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Globalization, Forest Resurgence and Environmental Politics in El Salvador

Edited by : **Herman Rosa and Susan Kandel**

Layout : Leonor González
Photos : PRISMA
Translation from Spanish into English : Susan C. Greenbalt

www.prisma.org.sv prisma@prisma.org.sv
3a. Calle Poniente No. 3760, Colonia Escalón, San Salvador
Tels.: (503) 2 298 6852, (503) 2 298 6853, (503) 2 224 3700; Fax: (503) 2 2237209
Dirección Postal: Apartado 01-440, San Salvador, El Salvador, C. A.
International Mailing Address: VIP No. 992, P.O. Box 52-5364, Miami FLA 33152, U.S.A.

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Susana Hecht, Herman Rosa y Susan Kandel

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Contents

Abstract

El Salvador is often seen as a classic environmental "basket case" of population growth, deforestation and collapsing biodiversity. This view, which was open to question even when it was first articulated (cf. Durham 1972) is not supported by contemporary studies. Today, El Salvador is experiencing a resurgence in forest cover. The changing national and international context suggests that globalization, while clearly triggering deforestation in many places in Latin America, can also stimulate forest resurgence. This has been the case in El Salvador through such global processes as war, international migration, increased economic integration into the global economy and environmental ideologies that have transformed livelihoods through a complex blend of remittances, wage labor, migration and shifts in the national economy. The expanding anthropogenic and successional forests, a consequence of these changes, are policy orphans in the current conservation context, even though communities that reside in these areas are increasingly organized and committed to forest and natural resource management.

The Secret Forests of El Salvador

"In El Salvador, nature has been extinguished." Terbourgh (1999) Requiem for Nature

In the popular consciousness, El Salvador is notorious for its degree of deforestation, as summarized in Terbourgh's cheerless sentence. Numerous articles assert that only 2%-5% of its forests remain, giving the impression of a blasted landscape with barely a tree in sight (Terbourgh 1999, FAO 2001, Hampshire 1989).[1]

This view is faulty, and informed by the extension of older trends in clearing, whose logic and dynamics no longer hold given the enormous structural changes in El Salvador's and the global economy (See Hecht 2002). This view also misses several processes that have encouraged forest recuperation and overlooks the widespread anthropogenic and regenerating woodlands that are significant in their total area, and in their ecological and social impacts.

This publication outlines the dynamics of forest recovery in El Salvador and reviews the global processes, national policies, local politics and varying ideologies of environment and environmental practices that now shape rural landscapes. The last section of the paper discusses the implications of these changes for conservation policy in the new global context.

Forest Systems of El Salvador

El Salvador falls entirely within the "hot spot" of Mesoamerica, an area containing some 7% of the globe's biodiversity within 0.6% of its land area. Forests of five basic types (with many subdivisions) blanket the mountains and volcanoes that rise from sea level to 3500 m (Holdridge 1979). These include mangrove forests, coastal plain and riparian evergreen forests, mid-level semi-deciduous forests, oak-pine mixed forests and cloud forests. High levels of biotic endemicity are found throughout the region as a function of its sharp relief and its position in the contact zones between the great biogeographic domains of North and South America (cf. Ramirez 2001).

While often derogated for a lack of biological richness (Hampshire 1989, FAO 2001), recent ecological research in several fields (cf. Komar 1998, Ramirez 2001, Berendsohn 1995, Dull 2001) contradicts this inaccurate, and unfortunately, oft repeated impression.

The view of "forest-free" El Salvador misreads forest trends, and devalues the importance of anthropogenic and disturbed forests, which are very important in biodiversity maintenance and other ecosystem services. While conservation science often fetishizes "virgin" forests, there is some question in a region as geologically and biologically dynamic as El Salvador whether the idea of "primary" versus "disturbed" ecosystems even makes sense as categories. Recent research on the Holocene vegetation history of El Salvador suggests that secondary vegetation types are the more "characteristic" formations of the region (Dull 2001).

Disturbance Landscapes

El Salvador is regularly buffeted by earthquakes, mass movements, volcanic eruptions, fires, hurricanes and floods. Its vegetation is adapted to perturbation whether of the geo-

[1] These studies tend to be overviews based on statistics and compendiums lacking in fieldwork on location, and thus, are likely to repeat "received ideas."

physical or human kind, so the distinction between "disturbed" and "natural" forests may be especially strained here.

Moreover, in much of Central America it is not clear whether it makes any sense at all to speak of "natural" vs. "cultural" forests given the antiquity of intensive occupation and the ubiquity of human impact over at least eight millennia (See, for example, Daugherty 1969, Sharer 1978, Sheets 1979, 1982, 1984, Flannery 1982, Pohl et al 1996, Dull 2001).

