

BOSNIA AND HERZEGOVINA BIODIVERSITY ASSESSMENT

BIOFOR IQC No. LAG-I-00-99-00014-00

Task Order No. 820

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Submitted to:
USAID/Bosnia and Herzegovina

Submitted by:
Chemonics International Inc.

December 2003



ACRONYMS

BDS	Business Development Services
BIOFOR IQC	Biodiversity conservation and sustainable forestry indefinite quantity contract
BiH	Bosnia and Herzegovina
CARDS	Community Assistance for Reconstruction Development and Stabilization
DEMNET	Democracy Network
EEA	European Environmental Agency
EIONET	European Information & Observation Network
ESC	Environmental Steering Committee
EU	European Union
EurepGAP	Good Agriculture Practices Standard
FBiH	Federation of Bosnia and Herzegovina
FSC	Forest Stewardship Council
GATT	General Agreement on Trade and Tariffs
GEF	Global Environment Facility
GDP	Gross Domestic Product
GTZ	Gesellschaft für Technische Zusammenarbeit
HCVF	High-Conservation-Value Forest
IFOAM	International Federation of Organic Agriculture Movements
IUCN	International Union for the Conservation of Nature
JICA	Japan International Cooperation Agency
KM	Convertible Marks (Bosnian currency)
LEAP	Local Environmental Action Planning
LIFE	Financial Instrument for the Environment
MoAWF	Ministry of Agriculture, Water, and Forestry
MoPPE	Ministry of Physical Planning and Environment
NEAP	National Environmental Action Plan
NGO	Non-Governmental Organization
OHR	Office of the High Representative
PEFC	Pan-European Forest Certification

REC	Regional Environmental Center
REReP	Regional Environmental Program for South Eastern Europe
RS	Republika Srpska
SDC	Swiss Agency for Development and Cooperation
SDSC	Sustainable Development Steering Committee
SIDA	Swedish International Development Agency
UNEP	United Nations Environment Program
UNESCO	United Nations Educational, Scientific, and Cultural Organization
USAID	United States Agency for International Development
WB	World Bank
WTO	World Trade Organization
WWF	World Wide Fund for Nature

EXECUTIVE SUMMARY

The USAID Mission to Bosnia and Herzegovina (BiH) commissioned this study to help it formulate its strategic framework over the next year. A three-person team was fielded for two weeks as part of the Biodiversity Conservation and Sustainable Forestry contract (BIOFOR) to (a) assess current biodiversity in BiH; (b) identify the most immediate threats to biodiversity; (c) identify actions to address current conditions and threats; and (d) determine how USAID programming affects conservation of biodiversity in BiH. The team, which consisted of a resident biodiversity expert, an environmental planner, and a natural resources management specialist, conducted interviews, did field studies, and reviewed the literature to arrive at its findings.

Status of Biodiversity

Because BiH anchors much of the biological diversity of the entire Balkan peninsula, it has a pivotal role in the environmental health of the region. It appears that BiH is one of the five European countries most rich in species, but about 19 percent of the plant species in BiH are thought to be under significant threat from land conversion, unsustainable forest management, and exposure to pollutants. Thus, while BiH is an important center of biodiversity for the region, it has the highest proportion of threatened species of any country in Europe. Yet less than 1 percent of the land in BiH has been set aside in protected areas, and these are neither adequately organized nor financially solvent.

The protected area situation is one symptom of the legislative and jurisdictional confusion that prevails. The situation is improving somewhat: Promising new framework laws for the environment have been enacted, though they still lack implementing details. Ability to enforce environmental laws and encourage more rational decision making about land use remains constrained by the limited capacity of government at several levels. Civil society organizations in BiH are only now beginning to coalesce around conservation issues.

Threats to Biodiversity

Threats to biodiversity fall into two general categories: (1) widespread intractable threats inextricably linked to post conflict economics; and (2) more immediate threats that have more measurable impacts but may also have medium-term solutions. Among the macro threats are a weak economy that forces mining of otherwise renewable natural resources; limited public awareness of mechanisms to improve resource conservation; lack of a coherent legislative framework and of substantial regulatory capacity; and policy and market failures that substantially undervalue environmental goods and services.

The urgency of the situation after the war required the entire development community to artificially stimulate employment and push income growth through outright subsidies for private as well as public enterprises. Many of these subsidies were underwritten by discounting natural resource assets: low prices for industrial water and energy encouraged waste; below-cost logs to

wood manufacturers discouraged sustainable management; and low prices for agricultural land favored conversion to commercial and residential use.

Such widespread and systemic undervaluation represents perhaps the largest threat to biodiversity. It is a significant barrier to the investments in management that are desperately needed to make BiH agriculture and forest-based products competitive within regional and European markets. The cumulative effect of undervaluation of natural resources, policy failure from inadequate environmental legislation and implementing policy, and inherent institutional limitations of a post-conflict situation compromise the ability of BiH to compete within current markets. The absence of a national conservation strategy, a coherent protected area network, and guidelines for sustainable management of renewable resources will limit Bosnia's ability to deliver competitive forestry, agriculture, and tourism products.

Actions Necessary to Conserve Biodiversity

A transition from humanitarian assistance to market-led economic growth is now necessary to create the conditions for rational use of the natural resources upon which most citizens of BiH depend. All production systems must begin to reflect fair market values for all production factors, including clean water, air, and sustainably managed forests. At this time, while governmental policy and capacity are slowly improving, all efforts should be made to encourage improved management and stewardship of agriculture, forestry, and tourism in BiH. There are a number of ways this can be done.

Harness Value Chain Capacity for Environmental Competitiveness. As increasing numbers of agriculture and forest enterprises are stimulated, there is a unique and historical opportunity to harness the power of the private sector to foster sustainable stewardship of land. The broad private supply chain initiatives that now use auditable standards of environmental, health and safety, and social performance in the food and wood products industries are powerful tools to promote incorporation of conservation and biodiversity values into export-oriented activities.

Build Networks of National, Entity and Local Environmental NGOs. Sustaining and expanding on NGO-related programs are vital if NGOs are to become key players in conservation of biological diversity. Programs are needed that enhance NGO financial sustainability, improve internal management and strategic planning, educate members, improve access to information, and strengthen linkages between NGOs and government decision makers.

Implement Environmental Education Curricula at all Levels. Improving environmental awareness is essential if BiH is to conserve its biodiversity, improve transparency, and enforce the rule of law related to the environment. Yet there is no systematic effort being made today in BiH to introduce interdisciplinary environmental education into the educational curriculum at any level.

Increase Institutional and Technical Capacity in Land Use/Spatial Planning. A comprehensive effort is needed in each entity to restructure land use planning, including planning for conservation of high-value natural resources and biodiversity-rich areas that are increasingly being lost to unregulated development.

Improve the Treatment of Municipal and Industrial Wastewater. Clean water is crucial to improving the market basis for conservation. Regulatory and financial mechanisms are needed to motivate private-sector compliance with new water quality laws and standards now being formulated. Private companies are not yet fully informed about pollution prevention, clean production, and environmental management approaches to reducing wastewater and pollutant loads in an economically practical way.

Develop a Comprehensive Protected Areas Management System. Designing and implementing a comprehensive national conservation strategy and setting up a protected areas system are critical to conserving biodiversity in the long run. It is important to move immediately to begin this process.

Establish a Conservation Data Center. Identifying and tracking stress on biological systems across all elements of the landscape – alpine, forest, agriculture, and estuarine – will help decision makers apply their scarce resources to areas that have high conservation value, clarify anthropogenic disturbances, and allow authorities and NGOs to protect threatened and endangered species.

The Role of USAID Programs in Addressing Conservation

Most of USAID's declining resources are directed to three strategic areas of intervention: *economic transformation* to more market-based enterprises and more fiscally responsible government; *democratic reforms* that encourage formation of civil society and increase transparency in political and legal systems; and facilitating the *return of minorities* to their communities by installing basic services and urban infrastructure.

At present USAID has no current or anticipated activities aimed specifically at biodiversity conservation or broader environmental management, but many of its other activities have environmental ramifications. Aspects of several current economic transformation activities – agriculture, forestry, tourism – can be expected to enhance land stewardship, which will have biodiversity benefits. The democratic reform initiatives to strengthen civil society, especially NGOs, and local government capacity to make more informed decisions about land use and waste management will help build grassroots appreciation for environmental values. Activities supporting the return of displaced minorities not only help to build livable communities but significantly improve water and energy utilities in ways that will ultimately improve natural resource valuation.

USAID activities in other areas – privatization of public enterprises, support for competitiveness clusters, improving the capacity of independent media, and strengthen municipal government – could be tweaked to reward better stewardship of natural resources.

Recommendations

In the spirit of Section 119 of the Foreign Assistance Act, the assessment team identified actions that could significantly improve conservation of biodiversity within the Mission’s current and potential programming structure. The recommendations do not address all the actions needed to conserve biodiversity but focus on those that may lie within the manageable interest of the different Strategic Objective teams. All were reviewed with the teams and most received a favorable response including:

Financial Sector Reform

Define guidelines and procedures for environmental risk review and train USAID partner Financial Institutions to bring environmental practices up to international standards; this will help divert USAID investments away from activities that could have severely adverse effects on natural resources and biodiversity.

Private Enterprise Development

Support independent and market-based certification of BiH forests/wood industry to standards applicable within current or prospective markets to improve both upstream and downstream conservation performance; this will improve access to and competitiveness in regional and international markets for forest products.

Privatization

Modify the privatization process as follows:

- Improve the quality of environmental liability disclosures in information memoranda.
- Make environmental performance criteria part of tender documents; this will define for bidders project expectations regarding environmental management.
- Raise the valuation of environment performance capability through explicit use of private value chain standards in bid documents.

Civil Society

- Amplify NGO support to replicate local environmental action planning across municipalities and build two to three coalitions that can provide national recognition and leadership for such a process.

- Work to change tax laws to make tax-deductible contributions to NGOs from corporations and individuals.
- Collaborate with NGOs to publish primary school environmental curricula. Underwrite a national environmental education and awareness campaign.

Local Governance

- Carefully observe trends in the use of independent certification systems for utilities (as in Croatia) and identify ways to facilitate ISO 14001 training and certification to improve internal management of municipal government and public utilities.

Institutional Strengthening

- Help utilities install pilot water-quality management systems that use an integrated watershed approach with monitoring and information capacity that incorporates indicators for upland resource.

New Programs

- Work with the state and entity governments and public interests to design a national protected areas strategy and implementation plan that will increase protection of high-value biodiversity; collaborate with the World Bank to enhance the success of the GEF-funded protected areas project scheduled to begin in 2004.
- Establish a clearinghouse for quality, environmental management, and health and safety training and certification assistance – a “one-stop-shop” where private and public enterprises and others can access information, resources, and training on market-based standards and environmental management systems. The clearinghouse would support USAID programs in agriculture, forestry, tourism, and municipal infrastructure and management.

Acknowledgements and Disclaimer

Identifying and assessing the information required to conduct this assessment was challenging and required support from USAID staff and partners. The team could not have undertaken this rewarding work without the dedicated support of many people including Samir Dizdar, Selma Sijercic, and Amira Vejzagic. Support from USAID’s Babette Privot and Merritt Broady, and their respective staffs, was outstanding and partners from the Regional Environment Centre and various Ministries was indispensable in the conduct of this work. Without the open doors to partner NGOs and contractors this assignment would have been impossible.

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The findings and conclusions of this report are, to the greatest extent possible, based on the team's collective wisdom and objectively verifiable evidence. Nonetheless, the conclusions and recommendation belong to the authors and in no way reflect U.S. Government policy or official position.

TABLE OF CONTENTS

Acronyms		
Executive Summary		iii
SECTION I	Introduction	1
SECTION II	The Status of Biodiversity in BiH	4
SECTION III	Policy, Regulatory, and Institutional Framework	13
	A. Policy Framework	13
	B. Legislation	16
	C. Institutional Environment	20
SECTION IV	Threats to Biodiversity	30
	A. Macro level Threats	30
	B. Immediate Threats to Biodiversity Conservation	32
SECTION V	Actions Necessary to Conserve Biodiversity	38
	A. Design a Comprehensive Protected Areas Management System	38
	B. Harness Private Capacity for Environmental Competitiveness	40
	C. Increase Institutional and Technical Capacity in Land Use/Spatial Planning	46
	D. Build Networks of National, Entity, and Local Environmental NGOs	48
	E. Create Environmental Education Curricula for BiH	49
	Educational Institutions at all Levels	
	F. Maximize Treatment of Municipal and Industrial Wastewater	49
	G. Establish a Conservation Data Center	51
	H. Require that Production Factors Incorporate Environmental Costs and Benefits	51
SECTION VI	USAID Program and Biodiversity Conservation	54
SECTION VII	Recommendations	60
ANNEX A	Scope of Work	A-1
ANNEX B	Biosketches of authors	B-1
ANNEX C	Bibliography	C-1
ANNEX D	USAID Program Description	D-1
ANNEX E	Section 119 of the U.S. Foreign Assistance Act	E-1
ANNEX F	CD Rom of background documents	F-1
ANNEX G	Endangered fungi in BiH	G-1
ANNEX H	IUCN Red List for plants in BiH	H-1
ANNEX J	Endemic fish species in BiH	J-1
ANNEX K	ICUN RED List for animals in BiH	K-1
ANNEX L	Endangered species in BiH	L-1
ANNEX M	Common Institutions Responsible for Ratification of International Agreements	M-1
ANNEX N	EU Directive on Conservation of Habitats	N-1
ANNEX P	Comparative Review of Private Standards	P-1

SECTION I

Introduction

Bosnia and Herzegovina (BiH) is slowly emerging from catastrophic civil strife that has rent the social, cultural, economic, and biogeographical fabric that once supported what was one of Europe's most prosperous economies. As civil order and the underlying infrastructure improve, the development community will be turning from humanitarian response to supporting governance and enterprise capacities on which to build a foundation for sustainable economic development. The USAID Mission to Bosnia and Herzegovina is now beginning a strategic planning process in which it will consider a myriad of intervention options in terms of its relative strengths and funding realities for the planning cycle that begins in 2005.

As the public and private sectors began to sort out their roles in postwar BiH, it became clear to all donors and NGOs that they must increase the attention they give to the critical role that natural resources must play as reconstruction progresses. Recently, in the process of drawing up the National Environmental Action Plan (NEAP), nongovernmental organizations, academics, and government officials acknowledged that the potential to reenter product markets and generate employment will depend on improving the management of agriculture and forest resources.

There is also an emerging consensus that water and air quality must improve dramatically before the country's economic sector can compete realistically in European markets. Indeed, accession to the European Union and participation in the World Trade Organization (WTO) and General Agreement on Trade and Tariffs (GATT) will require that BiH begin to apply norms that more accurately reflect the actual costs of environmental goods and services, including water, energy, and pollution abatement.

One element of natural resources management – the conservation of biological diversity – is an excellent proxy by which the broad health of the environment can be gauged. Healthy biodiversity derives from good land-use management, a functioning civil society – the governance of which is transparent – and investment in production and conversion capacity. Deterioration in biodiversity, as is the case throughout BiH, is often the result of inadequate regulation, inappropriate policies and market pricing signals, and the erosion of civil society, which encourages unsustainable extraction by those who are not being held accountable.

Assessment Purpose and Methodology

To ensure that its future investments in BiH are guided by sound analysis of both direct and indirect indicators of economic development, USAID commissioned an assessment of biological diversity and natural resources there. Under the Biodiversity Conservation and Sustainable Forestry Indefinite Quantity Contract (BIOFOR IQC), a three-person team spent about two weeks investigating the status of biodiversity, documenting the most significant threats to

biodiversity, and determining what must be done to improve conservation. After documenting the threats to biodiversity, the team assessed the ability of the evolving USAID portfolio to take actions necessary to conserve biodiversity.

This report seeks to help the mission make strategic choices as it moves from a humanitarian response to an agenda for sustainable economic development. The report closely follows the terms of reference provided by the mission (Annex A) as supplemented by guidance provided through Section 119 of Foreign Assistance Act (Annex E). Notably, while USAID is required to thoughtfully consider the effect of its programming choices on biodiversity conservation, it is not required to intervene directly in conservation. In fact, the USAID mission is simply working now to lay the civil and economic foundations upon which biodiversity conservation ultimately depends.

In 1987, the United States Congress amended the Foreign Assistance Act to add new requirements for USAID environmental procedures, codified under 22 CFR 216. In brief, the requirements are:

Section 119-Biodiversity. Every country development strategy statement or other country plan USAID prepares must include an analysis of: (1) the actions necessary in that country to conserve biological diversity, and (2) the extent to which the actions proposed for support by USAID meet the needs identified.

It is clear that the tropical forestry and biodiversity assessment exercise is not specifically a programming or sector-wise design effort. It is instead a preliminary environmental review of the Mission's proposed multiyear strategy for the country to ensure that:

- Planned activities and investments are not likely to adversely affect forestry and biodiversity.
- Opportunities for synergy among strategic objectives are identified that could contribute to conservation and biodiversity.
- Other issues and opportunities for USAID assistance that may match the Mission's general strategy are identified.

