)	83,000	Y 1-2	based on terms of reference, quotations of 3 to 6 Organizations will be reviewed by a panel conformed by staff members of CONANP and WWF. The best proposal will be selected by the panel
2102	Sub-contract N° 2	Provide technical assistance and follow up to the coordination mechanism for the design and implementation of the Regional Action Plan (project activities 2.2.1 and 2.4.1)	215,000	Y 1-2	based on terms of reference, quotations of 3 to 6 Organizations will be reviewed by a panel conformed by staff members of CONANP and WWF. The best proposal will be selected by the panel
2103	Sub-contract N° 3	Technical advice to stakeholders for incorporating RAP recommendations into their policies, plans and programs (project activity 2.3.1)	179,000	Y 2-5	based on terms of reference, quotations of 3 to 6 Organizations will be reviewed by a panel conformed by staff members of CONANP and WWF. The best proposal will be selected by the panel
2104	Sub-contract N° 4	Facilitate the dialogue with communities on pilot project proposals developed by the project team under activity 3.1.1 (project activity 3.2.1)	108,000	Y 2	based on terms of reference, quotations of 3 to 6 Organizations will be reviewed by a panel conformed by staff members of CONANP and WWF. The best proposal will be selected by the panel
2105	Pilot project 1 - conservation	One sub-contract to manage 8 pilot program and/or field activities related to conservation (project activity 3.3.1)	234,667	Y 3-5	based on terms of reference, quotations of 3 to 6 Organizations will be reviewed by a panel conformed by staff members of CONANP and WWF. The best proposal will be selected by the panel
2106	Pilot project 2 - conservation	One sub-contract to manage 8 pilot program and/or field activities related to conservation (project activity 3.3.1)	234,667	Y 3-5	based on terms of reference, quotations of 3 to 6 Organizations will be reviewed by a panel conformed by staff members of CONANP and WWF. The best proposal will be selected by the panel
2107	Pilot project 3 -	One sub-contract to manage 8 pilot program	234,667	Y 3-5	based on terms of reference, quotations of 3

	conservation	and/or field activities related to conservation (project activity 3.3.1)			to 6 Organizations will be reviewed by a panel conformed by staff members of CONANP and WWF. The best proposal will be selected by the panel
2108	Pilot project 4 - sustainable production	One sub-contract to manage 8 pilot program and/or field activities related to sustainable production (project activity 3.3.2)	236,711	Y 3-5	based on terms of reference, quotations of 3 to 6 Organizations will be reviewed by a panel conformed by staff members of CONANP and WWF. The best proposal will be selected by the panel
2109	Pilot project 5 - sustainable production	One sub-contract to manage 8 pilot program and/or field activities related to sustainable production (project activity 3.3.2)	236,711	Y 3-5	based on terms of reference, quotations of 3 to 6 Organizations will be reviewed by a panel conformed by staff members of CONANP and WWF. The best proposal will be selected by the panel
2110	Pilot project 6 - sustainable production	One sub-contract to manage 8 pilot program and/or field activities related to sustainable production (project activity 3.3.2)	236,711	Y 3-5	based on terms of reference, quotations of 3 to 6 Organizations will be reviewed by a panel conformed by staff members of CONANP and WWF. The best proposal will be selected by the panel
2111	Pilot project 7 - sustainable production	One sub-contract to manage 8 pilot program and/or field activities related to sustainable production (project activity 3.3.2)	236,711	Y 3-5	based on terms of reference, quotations of 3 to 6 Organizations will be reviewed by a panel conformed by staff members of CONANP and WWF. The best proposal will be selected by the panel
2112	Pilot project 8 - sustainable production	One sub-contract to manage 8 pilot program and/or field activities related to sustainable production (project activity 3.3.2)	236,711	Y 3-5	based on terms of reference, quotations of 3 to 6 Organizations will be reviewed by a panel conformed by staff members of CONANP and WWF. The best proposal will be selected by the panel
2113	Pilot project 9 - sustainable production	One sub-contract to manage 8 pilot program and/or field activities related to sustainable production (project activity 3.3.2)	236,743	Y 3-5	based on terms of reference, quotations of 3 to 6 Organizations will be reviewed by a panel conformed by staff members of CONANP and WWF. The best proposal will be selected by the panel
3201	Group training	Train stakeholders in the use of information systems and tools (under activity 1.3.2)	5,000	Y 2-5	Several workshops will be held which include material, meals and transport for participants. It may include accommodation in some cases. Local quotations of the best option will be selected
3202	Group training	Institutional, financial and technical	15,000	Y 2-5	Several workshops will be held which