There are more than 800 significant archeological sites in El Salvador, of which nine are found (although unexcavated) in the "natural forests" of the National Park of El Imposible (Amaroli 1996).[2] Some of the earliest Olmec pyramids (Wassen 1966) are found there, and the region was well integrated into Olmec and Mayan empires through its production of the Amazonian domesticate cacao, obsidian and hematite (Casa Sola 1978, Demarest 1988).

El Salvador formed part of the southern lowland Maya complex, and its rich volcanic soils have been densely populated for many centuries (Schortman and Urban 1991). El Salvador's population plummeted by 93% of pre-Hispanic densities after the arrival of Europeans (Lovell 1992), and commentators of the 17th and 18th centuries who noted the verdant forests, were gazing at the drapery over a vast sepulcher (cf. Cortés y Larraz, P. 1958).

Central America's Pompeii, Joya de Ceren, which was formed when the Laguna Caldera volcano erupted in 600 AD, shows large and complex land transformations including ridged field cultivation, widespread irrigation works and the production of a wide variety of tree, seed and root crops (Sheets 1984, Amaroli and Dull 1999, Dull 2001, Lentz et al 1996, Zier 1980, 1983). Pollen studies show substantial quantities of agricultural and cultivated forest pollens in pre-Columbian profiles (Dull 2001).

The territory that is now El Salvador has been a producer of key resources for various empires since the Olmec period (Sheets 1982, Coe 1977). Integrated into the indigo and resin booms of the 19th century, coffee was introduced in 1859, and by the 1930s, El Salvador was the world's largest coffee producer.

Thus, manipulation of regional landscapes and anthropogenic forests has a long history in El Salvador. Given its small area, geophysical activity, high human population densities, and prevalence of disturbed ecosystems, the country's biodiversity is impressive and perhaps can be understood as an outcome of its geographic complexity and natural and human induced seral mosaics.

Biodiversity in El Salvador

Biological collectors and tropical ecologists generally prefer areas with extensive wild areas and good laboratories (such as the La Selva research station in Costa Rica, INPA in the Brazilian Amazon, and the Barro Colorado Island of Panama) and so have largely avoided El Salvador, with its dense population and dearth of facilities.

With little international attention, and not much emphasis in local natural resources training due to 12 years of civil war, there is a ubiquitous impression that El Salvador is depauperate in biodiversity. This is reinforced by comments like those of Hampshire 1989 and Terbourgh 1999. Recent studies of trees (Berendsohn 1995, Ramirez 2001) and birds (Komar 1998) have discovered so many unrecorded species that the old perception must be rethought.

[2] Some parts of El Imposible were also coffee plantation, then pillaged of its valuable timber, before it became a park (Ramírez 2001).

In the nearby Western slope highlands of Guatemala, Vannini (1994) reported the second richest avian province in northern Central America. El Salvador is an important extension of this province. Five hundred eighty bird species have been reliably recorded here, and another 75 are expected to occur. Northern Central America is a center for avian endemism and this suggests that other taxa will also be highly endemic (Komar, 1998). The presence of a large variety of natural habitat types has permitted the survival of many subspecies and rare endemic birds.

The patchiness of the habitats themselves, and the types and the resource-rich structure of anthropogenic forests have undoubtedly contributed to the maintenance of overall biodiversity. Coffee farms suit many generalist species including a large array of international migrants because of the permanent nature of the crop and its shade trees (Vannini 1994). The widespread planting of hedgerows, fruit trees, and extensive domestic agro-forests provide resource islands throughout the landscape. In addition, secondary vegetation and arboreal diversity in abandoned pastures play an increasingly important role in the maintenance of El Salvador's biotic complexity and other environmental services.

Table 1 compares the diversity of El Salvador with other countries in Central America. It is worth pointing out that "diversity" is a feature of ecosystems as well as an artifact of biological collection. Panama with its long association with the Smithsonian Institution, and Costa Rica's venerable tropical ecology study site, La Selva, have meant that both places have undergone extensive taxonomic analysis and had thousands of students collecting specimens for more than 40 years. This may be reflected in their higher numbers of "specialist" taxa–plants and amphibians.

The diversity of El Salvador is especially impressive given the "small" (indeed, underestimated) forest area of the country (ranging from 2 to 10% of the forest endowment of other countries), and the prevalent view that it has almost no worthwhile forests. How then, does one explain such diversity in a country that is seen as having no significant forests?