The assessment team interviewed more than 50 individuals within government, NGO, and private-sector institutions in addition to doing an extensive review of the literature and cataloguing the most pertinent documents on CD-ROM (Annex F). The team also conducted site visits to established protected areas and functioning enterprises. The team met with all the USAID strategic objective teams and with contractors and NGOs responsible for implementing USAID programs. Before leaving Sarajevo, the team presented an exit briefing and discussion.

Acknowledgements

Bosnia and Herzegovina is only now able to begin addressing important questions about how biodiversity and natural resources management can support economic growth, encourage formation of the civil society, and improve the reintegration of displaced groups into the fragile

postwar economy. The assessment team was extremely heartened by the constructive engagement of USAID's strategic objective teams and the program office. The enthusiasm and openness of team leaders, project officers, and implementing partners made it possible for the team to quickly assemble a large body of knowledge and share the results quickly. Samir Dizdar and Merritt Brody deserve special recognition for their support and their willingness to ensure a useful result.

SECTION II

The Status of Biodiversity in BiH

Bosnia and Herzegovina anchors much of the biological diversity and broader natural resources of the Balkans. Located atop the continental divide at the headwaters of the Danube, BiH occupies a pivotal role in the environmental health of the entire region. And BiH may well be one of the five most species-rich countries in all of Europe.

About 19 percent of the plant species in BiH are thought to be under significant threat from land conversion, unsustainable management, and exposure to pollutants. BiH thus has the dubious distinction of being both an important center of biodiversity for the region while having one of the highest proportions of threatened species of any country in Europe. This section summarizes current biodiversity in BiH as a basis for understanding the importance of conserving biodiversity there.

Geomorphology and Shared Resources

BiH is a beautiful country with softly undulating terrain and rich beech (*Fagus sylvatica*) forests located in southeast Europe. Total land area is 51,129 square kilometers. BiH has 1,459 km of border, with Croatia to the north and west and Serbia and Montenegro to the east and south; it also has 20 km of coastline on the Adriatic Sea, though it is otherwise landlocked. All major watersheds and biogeographical regions in the country are shared with its neighbors; thus the natural resources and biodiversity conservation challenges of BiH are transboundary not only in nature but also in importance.

BiH's biodiversity is founded on a heterogeneous geological foundation that has undergone major tectonic change since the Pleistocene and Cretaceous periods and that has been further complicated more recently by extensive glaciation. Carbonate rocks like limestone and dolomite predominate, but silicate rocks and alluvia of various ages are common in the central and the eastern parts of the country. The southern portion of the country contains 4,400 square kilometers of karst topography. Exhibit 1 on the following page illustrates the complex geologic character of the country. Owing to its wide range of altitudes and its situation between European and Mediterranean weather systems, BiH also has very diverse climatic zones and precipitation characteristics. The geology and weather together, and the resultant microclimates and soil types, have created a rich mosaic of biodiversity.

Of the 11 main primary watersheds in the country, eight drain into the Black Sea basin through the Danube River system; the other three drain into the Adriatic basin through the Neretva River. The Sava River is the backbone of the area draining into the Black Sea; most major waterways in the country flow into the Sava. Fresh water springs are the dominant hydrologic feature in this area. Exhibit 2 on the following page depicts the primary and secondary waterbeds in BiH. It clearly illustrates the dependence of neighboring countries on sensible water resources management in BiH—which has thus far failed to materialize.

BiH is moderately wet, with an average annual precipitation of 61.5 billion cubic meters, some 43 billion cubic meters of which drains to surface waters (rivers, streams and lakes). The highest rainfall occurs in the winter, the least in the summer. The surface water discharges of the main river basins in BiH reflect seasonal variations in precipitation.

Major Landscapes and Ecosystems

Almost half the country (47 percent) is covered with forests, distributed throughout the central and portions of the country (see Exhibit 3 on the following page). Mixed farming—grains, horticulture, vineyards, and pasture—is concentrated mainly in the north. Intermountain valleys in the central and southern parts of the county support a variety of farming and grazing activities. Permanent cropland (olive, grapes, and citrus) is predominant in the south. In all, mixed farming and permanent crop uses cover about 30 percent of the country and pastureland an additional 23 percent.

The four main biogeographical regions in BiH (see Exhibit 4) and their approximate area in hectares (ha) is as follows:

- Mountains and river valleys (1.28 million ha)
- Lowlands in the Pannonian region (2.25 million ha) (the Pannonian plain in central Europe southwest of the Danube also includes parts of Austria, Hungary, Slovenia, Croatia, and Serbia and Montenegro)
- The Mediterranean region (0.5 million ha)
- The karstic region (1.08 million ha)

Considering their geographical, geological, climatic, and historical differences, these regions naturally display significant horizontal and vertical ecosystem differences. BiH is thus distinguished by very diverse ecosystems, distributed from sea level near the Adriatic to the alpine mountain peak of Mt. Maglic at 2,386 meters.



Rich beech forest provide the basis for the wood industry

In the central part of the country the vegetation types are similar to those in northern and central Europe. Vegetation in Herzegovina (the southern portion of BiH) and Western Bosnia, with large karstic areas, is typical of the submediterranean region. The high mountains of the Dinaric Alps, which parallel the Adriatic coast, separate these two regions of similar vegetation.

In the submediterranean region in the south and west, there is a narrow remnant ecosystem of evergreen oak forests and rocky meadows. The lower course of the Neretva River and its tributaries, adjoining karstic fields, also supports remnant riparian forests of species such as ash, elm, oak, and alder. These species are also found in lowland flooded forests in the Pannonian region in the north. The coastal forests once had much broader distribution but are now under significant threat from land conversion.

Moving north from the coast, forests of pubescent oak, oriental hornbeam, and Italian oak form the next major vegetation type, which exists in a narrow belt intersected with rocky meadows and arable land. In the past intensive grazing and cutting have severely damaged these forests. Such activities have transformed the forests first into shrub communities and ultimately into karstic meadows.

Hornbeam forests planted with ash, linden, sumac, and other species form the next association belt. They are found on steeper slopes at altitudes up to 1,000 meters. Coastal beech forests occur in association with pubescent oak and oriental hornbeam on the coastal side of the Dinaric Alps in Herzegovina and western Bosnia. This narrow belt of beech forest has been so significantly impacted by intensive grazing that there is only a remnant left today.

On the mountains in Herzegovina (Mt. Prenj, Mt. Cvrstica, and Mt. Cabulja) and on those bordering Montenegro (Mt. Orjen), a belt of endemic pine munika occurs above the beech forests, with dwarf pine growing above the endemic pine belt. The dwarf pine communities have been significantly impacted by conversion into subalpine pastures.

Perhaps the Richest Forests in Europe

About 80 percent of forest and other wooded land is state-owned. The remainder is owned by a large number of individual private owners. In state-owned production forest, the growing stock per hectare is estimated at 220 m³, the average annual volume increase is about 4.6 m³ hectare (ha), while the average harvested volume per hectare reaches 4.2 m³ ha. Nearly three-fifths of the forests can be characterized as production forests, while about 40 percent are not available for wood supply.

Forest Development & Conservation Project
Appraisal
The World Bank, 2003

Broadleaf oaks dominate the continental part of the country. Because they are located in the areas with the highest rural population, they are under extreme pressure from human activities and their numbers and sizes have been significantly reduced. Sessile oak and chestnut forests are to be found on acidic soils in northwestern Bosnia, where bracken, heath, and similar species are common. In northeastern and eastern Bosnia, forests of sessile oak and hornbeam give way to Turkish and Italian oak. Dominant species in these forests are the lime tree and the tatarian maple. This association is also common in the upper watershed of the Drina River.

Flooded forests of common oak in the northern plains occur intermittently along the Sava River and in the valleys of its main tributaries, the Una, Sana, Vrbas, Ukrina, Bosna, Spreca, and Drina rivers. In more arid and elevated areas they are replaced by forests of common oak and hornbeam. Forests of sticky alder occur only rarely, in very wet and saturated wetland areas. Riparian forests of willow and poplar are common along main rivers in the northeast. Beech is the most dominant forest type in BiH, covering the largest land area. Dominant species include sycamore, elm, and European ash. Because beech and beech-fir forests are the most economically important forests in BiH, they are commonly overexploited. Clear spruce stands occur within the belt of beech and fir-beech forests.

Stands of black and Scots pine occur on steep and eroded land; usually they represent primary vegetation types. At lower altitudes black pine is dominant. These communities prevail on dolomite and serpentine bedrock.

Species Diversity

Flora. BiH has is very rich in flora; it has an estimated 3,572 plant species, subspecies, and varieties; some 3,000 species of algae; and 3,000 to 5,000 species of fungi and lichens. Considering the number of species and the relatively small land area, BiH is among the five richest countries in Europe in terms of species density and diversity. The country has a significant number of endemic plant species, an estimated 500.

On average, 74 percent of fungi species from the International Union for the Conservation of Nature (IUCN) Red List for Europe can be found in BiH forest ecosystems. Although there are no reliable data on the current status of and threats to fungi species in BiH, the broad ecosystem diversity in the country suggests that a large number of fungi may well be endangered, particularly species from the subalpine and alpine belts that are very sensitive to any disturbance. A certain number of potentially endangered fungi species are collected as wild growing species; lack of strong natural resources management could very negatively affect their efficient preservation (See Annex G)

Flora in BiH has yet to be fully inventoried. The list of plants thought to occur in BiH in the IUCN Red List was drawn in 1990 from literature and herbarium sources only and the Red List for BiH was finally published only in 1997 (see Annex H). BiH has significant percentages of endangered plants (19 percent) compared with other European countries.

Table 1 IUCN Endangered Plant Species in Europe (2002)

	Extinct	Extinct/Endangered/ E	Endangered	Vulnerable	Rare	Indeterminate	Total number of endangered species 1	Number of species	Percent of endangered species
Austria	1		1	1	20	1	23	3,100	0.7
Bosnia Herzegovina	3	5	43	286	289	52	678	3,572	19
Bulgaria		1	1	14	84	6	106	3,350	3
Denmark					2		2	1,450	0.1
Finland				1	4	1	6	1,102	0.5
France	7	3	21	81	83	7	195	4,630	4.2
Greece	6	1	28	80	430	32	571	4,992	11.4
Holland				1			1	1,221	0.1
Ireland					1		1	950	0.1
Iceland					1		1	377	0.3
Italy	1		29	80	190	12	311	5,599	5.6
Hungary			3	7	16	4	30	2,214	1.4
Norway				3	9		12	1,715	0.7
Germany	3		3	2	5	4	14	2,682	0.5
Poland	1	1	1	10	10	5	27	2,450	1.1
Portugal	2		46	113	98	12	269	5,050	5.3
Romania			11	14	67	7	99	3,400	2.9
Spain	3	3	185	272	484	41	985	5,050	19.5
Sweden				3	10		13	1,750	0.7
Switzerland	1		4		21	5	30	3,030	1
Turkey	10	1	47	167	1,608	53	1,876	8,650	21.7
United Kingdom	1		1	3	14		18	1,623	1.1

Fauna. The species of fauna in BiH have evolved in the 20,000 years since the last ice age. Most migrated from the northern and southern parts of Europe and Asia, though as with plants, there is a large number of endemic species.

Because BiH is a mountainous country, much of its fauna is adapted to mountain habitats. In the central and the southern parts of BiH and the northern and northeastern Herzegovina area, dense stands of coniferous and broad-leaved forests, meadows, pastures, and mountain turf are habitat for a rich diversity of fauna. Numerous species originating in the Alps, central, south, and southeastern Europe, and Eurasia are found in these areas, including such rare endemic animals as the spalax and snow vole, as well as chamois, brown bear, and an endemic race of marten. Important and rare bird species include grouse, vultures, and Ural owls. Alpine salamander and viper are two other important species. Although they may be found in neighboring countries, in BiH they are represented by very small populations whose protection is critical for their survival.

Changes in general geological and hydrological conditions, and particularly the forming and destruction of natural isolation barriers, have had very pronounced impacts on the composition of life in waterways and lakes. The ichthyofauna of Bosnia and Herzegovina represent a unique European biological resource in terms of both total richness and presence of numerous interesting endemic forms (see Annex J). There are no endemic fish in the Black Sea basin, though these waters are rich in species with wider European distribution.

The BiH ichthyofauna consists of 138 subspecies in 69 genera and 27 families. Of these, 19 families are represented by just one genus, and 16 of these families have just one species. The richest genetic and species biodiversity is in the families *Ciprinidae* (26 genera – 51 species) and *Salmonidae* (5 genera – 8 species). Other families with more than one species are the *Acipenseridae* (2 genera – 7 species), *Mugilidae* (1 genus – 6 species), *Percidae* (4 genera – 7 species), *Cobitidae* (3 genera – 6 species), *Clupeidae* (1 genus – 3 species), *Gasterosteidae* (2 genera – 2 species), *Gobiidae* (5 genera – 7 species), and *Cottidae* (1 genus – 2 species). Only 7 of the 27 families are present in the Black Sea basin; there are 12 in the Adriatic basin, and 8 are present in both river basins (See Annex K).

The team's analysis of the biodiversity of BiH ichthyofauna found that of the 69 genera, 28 live only in the Black Sea basin, 16 only in the Adriatic Sea basin, and 25 have representatives in both. Of the 138 fish subspecies, 48.7 percent are found only in the Black Sea basin, 39.5 percent in the Adriatic basin, and 11.8 percent in both. The waters of the Black Sea basin are thus distinguished by the highest biodiversity level. A relatively small number of species are found in both basins, and of these certain species from the Black Sea basin have been introduced into the Adriatic basin (carp, zander, tench, and grayling). To this number should be added 11 allochthonous species originating in other Eurasian and even American waters.

Otter and Eurasian water shrew are species typical of karstic aquatic environments. Hutovo Blato and Bardaca, two wetland habitats, are the only nesting habitats in BiH for the little egret, squacco heron, and black-crowned night-heron. Glossy ibis, Eurasian spoonbills, and gulls are found only at Bardaca. Alpine lakes provide habitat for the alpine newt. The glacial Lake Prokosko on Mt. Vranica is the only home for an endemic subspecies of alpine newt (*Triturus alpestris ssp. reiseri*); preservation of the population in Lake Prokosko is of crucial importance for the newt's survival (See Annex L for more details on endangered species).

Protected Areas

The former Yugoslavian Law on Nature Protection (1970), which is being used in BiH pending implementing legislation for the 2003 Framework Law on Nature Protection, has been the basis for designating and managing protected areas on a national level. Only about 0.55 percent of the territory of Bosnia and Herzegovina (approximately 28,127 ha) is protected and more than half of that is contained within the only two national parks in BiH, Sutjeska National Park (17,350 ha) and Kozara National Park (3,375 ha), both of which were established to commemorate historic battles, not to conserve natural resources.

Table 2 Categories of Protection & Protected Parts of Nature

Group	Protection category	Number	Sub-group	Number	
I	Strict natural preserve	3			
II	Managed natural preserve	2			
III	National park	2			
IV	Special preserves		Geological	2	
			Botanical	5	
			Ornithological	1	
V	Natural landscapes preserve	9			
VI	Herbal species	7			
VII	Animal species	5			
VIII	Song-birds	153			
	Wading birds	66			
	Birds of prey	38			
	Monuments of nature			Geological	3
				Geomorphological	65
				Paleontological	1
Individual trees				21	
			Tree groups	1	

Source: National Environmental Action Plan 2002

The categories specified in table 2 do not correspond with the IUCN categories for protected areas. Moreover, the area designations defined in the 1970 law are outdated. Also, the status of individual species should be discussed within IUCN criteria for the Red Lists of Threatened Plants, Animals and Fungi, instead of within protected parts of nature.

A major activity that has already started in Sarajevo canton is to recategorize existing protected areas and use IUCN categories to determine the status of new protected areas. New protected areas in Sarajevo canton are the nature monument Skakavac (IUCN category III) and the protected landscape Bijambare (V).

Kozara National Park in the northwest of BiH, in the Republika Srpska (RS) covers an area of 3,375 hectares but has no unique biodiversity value. One of the last areas of pristine forest in southeastern Europe (1,291 ha) is within the boundaries of Sutjeska National Park, which covers 17,350 hectares in southeastern BiH, also in RS.

The Sutjeska park is open all year round, though access is limited in winter. It is accessible by road from Sarajevo (110 km) and Dubrovnik, Croatia (142 km). In Tjentiste there is accommodation at the hotel and in bungalows, for a total of 300 beds. These shelters operate all year round, as do guided hiking, trekking, and tour skiing tours. Campsites are open during the summer season. All facilities, which are owned by state companies, are in very bad shape. The number of visitors is low; and those that do come are mainly students from local schools during the summer. Very few visitors to the park are international. Although a management strategy for Sutjeska was prepared two years ago through a project funded by the World Bank (WB), there



Sutjeska National Park

are still numerous obstacles to efficient management, among them inadequate funding from the ministries responsible and lack of trained people and the necessary equipment for monitoring.

The 7,411 hectare Hutovo Blato Nature Park in the southeast contains numerous springs and lakes. The team's research found that it shelters 165 bird species from 39 families, 22 fish species from 12 families, and 610 vascular plant species. In 2001, the International Council for Bird Protection placed Hutovo Blato on its list of important bird habitats. The park is also listed as a wetland of international importance pursuant to the Ramsar Convention and is a registered UNESCO site.

Given BiH's high biodiversity value, the total area protected is exceedingly small. Creating additional protected areas will be critical to conserving biodiversity. This issue is discussed in greater detail in Section V.