		assistance follow up program for stakeholders using the Sierra Tarahumara Data Monitoring and Information System (under activity 1.3.2)			include material, meals and transport for participants. It may include accommodation in some cases. Local quotations of the best option will be selected
3203	Group training	Training of pilot project actors concerning conservation (project activity 3.3.2)	16,500	Y 3-5	Several workshops will be held which include material, meals and transport for participants. It may include accommodation in some cases. Local quotations of the best option will be selected
3204	Group training	Training of 3 pilot project support teams concerning conservation (project activity 3.3.2)	15,500	Y 3-5	Several workshops will be held which include material, meals and transport for participants. It may include accommodation in some cases. Local quotations of the best option will be selected
3205	Group training	Training of pilot project actors concerning sustainable production (project activity 3.3.2)	16,500	Y 3-5	Several workshops will be held which include material, meals and transport for participants. It may include accommodation in some cases. Local quotations of the best option will be selected
3206	Group training	Training of 6 pilot project support teams concerning sustainable production (project activity 3.3.2)	26,500	Y 3-5	Several workshops will be held which includes material, meals and transport for participants. It may include accommodation in some cases. Local quotations of the best option will be selected
3301	Meetings/conferences	Meetings with project partners and other relevant stakeholders involved in building the ST-DM&IS (under activity 1.1.1)	10,000	Y 1-2	Several meetings will be held which includes meals and transport for participants.
3302	Meetings/conferences	Meetings with relevant stakeholders to get feedback for developing product 1.2 Biodiversity and Environment Assessment (under activity 1.2.1)	15,000	Y 1-2	Several meetings will be held which includes meals and transport for participants.
3303	Meetings/conferences	Meetings to promote coordination mechanism of federal, state and municipal authorities with local communities and non governmental actors for the development and implementation of the Regional Action Plan (under activity 2.1.1)	2,000	Y 1-2	Several meetings will be held which includes meals and transport for participants. It may include accommodation in some cases. Local quotations of the best option will be selected
3304	Meetings/conferences	Constitutive meetings of the Regional Council (under activity 2.1.2)	2,000	Y 1-2	Several meetings will be held which includes meals and transport for participants.

3305	Meetings/conferences	Meetings of the Regional Council and thematic tables working on the design and implementation modalities of the Regional Action Plan (part of activity 2.2.1)	20,500	Y 1-2	Several meetings will be held which includes meals and transport for participants. It may include accommodation in some cases. Local quotations of the best option will be selected
3306	Meetings/conferences	Meetings and special information events for socializing the Regional Action Plan among key actors in the Sierra Tarahumara and a broader citizenship (part of activity 2.2.2)	19,000	Y 2-4	Several meetings will be held which includes meals and transport for participants.
3307	Meetings/conferences	Meetings to promote incorporation of RAP recommendations for mainstreaming BD and ES criteria into the sectorial development policies of government, non-government and public-private bodies (under activity 2.3.1)	50,000	Y 2-5	Several meetings will be held which includes meals and transport for participants. It may include accommodation in some cases. Local quotations of the best option will be selected
3308	Meetings/conferences	Promote jointly funded conservation programs by key governmental and non-governmental stakeholders under the new or adapted regulations for funding allocation criteria (under activity 2.3.2)	1,200	Y 2-5	Several meetings will be held which includes meals and transport for participants.
3309	Meetings/conferences	Meetings for presentation of outreach program to replicate and upscale the project's strategy and results from the pilot level to the wider landscape in Sierra Tarahumara (under activity 2.5.2)	19,000	Y 4-5	Several meetings will be held which includes meals and transport for participants. It may include accommodation in some cases. Local quotations of the best option will be selected
3310	Meetings/conferences	Meetings for developing catalogue of pilot project types and proposal for pilot project areas and sites (under activity 3.1.1)	2,000	Y 2-4	Several meetings will be held which includes meals and transport for participants.
3311	Meetings/conferences	Closing meeting of the negotiation process to agree on co-financing and supporting pilot projects, including governmental and non-governmental partners (project activity 3.2.3)	3,000	Y 2-4	Several meetings will be held which includes meals and transport for participants.
3312	Meetings/conferences	Workshops for developing sustainable and integrated landscape and natural resource management plans in project area municipalities, determining sites for pilot projects (including budget planning for each pilot project) (project activity 3.2.4)	11,000	Y 2-4	Several meetings will be held which includes meals and transport for participants.
3313	Meetings/conferences	Inception Workshop	2,000	Y 1	Several meetings will be held which includes meals and transport for participants.