Table 1

Biotic Diversity in Central America (Number of species per 10,000 km^2)

Country	Forest Area	Mammals	Birds	Reptiles	Amphibians	Higher Plants
El Salvador	167,000	106	365	5	18	1,956
Guatemala	4,253,000	114	304	105	45	3,638
Honduras	4,608,000	78	308	68	25	2,252
Nicaragua	6,027,000	86	322	69	25	3,003
Panama	2,123,000	112	477	116	84	4,618
Costa Rica	1,569,000	120	496	125	95	6,421

Source: World Resources Institute (1996)

Secret Forests of El Salvador

Table 2 outlines land uses in El Salvador and provides classification and area of woody vegetation from three different sources. Remnant forests embrace about 30,000-40,000 ha, although these often bear traces of disturbance in recent historical times (Ramirez 2001). Coastal forests of all kinds, but mostly mangrove, comprise about 25,000 ha. The 24 protected areas encompass another 28,000 ha. There are about 5,000–7,000 ha of forest plantations. Sec-ondary forests of various ages and forms (which is often classified as "pasture"), and with different degrees of density cover more than a third of El Salvador. Pastures are largely diverse silvo-pastoral systems[3] since during the war cattle were largely sold off or eaten. Beef imports from Honduras have sharply reduced local market prices, and the current level of banditry results in such high rates of cattle rustling that grazing without close supervision produces spectacular losses.

Table 2

Post-1995 estimates of land use according to various authors (in Ha)

Source	MARN*	Hecht	Komar
Forest	320,761	-	320,000
Secondary forests	-	300,000	-
Mangroves	24,382	25,000	38,000
Coffee	230,000	170,000	195,000
Plantations	-	7,000	7,000
Coconut	5,000	5,000	1,314
Commercial orchards	46,863	35,450	-
Domestic	-	50,000-100,000**	-
Protected areas	-		28,000***
Urban forests	-	8,000	-
Vegetables	9,014	-	-
Basic grains	499,000	300,000	-
Pasture	1,160,738	-	-
Urban area	44,261	50,000	67,000
Total Forest	**627,761**	**695,000**	**561,314**

* Ministry of the Environment and Natural Resources

** Estimates of forests in household orchards and agro-forests, land demarcations and hedgerows.

*** 48,000 ha still to be added.

Source. MARN 1999; Hecht 1999, Komar l998

As such, secondary growth and advanced pasture successions represent the largest forest types in the country, and given the millennial anthropogenic and disturbance dynamics in El Salvador, secondary formations are probably its characteristic vegetation. The living fences and tenure demarcations, large urban forests, dooryard agro-forests, coffee forests and gardens are widespread. Thus, in spite of its reputation for "extinguished" nature, El Salvador has substantial forest cover. All the sources on forest cover indicate that the country has about 600,000-700,000 ha of tree cover of all types– at least a third of the country is forested. Deforestation drivers now mainly include urbanization, especially on the fringes of San Salvador, and sugar cane production on the coastal plain and Lempa river valley.

Many analysts underestimate and derogate disturbance and anthropogenic forests because they do not "count" in the categories often considered most meaningful by many biologists– they are successional rather than "virgin" forests, anthropogenic rather than "wild." Ecologically and socially significant types of vegetation become "invisible," and thus fall outside of policy frameworks that might enhance livelihoods as well as the ecological and environmental services that such sites might provide.

[3] El Salvador's silvo-pastoral systems have not been extensively analyzed, but a detailed survey in Costa Rica showed that 190 of the 360 species that occurred in the area of Monteverde were found in pastures (of which 60% were primary forest species). Ninety-four percent of the species in pastures were known to be used by birds, bats and other animals (Harvey and Haber 1999).

Factors of Forest Recuperation

Forest recuperation in El Salvador reflects several processes that are the outcomes of political and economic globalization, structural adjustment policies, and processes of democratization and decentralization. These include:

- The impact of El Salvador's civil conflict, to the extent that it reflected hemispheric cold war politics. These had effects on the agricultural frontier, migration and agrarian reform;
- The outcomes of regional and international economic integration and trade liberalization on grain prices and the volatility of international coffee prices;
- The emergence of local and regional environmental policies as an outcome of decentralization and political opening after 50 years of authoritarian regimes.

Conflict and Clearing

El Salvador was a "hot spot" in the cold war. A long history of civil uprising marked the history of the 20th century in this country, but among the most severe episodes was the civil war that lasted from 1980-1992.

The main impacts of the war on natural resource management involved its chilling effects on the expansion of the agricultural frontier, its role in stimulating international and urban migration (and later, the economy of remittances), agrarian reform and its impact on holding size and the rural economic structure. While war should not be advocated as a resource policy, from the environmental perspective, these outcomes all tended to reduce deforestation pressures and permitted large areas of cultivated landscapes to revert to successional formations.

Impact on large-scale producers

Much of the literature on war and environment focuses on the destructive effects of blowing up large portions of the landscape and eating the wildlife, but guerrilla and low-intensity warfare in Central America inhibited the agricultural frontier while using forest cover. Thus, in forest areas, war can, ironically, promote natural resource conservation.

In El Salvador, coastal and mountain forest areas became FMLN (the opposition forces) strongholds, permitting forest resurgence in upland ranches and haciendas as large-scale producers in these areas retreated. These skirmish zones were often left alone for more than 20 years.