In FBiH, the cantons are responsible for establishing new protected areas in IUCN categories III and lower. At the moment, only Sarajevo canton has an efficient system for setting up and managing protected areas. Other cantons have numerous problems caused by weak administration of nature protection (only one person, if any) and lack of resources.

Using Sarajevo canton as an example, the main cantonal authority, the Ministry of Physical Planning and Environment (MOPPE), approves the management plan for protected areas that is provided by the Institute for the Protection of Cultural-Historical and Natural Heritage Sarajevo. The institute contracts with an expert team or institution to actually prepare the plan, which is required to provide guidelines for managing protected areas. The managers of protected areas are required to implement the management plan and may not make any changes without approval from the MOPPE.

Protected areas are established in three successive stages. First, the Institute for Protection of Cultural-Historical and Natural Heritage Sarajevo through a tender procedure selects an expert team or institution to prepare a study on the natural values of the proposed protected area. Once this evaluation of natural values is complete, an adaptive management plan for a protected area is formulated, with detailed guidelines on what activities are and are not allowed. Finally, the canton's Institute for Planning and Development creates a physical plan that very precisely specifies locations and activities.

Biodiversity and Agriculture

Bosnia and Herzegovina has a high level of diversity in domesticated species of plants and animals. Today they, together with the wild species, represent a valuable part of the country's natural heritage.

Though about 54 percent of land holdings occupy less than 2 hectares, most small-scale farmers nevertheless produce multiple products; the mixed habitats contribute to preserving biodiversity. These farmers usually grow fruit, including a wide spectrum of cherries, plums, apples, and pears, and several famous grapes for wine. Very important crops are various types of wheat, barley, oats, rye, buckwheat, and corn. In gardening there are varieties of potatoes, pumpkins,

cabbage, garden oraches, mangel-wurzel, and peas, as well as of decorative, medicinal, and aromatic horticultural species.

Table 3 Land Use in BiH

	FBiH (ha)	RS (ha)	FBiH (%)	RS (%)
Total Area	2,609,579	2,505,300	51.0	49.0
Forest and Bare Land	1,500,179	1,209,590	55.3	44.7
Agricultural Land	1,258,796	1,298,619	49.2	50.8
Fertile Fields and gardens	508,062	671,599	43.1	56.9
Agricultural cultures	461,360	616,548	42.8	57.2
Orchards	41,395	54,358	43.2	56.8
Vineyards	5,307	693	88.5	11.5
Meadows	248,291	236,922	51.2	48.8
Pasture	505,443	358,734	58.3	41.7
Agricultural land per capita	0.56	0.90		
Fields and gardens per capita	0.23	0.46		

Source: National Environmental Action Plan 2002

There were once dozens of autochthonous types of livestock in BiH. Today, the number is reduced to the minimum and many of these are on the verge of extinction, although they represent an immense national heritage. Yet today there are almost no domestic species of, e.g., cows, goats, and horses.

Bosnia and Herzegovina has one of the most diverse ecosystems in Europe, replete with pristine forests, fertile agriculture, ample fresh water sources, and a rich mosaic of flora and fauna. However, lack of concerted conservation efforts, combined with the destruction from the war fought in BiH during the 1990s has left the nation's biodiversity and natural resource base in a precarious and unprotected position.

SECTION III

Policy, Regulatory, and Institutional Framework

Clear policy, a comprehensive legislative framework, and functional institutions are three pillars that support environmental management and biodiversity conservation in any context: national, state, or local. Without them, resource management can only be fragmented and opportunities for conservation are irretrievably lost; over the long term, sustainable resource management priorities cannot be integrated into economic and social policy and programs. Unfortunately, in BiH, these three pillars have yet to be fully constructed at any level of government – state, entity, cantonal, or local.

The following review of environmental policy, legislation, and institutions in BiH provides a snapshot of current conditions, opportunities, and constraints related to conserving biodiversity. The aim is to understand the character of USAID programs in context.

A. Policy Framework

State of Bosnia and Herzegovina

The BiH constitution establishes a federal government, the state, which is administratively divided into two entity governments, the Federation of Bosnia and Herzegovina (FBiH) and the RS. The BiH constitution does not provide environmental policy direction but delegates this responsibility to each entity. Consequently, there is no national environmental policy to direct either entity or with which the state government can present its conservation priorities to other countries

Without a national policy, improving the effectiveness of environmental management in BiH continues to be problematic. A foremost problem is that the entity governments do not have a harmonized direction for creating their own policies. As a result, each has addressed environmental policy independent of the other. This has been partially responsible for a lack of collaboration, especially on transboundary environmental concerns (including biodiversity conservation) and on issues of national importance. Furthermore, the state cannot represent itself as a viable legal partner to international programs and conventions (e.g., RAMSAR, Convention on Biodiversity, Aarhus Convention) that require state participation because there is no state-level direction for the explicit protection of biodiversity.

There is now a foundation on which a national environmental policy and action program may eventually be built. In partnership with the World Bank, technical and policy experts in the FBiH and RS have recently collaborated as a consortium to complete BiH's first National Environmental Action Plan (NEAP). Though the NEAP contains an impressive amount of information, it lacks clear implementation or financing priorities. Nevertheless, it is an important first step in inter-entity cooperation on environmental management issues of national importance that provides the state with its first environmental management policy guidance. Though the

State Council of Ministers has not adopted the NEAP and remains unclear about its implications, officials have articulated the need for a state environmental policy.¹

International Conventions and Agreements. After the war the state gave authority to the Ministry for Foreign Trade and Economic Relations to negotiate and sign international conventions and agreements. BiH has since ratified a number of new international conventions and has also ratified others to which the former Yugoslavia was a cosignatory when BiH seceded from it. BiH is now signatory to the following important conventions and agreements:

- Convention on Biodiversity (1992)
- Ramsar Convention on Wetlands of International Importance (1971)
- Convention to Combat Desertification (1994)
- Protocol on Specially Protected Areas and Biological Diversity in the Mediterranean (1996)
- Aarhus Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters (1998)
- UN Framework Convention on Climate Change (1992)
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (1989)
- Convention on Long Range Transboundary Air Pollution (1979)
- Montreal Protocol on Substances that Deplete the Ozone Layer (1987)
- Convention for the Protection of the Mediterranean Sea Against Pollution
- Protocol for the Protection of the Mediterranean Sea Against Pollution from Land Based Sources (1980).

BiH has not yet signed several other conventions and protocols that promote biological diversity conservation, among them:

- Bern Convention on the Conservation of European Wildlife and Natural Habitats (1982)
- Convention on the International Trade in Endangered Species (1973)
- Protocol on Biological Safety (within the Convention of the United Nations on Biological Diversity (2000)
- Convention on the Conservation of Migratory Species of Wild Animals (1979);

The Ministry for Foreign Trade does not have the expertise, capacity, or financial resources to substantially meet its international obligations. It often relies on entity ministries and experts to provide guidance on ratification and implementation. However, entity governments also have limited capacity to respond.² For example, the FBiH Ministry of Physical Planning and Environment has a total staff of only eight persons, none of whom have significant technical or policy experience with international conventions.

Because of its state's inability to meet its obligations effectively, the state continues to miss opportunities for international financial and technical assistance to programs that would conserve

¹ E.g., Mehmed Cero, assistant minister, FBiH Ministry of Physical Planning and Environment, pers. com., October 10, 2003.

² Ibid.

biodiversity. Failure to meet its obligations also damages the state's credibility as an effective partner, not only in environment-related agreements but also more broadly in economic and social matters.

Environmental Policy at the Entity Level

While the national constitution delegates authority for environmental policy and management to each entity, the entity constitutions differ in the extent to which environmental values have standing; they therefore set differing expectations and obligations for environmental management. Two projects the World Bank is planning over the next several years that are directed to creating a national biodiversity strategy (see Section IV) should help the entities formulate a harmonized strategy for conserving biodiversity and for setting aside and managing protected areas. However, implementing the strategy is likely to require significantly more time and resources than the WB is making available. Meanwhile, it is important to understand the current situation.

Environmental Policy in the FBiH. The Constitution of the FBiH, created in 1994 and amended in 1996 in response to the Dayton Accords, does not address the need for environmental protection or the right of individuals to a healthy environment. Moreover, the list of individual rights does not include either the right to free access to information or the right to petition (REC, 2000). Consequently, there is no basis for environmental management at the entity level.

The FBiH has no comprehensive environmental or biodiversity conservation policies, conservation strategies, or priorities, and has not set aside any protected areas. This fact has significant implications. At the most basic level, decision makers and institutions with direct or tangential responsibilities for environmental management have no foundation for decisions on policy, legislation, or programs. This leads to uncertainty about how scarce human and financial resources can be allocated to manage the environment or conserve biodiversity. Second, environmental values are not incorporated into broader economic development or social development policy or strategies.

Lack of a clear environmental policy for the entity has implications for environmental management at more decentralized levels of government in the FBiH – the cantons and municipalities. Cantonal governments (see below) share some environmental management responsibilities with the FBiH government, but in fact theirs is the practical responsibility for planning, implementing, and monitoring activities that have substantial potential to degrade environmental resources. Without clear policy direction from the entity, cantonal governments, which generally have even less capacity to address environmental management than the entity does, have no structure to support natural resource and environmental management policy or strategies.

Environmental Policy in the RS. The RS constitution adopted in 1994 has been amended several times since. Unlike the FBiH's, the RS constitution explicitly supports environmental protection and the right of citizens to a healthy environment: Article 64 states that the "Republic shall protect and encourage the following: Rational use of natural resources, with the view of protecting and improving the quality of life and protecting and reviving the environment to the

general benefit.” Article 35 states that “a person has the right to a healthy environment. Every person shall be bound, in accordance with the law and his/her own capabilities, to protect and improve the environment.”

Like the FBiH, the RS has yet to adopt a comprehensive policy on environmental management or biodiversity conservation, with similar implications: Environmental values have failed to find traction in the economic and social development of the RS and the institutions that are responsible for environmental management are not able to articulate priorities for allocating scarce resources to conservation.

Conclusions. Comprehensive, integrated, and practical environmental policy is an absolute prerequisite for integrating environmental values, including biodiversity conservation, into economic and social policy and decision making. It also provides the direction for legislation and for the institutions implementing the policy. Today, the absence of a clear environmental policy framework at both state and entity levels puts BiH’s rich biodiversity at risk in both the short and the long term. However, some progress is being made, slowly, in resolving policy shortcomings, as is explained in the next sections, and should be more rapid in the next several years with implementation of the WB projects to facilitate formulation of a national biodiversity strategy.

B. Legislation

State of Bosnia and Herzegovina

Because there is no state-level legislative framework for environmental management or biodiversity conservation, each entity has been left to cobble together its own set of environmental laws and these legislative approaches and priorities that have not been harmonized to any degree until just recently. Without harmonized priorities, the entities have had a very difficult time addressing transboundary issues and finding common legal ground to tackle environmental management issues of national concern, including conservation of biodiversity.

The lack of national environmental legislation and institutions has ramifications for BiH’s goal of joining the EU. BiH recognizes that its long-term economic viability and social well-being are intimately tied to EU integration. Countries wishing to gain EU accession must, among other things, harmonize their environmental laws and environmental management programs with those of the EU environmental *acquis* (the body of principles, treaties, resolutions, etc. on which the EU is integrated). The environment *acquis* covers issues ranging from horizontal legislation to natural resources protection, waste management, and nuclear safety. This harmonization (the “approximation” process) can only be carried out at the state level. Today, then, BiH cannot meet an important prerequisite to EU integration.

Conclusions. Neither the state, the entities, the cantons (in the FBiH), nor local governments have clear policies on natural resource protection or biodiversity conservation. Absence of policy direction leads to ineffective, inefficient legislation and ineffective, inefficient operation of institutions of these governments that have environmental management responsibility. BiH integration into and participation in international programs and agreements on biodiversity conservation is constrained, cross-boundary cooperation between entities is hindered, and

cantonal and local governments are left without a practical approach to conservation of natural resources.

Environmental Legislation at the Entity Level

Environmental legislation at the entity level is a mix of former Yugoslav Republic law, former Republic of Bosnia and Herzegovina law, laws passed after the Dayton Accords created the entities, and new laws written with EU assistance that are intended to harmonize entity laws with each other and with those of the EU. The effect of this legal *mélange* has been a sense of uncertainty at every governmental level about which legislation prevails, which level of government has authority for environmental management and development planning, which enforcement mechanisms and economic or other instruments are to be used, and which institutional changes are needed to implement environmental law.

Laws of the Former Republic of Yugoslavia. The Dayton Accords state that all laws that are not inconsistent with the Dayton Constitution may remain in force. Given that without state environmental guidance, the entities were left to craft their own, their default option was to continue using an array of Yugoslav laws and the entities acted independent of each other in determining which. Consequently, their environmental legislation has never harmonized.

It is widely acknowledged that Yugoslavian legislation that addressed management of natural resources and human effects on the environment generally fell well below international standards and was even considered inferior to policies in many developing countries (BiH, 2002). Fragmented and outdated, it did not include effective regulatory mechanisms to support environmental management. The laws made no explicit reference to the value of or need to conserve biological diversity.

A significant exception assessment is the law on physical planning adopted in the Republic of Bosnia and Herzegovina in 1974. It was the first law to specifically address environmental protection modeled on environmental management principles that were in use by the international community. The law established a system for urban planning and permitting that regulated the impact of development on natural resources and the environment. It continues to be the primary environmental management legislation in practical effect in the FBiH today. The RS in 1996 adopted a new law on physical planning that functions as its primary environmental management tool. Neither makes explicit reference to biodiversity conservation and neither creates a mechanism for defining protected areas for biodiversity conservation.

The Law on Environmental Protection of 1961 is also of particular relevance to biodiversity conservation. The only significant law in the former Republic of Bosnia and Herzegovina to establish a method for designating protected areas, it defines the five categories of protected landscapes and three categories of protection for flora and fauna shown in Table 4.

Table 4 - Protected Area Categories

Group	Protection Category	# Established/Protected
I	Strict natural preserve	3
II	Managed natural preserve	2
III	National park	2
IV	Special preserve	2 geologic, 5 botanic, 1 ornithological
V	Natural landscape preserve	9
VI	Protection of herbal plant species	7 species
VII	Protection of animal species	5 species
VIII	Protection of bird species	257 species
IX	Monuments of nature	3 geologic, 65 geomorphologic, 1 paleontologic, 21 individual trees, 1 tree group

Source: National Environmental Action Plan 2002

The law does not articulate as a specific goal conservation of areas of high biodiversity conservation value. Furthermore, as will be discussed below, the law was underused as a mechanism to protect areas rich in biodiversity.

FBiH Environmental Legislation. The FBiH drafted several new environment laws during the war and soon thereafter. Laws on waters, forests, and agricultural land were all adopted in 1998. The EU and the Office of the High Representative (OHR) helped draft these laws, which depart from former Yugoslavian law and from law previously drafted by each entity in that they are based on current international environmental management principles and include incentives and tools for compliance. The laws were an attempt by FBiH and the international community to address major gaps in existing legislation and improve natural resource management in general.

Cantonal Environmental Legislation. Since the war, several cantons have adopted new environmental legislation. For example, Sarajevo Canton adopted its own laws on physical planning and on air protection in 1999. Herzeg-Bosnia Canton passed its law on physical planning in 1998. Tuzla Canton has passed a series of environmental laws and regulations, and Posavina Canton has adopted legislation that regulates activities that “can significantly affect the environment.”

Nevertheless, the new environmental laws passed by the cantons are limited in number and range; primary direction is still taken from Yugoslav law. Furthermore, the effectiveness of their implementation is highly variable. With few exceptions, the cantonal governments have limited capacity to implement or enforce their environmental legislation, whether it relates to establishing protected areas or conserving biodiversity. One exception is Sarajevo Canton, where

environmental management is generally more progressive and where there is greater capacity to manage natural resources and biodiversity.

RS Environmental Legislation. To close gaps in its environmental law the RS passed a number of new laws shortly after the war. Though the law on physical planning passed in 1996 is the most comprehensive, other new laws on water, electrical energy, agricultural land, and protection of vegetation are of particular relevance because they support improvements in environmental management and biodiversity conservation.

Since the RS does not have a cantonal government structure, the entity government is responsible for formulating environmental legislation and implementing it with municipalities. Therefore, environmental decision making and implementation of environmental legislation is likely to be more efficient in the RS than in the FBiH.

New Environmental Laws in Both Entities. Over the past three years, the EU has helped both entities to draft new environmental legislation that is harmonized with EU directives. The RS adopted these laws in 2002, along with a law establishing an environmental fund. The FBiH adopted them in 2003 but has yet to establish an environmental law fund. The five new laws are the:

- Framework Law on Environmental Protection
- Law on Nature Protection
- Law on Air
- Law on Water Protection
- Law on Waste Management

The Framework Law on Environmental Protection is umbrella legislation. It describes mechanisms for environmental permitting and licensing, environmental impact assessment, and integrated pollution prevention. It also broadly addresses the following fundamental principles:

- Public participation and access to information
- Environmental information and education
- Environmental permitting and prevention of major accidents
- Environmental quality standards, inspections, and supervision
- Financing for environmental protection
- Liability for environmental damage
- Inter-Entity cooperation
- Penalties

The laws together create an effective foundation for environmental management and, indirectly, biodiversity conservation. They largely resolve major gaps in legislation in both entities and give each entity tools for improving environmental management. Now that the entity laws are harmonized, cooperation between the entities on transboundary issues should be improved. Perhaps most important, harmonized entity laws should help facilitate creation of a state environmental law framework. Adoption of these laws is a major step toward conserving

biodiversity in BiH. The Law on Nature Protection, for instance, explicitly provides for protected areas to conserve biodiversity. It supplants the 1961 Law on Environmental Protection.