3314	Meetings/conferences	General meetings/conferences	25,000	Y 1-5	Several meetings will be held which includes meals and transport for participants.
4101	Expendable equipment	Office running cost (Creel)	6,500	Y 1-5	Costs of office rent
4102	Expendable equipment	Office running cost (Chihuahua City)	21,600	Y 1-5	Costs of office rent
4201	Non-expendable equipment	Server for ST-DM&IS	9,000	Y 1	According with WWF policies and procedures, 3 quotations from vendors must be obtained in order to select the best one
4202	Non-expendable equipment	3 four wheel drive cars	75,000	Y 1	According with WWF policies and procedures, 3 quotations from vendors must be obtained in order to select the best one
4203	Non-expendable equipment	5 laptop computers (director+component coordinators+base for GIS); Dell includes maintenance during 3 years	10,000	Y 1	According with WWF policies and procedures, 3 quotations from vendors must be obtained in order to select the best one
4204	Non-expendable equipment	2 laptop computers (administrator+assistant)	4,000	Y 1	According with WWF policies and procedures, 3 quotations from vendors must be obtained in order to select the best one
4205	Non-expendable equipment	GIS software (co-financed by WWF)	-	Y 1	According with WWF policies and procedures, 3 quotations from vendors must be obtained in order to select the best one
4206	Non-expendable equipment	2 printers-scanners (multifunctional, toner)	2,000	Y 1	According with WWF policies and procedures, 3 quotations from vendors must be obtained in order to select the best one
4207	Non-expendable equipment	Office furniture	1,000	Y 1	According with WWF policies and procedures, 3 quotations from vendors must be obtained in order to select the best one
4208	Non-expendable equipment	Telephone equipment: Commutator + 3 phones	700	Y 1	According with WWF policies and procedures, 3 quotations from vendors must be obtained in order to select the best one
4209	Non-expendable equipment	Radio communication: Base, 4 portables, 3 mobiles)	1,200	Y 1	According with WWF policies and procedures, 3 quotations from vendors must be obtained in order to select the best one
4301	Premises	Rental of office space in intervention area (Creel)	14,200	Y 1-5	Office running costs
4302	Premises	Rental of office space (Chihuahua City)	30,200	Y 1-5	Office running costs
5101	Operation and maintenance of equipment	Maintenance 4-wheel drive cars (minor repairs, tires, major repairs)	36,000	Y 1-5	According with WWF policies and procedures, 3 quotations from services suppliers must be obtained in order to select

					the best one
5102	Operation and maintenance of equipment	Operation 4-wheel drive cars (taxes, insurance, gas)	54,000	Y 1-5	According with WWF policies and procedures, 3 quotations must be obtained in order to select the best one and get value for money
5103	Operation and maintenance of equipment	Maintenance computers, printer+scanner	2,500	Y 1-5	According with WWF policies and procedures, 3 quotations must be obtained in order to select the best one and get value for money
5104	Operation and maintenance of equipment	Package four two office telephone lines, internet included	7,000	Y 1-5	According with WWF policies and procedures, 3 quotations must be obtained in order to select the best one and get value for money
5105	Operation and maintenance of equipment	Package for 5 cell phones, internet included: US$3,700/year; 4.5 years	16,600	Y 1-5	According with WWF policies and procedures, 3 quotations must be obtained in order to select the best one and get value for money
5106	Operation and maintenance of equipment	Maintenance portable radios (batteries)	400	Y 1-5	According with WWF policies and procedures, 3 quotations must be obtained in order to select the best one and get value for money
5301	Sundry	Publication: Sierra Tarahumara Biodiversity and Environment Assessment on web page (under activity 1.2.1)	11,500	Y 2	According with WWF policies and procedures, 3 quotations from vendors must be obtained in order to select the best one
5302	Sundry	Outreach material to disseminate ST-DM&IS monitoring and informaton tools (under activity 1.3.1)	3,000	Y 2	According with WWF policies and procedures, 3 quotations from vendors must be obtained in order to select the best one
5303	Sundry	Material to promote coordination mechanism for mainstreaming BD and ES criteria among regional actors (under activity 2.1.1)	2,000	Y 1	According with WWF policies and procedures, 3 quotations from vendors must be obtained in order to select the best one
5304	Sundry	Publications for socializing the Regional Action Plan among key actors in the Sierra Tarahumara and a broader citizenship (under activity 2.2.2)	27,000	Y 2-4	According with WWF policies and procedures, 3 quotations from vendors must be obtained in order to select the best one
5305	Sundry	Manual/practical guide for incorporating RAP recommendations into sectorial development policies of actors (under activity 2.3.1)	38,000	Y 2	According with WWF policies and procedures, 3 quotations from vendors must be obtained in order to select the best one
5306	Sundry	Publication of outreach program to replicate and upscale the project's strategy and results from the pilot level to the wider landscape in	15,000	Y 5	According with WWF policies and procedures, 3 quotations from vendors must be obtained in order to select the best one