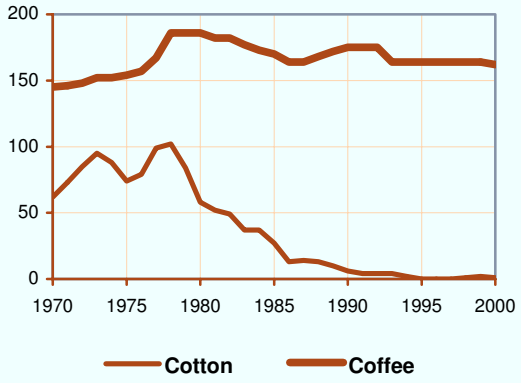
Already in decline, the production of cotton, the land use most responsible for chemical pollution of the landscape and waters since the sixties, was also decisively curtailed in FMLN-controlled coastal areas (Graph 1). With its extremely high use of agrochemicals of all types, cotton was central in contaminating local water bodies and in the pollution of mangroves (Murray 1994). The elimination of this land use was very positive ecologically.

The civil war also had important effects on coffee cultivation, the historic source of wealth in El Salvador. Being a perennial crop, the surface in coffee did not change significantly, but the war did preclude a switch from the ecologically sound and "biodiversity friendly" shade coffee to the more sun tolerant varieties.

The latter were being promoted throughout Central America during the 1980s through various development agencies because they were somewhat more productive and as a control measure for coffee rust (Perfecto et al 1996). As a consequence 92% of Salvadoran coffee continues to be grown under traditional diverse shade canopies (Rice and Ward 1996).

Graph 1

El Salvador: Surface in Cotton and Coffee, 1970-2000
(Thousands Ha)



Source: Central Reserve Bank of El Salvador

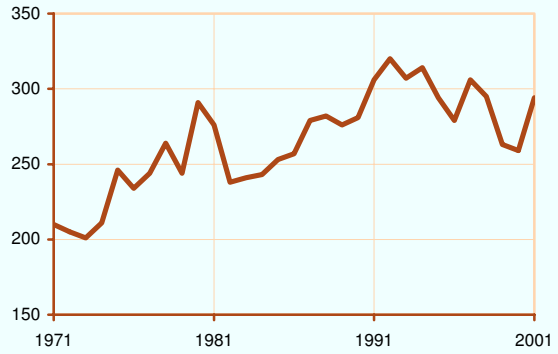
Campesino production

The small farmer agricultural frontier based on the cultivation of maize and beans, which had been progressively pushed into montane areas by land scarcity during the 1970s (Paige 1999, Faber 1993, Utting 1993), was also reduced in the guerrilla zones by the periodic military skirmishes, the threats and realities of civilian massacres, forced resettlement, migration and widespread instability and marauding. While some areas limped along, the expansion of small-scale cultivation was increasingly difficult in the conflictive areas.

On the other hand, as the land reform program got underway during the eighties and *campesino* access to land was expanded, the area cultivated in corn recovered and continued its upward trend, peaking in 1992, the first post-war year (Graph 2). Although the spatial analysis is still missing, this expansion most likely occurred without actually expanding the agricultural frontier.

Graph 2

El Salvador: Surface in Maize, 1971-2001
(Thousands Ha)



Source: Central Reserve Bank of El Salvador

During the nineties, this upward trend was arrested due to a combination of factors, including the low prices fetched by this production, and new opportunities for diversifying livelihoods in the post-war period (see below). The war thus had the effect of curtailing both the coffee changeover to sun coffee, and the expanding agro-industrial, livestock and peasant agricultural frontiers, at exactly the moment that these exploded in other parts of Latin America and were significant drivers of deforestation (cf. Schuman and Partridge 1989, Hecht and Cockburn 1989, Downing, Hecht and Pearson 1992, Perfecto et al 1996).

Migration and Remittances

Another significant effect of the war was the out-migration of roughly one sixth of El Salvador's population. Internal and international migration increased sharply during the 1980s when war ravaged the countryside, and has continued through the 1990s and into the present decade.