At the practical level, though, there are still impediments to implementing the new legislation. First, sublaws related to implementation have yet to be adopted, so that there is not yet the specific direction needed by decision-makers at all governmental levels. Second, as is described in section C, the government bodies charged with enforcement have limited capacity. Significant resources must be committed to improving the implementation and enforcement structure and capacity at all levels of government in both entities. Third, as interviews with several government representatives revealed, there is concern that one or more of the laws were written without due consideration to current institutional arrangements in the entities. For example, the Law on Water Protection demands institutional arrangements that are not well matched to those currently in place. As a result, its feasibility is in question.³

Conclusions

Until recently, then, environmental legislation at both state and entity levels did not explicitly protect biodiversity, though the 1961 Law on Environmental Protection did make it possible to establish protected areas. The new Law on Nature Protection explicitly provides for establishing protected areas to conserve biodiversity. The other new legislation protects biodiversity indirectly. It is likely to be a model for structuring environmental legislation at the cantonal level in the FBiH, thereby enhancing decentralized management of environmental resources. It should also improve cooperation between the entities in managing transboundary resources and move BiH significantly closer to meeting the legislative components of the EU environment *acquis*.

Implementing legislation for the five new environmental laws adopted by both entities has yet to be completed and problems remain in creating institutional supports for them. Pending resolution of these issues, biodiversity resources in practice remain unprotected and vulnerable to degradation by a variety of human activities.

C. Institutional Environment

Policy creates the priorities and legislation the mandate to achieve environmental management goals. Effective institutions must be in place to design and manage programs that achieve policy goals consistent with the legislative mandate. Without such institutions, the best policy and legislation is meaningless. This review of BiH institutions involved in environment management makes it possible to identify needs that must be met to better preserve valuable biological diversity.

The institutional framework for environmental management in BiH is complex. The Dayton Accords created an institutional structure the implications of which for environmental management in BiH are far-reaching, and also still far from being implemented. There are significant differences between the entities in organizational structures, capacities, and mandates. The lack of harmonization is further complicated by continuing ethnic tensions and very

³ Hazima Hadzovic, assistant to the minister of water management, Ministry of Agriculture, Water Management and Forestry, pers. com., October 13, 2003.

different styles of governing. Centralist policies in the RS provide some basis for regulatory, command and control, enforcement of laws protecting biodiversity, but the same centralism tends to limit the local participation in decision making that is so important to sustainable natural resources management. On the other hand, the FBiH's more decentralized approach could foster more rapid uptake of participatory conservation but the government there seems to lack the discipline and political will to make hard decisions about conservation. Community conservation plans, as well as effective management protocols, must cross entity – if not international – boundaries, so the current lack harmony is a significant obstacle to biodiversity conservation. The following demonstrates who has responsibility for what.

State of Bosnia and Herzegovina

The state government is comprised of a BiH Council of Ministers and seven ministries. The state constitution does not make environmental management the responsibility of any ministry or of the council. There is no clear policy direction or administrative mechanism for comprehensive management of environmental resources.

Two ministries currently have some concern with environmental management. The Ministry of Foreign Trade and Economic Relations, which has responsibility for coordinating BiH obligations under international treaties and conventions, is the BiH coordinating agency for Global Environment Facility (GEF) programs and is the home of the Sustainable Development Steering Committee (SDSC). Yet the ministry lacks the capacity to effectively implement its obligations under the international agreements to which it is a party.

Because it coordinates European transition programs and EU projects, the Ministry of European Integration is tangentially involved in environmental management. It is responsible for harmonizing BiH environmental standards with those of the EU. Because that, the ministry has no significant role in initiating or implementing environmental management activities.

The Council of Ministers has indicated that future responsibility for environmental and natural resources management and energy policy will be assigned to the Ministry of Foreign Trade and Economic Relations, but no significant resources have yet been committed to promoting this function within the ministry.

Otherwise, the state does not play a significant role in natural resource management. This responsibility is left to the entities and to the government of the autonomous Brcko District. Each of these has pursued its own policy and institutional agenda in the environment sector. This has made pursuit of a state-level approach to environmental management challenging at best. Two WB projects described later in this section are intended in part to build capacity for a national biodiversity strategy. The Ministry of Foreign Trade and Economic Relations should benefit from the assistance of projects, but will need significantly more help over the long term.

Environmental Steering Committee

To help bridge the gulf in environmental management authority at the state level and facilitate cooperation between the two entities, especially for transboundary issues, in 1998 an Environmental Steering Committee (ESC) was established by a Memorandum of Understanding

between the two entities. The ESC is composed of representatives of the ministries in each entity that have primary responsibility for environmental management. International organizations, including the Office of the High Representative (OHR), the EU, the WB, and USAID also support and advise the ESC. Annex M shows the institutional structure for environmental management in BiH.

Among the responsibilities the entities have delegated to the ESC are:

- Oversight of international treaties and conventions
- International environment programs
- Cooperation with the European Environmental Agency (EEA)
- Harmonization of environmental legislation and regulation
- Harmonization and monitoring of environmental standards
- Harmonization of environmental databases and information systems
- Information collection and exchange (international and inter-entity)
- Coordination of all environmental activities linked to European accession (REC, 2002).

The ESC is a quasigovernmental body that at present has no legal authority. While the state has no capacity for environmental policy making, the ESC does advise the Council of Ministers about policy and legislative needs. State and entity government officials, along with international organizations, have discussed the possibility of transitioning the ESC into a state environmental management body. The Italian government is funding a feasibility study to determine how this might be done. An EU representative told a study interviewer that, depending on the outcome of the feasibility study, the EU may be solicited to finance the creation of the new body. Efforts are now underway to create an operational unit that would give the ESC capacity to expand its environmental management capabilities.

Federation of Bosnia and Herzegovina

Institutions. In the FBiH, primary responsibility for environmental management and protection lies with the Ministry for Physical Planning and Environment (MoPPE). The Ministry for Agriculture, Water Management, and Forestry (MoAWF) plays a tangential role in managing natural resources, but not in protecting them specifically. The MoPPE has responsibilities related to physical planning, environmental protection, and building and reconstruction under the 1974 Law on Physical Planning and Environment. The ministry's key permitting authority is in the area of land use planning, development planning, and evaluation of projects that may adversely affect the environment. The MoAWF is responsible for strategy and policy in the agriculture, water, and forestry sectors. It issues agreements and permits, sets standards and regulations, and is responsible for monitoring.

The MoPPE is also charged with demarcating and managing protected areas under the 1961 Law on Nature Protection. Under the successor law adopted this year, MoPPE has authority for to establish and manage protected areas for the explicit purpose of conserving biodiversity – a positive development. There are not now and have never been any category I or II protected areas in the FBiH.

The MoPPE's environmental protection section has departments for protection of biodiversity and natural ecosystems, for general ecology and environmental assessment, and for air/water/soil protection and waste management. The entire ministry staff consists of only eight people, with only one charged with protecting biodiversity in the whole FBiH. The staff has not received much formal training in the areas for which they are responsible. For example, the person responsible for biodiversity conservation has minimal training in biodiversity management principles or tools for conservation.

In general, the MoPPE, like other FBiH ministries, lacks the capacity to manage environmental resources effectively, primarily due to a lack of financial resources, but also because of a lack of both technical expertise and capacity to generate and use environmental data as a basis for decision making and an inability to monitor and enforce compliance. The problem is exacerbated by the lack of clear policy and legislation. The ministry's inadequacies are a significant impediment to meaningful natural resource and biodiversity conservation.

Cantonal Institutions. FBiH is divided into 10 cantons, each with its own constitution and government. Each canton has independent ministries, generally modeled on those at the entity level, that are responsible for environmental management. For example, each canton generally has a Ministry of Physical Planning and Environment. The state constitution gives cantons the exclusive right to manage land use and zoning through these ministries. There is some overlap or gray area in the responsibilities of the canton and of the FBiH ministries. Both are jointly responsible for environmental protection and the use of natural resources, with the FBiH ministries providing entity level coordination.

Though overlapping jurisdiction was meant to foster cooperation between entity and cantons, it has often led to confusion over which government has jurisdiction over legislative decisions and enforcement responsibility. Many cantons have not yet adopted a full complement of legislation for environmental management, while others have laws that articulate cantonal responsibilities. Where laws are lacking, there is uncertainty over jurisdiction for environmental protection. This confusion is further compounded by very uneven technical capacities within each canton.

Under the 1961 Law on Nature Protection, cantonal governments also have the authority to designate and manage lower-level protected areas such as nature monuments and natural landscape preserves, but the cantons vary substantially in their ability or interest in doing so. It appears that the Sarajevo and Bihac cantons have more advanced programs and greater capacity to establish and administer protected areas than the other cantons. Sarajevo has a relatively strong technical Institute for Cultural, Historic, and Natural Heritage that has completed feasibility studies for four different protected areas based on International Union for the Conservation of Nature (IUCN) criteria; it uses the Croatian protected area model in structuring its activities. The institute seems capable of supporting a robust cantonal protected areas program.

There is no protocol for managing interactions between cantons or between cantons and the entity government on establishment or management of protected areas. Such interactions will need to be tested if a robust cantonal protected areas system is to play a substantive role in conserving biodiversity.

Municipalities within each canton are largely charged with implementing cantonal laws, though authority for local spatial planning and related permitting is within their purview. Cantonal governments can also delegate other environmental management responsibilities to municipalities.

Government-Supported Institutes. A number of institutes historically provided technical support to FBiH ministries on environmental management issues, among them the institutes for Meteorology, Agropedology, Statistics, Public Health, and Protection of Cultural, Historic and Natural Heritage. For the most part, the institutes were robust before the war, but their capabilities are now significantly diminished. They generally do not play a substantial supporting role at present.

Republika Srpska

Environmental management responsibilities in the RS are assigned largely as they are in the FBiH. The Ministry for Urbanism, Housing and Communal Services, Civil Engineering, and Ecology is directly responsible for environmental protection and oversees land use planning and development in the entity. The Ministry of Agriculture, Water Management, and Forestry is responsible for air, water, and soil management and protection and has permitting authority over activities that use these resources.

Unlike the FBiH, where significant authority for environmental management activities is delegated to the cantons, much of this authority in the RS is retained at the entity level. However, local land-use planning and development decisions are largely delegated to municipalities, with the entity government providing direction and coordination.

Like those in the FBiH, RS ministries lack the capacity, financial resources, expertise, legislative mandate, and enforcement capability to effectively manage environmental resources. However, the absence of a cantonal level of government and the corresponding competing political interests appears to enable RS institutions to function more effectively than those in the FBiH so that any new biodiversity conservation programs are likely to be more efficient and less problematic in the RS than in the FBiH.

Nongovernmental Organizations

NGOs play a critical role in activating public and governmental awareness of and positive action on natural resource and biodiversity conservation. Until the 1990s, the NGO sector was not well developed and NGOs did not have a significant voice in BiH, but by February 2002, the Regional Environmental Center (REC) estimated, there were more than 150 environment-related NGOs operating in BiH, up from about 20 just after the war. Though this growth is encouraging for its potential to positively affect biodiversity conservation, most environment-focused NGOs are quite small, consisting of a handful of people whose technical and financial capacities are limited.⁴

⁴ Djordje Vojinovic, REC, pers. comm., October 1, 2003.

The primary constraint on not just the effectiveness but even the viability of environmental NGOs is lack of financial sustainability. The average budget for an environmental NGO in BiH in 2002 was €11, 576, which includes the approximately 34 percent that were sustained by support from the international community. Other environmental NGOs are able to survive solely on membership fees and domestic grants and contributions (REC, 2003). Today, public or private contributions to NGOs are not tax-deductible, which effectively discourages donations, particularly from corporate sources.

Table 5 Environmental NGOs in BiH

Organizational	Budget	Funding	Area of Focus
127 Total NGO (70 returned questionnaires)	Total: €775,000	Dues 60%	Education 86%
84,676 Members	Avg. (est.) € 11,576	International Grants 45%	Conservancy 81%
1,210 Members/NGO		Domestic Donations/Grants 28%	Public Participation 73%
42 Paid Staff			Policy-Making 53%
343 volunteers			Tourism 47%

Source: Regional Environmental Center 2003

REC has been a key player in promoting NGO involvement in environmental management. It conducts NGO capacity building programs, offers training, provides small grants, and advocates for state and entity environmental management programs and policies. As a regional NGO, REC works to catalyze the NGO community rather than directly building grassroots participation in environmental initiatives, which is considered the responsibility of indigenous NGOs.

In post-war BiH, few if any NGOs operate in both entities. An exception is a network of over 25 environmental NGOs that have linked efforts, communicating through a cooperative Internet portal. Several larger NGOs in FBiH are active in promoting public awareness of environmental issues, among them ECO BiH and Fondecko. Larger NGOs active in the RS include EKO-Banja Luka and the Youth Democratic Center.

Regionally based and issue-specific NGOs are also growing in number. For example, NGOs in the RS and in Una Canton and in Herzegovina/Naretva Canton are working to establish protected areas. Numerous local NGOs are active in preparing local environmental action plans, conducting environmental education and awareness campaigns in schools and among youth groups, organizing solid-waste clean-up programs in municipalities, and disseminating information on environmental issues.

Though the environmental NGO community is growing, it is still only a nascent force in natural resources and biodiversity conservation in BiH. Building NGO financial sustainability, develop their capacity to network and share information, and strengthening internal management systems remain critical to the growth and effectiveness of the NGO community. Linking BiH NGOs with

international NGOs and modifying tax laws to allow tax-exempt contributions would facilitate the growth, stability, and capability of BiH NGOs.

Private Sector

The private sector in BiH has not participated in any meaningful way in formulating environmental management policy, legislation, or institution building; nor are there any known instances where the private sector has directly or indirectly taken significant action to protect natural resources.

Market-based incentives for improved environmental management that could result in improved environmental quality have yet to be fully recognized, much less codified. Several short-term international donor-supported projects have, in collaboration with local institutes and organizations, attempted to introduce and sustain clean production as a business practice. For example, the Hydro-Engineering Institute of Sarajevo has piloted about 12 clean production programs in industries across BiH that have had some success.⁵

Environmental technology has yet to make significant inroads into the public or the private sector in BiH. Common perceived hurdles to more widespread uptake of new technologies are lack of awareness of environmental technologies, limited availability of investment capital, limited capacity to account for cost savings, uncertainty about operations and maintenance costs, and lack of government incentives.

Only four companies in BiH have so been certified to the ISO 14001 Environmental Management System standard, compared with over 45 companies in Croatia. REC and a handful of other organizations, including the Institute for Standardization in Sarajevo, have worked to build awareness but there is much still to be done.⁶

In short, without market or regulatory incentives, the private sector has not participated in a meaningful way to improve environmental performance in a manner that has direct or indirect biodiversity conservation benefits. There appears to be an unmet need for training in and capacity building of clean production and environmental management systems that could improve performance. That need may grow if domestic and international donor efforts, including USAID's, to support private enterprise development and privatization meet with success.

International Organizations

Since the end of the war, the international community has played an indispensable role in facilitating environmental management in BiH. Assistance has been provided by OHR and a range of multilateral and bilateral agencies. The WB has been primary the multilateral donor. Bilateral donors have included the EU, USAID, Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), the Italian Government, the Swedish International Development Agency (SIDA), the Swiss Agency for Development and Cooperation (SDC), the Japan International Cooperation Agency (JICA), and USAID. Donors have provided financial and

⁵ Tarik Kupusovic, director, Hydro-Engineering Institute of Sarajevo, pers. com., October 14, 2003.

⁶ Davor Turcic, SGS Company, pers. com., October 14, 2003.

technical assistance for a wide variety of programs, among them institution building, water management, and environmental information systems.

Donor activity in environmental management has declined since the immediate post-war period, though as the following discussion shows, donors are still active in supporting environmental management in BiH. The primary donors and their general areas of support are shown in Table 6. Individual donor funding ranges from several millions of dollars to less than \$100,000 per year.

Table 6 - Major Current Donors to Environmental Programs

	World Bank	European Union	REReP*	Italy	USAID	Swiss Devel. Agency	GEF
Institution-building	x	x	x		x		x
Agriculture					x		
Forestry	x	x					x
Water management	x	x	x		x	x	x
Solid waste	x	x	x		x		
Protected reas	x			x			x
Biodiversity	x			x			x
Spatial planning							
Information/monitoring		x	x			x	
Policy/legislation	x	x	x				x
NGOs		x	x		x		x

*REReP donors include the Netherlands, Germany, EC, Norway and the U.S.

Today, the EU appears to be providing the greatest support, through its Community Assistance for Reconstruction Development and Stabilization (CARDS) and Financial Instrument for the Environment (LIFE) programs. The CARDS program has as a priority institution strengthening, monitoring, and planning in the environment and natural resources sector. It is the primary EU financial assistance program in BiH.