		Sierra Tarahumara (under activity 2.5.2)			
5307	Sundry	3 practical guides (3 x 1,000) for pilot project practices concerning conservation, in spanish, rarámuri, guarojío, tepehuano and pima (print and digital) (project activity 3.3.2)	38,000	Y 3	According with WWF policies and procedures, 3 quotations from vendors must be obtained in order to select the best one
5308	Sundry	5 practical guides (5 x 1,000) for pilot project practices concerning sustainable production, in spanish, rarámuri, guarojío, tepehuano and pima (print and digital) (project activity 3.3.2)	58,000	Y 3	According with WWF policies and procedures, 3 quotations from vendors must be obtained in order to select the best one
5501	Evaluation	Mid-term Evaluation	25,000	Y 2	According with WWF policies and procedures, 3 to 6 CVs of experts must be obtained in order to select the best one
5502	Evaluation	Terminal Evaluation	35,000		According with WWF policies and procedures, 3 to 6 CVs of experts must be obtained in order to select the best one
	GRAND TOTAL		**4,900,000**		

Note 1 - Year when goods/services will be procured

Note 2 - Based on your organisation's procurement procedures, and in compliance with UNEP rules and procedures, briefly explain how the service provider/consultant/vendor will be selected

APPENDIX 15: TRACKING TOOLS

See separate Excel file.

APPENDIX 16: RESPONSES TO REVIEWS

GEF Secretariat Review - Items to consider at CEO endorsement/approval:

15: The GEF Secretariat requests that, during project preparation, UNEP and the project sponsors examine opportunities for ejidos to benefit from PES systems for which they could be eligible.

Response:

As outlined under ProDoc, paragraph 145 (action line *Capacity building for financing conservation projects*), "the project will increase capacities of communities to mobilize funding for biodiversity conservation and sustainable land management from diverse sources, diversifying and bundling funding opportunities, for example payments for ecosystem services (PES), like biodiversity conservation and water sources protection. … Furthermore, new mechanisms and sources of PES, other than CONAFOR´s ProArbol PSA program, will be analyzed as to their potential and applicability under regional and local conditions."

This means that the project will seize, on the one hand, all opportunities to facilitate access of communities, ejidos and other owners of forest resources to "conventional" PES schemes, particularly CONAFOR´s PSA program. However, there is evidence of some limitations of this program, for example its weakness in demonstrating to land users the (long-term) economic advantages of dismissing less biodiversity friendly land uses, as the program stops payments after five years. When the payments end, land users are often unaware of and/or unable to switch to other incentives systems and therefore there is a risk that they revert to unsustainable practices. In addition, CONAFOR federal resources are limited and many well-designed community PES projects cannot be considered for funding. There are also weaknesses in targeting incentive payments under the program to areas of high priority in terms of ecosystem services and biodiversity. This is why there are different appreciations among local stakeholders regarding the benefits or detriments of PES. Hence its promotion by the project will be oriented to those places where forest owners and other actors influencing land use choices, like UMAFORes and NGOs, agree to do so.

On the other hand, and complementing CONAFOR´s PSA program, the project will also promote alternative PES mechanisms, for example local PES schemes through matching funds. CONAFOR encourages ecosystem service users to become involved in such matching funds arrangements whereby users of ecosystem services (cities, water utilities, agricultural producers etc.) are called on to make financial contributions to be used for the conservation and restoration of forest ecosystems. CONAFOR contributes up to 50% of the amount necessary to establish the PES mechanism for periods between five and 15 years. Therefore, strengthening and expanding local initiatives, like that being promoted by the state Direction of Forest Development (see paragraph 66), will be of foremost interest to the project.

Other PES schemes potentially eligible for local stakeholders in the Sierra Tarahumara are CONAFOR´s Biodiversity Endowment Fund and voluntary PES mechanisms like Plan Vivo. The Biodiversity Endowment Fund makes payments for ecosystem services in eligible areas which have been identified based on a regional approach and with an emphasis on biological corridors. The fund operates through investment packages for each eligible area, with an effort to stimulate more investment for the purposes of conservation from other private or public sources in the same area. - Plan Vivo operates through a trust fund providing farmers with financial and technical assistance based on expected carbon revenues for communities working with a range of agroforestry systems and small timber plantations.