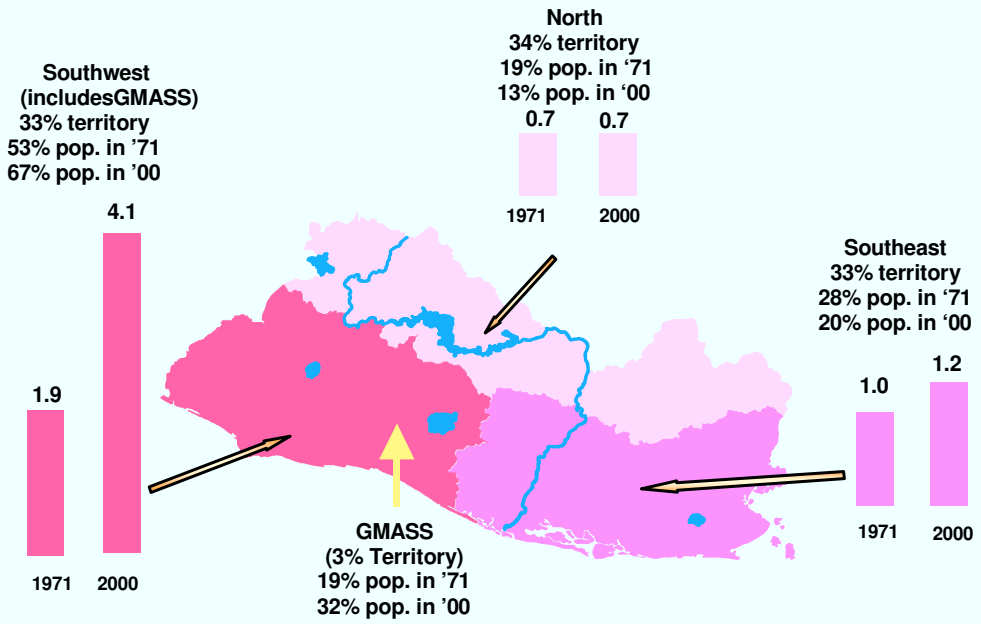
Although only three percent of the national territory, 32% of the population resided in the greater metropolitan area of San Salvador (GMASS) by 2000, up from 13% in 1971 (Map 1). In the southwestern zone, which includes the GMASS, the population more than doubled, largely due to peri-urban development around San Salvador, and the assembly industry (maquila) near the airport (PRISMA 2002). The population in the northern third of the country by contrast, remained stagnant. In southeastern El Salvador, the population increased by 20%, but largely in its more urban southern cities.

Roughly 2.5 million Salvadorans live outside the country, some 94% in the US (Kandel 2002). Expatriates are the main source– 66% by 2000– of El Salvador's foreign exchange (Table 3). The "economy of affection" thus eclipses all other hard currency sources.

The average amount of these remittances sent to rural households was roughly US$ 121/mo by 2000, about the equivalent of the monthly minimum wage. Roughly one fifth of all rural households receive them (Table 4). The per capita income in El Salvador is US$1,990, so the average remittance contribution of US$ 1,452/year is a significant welfare subsidy for the recipient families.

Map 1

El Salvador: Population Distribution by Zones, 1971 and 2000
(Millions of Inhabitants)



Source: PRISMA, based on population census.

Table 3

El Salvador: Changes in the primary sources of foreign exchange, 1978 and 2000

	Millions of Dollars		Percent of Traditional Agro-Exports		Structure (%)	
	1978	2000	1978	2000	1978	2000
Traditional agro-exports*	514	292	100%	100%	81%	11%
Non-traditional exports outside Central America	54	145	11%	50%	8%	5%
Maquila (net income)	21	456	4%	156%	3%	17%
Remittances	51	1,750	10%	599%	8%	66%
Total	**640**	**2,643**			**100%**	**100%**
Total excluding remittances	**589**	**893**				

* Coffee, cotton, sugar, shrimp. Note: The table does not include exports to Central America.

Source: PRISMA, based on data from the Central Reserve Bank of El Salvador

Table 4

El Salvador: Households Receiving Remittances

	1992-93			1995			2000		
	No. of recipient households (000)	% of total households	Average monthly remittance/ household	No. of recipient households (000)	% of total households	Average monthly remittance/ household	No. of recipient households (000)	% of total households	Average monthly remittance/ household
Urban	89	15.5%	$ 88	111	16.2%	$ 100	174	19.3%	$ 127
Rural	68	13.1%	$ 60	68	14.1%	$ 93	110	20.4%	$ 111
National	157	14.4%	$ 76	179	15.3%	$ 98	284	19.7%	$ 121