The primary impetus for structuring EU activities is to bring BiH closer to accession to the EU.⁷ The EU continues to provide assistance in drafting environmental legislation that is harmonized with the

⁷ Gerard Von Driessche, EC environment task manager, pers. com., 10/10/03

EU Directive on Wildlife and Habitat Preservation (See Annex N)

The 1992 Habitats Directive aims to protect wildlife species and their habitats. Each Member State is required to identify sites of European importance and to put in place a management plan to protect them, combining long-term preservation with economic and social activities, as part of a sustainable development strategy. These sites, together with those of the Birds Directive, make up the Natura 2000 network – the cornerstone of EU nature protection policy. The Natura 2000 network already comprises more than 15,000 sites, covering over 15 percent of EU territory; it is due to be completed by 2004. It is co-financed through the Commission's LIFE programme (set up in 1992 to develop EU environmental policy) and other Community finance instruments.

EU environmental *acquis*; building environmental management capacity within entity institutions, and facilitating the work of the ESC.

The EU has a strong vested interest in natural resources conservation in BiH and has had maintained a strong presence with the ESC. Most of the EU's attention and program support has thus far been analytical (a cost-benefit analysis of public versus project environmental management; a study for the creation of environmental consulting capacity, environmental monitoring and reporting systems; and processing options for waste management and water pollution mitigation). Most of the EU's interests seem to lie with the "browner" environmental issues; it was made clear during several interviews that the EU has limited interest in conservation of natural resources and biodiversity.

Perhaps the largest contribution of the EU to conservation is the carrot of EU accession, which entails more balanced management of natural resources and biodiversity. Framework directives on water, natural resources, and biodiversity are becoming increasingly specific with regard to standards and norms; adherence becomes more important as the indicators framework becomes more specific.

The WB is currently funding a number of agriculture, forestry, water supply/sanitation, and solid waste projects. The WB has three activities scheduled to start within the next year that will directly address biodiversity. Two of them are largely funded through the GEF. They are:

Integrated Ecosystem Management of the Neretva and Trebisjnica River Basins. WB is acting as implementing agency for this \$8 million, five-year GEF-funded project. The objective is to reduce water pollution and improve biodiversity conservation in the Neretva River Basin by using a comprehensive ecosystem-based approach. This is a cooperative project with the Croatian Ministry of Environmental Protection and Physical Planning, the FBiH MoPPE, and the RS Ministry for Urbanism, Housing and Communal Services, Civil Engineering, and Ecology.



The Neretva River

Forest Development and Conservation. This \$5 million, three-year project is designed to help implement legislated reforms in forest organization and management. It aims to increase revenues, improve forest management, and enhance biodiversity conservation through participatory approaches to forest land use.

One component of the project, Promoting Biodiversity and Forest Conservation, to be funded by the Italian government, responds to the government's commitments to leveraging biodiversity into protected areas. The component will be conducted in both entities in coordination with the ESC; forest institutions and organizations will participate. Most significantly, this component will facilitate development of a national biodiversity strategy using a participatory framework built on the process used to complete the NEAP. National workshops; field consultations in each of the FBiH's ten cantons and each of the RS regions, numerous municipalities, and Brcko

District; roundtable discussions on specific themes; and lectures for representatives of businesses, NGOs, and scientific institutions, as well as media appearances and interviews will all be part of the process. Draft maps of proposed protected areas will also be prepared.

Forest and Mountain Biodiversity Project. The objective of this GEF-funded project, planned to begin early in 2005, is to increase the forest and mountain ecosystems that are under formal protection, and to design mechanisms to conserve these ecosystems while using them to improve livelihoods in rural areas. Building on the work of the Forest Development and Conservation Project, the project aims to expanding and strengthen the network of protected areas, enhance the capacity of national institutions and other stakeholders to manage protected areas and to preserve biodiversity, manage resources more sustainably outside protected areas, and integrate BiH into transnational biodiversity conservation activities.

These three projects are laying a new foundation for the establishment, management, and long-term economic viability of protected areas that substantially improves prospects for biodiversity conservation in BiH. They will help to fill a significant gap in the state and entity policy and institutional capacity framework for conserving biodiversity. The projects are a strong start, but substantial additional resources will be required to implement conservation strategy over time. There is thus an opportunity to build on the work the WB is initiating to expand protected areas and better conserve biological diversity.

Through REReP, several donors, including GTZ, EU EuroAid, Netherlands, Norway, and the United States, have provided diverse environmental management assistance to countries in southeastern Europe, including BiH, but REReP projects appear to be ending with 2003. USAID continues its work in rehabilitating municipal water and waste treatment infrastructure and improving the capacity of municipality utilities, as well as supporting NGO capacity building. The only program specific to biodiversity conservation is the World Bank forestry program being funded by the Italian government.

SECTION IV

Threats to Biodiversity

For analytic purposes the threats to biodiversity and to broader natural resources conservation in Bosnia and Herzegovina can be separated into two categories: (1) threats from the general macroeconomic context, which determines national priorities and investment policies and sends broad signals to economic actors about resource utilization, and (2) immediate and operable threats, many originating where administrative policies and procedures and enterprise decisions are made. Though looked at separately, they are inextricably linked. Both must be in harmony for Bosnia's natural resources and attendant biodiversity are to survive.

A. Macrolevel Threats

Macrolevel threats to biodiversity are those that are wide-ranging, persistent, and deeply rooted in post-conflict economics. Most, if not all, donor actions in BiH attempt to address in some way one or more of these threats because they are also threats to economic and social development. Actions to tackle them must be sustained, systematic, and backed by extensive technical and financial resources.

Poor economic performance limits access to acceptable livelihoods.

BiH has historically been economically depressed. Before the war, the area was underdeveloped, lagging 15 percent behind the Yugoslavian average gross domestic product (GDP) and 46 percent behind the world average. Industry constituted about 60 percent of BiH's prewar economy. The unemployment rate was about 20 percent.

The war has had a tremendous impact on the already depressed economy. Industrial activities have nearly stopped. About 40 to 50 percent of the population is unemployed (NEAP, 2003) and half the population is at or below the poverty line. Productivity and job generation have improved recently (World Bank, 2002) but most of the population continues to lack access to a sustainable livelihood, which includes employment as well as basic services like water, wastewater treatment, and electric power. Poverty breeds informal extractive industries that have broad impact on the landscape, such as mining and quarrying, collecting fuelwood, and clearing land for smallholder agriculture.

There is limited public awareness of the need for environmental health and conservation.

Environmental awareness is a prerequisite for effective conservation. In fact, environmental causes and dissatisfaction with natural resource corruption contributed substantially to the demise of the former Soviet Union and the Eastern Europe bloc (Warner et al., 2001). However, environmental awareness has never been high in BiH and both before and since the war the environment has never been a standard component of educational curricula at any level. Elementary and secondary schools still have no environmental curricula and there is no comprehensive state environmental education curriculum for higher education. At faculties of

science and engineering, environmental issues are treated narrowly and inadequately. An interdisciplinary approach to environmental science and environmental economics is lacking in all curricula. Where the environment is addressed at all in public education, it is incorporated into other subjects (NEAP, 2003).

The continuing lack of meaningful environmental education has created a populace that does not fully understand and that undervalues the role of the environment in supporting sustainable economic and social development. Until citizens of BiH are better aware of the importance of clean air, water, and outdoor recreation, they are unlikely to appreciate conservation issues or organize to address environmental needs and abuse.



Inefficient processing and waste from the wood industry

The legislative framework is incomplete and regulation is inadequate.

As discussed in Section III, the legislative framework for environmental management and conservation is complex, incomplete, and uncoordinated; what there is of it lacks implementing regulations. There is no state environmental management strategy or agency, though both Bosnia and Herzegovina has recently adopted framework environmental laws that approximate those in the European Union. Though this is a significant step in the right direction, once again, the framework laws have as yet no implementing details.

In the BiH, it is not even clear whether former Yugoslav laws, laws drafted by each entity after the war, or the new framework environmental laws are in force. There is, moreover, confusion about which level of government has discretionary authority over activities that affect the environment. Given this context, there can be no sound and systematic environmental and development planning that can effectively promote conservation of biodiversity.

Institutional structure and capacity preclude effective environmental management.

Section III reviews institutional issues in BiH that are hurdles to effective environmental management and biodiversity conservation. Lack of a state environmental agency or ministry or alternative capacity and of technical expertise to effectively design and implement appropriate policies and programs is a paramount problem. It is compounded in BiH by confusion about institutional responsibilities for implementing environmental legislation.

Marginally effective institutions have meant undisciplined development, unregulated discharge of waste streams from industrial and domestic sources, overexploitation of forest resources, and a range of other significant threats to biodiversity. Lack of adequate regulation has been further confounded by the slow emergence of civil society and NGOs concerned with conservation and environmental health.

Markets and policies discount environmental production factors.

While economists and environmentalists often quarrel over whether policy failures cause distortions of environmental pricing or result from them, in BiH policy failures and pricing distortions are clearly linked in a vicious and reinforcing cycle that makes the question moot. The environment-related costs of providing water – such as protecting ground or surface water supplies from contamination, managing land resources to minimize erosion and siltation of surface water, or simply paying for the treatment of waste water – are not included in the price. Since the price is artificially low, the resource is used inefficiently, leading to over extraction of a resource that plays a critical role across all landscapes and aspects of life.

Current prices for logs at the mill gate, water at the tap, ores at the smelter, or grazing units at the dairy are all heavily subsidized by the government, donors, and future generations of Bosnians. For example, the cost of delivered water in the RS is approximately 80 percent lower than in Hungary or Estonia and about 92.5 percent lower than the average for the entire European Union (NEAP, 2003). Another example that is shown clearly by the enormous waste in the wood products industry is that current forest stumpage prices (the residual value of standing timber after all processing costs) are probably negative and are not recovering either actual management costs or helping to restock and replant forests so harvests are sustainable. The recent log export ban to protect largely inefficient lumber mills will further exacerbate the situation, as it has done elsewhere (Stewart & Gibson, 1994).

Land mines make extensive areas inaccessible.

Approximately 8 percent of the land area in BiH is currently inaccessible due to the presence of land mines. Much of this land is in the mountainous forested areas that cover about 50 percent of the country; the recent World Bank Forest Project Appraisal estimated that mines have made nearly 200,000 ha of forest land inaccessible (World Bank 2003). As a result, forest industry needs must be met through a smaller base. The result is localized over-harvesting, with deep and long-term impacts on forest habitats and less ability to set aside high-value conservation forests.

B. Immediate Threats to Biodiversity Conservation

The structural threats described have produced an economic and institutional environment where immediate threats to biodiversity conservation can quickly become heightened. We next describe the most immediate threats to Bosnia's natural heritage.

The protected areas system is nonexistent.

BiH is one of the richest countries in Europe in terms of biodiversity, and protected areas are a critical mechanism for protecting that biodiversity. The IUCN has had a long-standing – some would argue conservative – goal that each country should set aside at least 10 percent of its area under different protected area regimes. Yet in BiH neither the state nor either of the entities has a strategy, an enabling policy, or any legislation to facilitate an integrated system of protected areas.

“There are no clear priorities for establishing, managing, or ensuring the financial sustainability of a protected areas system in BiH.”

Mehmed Cero,
FBiH Ministry of Physical Planning
and Environment

Today, the two national parks within BiH, both in the RS, cover a total of 20,635 hectares. These comprise less than 0.50 percent of the total land area in BiH and only a fraction of the biodiversity values found across BiH (World Conservation Monitoring Center-UNEP website). This is the lowest percentage of total surface area under protected areas status in all of Europe (HTS Development, 2001). RS officials have expressed interest in expanding the area of the country under protected areas status to 5 to 10 percent.⁸

In the FBiH, lower-category protected areas can be designated and managed by cantonal governments. For example, Sarajevo Canton has undertaken several feasibility studies of potential protected areas based on their biodiversity value, using for guidance the Croatian model for protected area designation and management. However, practical experience with managing protected areas to ensure their financial sustainability is limited.⁹

A number of areas have received attention as possible new national protected areas. In 2001 a feasibility study was done to analyze whether Mt. Igman/Bjelasnica could become a protected area (HTS, 2001). Local and regional interests, including NGOs, with assistance from the Swiss government, are also actively pursuing protected area status for an area centered on the Una River. The World Bank is the implementing agency for Global Environment Facility (GEF) funding of a transboundary (BiH/Croatia) protected area centered on the Naretva and Trebisnjica River basin and is planning a new GEF-funded project to improve the management of and expand protected areas. There has been preliminary evaluation of other areas of high biological diversity value for potential protection, among them Prenj/Cvrstica/Cabulja, the largest area of holokarst landscape in the world, and Hutovo Blato, a highly valuable wetland complex.

The lack of a national conservation strategy leading to a protected area system has been long acknowledged; formulating such a strategy should receive support from the World Bank Forest Development and Conservation Project slated to begin in 2004.

There has been unplanned conversion of lands with high conservation value.

Postwar economic and social pressures have resulted in displacement and migration of a significant percentage of the BiH population. Of the prewar (1991) BiH population of 4,364,649, it is estimated that some 2,678,000 people were displaced from their homes. Before the war, about 60 percent of the BiH population lived in rural areas and 40 percent in cities and urbanized areas. As one consequence of the major displacement, this situation is now reversed, with 60 percent of the population residing in or near urban areas (NEAP, 2003).

The rural-to-urban migration is causing accelerated conversion of biologically diverse lands near cities and villages, including high-value agricultural land. Agricultural land is a limited resource in BiH. It is estimated that just 49.2 percent of the land area in the FBiH and 50.8 percent of the land area in the RS is or can be used for agricultural purposes. Most of BiH's cities and villages are located within areas that are considered to have significant agricultural value, especially in the FBiH, where much of the population resides in intermountain valleys.

⁸ Radoljub Trkulja, Minister, RS Ministry of Agricultural, Water and Forestry, pers. com., 15 October 2003.

⁹ Valida Celic, director, Institute for the Protection of Cultural-Historical and Natural Heritage of Canton Sarajevo, pers. com., 13 October 2003.

As a result of the shift in population from country to towns, agricultural lands are being rapidly converted to nonagricultural uses like housing, commerce and industry, and infrastructure. BiH has been losing an estimated 10,000 hectares of agriculture land to such uses every year since the end of the war (NEAP 2002). Regulatory institutions and expertise in land use/spatial planning at the local level (and the cantonal level in the FBiH) are insufficient to stem loss of agricultural land.

Other lands of high conservation value are also being converted as a result of major population displacement and poorly informed land management practices. For example, agriculture and development uses often extend into flood plains and bring settlements to the edges of rivers and streams, resulting in loss of the riparian habitat so important to breeding and wintering for many threatened passerines. Illegal homes and infrastructure are being built in forests of high conservation value and adjacent to lakes and other bodies of surface water. Extraction of minerals and aggregate is being conducted without regard to damage to forest or aquatic environments.

Table 7 Most Frequent Loss of Agricultural Land

Cause of loss of agricultural land	Lost area (ha)	Lost area (5%)
Surface pits	900	30
Landfills	300	10
Residential zones	600	20
Water accumulation	300	10
Roads	300	10
Industrial facilities	300	10
Erosion, landslides, etc.	300	10
Total	3,000	100.00

Source: National Environmental Action Plan 2002

Forest management and wood utilization are poor.

- Approximately 55 percent of the FBiH and 44.7 percent of the RS are comprised of forests.
- Forest-based natural resources in BiH are among the richest in Europe in terms of the extent and variety of stock relative to the size of the country (NEAP, 2003).
- Might create a quote from the engineer at the wood products company we visited regarding percentage of input converted to “final” product.
- “We still consider forests solely for their economic function, but there is a need to understand their multiple use values” (Trkulja).
- Capacity for processing is 2-3x greater than log harvesting (Trkulja).
- Lack of multiple-use management approach – no management for conservation values.

There is danger from untreated municipal and industrial wastewater discharge.

Maintaining the health of surface and ground water environments is critical to biodiversity conservation because water is the linkage between all landscape types, from alpine areas to coastal wetlands. Untreated wastewater discharge causes both outright contamination from toxic substances and eutrophication or oxygen starvation of the receiving waters due to nitrogen loading.

With additional nutrient loading from agriculture, the resultant algal blooms cause the death of stressed aquatic vegetation that anchors river and stream bottoms. This in turn leads to further siltation and loss of water clarity, which again reduces plant growth. This well-documented cycle ends in the loss of key breeding grounds for fish and aquatic organisms below the surface. The death of vegetation along stream banks further simplifies stream ecology, destroying habitat for waterfowl, mammals, and amphibians.

About 90 percent of the municipal and industrial wastewater generated in BiH is released to the nearest river, stream, or underground channel without any treatment whatsoever – no settling, filtration, oxygenation, or chemical manipulation. About 56 percent of the urban population in general is connected to a wastewater collection system, 72 percent in cities of 10,000 people or more. Most if not all systems are malfunctioning. Only six cities with a population of 5,000 or more people have functioning wastewater treatment capacity. Before the war, it is believed there were 122 industrial wastewater treatment plants. None of these is known to be functional today (NEAP, 2003).