Exploring opportunities for forest owners (community and private) to benefit from alternative and longer-lasting PES systems will also respond to STAP concern (expressed in its PIF screening from April 24, 2012), that many gains in biodiversity conservation may be directly dependant on grant funding delivered during the project and therefore may not be sustainable.

To summarise, it can be said that the project will undertake efforts to strategically combine short term incentives for conservation buy-in with long term solutions. The former will include different PES schemes

as well as support programs from different government and private sectors, in many cases constituting a bundling of resources to cover opportunity costs adequately. The latter is more in line with the project's long term hypothesis of local stakeholders taking on board a better understanding of how the maintenance of ecosystem services in the end work in their favor in terms of land productivity.

16: We encourage UNEP to considering inclusion in the monitoring framework an indicator that measures changes in socio-economic benefits, gender disaggregated if possible.

Response:

These considerations have been taken into account in the following Project Objective indicators:

- Percentage of families participating in project activities assessing an improvement in their quality of life;
- Percentage of families participating in project activities assessing an improvement in the value of their natural capital.

These indicators are also reflected in Tracking Tool BD1, section II, line 212 and 216.

The source of verification will be a Sample Gender Disaggregated Survey among families in communities participating in project activities, asking *if* they perceive an improvement, and *in what* it does consist.

Additional Indicator 2 of Outcome 2 and Indicator 5 in Outcome 3 are gender disaggregated. See Project Logframe in Appendix 4.

25 & 26: We ask UNEP to identify additional cofinancing during project development, including, if feasible, grant resources of its own.

Response:

The consultation process with relevant partners during the PPG has resulted in additional strategic co-programming. This has rendered a substantive increase in co-financing commitments when compared to the level at the time of PIF approval. As this is an ongoing process that will continue throughout project implementation as the project becomes visible and establishes credibility, the team decided to make a stocktaking with a cut-off for CEO endorsement to be able to work with conservative while consistent numbers for the co-finance budget that is being presented. As a result, the co-finance commitment letters accrue to a higher amount as shown in the budget. Careful analysis will continue at project inception to sort out essential and eligible investments and the evolving scenario will be reflected in the periodic co-finance reports throughout the project, including the cash vs in-kind classification which is not always possible to do at this stage.

STAP Scientific and Technical screening of the Project Identification Form (PIF)

Date of screening: April 24, 2012

Main observations to PIF:

i) " … no attempt is made to quantify the specific GEBs that will be expected from this initiative nor the extent to which these gains will be stable and resilient to future changes at community level. In addition, the justification for the use of GEF resources it is not clear to STAP reviewers. The bulk of what is described in this initiative are clearly the responsibility of national and local agencies, which are very competent in this country, and the majority of benefits which will flow from this effort will be local. It is at present unclear precisely what global benefits will accrue from this effort.

ii) The PIF notes that this initiative will draw on past experience in GEF projects in the same domain with similar community-focused approaches, and notes in particular the CONAFOR-led environmental services project (GEF 2443) â€“ which promoted biodiversity conversation through PES frameworks in community managed forests. It would be important to review the empirical evidence of the quantifiable gains made in biodiversity conservation from this initiative, the factors supporting success, along with the expected resilience of these gains as many of these may be directly dependant on grant funding delivered during the project and therefore may not be sustainable (ref â€“ review of PES scheme Mexico). This may provide a tangible indication of similar gains possible from this project.

iii) In addition, the PIF also notes that direct dependence on the natural resource base in the target communities or ejidos, and unsustainable use of these resources, is the primary factor driving degradation and biodiversity loss. However, there is little attempt to identify the root causes of this reality along with appropriate strategies to address these root causes."

Response:

i) The project can indeed count on a robust baseline and co-financing. There is no shortage of resources. What is lacking for a sustainable solution and to achieve GEBs is addressing the root causes, which is why the GoM needs the catalytic support of this GEF project. The intervention logic to strategically invest GEF resources was thus designed with the aim to overcome barriers to BD conservation as shown in section 3.3 In the course of the project preparatory phase, global benefits have been further analyzed and are presented in the ProDoc under *Appendix 3: Incremental Cost Analysis.* This analysis should go a long way in summarizing the discernment of local vs. global benefits which could not have been done at the PIF stage in this detail.

In addition, care was taken during project design that these benefits are quantifiable and reflected as such in the log-frame indicators under Appendix 4. *Results Framework.* To further ensure that the achievement of GEBs is measurable and clearly follows GEF eligibility criteria the following measures were taken during project design: i) Key log-frame indicators were chosen with selected (as in PIF) GEF 5 Biodiversity programming outcomes and outputs in mind, ii) The GEF Biodiversity Tracking Tool was used as a tool for project design and iii) Cross references have been included between key log-frame indicators and corresponding indicators in the GEF Tracking Tools for BD1 and BD2.