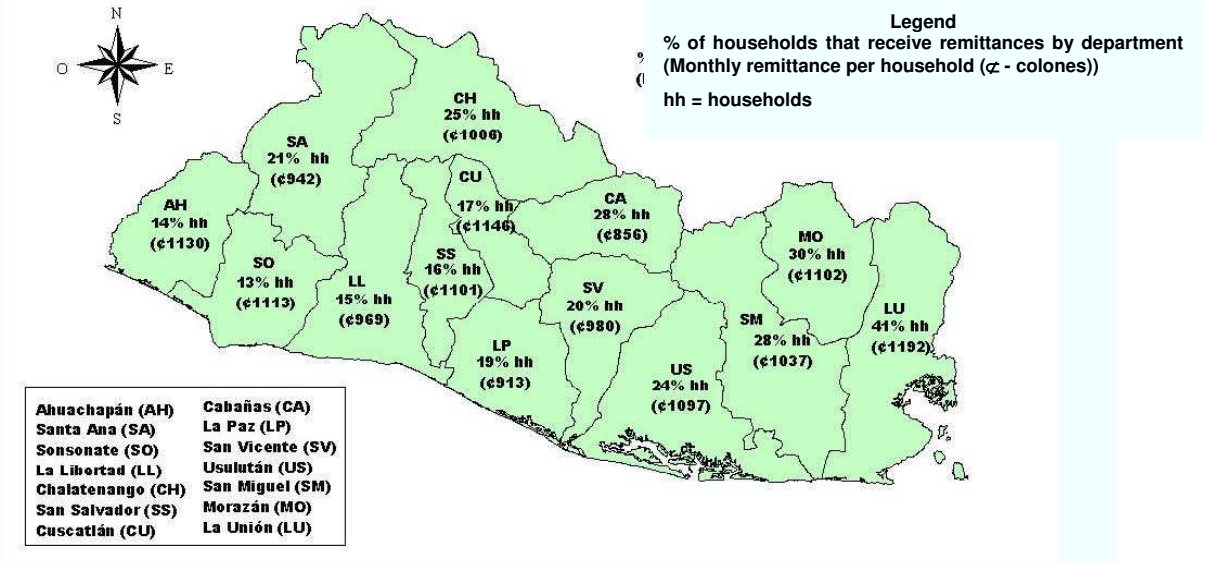
Source: Ministry of the Economy, General Direction of Statistics and Census, Multiple purpose household surveys, 1992-93,1995, 2000. Exchange rate used US$1 = ¢8.75 colones.

The geographical distribution of remittances is also variable as Map 2 suggests, ranging from a low of 13% in Sonsonate– a coffee production area largely buffered from the war- versus areas like Morazán where the war, resettlement and economic collapse fed large migration flows. Remittances correlate loosely with the zones of forest recuperation: the mountain zones of Chalatenango, Cabañas, Morazán, La Unión, and northern San Miguel.

The effect of remittances has been to buffer the income of the poor so that relentless environmental exploitation is less necessary, and to permit the purchase of food, (so that it does not need to be grown), medicine and improved shelter and education (Lungo and Kandel 1999).

Map 2

El Salvador: Percentage of households that receive remittances by department, 2000



Labor scarcity and the gender division of labor

The preponderance of male migrants has changed the gender division of labor in the rural areas, as 30% of the households are now headed by women (Deere and de Leon 1998). Women in these households now must take on more agricultural tasks, even though traditionally they have been more involved in small animal management.

Three factors affect this dynamic: low grain prices that make the costs of production exceed the value of the crop; labor scarcity due to the low wages in the sector and the decline in family labor as children study; and finally, a drop by roughly half in fertility rates (Kandel 2002).

More to the point, with the collapse of agricultural prices, the costs of production often exceed their return. In a series of group interviews on the impact of remittances on rural households carried out in Chalatenango and Ahuachapan, respondents were unanimous in their assessment that many such households had stopped cultivating, and would rather wait for remittances (PRISMA/UCLA Survey 2000). The effect of declining grain prices worked against peasants as producers, but benefited them, through low prices, as consumers with cash from remittances.

Agrarian reform

Agrarian reform has been one of the central political questions in Central and Latin America throughout the last century. Indeed, the roots of the civil war reflected the demands for equitable land distribution.

Redistributive agrarian reforms in El Salvador have undergone several distinct phases, each with a specific set of legal characteristics. Two main reform periods are especially relevant to our concerns: the agrarian reform of 1980 that was put into place as an effort to stave off the war, and the PTT (Land Transfer Program) of

1992 negotiated as part of the Peace Accords ending the war. In both these transfers, land could be held in single plots, but provision was also made for collective holdings and communal management.

The agrarian reforms of the 1980s distributed 295,000 ha among 84,000 beneficiaries. In the early nineties 106,232 ha were distributed amongst 36,597 beneficiaries– mostly ex-combatants- under the Land Transfer Program (PTT). Thus, in total 401,232 ha were distributed– a fifth of the national territory– to 120,597 beneficiaries: 37,000 were organized in cooperatives and received 5.8 ha/beneficiary; 47,000 received individual plots averaging 1.7 ha; and 36,597 received an average of 2.9 ha / beneficiary. These figures were generally below the size levels considered necessary for significant poverty alleviation, but this is predicated on the idea that all income is derived from agricultural sales (Diskin 1996). Nonetheless, about 25% of rural households received land under the programs.

The agrarian reform has had four main effects on natural resources:

First, at the social level, the land transfer processes opened up the possibility of new forms of tenurial and territorial organization, which, in some cases, have led to collective decisions about land including natural resources management such as forest co-management, fire control, watershed councils and hunting controls.