Unabated release of air pollutants threatens forest ecosystems

Due to BiH's strong prewar industrial base (approximately 60 percent of the country's GDP) and a lack of municipal wastewater treatment, the majority of the rivers in the country have long been highly polluted. Under the water laws of the former Yugoslav Republic, water quality was measured on a scale from I to V, clean to heavily polluted. The water quality of many BiH rivers fell within class IV.

Surprisingly, because the industrial sector collapsed as a result of the war, surface and groundwater quality has actually improved, though existing industrial wastewater discharge remains untreated. There is very little data on current surface water quality, however, though a few studies underway will provide quality data for limited segments of several rivers.¹⁰

The cumulative effect of untreated wastewater discharge, nutrient loading from agricultural systems not adequately buffered to prevent seepage into streams, and sedimentation from land conversion and erosion has been devastating to riparian habitats in BiH. Unfortunately, this has been poorly documented and is certainly not being monitored.

¹⁰ Admir Cerić, executive director, Hydro-Engineering Institute, Sarajevo, pers. com., 14 October 2003.

There is localized overexploitation of forests and rangelands.

Because 60 to 70 percent of the people in BiH are living barely at subsistence level (NEAP, 2003), there is tremendous pressure on the environment. Many rely in whole or in part on natural resources, especially non-timber resources such as plants and game for food and forest timber or other woody biomass resources for fuel and heating. Harvesting and processing of non-timber forest products and other native plants and animals are seen by both entity governments as well as some donors as an economic development sector with significant potential. There is already commercial extraction of these materials, and formal and informal forest product collectors bring the number of people at least partially dependent on forest and its broad suite of products into the hundreds of thousands.

Uncontrolled and excessive exploitation of these resources has been reported in numerous locations throughout the country. Current collection systems are poorly regulated and are most often volume-based, not place or area-based, which leads to additional over harvest. A common visible example is deforestation of hillsides near urbanized areas in response to local fuel and heating needs. Illegal logging has also occurred throughout the country, primarily as an economic activity rather than a response to subsistence requirements. Discussion with independent forest loggers strongly suggests that many concessions still fell many species for which there is no current market in order to extract the high-value beech and oak. Unfortunately, quantitative data on natural resource exploitation, legal or otherwise, is limited.

There is no clear, comprehensive strategy, institutional enforcement capacity, or legislative framework within either entity to guide the sustainable use of resources or to regulate the exploitation of species with special status. In the face of increasing pressure on harvestable natural resources, lack of a sustainable approach to harvest is of significant concern. The decision of the EU, Norway, and Germany to withdraw from the forest sector leaves USAID and the World Bank as the only significant players for an industry that generates some 20-30 percent of current export earnings.

Environmental information and monitoring systems are absent.

Sound information is prerequisite to formulating environmental management and biodiversity conservation strategy, policy, and legislative decisions. Unfortunately, current information on any environmental parameter in BiH (water, air, land, waste, etc.) is sparse, if not entirely lacking. For example, there has never been a comprehensive inventory of biodiversity resources in BiH. There are virtually no time series data that span the prewar and postwar periods. Except for studies undertaken by government institutes participating in international projects, little environmental information is collected systematically and what has been collected has not been well coordinated. There is no comprehensive environmental monitoring system or central database in either entity or for the state of BiH.

“There is a significant lack of data on water usage and quality. Without this, we cannot propose appropriate solutions to problems in the water sector.”

Hazima Hadzovic
FBiH Ministry of Agriculture,
Water and Forestry

In the FBiH, the MoPPE is responsible for collecting environmental information and for monitoring; in the RS, the Ministry of Physical Planning, Civil Engineering, and Ecology is responsible. Government technical institutes that support each ministry are typically charged with implementing activities to collect environmental data and monitor environmental conditions. Collection, monitoring, and reporting generally lack a clear methodology for conveying the information.

A number of activities have recently been initiated to address deficiencies in environmental information systems. Since 2000 BiH has been a member of the European Information & Observation Network (EIONET). The MoPPE is the national focal point for the EIONET program, but the ministry does not have the capacity to collect and report information consistent with EIONET protocols. Several of the new framework environmental laws for both the FBiH and the RS provide directives for establishing environmental information systems, describe reporting requirements, and define mechanisms to use and disseminate environmental information to decision makers and the public. The new EU Community Assistance for Reconstruction, Development and Stabilization (CARDS) program will also support a range of environmental information and monitoring structures consistent with the new laws.

SECTION V

Actions Necessary to Conserve Biodiversity

The assessment team identified the following macro-scale threats to biological diversity conservation in the prior section of this report:

- Poor Economic Performance Limits Access to Acceptable Livelihoods
- Limited Public Awareness of and Education in the Role of Environmental Health and Conservation
- Incomplete Legislative Framework and Inadequate Regulatory Capacity
- Institutional Structure and Capacity Precludes Effective Environmental Management
- Policy & Market Failures Combining to Substantially Undervalue Environmental Goods and Services
- Land Mines Effectively Reducing Access to Natural Resources & Accelerating Localized Over Harvesting

Myriad economic, social, and cultural issues in BiH underlay these threats. With the possible exception of land mines, the breadth of actions necessary to address these threats is correspondingly complex, interdisciplinary, and only addressed strategically by the State over the long run. No one action will suffice as a solution to any one threat. As noted in the previous description of the institutional environment, various donors are tackling components of several of these threats, but the actions are incremental and time, resources and patience are required to affect change. A prescription for a comprehensive action plan to reduce the complex threats to biodiversity is beyond the scope of this assessment. Therefore, the remainder of this section focuses on priority specific actions the assessment team believes will have significant incremental impact on reducing threats.

A. Design a Comprehensive Protected Areas Management System

Designing and implementing a comprehensive national conservation strategy and setting up protected areas systems are critical to conserving biodiversity in the long run. Steps to begin this process must be taken immediately. Such a strategy and system could help galvanize disparate political elements and economic interests into actions that might transcend ethnic differences and pave the way for localized peace. The strategy must include, though not be limited to, the following actions:

- Passing state laws for establishing and managing protected areas that can be implemented across boundaries by each entity;

- Creating a state institutional structure for managing the strategy in the long term, and strengthening ministries in both entities in the short term to build capacity for managing protected areas;
- Creating venues for the substantial participation of communities and NGOs in management of protected areas;
- Inventorying biodiversity across all BiH landscapes in order to prioritize selection of protected areas;
- Identifying key indicators of disturbance and putting in place a real-time system for monitoring and managing conditions within protected areas;
- Defining a strategy for ensuring the economic sustainability of the system through multiple use, integration of local communities, promotion of tourism, and setting acceptable levels of extraction commensurate with management goals; and
- Integrating the BiH protected areas system into international and transnational biodiversity conservation programs, especially those operating within the EU Natura 2000 framework.

The planned World Bank GEF-funded Forest and Mountain Biodiversity Conservation Project has as a preliminary objective to “increase the area in forest and mountain ecosystems under formal protection status, and to develop mechanisms in order to conserve these ecosystems while ensuring that these natural assets provide a basis for improved livelihoods in rural areas and for increased tourism revenues.” This project may be the first in BiH to comprehensively address the need for an integrated protected areas system. The Bank’s GEF-funded project on integrated management of the Neretva and Trebisnjica River Basin will further support biodiversity. Similar support is needed for protecting other areas throughout BiH.

The World Bank’s Forest Development and Conservation Project calls for drafting a National Biodiversity Strategy, which will lay the foundation for a protected area system. This component of the World Bank project will support:

1. *Formulation of a participatory national conservation strategy:* Plans include roundtables, regional workshops, and a number of consultative studies to build the information base required. It is expected that this work will lead to a national conservation strategy that would presumably take recent NEAP activities in spatial planning and biodiversity conservation a step further;
2. *Drafting of proposals for a country-wide protected area network:* The studies planned will help detail the requirements. There will then be two to three workshops to discuss the studies, followed by a session to write the first draft. The project would provide workshop space, facilitation services, and local travel and per diems; it would also support dissemination of workshop results and printing of maps; and

3. *Setting up procedures for a comprehensive consultation process for establishing protected areas:* The project will help BiH design a comprehensive methodology for this purpose that will take into consideration expertise available in BiH. It will be field-tested in the Igman-Bjelasnica area, which a feasibility study funded by the Forestry Emergency Project has proposed as a national park. The project will support field surveys and consultation, as well as stakeholder workshops. It would include local travel and per diems.

These are all activities that could have important outcomes. However, it is unlikely that the resources available to it will allow this project to do more than initiate this effort.¹¹ The broader donor community should be determining now how it can provide further support for these activities. As the strategy nears completion there will be opportunities (e.g., collaborative management plans, financial and investment plans, mapping and delimitation) to address both the management requirements of individual protected areas and the needs of the larger system, such as management training, data-gathering and mapping, transboundary representation, and professional and long-term training.

B. Harness Private Capacity for Environmental Competitiveness

Beyond protected areas, conserving biodiversity in the future will rely on judicious regulatory oversight to reduce industrial discharges, stem land clearing, and regain control of logging, much of which is currently not only excessive but also illegal. This will obviously take time. The donor community should already be carefully considering how the resources and attention now focused on economic development might also foster progressive environmental accounting principles.

Given the number of programs to promote businesses and the massive investment now transitioning to support of productive activities, there is at the moment a unique opportunity to harness the power of the private sector to foster sustainable development. Private initiatives that now use auditable standards of environmental, health and safety, and social performance already provide real tools to incorporate conservation and biodiversity values into most export-oriented activities. Supply chain initiatives are a perfect compliment to economic development program investments for their value in promoting private sector competitiveness.

Sectors most immediately influenced by international market demands for measurable improvements in environmental performance are shown in Table 8. The private standards noted are third-party auditing systems that give specific attention to biodiversity conservation (see Annex P for more detail). The standards are discussed at length below because we believe they are both critical to long-term conservation and well within the manageable interests of a dedicated and organized donor community.

¹¹ The World Bank appraisal document dedicates only \$600,000, 11 percent percent of the total project budget, to the biodiversity conservation component. The experience of others who have created national conservation strategies suggests this is not enough to meet medium and longer-term financing requirements.

Table 8 Private Standards for Forestry, Agriculture, Tourism, and Manufacturing

Sector	Standard	Information
Wood products and Forestry ¹²	Forest Stewardship Council (FSC)	www.fscoax.org
	Pan-European Forest Certification (PEFC)	www.pefc.org
Organic Agriculture	International Federation of Organic Agriculture Movements (IFOAM)	www.ifoam.org
	European Organic Standard	www.europa.eu.int/comm/agriculture/qual/organic
Conventional agriculture	Good Agriculture Practices Standard (EurepGAP)	www.eurep.org
Tourism	GreenGlobe 21	www.greenglobe21.com
	Blue Flag Certification	www.blueflag.org
Manufacturing textile, utilities, and agriculture	ISO 14001	www.iso.ch/iso/en/iso9000-14000
	SA 8000	www.sa-intl.org

The use of such standards in agriculture, forestry, public utilities management, and manufacturing is now becoming a serious competitiveness factor in value chains world-wide. BiH will need to both raise awareness and build capacity to use such standards, given their fast-paced evolution, if it wants to retain a seat at the international trade competitiveness table. Each of these auditable standards (except general process ones like the ISO series and SA 8000) has specific criteria for auditing biodiversity conservation and use of other natural resources.

B1. Wood Products and Forest Industries Certification

Before the war, formal forest products industries generated approximately 10 percent of BiH GDP and employed nearly 10 percent of the trained and semi-trained labor force (GTZ, 2001; Lambregts et al., 2001). The employment figures did not include the pre-mill-gate work force or those employed in the fuel wood and non-timber forest products markets, which would probably add another 10 percent to the work force. Most reports put the number of prewar finished product enterprises at nearly 200 and suggest that informal forest enterprises are likely to be a multiple of this.



Non-timber wood products provide important income for thousands of people in Bosnia

While the numbers vary considerably, there is broad agreement that the number and productivity of formal postwar enterprises have fallen by more than 50 percent, while informal employment has probably doubled. Certainly the number of small, nonintegrated, and often unregistered saw mills has exploded; several sources estimated that there may be as many as 2,000 small sawmills now operating, each employing five to 10 workers each.

¹² The FSC and PEFC standards are cited here as they collectively cover 100% of the European market where most Bosnia wood products are destined. As a matter of policy USAID does not prefer any particular system of certification.

Recovery rates for wood products are extremely low. Even well-equipped mills selling into high-value European markets are operating at less than 50 percent efficiency. The inefficiency is driven by poor milling equipment, inadequately trained workers, and weak market position. It also reflects discounted timber prices that do not reflect scarcity or sustainable woodland management practices and that are having negative consequences for biodiversity. The impact of the wood products sector on biodiversity is significant and direct, economy-driven, and potentially very positive for nearly all the people of BiH.

It is now necessary that donors and lenders and their agents begin to look at forest enterprise in a much more integrated way, taking a value chain approach in which the sustainable management of forests is related to final sales. Interviews and source documents from our study depict an industry where wood products companies must now compete with the informal sector and the few remaining (very inefficient) state-run plants for raw wood. Local branches of the government units responsible for designating who gets timber contracts are increasingly politicized and vulnerable to corruption.

Forest production and the wood products sector are more inextricably linked than ever. Donors must begin encouraging long-term management changes that will help propel wood products into more competitive but more lucrative markets. This will require massive investment for harvesting and processing equipment, removing public agencies from wood production, and paying closer attention to efficiency and buyers' standards for quality management, including the environmental attributes of products.

FSC Principle # 5: Benefits from the Forest

Forest management operations shall encourage the efficient use of the forest's multiple products and services to ensure economic viability and a wide range of environmental and social benefits

Other countries in the region are recognizing the importance of several independently-verified certification schemes which connect consumers and retailers with wood product producers as well as forest stewards. Several schemes are rapidly accelerating their grasp of forest products markets throughout the World and particularly throughout Europe where there is a swelling consumer interest in products originating in sustainably managed forests. The notion of sustainable management is embodied in the specific requirements of these standards that are audited by 3rd parties much along the lines of financial audits. The Pan-European Forest Certification (PEFC) standard and the Forest Stewardship Council (FSC) standards currently predominate the European market place with FSC being by far the largest. In other markets the processing industry is often integrating processing facilities with production forests through these standards or through multiple branding using a combination of standards (e.g. ISO 14001 and ISO 9002:2001 are both being used to ensure quality and environmental management at the mills).

FSC Principle #6: Environmental Impact

Forest management shall conserve biological diversity and its associated values, water resources, soils, and unique and fragile ecosystems and landscapes, and, by so doing, maintain the ecological functions and the integrity of the forest.

As Table 9 shows, Croatia has now certified nearly 2 million ha of public forest to the FSC standard and is using forest certification to position its furniture manufacturing industry in European markets. Poland has doubled the area under certified management in the past year and Romania is relieving its forest agency from auditing, which is improving transparency while allowing the agency to spend more time in management planning.

Table 9 Forest Stewardship Council Certifications in Eastern Europe and Russia as of November 10, 2003.

Country	Number of Certificates	Hectares Certified	Legal Status	Forest Type Certified
Poland	17	6,145,000	Public	Semi-Natural
Croatia	1	1,968,000	Public	Natural
Hungary	3	1,880,001	Mixed	Semi-Natural
Russia	6	1,377,000	Public	Natural
Latvia	2	1,065,000	Mixed	Plantations & Natural
Estonia	2	1,063,000	Mixed	Natural & Plantations
Germany	60	447,000	Mixed	Mixed
Lithuania	16	385,000	Public	Natural Forest
Romania	1	31,000	Public	Natural

Data provided by FSC. www.fscoax.org

The volume of certified forest products is increasing rapidly. In Europe it is becoming almost a non-tariff barrier to trade. Although it usually does not yield a price premium to producers, it is seen as a tangible management benefit that evokes confidence in buyers and satisfaction with consumers.

Nearly all the forest certification models now being adopted worldwide blend the environmental and social values of forest woodlands, paying close attention to the noncommercial values of forests. Each certifying body has guidelines for auditing conformance to its principles and requires annual audit updates to revalidate the certificate. The forest being certified generally bears the expense of registration and annual audits and posts the audit results widely. Beyond their effects on wildlife, the environmental impact of harvest operations on riparian zones should be taken into account by the entire value chain, as well as the increased access to forests and post-harvest damage logging operations traditionally create.

Pan European Forest Certification

PEFC is a global umbrella organization for the assessment of and mutual recognition of national forest certification schemes developed in a multi-stakeholder process. These national schemes build upon the inter-governmental processes for the promotion of sustainable forest management, a series of on-going mechanisms supported by 149 governments in the world covering 85% of the world's forest area.

Pan-European Forest Certification (PEFC) and the FSC both have requirements for systematic identification of and planning and protection for forests of particularly high value. Such forests

FSC Principle # 9: Maintenance Of High Conservation Value Forests

Management activities in high conservation value forests shall maintain or enhance the attributes which define such forests. Decisions regarding high conservation value forests shall always be considered in the context of a precautionary approach.

often provide key habitats for threatened or endangered species or are in particularly fragile areas where harvest operations are more likely to have significant negative consequences for both people and wildlife. These high-conservation-value forests (HCVFs) must be identified in management plans and precautions must be taken to mitigate the effects on them of extraction in adjacent stands. This means that there must be some way to evaluate and constantly monitor the conditions in these HCVFs and there must be contingency plans for unintended or unwanted activities that may result from harvesting.