The project will achieve tangible global environmental benefits for biodiversity in a pilot landscape of 300,000 hectares, as mentioned in *ProDoc, paragraph 99.* The project will also make a significant contribution to the global knowledge base on biodiversity, ecosystem services and threats to habitats. The main increment offered by the project in this respect will consist in establishing a Data Monitoring and Information System for the Sierra Tarahumara (ST-DM&IS) that will allow for systematic monitoring of the most threatened species and the threats affecting them, as well as a representative sample of indicator species and their habitats *(ProDoc, paragraph 105).*

In this context, the project will also discuss, in coordination with GEF ID 3813 Mixteca, lessons learned for the implementation of further efforts leading to global environmental benefits.

ii) Drawing on the experiences from a range of past and ongoing initiatives, the project will undertake efforts to strategically combine short term incentives for conservation buy-in with long term solutions. The former will include different PES schemes as well as support programs from different government and private sectors, in many cases constituting a bundling of resources to cover opportunity costs adequately. The latter is more in line with the project's long term hypothesis of local stakeholders taking on board a better understanding of how the maintenance of ecosystem services in the end work in their favor in terms of land productivity.

As outlined under ProDoc, paragraph 145 (action line *Capacity building for financing conservation projects*), "the project will increase capacities of communities to mobilize funding for biodiversity conservation and sustainable land management from diverse sources, diversifying and bundling funding

opportunities, for example payments for ecosystem services (PES), like biodiversity conservation and water sources protection. … Furthermore, new mechanisms and sources of PES, other than CONAFOR´s ProArbol PSA program, will be analyzed as to their potential and applicability under regional and local conditions."

This being said, by using PES schemes as just an additional source for sustainable livelihood financing and not making the intervention's success including the impact on GEB contingent on such schemes, the project is fully taking on board the guidance from STAP. This further acknowledges the collective lesson summarized in the comment, that gains derived from PES schemes may be "*dependant on grant funding delivered during the project and therefore may not be sustainable*". STAP concerns referring to sustainability of gains in biodiversity conservation by PES are thus being addressed, through the comprehensive, conservative and long term oriented approach taken by the project in this regard.

iii) Root causes of unsustainable use of the natural resource base have been extensively analyzed and identified under *ProDoc Section 2.3: Threats, root causes and barrier analysis*, laying the focus on:

- Root causes of forest degradation
- Root causes of deforestation
- Root causes of decrease and contamination of water resources
- Root causes of poaching.

Comments Submitted by Council Members on the Work Program Approved by Council in June, 2012

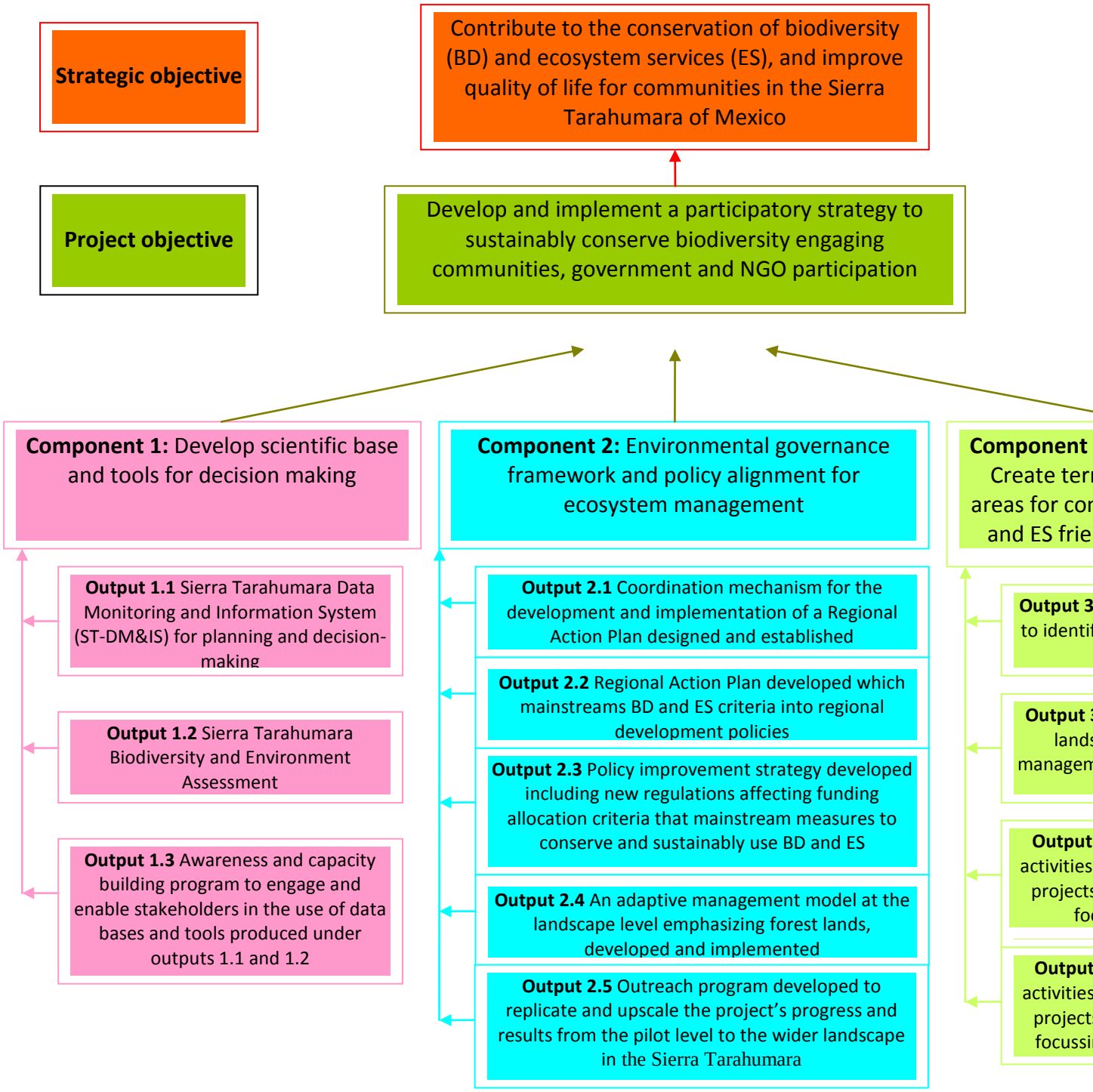
Germany's Comments:

"A close exchange on aspects of environmental governance with the bilateral Mexican- German project (led by SEMARNAT/CONANP) in the central part of the Sierra Madre Oriental (Tamaulipas, San Luis Potosi and Hidalgo) on building an ecological corridor might be useful. Of particular importance in this regard is the effectiveness and the access to existing programs and financial mechanisms to foster ecosystem management and connectivity between protected areas."

Response:

The proposed exchange of experiences on aspects of environmental governance with the bilateral Mexican-German project (led by SEMARNAT/ CONANP) in the central part of the Sierra Madre Oriental (Tamaulipas, San Luis Potosi and Hidalgo) is included as one of several important linkages with other GEF interventions in the Project Document under paragraph 88, bullet 7.

APPENDIX 17: OBJECTIVES TREE (THEORY OF CHANGE)


Strategic objective
Contribute to the conservation of biodiversity (BD) and ecosystem services (ES), and improve quality of life for communities in the Sierra Tarahumara of Mexico
Project objective
Develop and implement a participatory strategy to sustainably conserve biodiversity engaging communities, government and NGO participation
Component 1: Develop scientific base and tools for decision making
Component 2: Environmental governance framework and policy alignment for ecosystem management
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Output 1.1 Sierra Tarahumara Data Monitoring and Information System (ST-DM&IS) for planning and decision-making
Output 1.2 Sierra Tarahumara Biodiversity and Environment Assessment
Output 1.3 Awareness and capacity building program to engage and enable stakeholders in the use of data bases and tools produced under outputs 1.1 and 1.2
Output 2.1 Coordination mechanism for the development and implementation of a Regional Action Plan designed and established
Output 2.2 Regional Action Plan developed which mainstreams BD and ES criteria into regional development policies
Output 2.3 Policy improvement strategy developed including new regulations affecting funding allocation criteria that mainstream measures to conserve and sustainably use BD and ES
Output 2.4 An adaptive management model at the landscape level emphasizing forest lands, developed and implemented
Output 2.5 Outreach program developed to replicate and upscale the project's progress and results from the pilot level to the wider landscape in the Sierra Tarahumara
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APPENDIX 18: UNEP/GEF ENVIRONMENTAL AND SOCIAL SAFEGUARDS CHECKLIST

Project Title:	Integrating the Management of Protection and Production Areas for Biodiversity Conservation in the Sierra Tarahumara of Chihuahua, Mexico		
GEF project ID and UNEP ID/IMIS Number		***Version of checklist***	Version N° 1
Project status (preparation, implementation, MTE/MTR, TE)	Preparation	***Date of this version:***	October 3, 2013
Checklist prepared by (Name, Title, and Institution)	Dr. Dieter Paas, Consultant Tarahumara PPG		

In completing the checklist both short- and long-term impact shall be considered.