Second, some agrarian reform cooperatives and the PTT communities received technical assistance and funds as part of international cooperation programs. As a result of institutional interactions associated with NGOs that emphasized environmental ideas and sustainable development projects, such as reforestation, agroecology and environmental protection, environmental awareness in rural communities has increased.

Third, the redistributive structure itself has created a different agricultural landscape that is much more multiuse and multipurpose in its focus because the holdings are of such small size. In the case of coffee, for example, small farms of less than 7 ha represent 80% of the individual farms (Table 5) and are integrated into mixed production systems that supply coffee as well as other ancillaries, like fruits, artisan inputs, forage, medicines and fuelwood for cooking (Mendez, forthcoming).

These plots have an important role in self-provisioning and buffering households and extended families from the economic volatility of the Salvadoran economy and create a highly structurally and ecologically diverse landscape mosaic.

These fragmented holdings mean higher diversification at the plot level, and much more "inertia" for land transformation at the scale of the landscape. This tenurial "patchiness" blocks the large-scale clearing more typical of large holdings. This is illustrated by Table 6, where the

Table 5

El Salvador: Coffee farms and surface by size, 2000

Farm Size (ha)	No. of Farms		Area (ha)	
0-7	15,051	80%	24,331	15%
0-14	1,479	8%	15,600	10%
14-35	1,319	7%	32,018	20%
35-70	618	3%	33,698	21%
> 70	371	2%	55,298	34%
	18,838	100%	160,945	100%

Note: Does not include land reform cooperatives.

Source: PROCAFE, 2000.

Table 6
Characteristics of shade trees in three cooperatives of Tacuba, El Salvador

Cooperative Type	Average Abundance+ (trees per ha)	Total Species diversity	Diversity/ plot* (min. per ha)	Management/tenure
Agrarian Reform Coop (n=20 plots)	390	74	12	Collectively managed
Traditional Coop. (n=14 plots)	350	51	12	Collective and private plots
Farmer Association (n=17 plots)	890	110	22	Private plots

+For this figure, abundances per plot are averaged and extrapolated to ha.

* Diversity was measured in 1,000 m^2 plots. This ensures that there is at least this minimum number of species for larger units of area.

Source: Mendez (forthcoming)

most fragmented holdings in the producer associations embrace the greatest diversity since a range of cultivated forest products, such as citrus, other fruits, posts, small scale building materials, firewood and artisan materials are also produced.

Another significant effect of the agrarian reform and the war was to wean El Salvador's economic elites away from the rural economy. The Peace Accords mandated expropriation of many large agro-industrial rural holdings for agrarian reform, while maintaining the security of urban and financial assets of national elites. This helped create an economic and political class with virtually no interest in rural development questions except as they might affect hydropower and drinking water.

As rural areas became less important for economic accumulation, they also were less important in policy and as sites of investment. El Salvador's national economic focus in the 1990s emphasized its financial and industrial policies, in line with adjustment policies that embraced free trade and slashed rural subsidies and credits.

Thus, after a long agricultural history, El Salvador embarked on an urban based and urban biased development model. Within that set of approaches, cheap food policies remained a central strategy to reduce urban unrest, and were largely achieved through trade liberalization with the Central American Common Market and not through increasing national production.

Economic Integration, Structural Adjustment and Rural Commodities

In the period from 1960 to 1980, El Salvador began to diversify its export base and transform the structure of agriculture. In an effort to modernize the agro-export sector, extensive land uses, like cattle, and intensive industrial, high input agriculture like cotton and sugar cane exploded (Conroy et al 1996, Paige 1999, Faber 1993). This dynamic was stimulated by an ensemble of fiscal incentives that were reproduced in many Central American countries, including subsidized credit for land, animal and machinery acquisition, duty free equip-

ment importation, tax holidays, land grants and infrastructure development.

Protected and preferential markets further buffered these activities from external competition, and until the economic downturns of the 1980s, agricultural modernization created 1) a powerful agro-commercial elite, 2) concentrated land ownership, and 3) marginalized an increasingly landless population who sought to produce their livelihoods on ever more precarious holdings at the mountainous agricultural frontier. The combination of the export agricultural and marginal subsistence production generated an extremely aggressive deforestation frontier (Paige 1999, Faber 1993). The array of institutional subsidies also produced immense distortions in the agro-export economies.

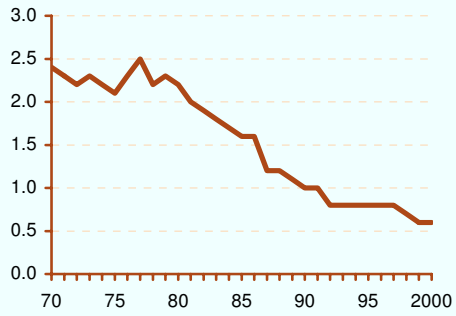
The civil war in El Salvador was to a large extent the result of those distortions, and as it unfolded it was also accompanied by structural changes of the economy to the extent that by the nineties, the Salvadoran economy could no longer be recognized as an agro-exporting one. Not only did remittances replace agro-exports as the main source of foreign exchange, but internal price signals shifted much more in favor of economic sectors other than agriculture.