B2. Conventional and Organic Agriculture

In both organic and conventional agriculture there are performance standards that move beyond traditional measures of environmental health and safety. Agriculture, specialty buyers, and brokers are now working with larger grocery retailers like Ahold, Marks & Spencer, and Coop Italia to insure that food safety is consistently improved. Levels of exposure to agrochemicals are carefully monitored. In the organic movement the watchful eye of auditors is insuring that no inorganic chemicals are used within the prescribed period and that the entire value chain from cold chain and packing sheds through transportation systems to retailing does not contravene prescribed practices. According to Riordan the consolidation of supermarkets is accelerating the use of standards by buyers for international markets (Riordan, et al., 2003). The confluence of supermarket consolidation and the new value chain standards is thus having unintended effects on producers in emerging markets who wish to export.

Interestingly, both organic production systems (as prescribed by most standards and very carefully within International Federation of Organic Agriculture Movements [IFOAM], the most widely used) and conventional systems (including EurepGAP, which controls 55 of the largest grocery chains in Europe) now require attention to conservation of water and land resources, including biodiversity. Most new private standards – and again these are not public standards or requirements of any Para public body such as the World Trade Organization – require that suppliers have farm conservation plans that review adjacent land uses and identify farm impacts on nutrient

EurepGAP Requirements for Environment and Conservation

4.1.1 Is there a risk assessment for new agricultural sites, which shows the site in question to be suitable for food production, with regard to food safety, operator health and the environment? (**Major Must**)

13.2.1 Has a conservation management plan been established (either individually or on a regional basis)? (**Minor Must**)

13.2.2 Does the farmer have a management of wildlife and conservation policy plan for his/her property? (**Recommended**)

EurepGAP Checklist
Fruit and Vegetables
Version 2.0-Jan04

loading, forestry, and wildlife. Again, independent audits, required by the buyers but paid for by the producers, insure that certain conditions are met. When operations fail an audit, corrective action reports are issued; if the infractions are significant enough, the certifying body may suspend or remove the certificate.

Organic requirements are similar with respect to on-farm conservation. IFOAM is quite stringent in its approach to the role of biodiversity within the farming system. It also requires that collectors of wild non-timber forest products insure that the rate of collection does not exceed the average production potential of a given plant. This is important in BiH, where the largest segment of certified organic production consists of the 2,700 collectors of wild forest-based herbs, mushrooms, and plants for essential oils who sell to wholesalers certified by IFOAM-accredited bodies.¹³ Sustainable woodland management and extraction that does not exceed annual production increments are key criteria.

BiH is poised to be a significant player in Europe's rapidly expanding organic foods market. Although there are currently only about a dozen organic farms, farm size and labor favors excellent expansion capability with superb price premiums for certified organic producers. The IFOAM standards promote improved production systems that can be used to foster broad scale change in farming practices and agrochemical use in a manner that further benefits biodiversity. The IFOAM standard is quite specific about clearing primary ecosystems (forests and wetlands) for organic farming, consideration for soil erosion control and management of chemicals. Among the benefits of improved practices are a reduction in surface and groundwater contamination from reduced fertilizer and pesticide runoff, and improved surface water quality resulting from reduced sedimentation from tillage practices. Upland forest health and diversity can also be improved by farm management practices that mimic more natural ecological function through incorporation of shelterbelts, mixed cropping schemes, and the use of integrated pesticide management.

B3. Tourism Products

Much of the discussion of private business-to-business standards for forestry and agriculture applies increasingly to the tourism industry. While there is not yet a significant consumer demand for certified products, there is little doubt that the fastest-growing segment of the travel industry is adventure travel and ecotourism. According to Reingold, (1993) ecotourism and adventure travel are growing at a rate between 10 and 30 percent, far eclipsing the 4 to 5 percent growth of more generalized tourism. The WTO has stated that nature-related forms of tourism account for 20 percent of total international travel. Nature, adventure, or ecotourism is the only near-term

IFOAM Standards shall require that:

- 2.1.1. Operators shall take measures to maintain and improve landscape and enhance biodiversity quality.
- 2.1.2. Clearing of primary ecosystems is prohibited.
- 2.4.1. Wild harvested products shall only be certified organic if they are derived from a stable and sustainable growing environment. The people who harvest, gather, or wildcraft shall not take any products at a rate that exceeds the sustainable yield of the ecosystem, or threaten the existence of plant, fungal or animal species, including those not directly exploited.

IFOAM Basic Standards
for Organic Production and Processing
Victoria, Canada, August 2002

¹³ Aida Vehabovic Ljuta, pers. com, October 13, 2003

market for BiH and the creation of tourism products is inextricably tied to conservation of BiH's unique natural qualities (WTO 1998).

Many European tour operators now require that destinations be certified by one or more standards to ensure that their clients have a quality vacation. Many package tour operators and charter-based organizations are seeking reassurance from independent certifying bodies about the quality and safety of destinations.

Most certification systems look at a variety of quality elements; many now routinely require adherence to value systems that have ecological aspects, such as water and energy use and how the property organizes its business to reduce environmental impact. Disturbance to local wildlife populations is often not acceptable. Most auditors look for ways to ensure that the property is actively planning ways to have guests leave only footprints and take only photographs. Several resorts in Croatia now subscribe to the Blue Flag standard, which requires, among other things, routine measurement of water quality at beaches on the properties.

In sum, public and private organizations involved in forestry, agriculture, and tourism must now carefully consider how they can incorporate improved conservation performance into their market placement strategies. Much depends on their improving awareness among producers and government agencies and helping to build national standard-setting capability. It will be necessary to establish commercial auditing firms and service lines within current Business Development Services (BDS) organizations in order to reduce dependence on external auditors and help companies implement the new standards. The following activities must be undertaken do if environmental, health and safety performance is to be improved to the extent now being required by most international buyers:

- Help the BiH Bureau of Product Standards adopt international standards and gain reciprocal recognition for national standards.
- Support systematic training of auditors to international standards and build professional auditing societies to begin building an accreditation infrastructure.
- Encourage companies receiving BDS support to adopt international standards that incorporate environmental values.
- Consider applying international standards as current public-sector businesses and utility management are privatized.

Donor-coordinated support for a central clearinghouse that could centralize awareness-building, training, and outreach to forest and agriculture companies would be very useful to help increase the supply of responsible tourism products and reduce potential damage to biodiversity.

C. Increase Institutional and Technical Capacity in Land Use/Spatial Planning

Unplanned and unregulated conversion of land to residential, commercial, and industrial uses poses a significant threat to biodiversity. Much of this conversion is taking place in wetlands and

riparian zones and on steep mountainsides, with unintended consequences to wildlife populations.

Prewar systems for land use or spatial planning from the local level up have almost completely broken down, especially in the FBiH. A comprehensive effort is needed to restructure the land and spatial planning system in each entity, including planning for conservation of high-value natural resources and biodiversity-rich areas.

Key elements in a comprehensive overhaul of the spatial planning system include, but are not limited to:

- A land use/spatial planning strategy for BiH at the state and entity levels
- A revised law on spatial planning for FBiH that is consistent with international norms and specifies implementing regulations
- Spatial plans at the municipal and cantonal levels (in FBiH)
- Environmental management principles, standards and codes of conduct which can improve public investments in infrastructure and land use planning
- Training on systematic identification and protection of natural resources, including plant and animal habitats of high biological value
- Municipal finance strategies that incorporate environmental values into economic and social development planning and pricing structures
- Processes for public participation in decision making related to land use and biodiversity.

Exhibit 5 on the following page illustrates industrial and residential encroachment on valuable agriculture as well as disappearance of the riparian zones that are crucial to survival of migratory waterfowl and wintering passerines.

No donor organizations appear to have targeted improved land use and spatial planning for assistance. However, the EC continues to assist both entities with harmonization of their framework environmental laws. Though the laws are an improved foundation for the legal aspects of spatial planning, they do not address spatial planning directly.

“Our local spatial planning process generally does not recognize the value of planning for conservation of valuable natural resources including habitat and agricultural land. We need to teach municipalities how to incorporate natural resource management into how decisions are made about new development.”

*Ozren Laganin
RS Ministry of Town Planning,
Housing-Communal Services, Civil
Engineering and Ecology*

D. Build Networks of National, Entity, and Local Environmental NGOs

Clearly, environmental awareness and advocacy are inadequate in post-Yugoslav BiH, with the notable exceptions of Bihac and Sarajevo Canton. People are unable to quickly call for action and obtain the support of authorities when environmental transgressions are identified. Independent newspapers are few and public broadcasting capacity is inadequate, which further reduces the public capacity to understand and identify mismanagement of natural resources and flagrant pollution violations.

The profile sketched by Regional Environment Center (REC) offices in both FBiH and RS depicts nascent environmental NGOs that do not yet have good advocacy capacity or financial strength. Of the estimated 150 NGOs with an interest in environment and conservation programming, only a few are capable of handling grants of more than US \$5,000 to \$10,000, and most are unable to conceptualize, much less implement, such programs. While REC has an impressive track record of organizational development and is helping to implement the EU/CARDS program and the LIFE project, environmental capacity building requires more work by doing. Several of those interviewed said that the NGO community needs to follow one or two major initiatives to completion and achieve a few noteworthy successes before it can move to the next phase of organizational development.

Actions are needed that improve the capacity of NGOs to play a more prominent role in civil society, especially decision making, policy formulation, and implementation of environmental-management programs that add significant value to biodiversity conservation. Such actions should be concerned with enhancing financial sustainability, improving internal management and strategic planning, educating members, improving access to information, and improving linkages between NGOs and government decision makers (REC, 2003).

Sustaining and expanding on existing programs is vital if NGOs are to become key players in the conservation of biological diversity. Specific improvements that could help galvanize conservation NGOs are to:

- Pay more attention to NGOs engaged in grassroots conservation and environmental management; to date most NGO capacity-building has been aimed at reconstructing civic organizations not dedicated to the environment.
- Help conservation NGOs identify and achieve some noteworthy successes to build capacity, credibility, and awareness for their potential.
- Create a multi-donor and government initiative to reform tax codes and endowment laws to encourage corporate and individual giving to conservation NGOs.
- Identify and provide support for a major international conservation NGO (e.g., IUCN, WWF) to help focus NGO attention on support for a protected area system.

E. Create Environmental Education Curricula for BiH Educational Institutions at all Levels

Another essential, though longer-term, need is to improve environmental awareness as a key to conservation, improved transparency, and the application of the rule of law to the environment. Our research found no systematic effort in BiH to introduce interdisciplinary environmental education into the curriculum of the educational system at any level. The objectives generally found in environmental education programs should be incorporated into related actions in BiH:

- **Awareness:** to help groups and individuals acquire an awareness of and sensitivity to the environment as a whole and its allied problems.
- **Knowledge:** to help groups and individuals gain a variety of experiences in, and acquire a basic understanding of, the environment and its problems.
- **Attitudes:** to help groups and individuals acquire values and feelings of concern for the environment, inspiring motivation to actively participate in environmental improvement and protection.
- **Skills:** to help groups and individuals acquire the skills the need to identify and solve environmental problems.
- **Participation:** to give social groups and individuals an opportunity to be actively involved at all levels in working toward resolution of environmental problems.

A key goal of an environmental education program is that students acquire the capacity to collect and analyze information, make good judgments, and participate fully in civic activities. Because people who are effective in action need not only awareness and understanding of the problem they are addressing but also knowledge of how to effect change, civic and public participation skills are an important component of any education program. The goal, then, is to instill in learners knowledge about the environment, positive attitudes toward the environment, competency in citizen action skills, and a sense of empowerment (GreenCOM).

F. Maximize Treatment of Municipal and Industrial Wastewater

Water pollution places enormous burdens on the aquatic organisms and riparian zones so important to threatened and endangered species. Corrective action will be difficult because the problem is complex, interweaving legal, institutional, regulatory, and technical variables.

Financing of municipal wastewater collection and treatment systems is perhaps the greatest constraint to expanding the number and effectiveness of such systems. USAID has facilitated rehabilitation and construction of several systems, but these treat only a fraction of the total municipal wastewater load delivered to rivers and streams. Other



Inappropriate storage of tannery wastes contaminates critical wetland resources

donors are not known to be directing investments into municipal wastewater treatment, yet the EU Water Framework Directive mandates elements that have now been put on a timetable (see Table 10) for EU member countries and will eventually be *de rigueur* for BiH if it maintains accession aspirations:

- Expanding the scope of protection to all waters, surface waters and groundwater
- Achieving “good” status for all waters by a set deadline
- Basing water management on river basins
- Using a combined approach of emission limit values and quality standards
- Getting the prices right
- Getting citizens more actively involved
- Streamlining legislation.

Table 10 Timetable for Implementing the EU Water Framework Directive.

Year	Issue	Reference
2000	Directive entered into force	Art. 25
2003	Incorporation into national legislation Identification of river basin districts and authorities	Art. 23 Art. 3
2004	Characterization of river basin: pressures, impacts, and economic analysis	Art. 5
2006	Monitoring network set up Start public consultation (at the latest)	Art. 8 Art. 14
2008	Present draft river basin management plan	Art. 13
2009	Finalize river basin management plan, including program of measures to be taken	Art. 13 & 11
2010	Introduce pricing policies	Art. 9
2012	Make an operational program based on the measures	Art. 11
2015	Meet environmental objectives	Art. 4
2021	End first management cycle end	Art. 4 & 13
2027	End second management cycle; final deadline for meeting objectives	Art. 4 & 13

Source: European Commission 2003

Improving the market basis for conservation will depend on improved water management and pricing, but the regulatory and financial mechanisms needed to motivate private-sector compliance with new water quality laws and standards are still being crafted. Furthermore, private companies have yet to be fully informed about pollution prevention, clean production, and environmental management system approaches to reducing wastewater volumes and pollutant loads in an economically practical manner. Biological diversity can only be conserved

by actions that (1) support implementation of the new RS and FBiH framework environmental protection and water laws and (2) promote certification of industrial activities to environmental management standards.

G. Establish a Conservation Data Center

If the scientific basis for establishing a protected area system in BiH is illusive, so is the ability to track broader conservation trends and biodiversity threats systematically. Tracking stress on biological systems across all elements of the landscape – alpine, forest, agriculture, and estuarine – will be important for identifying lands with high conservation value. It would also help identify key species indicators and anthropogenic disturbances, and allow authorities and NGOs to protect and recover threatened and endangered species. The EC is now working in BiH to help set up information systems, with help from other donors in project-specific contexts. However, not enough resources are being directed at addressing data needs. Environmental strategy and action plans for BiH need to comprehensively:

- Identify conservation and biodiversity status across all landscapes and institutional levels and organizations.
- Define integrated data collection, storage, and monitoring system protocols.
- Specify system-wide capacity building and training needs in biodiversity information management.
- Define funding options and approaches for ensuring sustainability of the system.
- Describe a process for continual quality improvement within the system.

An international conservation organization that has set up such systems would be best prepared to help BiH set up such a conservation data center. Both IUCN and World Wide Fund for Nature (WWF) have specific protocols for organizing and managing this kind of information.

H. Require that Production Factors Incorporate Environmental Costs and Benefits

Post-conflict economic and institutional development programs generally do not focus on long-term growth needs. The urgency to address population displacement and collapse of economic productivity in BiH forced the entire donor community and its partners to stimulate employment and income generation by creating outright subsidies for private and public enterprises. Many of these subsidies that were used to stimulate post-war production were underwritten with discounted natural resources assets including extremely low price water and energy for factories and utilities, below-cost forest stumpage to run wood manufacturers, and conversion of valuable agriculture lands into commercial and residential parks. As described above, such undervaluation represents perhaps the largest and most systemic threat to biodiversity. Undervaluation acts as a significant barrier to necessary investments in improved management that are essential now for long-term prosperity. Without dependable water supplies, well stocked forests, market-priced energy, and accountability for use of environmental goods in general, the resource inputs and health of life-supporting natural systems will not be sustained. Economic and social costs will be

significant. The undervaluation cycle must therefore be broken as the development community begins to transition from humanitarian and short-term economic development assistance to longer term economic growth programming.

Several tools are available for the BiH and entity governments to stimulate more effective use of natural resources. Most of these are found within areas which donors have developed effective working relationships with industry and governments:

Privatization of State Corporations. The development and tendering process for the privatization of public enterprises should begin to incorporate fair market prices for natural resources inputs. Suggestions to mitigate environmental impacts and reduce collateral damage on biodiversity include:

- The Agency for Privatization should begin to routinely include the systematic identification of environmental problems that must be addressed within information memorandums (e.g. hazardous material disposition, processing yard, and mine tailing clean up);
- Tenders should also require offerors to use more realistic energy, water, and stumpage costs during profitability calculations to reduce the dependency on subsidized and non-competitive practices;
- The International Advisory Group for Privatization should also help to establish guidelines that will encourage offerors to incorporate waste management costs and investments in recycling that will be in line with EU Directives; and
- Offerors' investment plans should be strongly encouraged to use third party auditing (e.g. ISO 14001) to ensure compliance with new environmental regulations and conformance with supply chain standards. This will help new companies to be more competitive in the long-run and significantly reduce negative environmental impact.