Section A: Project location

If negative impact is identified or anticipated the Comment/Explanation field needs to include: Project stage for addressing the issue; Responsibility for addressing the issue; Budget implications, and other comments.

	Yes/No/N.A.	*Comment/explanation*
- Is the project area in or close to -		
- densely populated area	No	
- cultural heritage site	Yes	
- protected area	Yes	Parts of the project area are protected areas.
- wetland	No	
- mangrove	No	
- estuarine	No	
- buffer zone of protected area	Yes	
- special area for protection of biodiversity	Yes	
- Will project require temporary or permanent support facilities?	No	
If the project is anticipated to impact any of the above areas an Environmental Survey will be needed to determine if the project is in conflict with the protection of the area or if it will cause significant disturbance to the area.		

Section B: Environmental impacts

If negative impact is identified or anticipated the Comment/Explanation field needs to include: Project stage for addressing the issue; Responsibility for addressing the issue; Budget implications, and other comments.

	Yes/No/N.A.	*Comment/explanation*
- Are ecosystems related to project fragile or degraded?	No	
- Will project cause any loss of precious ecology, ecological, and economic functions due to construction of infrastructure?	No	
- Will project cause impairment of ecological opportunities?	No	
- Will project cause increase in peak and flood flows? (including from temporary or permanent waste waters)	No	
- Will project cause air, soil or water pollution?	No	
- Will project cause soil erosion and siltation?	No	
- Will project cause increased waste production?	No	
- Will project cause Hazardous Waste production?	No	
- Will project cause threat to local ecosystems due to invasive species?	No	
- Will project cause Greenhouse Gas Emissions?	No	
- Other environmental issues, e.g. noise and traffic	No	

Only if it can be carefully justified that any negative impact from the project can be avoided or mitigated satisfactorily both in the short and long-term, can the project go ahead.

Section C: Social impacts

If negative impact is identified or anticipated the Comment/Explanation field needs to include: Project stage for addressing the issue; Responsibility for addressing the issue; Budget implications, and other comments.

	Yes/No/N.A.	*Comment/explanation*
- Does the project respect internationally proclaimed human rights including dignity, cultural property and uniqueness and rights of indigenous people?	Yes	
- Are property rights on resources such as land tenure recognized by the existing laws in affected countries?	Yes	
- Will the project cause social problems and conflicts related to land tenure and access to resources?	No	
- Does the project incorporate measures to allow affected stakeholders' information and consultation?	Yes	
- Will the project affect the state of the targeted country's (-ies') institutional context?	No	
- Will the project cause change to beneficial uses of land or resources? (incl. loss of downstream beneficial uses (water supply or fisheries)?	No	
- Will the project cause technology or land use modification that may change present social and economic activities?	No	
- Will the project cause dislocation or involuntary resettlement of people?	No	
- Will the project cause uncontrolled in-migration (short- and long-term) with opening of roads to areas and possible overloading of social infrastructure?	No	
- Will the project cause increased local or regional unemployment?	No	
- Does the project include measures to avoid forced or child labour?	Yes	
- Does the project include measures to ensure a safe and healthy working environment for workers employed as part of the project?	Yes	
- Will the project cause impairment of recreational opportunities?	No	
- Will the project cause impairment of indigenous people's livelihoods or belief systems?	No	
- Will the project cause disproportionate impact to women or other disadvantaged or vulnerable groups?	No	
- Will the project involve and or be complicit in the alteration, damage or removal of any critical cultural heritage?	No	
- Does the project include measures to avoid corruption?	Yes	
Only if it can be carefully justified that any negative impact from the project can be avoided or mitigated satisfactorily both in the short and long-term, can the project go ahead.		

Section D: Other considerations

If negative impact is identified or anticipated the Comment/Explanation field needs to include: Project stage for addressing the issue; Responsibility for addressing the issue; Budget implications, and other comments.

	Yes/No/N.A.	*Comment/explanation*
- Does national regulation in affected country (-ies) require EIA and/or ESIA for this type of activity?	No	Not for project interventions and activities.
- Is there national capacity to ensure a sound implementation of EIA and/or SIA requirements present in affected country (-ies)?	Yes	
- Is the project addressing issues, which are already addressed by other alternative approaches and projects?	Yes	
- Will the project components generate or contribute to cumulative or long-term environmental or social impacts?	Yes	Project components will contribute to positive environmental or social impacts
- Is it possible to isolate the impact from this project to monitor E&S impact?	Yes	Project M&E system will allow monitoring E&S impact.