Proper watershed management is key to water quality and fisheries

Public Utilities Management. Nominal operating costs are currently not recovered. This has negative effects on upstream management of watersheds for water utilities and reduces important investments in provision of feed stock, particularly coal supply for power generators. While subsidies for these utilities are likely to continue into the foreseeable future, pricing parity will be a necessity as EU accession becomes more feasible. Croatia has begun using international standards to ensure that management capacity is improving its ability to approximate fairer market prices by using third party standards including ISO 14001. The benefits of doing so include the following:

- *Compliance responsibilities.* Concerns for potential environmental problems, incidents, and enforcement actions;

- *Management confidence.* Management wants assurance that its organization is adequately handling its environmental responsibilities and identifying opportunities for improvement;
- *Organizational factors.* Better efficiency, worker health and safety conditions, employee morale, and reduced costs; and
- *Public image concerns.* Improving poor relationships with neighbors and counteracting negative press.

In the continued absence of regulatory capacity to enforce changing environmental statutes, the state, entity, and municipal and canton governments should be strongly encouraged to use third party and commercial third party verification systems as part of the permitting process.

SECTION VI

USAID's Program and Biodiversity Conservation

This section describes the USAID program and identifies the extent to which actions currently under way and proposed for the next programming cycle correspond with those identified in Section V "Actions Necessary to Conserve Biodiversity." The intent here is not to evaluate the effects of USAID programming on biodiversity but to help the Mission better understand the indirect effects of its programming on conservation and lay a foundation for informed alternative programming choices. Clearly, USAID/BiH has no current or planned activities, intermediate results, or strategic elements that are intended to affect the status of biodiversity directly.

A. Timing of the Assessment

This assessment was conducted in year four of the Mission's current five-year strategic assistance program, well before the Fall 2004 deadline for completing the next five-year plan. Based on interviews held with USAID Mission staff, the assessment team understands that new projects within several program areas that have recently been initiated or are about to be initiated will extend well into the next assistance period.

Because a strategic plan for the next cycle is not yet in place, it was not possible to determine precisely "the extent to which the actions proposed by the Agency meet the needs thus identified" (FAA Section 119(d)). Instead, the team looked at current and prospective activities to assess which might address the biodiversity conservation needs identified. Projects expected to end in the next several months were not considered.

B. Current Program

The Mission's current strategic objectives and the activities undertaken to meet these objectives are listed in Table 11. After interviews with the Technical Officers and the staff of all implementing teams, the assessment team determined that only those activities shown in the table in bold face addressed actions necessary to conserve biodiversity. Though actions within other programs are not otherwise addressed, some recommendations describe how some of these might be used to buttress conservation.

Table 11. USAID/BIH's Strategic Objectives and Activities

Strategic Objective	Associated Activities
Economic transformation	Fiscal reform Financial sector reform <i>Private enterprise development</i> Legal and regulatory reform Privatization
Democratic reform	Media Political processes Legal systems <i>Civil society</i> Local governance
Reestablishment of a multi-ethnic society	<i>Providing access to basic services</i> Improving economic self-sufficiency <i>Institutional strengthening</i>
Cross-cutting Program	Participant training Antitrafficking Demobilized soldiers Anticorruption

C. Linkages Needed

Elements of USAID Mission programs that support actions needed to conserve biodiversity are as follows:

Economic Transformation Objective - Private Enterprise Development Program

Lending Activities

The Development Credit Assistance (DCA) program and lending through local financial institutions (FIs) and microcredit organizations (MCOs) are key actions that support private business development.

The assessment team found Mission staff enthusiastic about working to insure compliance with USAID environmental regulations as prescribed under USAID regulations (22CFR216). The Mission plans to flow responsibility for environmental risk assessment down to its partner FIs and MCOs. The Mission will ask that local FIs be accountable for conducting environmental risk assessments as part of their lending procedures and actively screens potential DCA partner FIs to ensure that they have adequate environmental due diligence procedures and processes in place. The DCA mechanism¹⁴ will evidently be used to support enterprise

DCA Loan Guarantee Environmental Stipulations

The [qualifying] loan must not be used for activities that would violate Bosnian (BiH) laws and regulations regarding environmental protection and protection of the safety and health of workers. The Guaranteed Party shall exercise due diligence in reviewing loan applications to determine that the borrower intends to and can comply with relevant Bosnian laws and regulations concerning the protection of the environment and the health and safety of workers, and shall insert appropriate covenants in loans covering these subject.

DCA Loan Agreement

¹⁴ The Development Credit Authority allows USAID Missions to fund projects that are financially viable through loan guarantees in sectors that meet sustainable development objectives. Typical recipients of a guarantee are creditworthy borrowers, such as local governments, private entities, and NGOs. USAID can also provide portfolio guarantees to financial institutions that extend loans to a broad number of small borrowers, such as microenterprises and small businesses.

development in the agricultural, wood, and tourism sectors. According to SO Team staff, environmental risk will be assessed for DCA-supported loans although there is no specific environmental guidance provided under DCA authorities¹⁵ or Mission protocol.

A number of FIs with whom USAID has worked in the past have been trained in assessing basic environmental risk for manufacturing and services borrowers, but as yet there is no capacity to identify and mitigate unintended impacts of loans on biodiversity through land conversion, point source pollution, or over-harvesting of natural products. The capacity of contractors and NGOs in BiH to conduct adequate risk assessments is uncertain. The team concluded that, given the staffing capacity of USAID partners and recipient enterprises, it is unlikely that the rapidly changing laws can be followed consistently; nor is there any guarantee or even likelihood that best management practices for conserving biodiversity will be routinely applied. Further training of USAID lending partners appears to be warranted, especially on topics that link market access to environmental performance and sustainable use of Bosnia's dwindling natural resources. (See Section VII, Recommendations.)

The Agricultural Sector

The Mission recently launched its flagship agriculture project, Linking Agriculture Markets and Producers (LAMP). This project will attempt to stimulate agriculture production initially for domestic markets before considering export potential. By providing technical assistance as well as substantial grants (\$8 million) to producer associations and intermediary FIs, the project will attempt to accelerate producer responses in targeted subsectors, probably beginning with fruits, berries, dairy, fisheries, livestock, herbs, and spices.

Many of these products originate in forest lands and sensitive landscapes. USAID has smartly flowed down environmental requirements to the contractor to ensure that activities meet with established USAID environmental policies under 22CFR216. Such attention to potential partners is also likely to identify activities that may have indirect negative consequences for sensitive communities and attendant biodiversity if the scoping documents prepared by the contractor do not look beyond the immediate impacts of pesticide use and waste from agro processing facilities.

**LAMP Contract No. PCE-I-00-99-00001-00,
Task Order 822**

To identify any potential negative impacts and insure compliance with USAID and USG environmental procedures, all activities providing USID support (grants, technical assistance, credit or commodities) for production, processing or extraction will not be granted an exclusion from environmental review. The Contractor will be required to indicate the procedures that it will establish to assess the environmental impacts of proposed assistance and mechanisms to address the relevant assessment requirements.

Under LAMP USAID may also choose to provide technical assistance to the agricultural sector on phytosanitary and food safety processing quality standards and support for production and certification of products to organic standards. To the extent that such assistance is designed to improve how well people in the agricultural value chain understand biodiversity-friendly farm management practices (e.g., those of IFOAM, EurepGAP), it will likely support biodiversity conservation management practices.

¹⁵ See http://www.usaid.gov/economic_growth/egad/ci/dca_ops_man.htm for operational guidance.

As noted in Section V, the expanding use of market-based certification and labeling is likely to impact both conventional and organic agriculture in both export and domestic markets. BH Foods will introduce three new lines of organic vegetables next year; KLAS sales of herbal teas and VegaFruit's processed fruit products have already profoundly affected producer awareness and localized practices. Expanded USAID support for improving the awareness and cost-effective application of food safety and organic production standards will help bridge the gap between market competition and natural resource conservation.

Wood Products and Forestry

USAID is currently assisting about approximately 35 companies in the wood sector. The assessment team understands that the Mission is also considering options to expand its support for wood processing industries into areas that affect the reliability, quality, and cost of logs. The current program, expected to end in December 2003, is not involved in any aspects of raw materials (logs) or forest management, though both have a significant direct effect on biodiversity in BiH. Improving the management and utilization of wood products is critical to the stability of existing and future USAID investments in the sector.

All sources agree that the forest inventory information upon which timber allocations and concessions sales are made is out of date (GTZ, 2001). The planned World Bank Forest Development and Conservation Project rightly emphasizes upgrading the inventory; it will establish a forest management information system to help catalogue commercial and conservation information.

To the extent that future wood products initiatives address biodiversity conservation and stimulate donor support and private investment for interventions to improve forest management – such as recognition of multiple-use values, conservation of high-value forest, riparian set-asides, and reduced impact logging – they will address biodiversity conservation needs in BiH.

Personnel across all teams indicated strong interest in moving beyond simple processing to sustainable forest management and improved competitiveness with certification-sensitive buyers outside BiH. The assessment team concluded that investments in wood products that do not also emphasize forest management would not likely result in the changes needed to restore BiH competitiveness in forest products. The team likewise agreed with other USAID consultants¹⁶ that any policies that protect inefficiencies in processing (log export bans in particular) have significant negative upstream impacts on forest management and ultimately compromise the industry as a whole. Total collapse of the wood industry would be catastrophic both economically and ecologically.

Democratic Reform Objective – Civil Society Program

Actions that support the growth and sustainability of NGOs active in conservation and the environment in BiH are vital to conserving biodiversity and preventing further conflict. NGOs

¹⁶ Edward Davis (2000), "A Marketing Intelligence Brief for the Wood Processing Sector," USAID Business Consulting project, Sarajevo.

play a critical role in collecting and disseminating information to and coordinating actions that mobilize communities, educational institutions, local and regional organizations, and decision makers to improve environmental management.

USAID is providing comprehensive support to a cadre of environmental and other NGOs to build their capacity for financial sustainability and advocacy. USAID's Democracy Network Project's support for a women's group working on restoring the Ona River in Bihac and for Boy Scout clean-up campaigns near Igman-Bjelasnica is building an essential foundation for conservation. The DEMNET team's attention to forming issue-based coalitions and its backing for local environmental action planning (LEAPs) in two municipalities, while building interest elsewhere, shows remarkable promise for the kind of grassroots support for environmental advocacy that has been so important elsewhere in eastern Europe, Russia, and the Newly Independent States.¹⁷

The Mission's actions are already having tangible benefits in reducing threats to biodiversity. Among the range of conservation activities undertaken by USAID-supported NGOs are preparation of LEAPs in two communities, solid waste collection and disposal to improve water quality and improve community health, promoting protected areas on the Trebizat River and Igman/Bjelasnica Mountain, and writing and delivery of environmental education curricula and services in schools and communities. The Mission is also considering support to a coalition of over 15 NGOs to increase advocacy for the environment.

Reestablishment of a Multi-ethnic Society

Access to Basic Services. USAID provides significant financial support for actions that make such basic services as water and power available to minority returnees in an organized way. These actions indirectly reduce human pressure to extract natural resources like timber (energy) and non-timber (food) forest products by stimulating enterprise alternatives to purely extractive industries. It is well documented that improving livelihoods has profound and positive impacts on natural resources in the long run.¹⁸ The support USAID has historically provided to the water and energy utilities and to resettlement will be fundamental to reducing unplanned land conversion in fragile lands near water courses and on steeper forested areas.

Institutional Strengthening. USAID actions will continue to improve the viability of institutions that provide water and power services. Sustainability of these institutions is critical to relieving long-term human pressure on natural resources. Part of the process is to price services and resources so as to promote their measured consumption (conservation). The result will be a more balanced use of resources, less impact on water and forest ecosystems, and ultimately greater conservation of biodiversity.

While the team understands that USAID investments in rehabilitating and restructuring utilities will be sharply reduced, the MRDO office's leadership in helping privatized utilities begin to rationalize pricing and investment is critical. Helping utilities to use integrated resources

¹⁷ R. Warner, D. Gibson, and E. Simonov (2001), "Biodiversity Assessment of Russia," USAID Moscow.

¹⁸ Izabella Koziell and Jacqueline Saunders (2001), *Living Off Biodiversity: Exploring Livelihoods and Biodiversity Issues in the Natural Resources Management* (London: IIED).

planning models for air and watersheds can only improve the natural resource valuation models, which will ultimately conserve biodiversity.

Conclusion

USAID investments have begun to build economic alternatives to extractive industries; privatization of inefficient public enterprises in forestry, agriculture, and mining will also improve the outlook for conservation. Partly because the role of government agencies will continue to be weak for the foreseeable future, the value chains that reflect the demands of conscientious buyers must be harnessed to strengthen the economic foundation for sustainable management of natural resources.

Improved local governance, transparent natural-resource decision making, and improved awareness of the costs and benefits of a healthy environment are being emphasized by many of USAID's partners. Only when the rule of law makes it possible to identify polluters and half illegal extraction BiH will its valuable agricultural, range, and forest assets be protected. Further investments in grassroots LEAP will also help shore up biodiversity.

SECTION VII

Recommendations

The assessment team has formulated a set of recommendations for program actions that USAID may wish to consider to improve its contribution to natural resources management and biodiversity conservation. The recommendations do not address all the actions needed to conserve biological diversity; they are concerned only with those that seem to be within the manageable interest of the Strategic Objective teams and USAID's current partners.

The recommendations are targeted at specific actions based on several important assumptions. Except for one new program, these are incremental additions to or changes in USAID's current and projected program areas. This seems to be the most practical approach to addressing biodiversity conservation given funding constraints.

Enterprise and business services development will increasingly become the basis for USAID Mission Strategy. Wherever possible, the recommendations therefore suggest actions that are likely to create catalytic benefits by improving cluster competitiveness, providing important processing investment, and recognizing the value of an improved trade relationship within Europe.

Financial Sector Reform

- Train USAID partner FIs on the role of value chain standards in facilitating market access and quality management (see also the Private Enterprise Development recommendations below). Raise the level of enterprise awareness of the value of quality, food safety, and environmental management as a matter of course for all business clusters
- Draft improved environmental risk assessment procedures and give implementation training for USAID partner FIs to bring practices to international standards and EU directives, in order to divert USAID investments away from activities with potentially significant adverse effects on natural resources and biodiversity conservation.

Private Enterprise Development

- Provide awareness seminars and cluster-specific training in value chain standards in agriculture (IFOAM), forestry (EurepGAP, FSC), and tourism (GreenGlobe 21) to facilitate certification to standards as a means to improve access to regional and international markets.
- Build local capacity within the BDS community for environment, health, and safety auditing as another commercial product line and to help enterprises identify clean production opportunities that reduce costs and improve productivity.

- Support certification within the BiH forests/wood industry to the FSC and similar standards to improve both upstream and downstream conservation and access to regional and international markets,
- Set up a permanent liaison with entity ministries and international donors, especially the WB, to ensure that USAID investments in the private sector (wood, agriculture, and tourism) are informed by and consistent with forestry management and protected areas programs being initiated by the WB.

Privatization

Modify the privatization process as follows:

- Expand and improve the quality of environmental liability disclosures in information memoranda.
- Make environmental performance criteria part of tender documents to define what is expected of bidders in terms of environmental management.
- Raise the valuation of environment performance capability to standards incorporated into bid documents. Collaborating with the Agency for Privatization on a manual, training modules, and procedures could provide outstanding returns on investment.

Civil Society

- Target environmental NGOs for capacity-building in advocacy and sustainability.
- Work to change tax laws to make contributions to NGOs tax-deductible.
- Link environmental NGOs to international conservation partners for targeted projects (e.g., protected areas management) in priority areas where the LEAP process has demonstrated results.
- Collaborate with NGOs to disseminate primary school environmental education curricula.
- Provide additional support for media campaigns to enhance local knowledge of the costs and benefits of sustainable natural resources management and environmental protection.

Local Governance

- Simplify the application and quality management systems for municipal government and public utilities to improve internal management, reduce credit risk, and improve environmental accountability and reporting.

- Create a pilot program to build capacity and improve transparency in urban land use planning and permitting to improve delivery of services, reduce infrastructure and services costs, improve conservation of natural resources and biodiversity conservation, and improve public participation and access to information.

Institutional Strengthening

- Build capacity in municipal planning for land use and infrastructure to reduce conversion of land that causes loss of significant environmental values (see related recommendation under Local Governance)
- Support water company training on ISO 9002/14001 certification to improve management, access to financing, and service delivery. Replicate training among water and other municipal utilities (see related recommendation under Local Governance)

New Programs

- Work with state and entity governments and public interests to design a national protected areas strategy and implementation plan that will increase protection of high-value biodiversity in areas with significant tourism potential. Collaborate with the WB to enhance the success of the GEF-funded protected areas project scheduled to begin in 2005.
- Underwrite a national environmental education and awareness campaign to build support for environmental policies; strengthen the capacity of municipal leaders, NGOs, and community-based organizations to manage natural resources sustainably; build partnerships among governments, local communities, and NGOs; motivate private businesses to adopt cleaner production technologies; and increase support for national parks and biodiversity conservation among populations near the parks, business leaders, and entrepreneurs.
- Establish a clearinghouse for international quality, health and safety, and environmental management system standards training and certification assistance – a “one-stop-shop” where private and public enterprises and others can access information, receive implementation support, and identify legitimate certification services. The clearinghouse would support USAID programs in agriculture, wood products, tourism, and municipal infrastructure and management.