Indeed, as Graph 3 reveals, agriculture's relative prices have been in sharp decline since the 1980s, when structural adjustment policies were first predicated. At that time, one of the arguments was that they were necessary to revert this decline and the anti-agricultural bias created by the prevalent interventionist macroeconomic framework. In practice, when the economic liberalization policies were finally adopted at the end of the eighties, the outcome was to lock the structural change of the economy as the relative prices of the agricultural sector vis-à-vis the rest of the economy were further eroded.

Graph 3

Decline in relative prices of the agricultural sector, 1970-2000

(1990=1)



Source: PRISMA, based on Central Bank data

As the profitability of agriculture collapsed and the economy shifted into an urban based economy, the nature of environmental problems changed. Urban environmental problems related to waste disposal and contamination became quite severe (PRISMA 1995) while the rural environment began to show some improvements.

For instance, high input cotton, which had been critical in contaminating mangrove ecosystems and other aquatic systems, practically disappeared and the highly subsidized livestock sector (which also suffered from rustling during and after the war, and later from cheap beef imports from Honduras) also unraveled. The sharp contraction of these two land uses eliminated the two systems that had the most impact on pollution and especially on direct and indirect deforestation. Finally, the expansion of the agricultural frontier for the cultivation of maize was arrested, thus eliminating another source of deforestation.

Table 7 indicates the changes in the areas under cultivation for different crops. Except for sugar, which has a protected market, and red beans, which are always grown in the same plots as corn while fetching much higher prices, the cultivated surfaces for all the other products declined. Data comparing El Salvador with the rest of Central America shows that this is the only country where the total cultivated *area* in all crops decreased between 1980 and 1999 (Table 8).

The unfavorable context for agriculture has made the sector relatively undynamic compared with the other economic sectors (Graph 4), a factor that works against investment in it, and thus, has further constrained its expansion.
This low dynamism of agriculture contraction can be partially explained by price signals and the relentless capital scarcity in this sector, but several other social factors also played a role. These included the effects of male migration on the gender division of labor. Also, overall rural labor availability worked against the high labor inputs of corn. Attitudes toward farming shifted as rural opportunities waned.

Demographic factors including the sharp decline in family size (a decrease by about half) and the increased schooling of children reduced the availability of domestic labor that had been applied to grain cultivation. Finally, the low wages in agriculture, as well as the changing aspirations and exposure to mass media have made farming less attractive and detracted from its precarious prestige. If one is going to proletarianize oneself, it makes more sense to do so away from the low wage rural zones, and by preference in the U.S. where wages are higher. Table 9 illustrates the profound rural wage stagnation compared to other employment sectors in the economy.

Table 7

El Salvador: Areas planted in Agricultural Products, 1980, 1990, 2000 (1000s Ha)

Crop	1980	1990	2000	% Change
Coffee	186	175	162	-13%
Sugar	27	38	77	185%
Corn	291	281	259	-11%
Beans	52	63	79	52%
Rice	17	14	8	-53%
Sorghum	119	129	94	-21%

Source: Central Bank Data.

Table 8

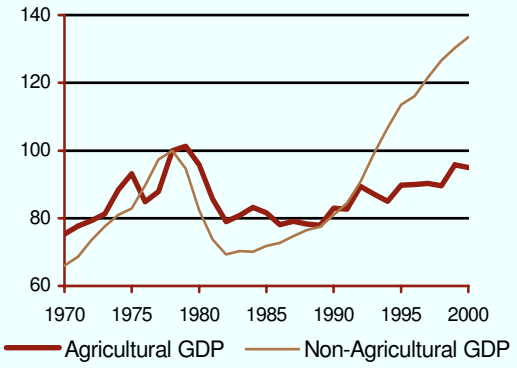
Central America: Area in crops, 1980, 1990, 1999 (1000s Ha)

	1980	1990	1999	%
El Salvador	791	774	744	-5.9%
Guatemala	1,310	1,481	1,531	16.9%
Honduras	695	826	1,011	45.5%
Nicaragua	563	644	752	33.6%
Costa Rica	359	440	454	26.5%

Source: CEPAL, 2000.

Graph 4

Evolution of Agricultural and Non-Agricultural GDP, 1970 – 2000
(1978=100)



Source: PRISMA, based on Central Bank data

Table 9

El Salvador: Real wages by sector (1992 National Average =100)

Sector	1992	1995	1998	2000
Agriculture	53	50	51	50
Industry	98	104	126	108
Construction	101	108	120	123
Commerce	107	112	127	130
Services	108	124	124	129
Transport/ Communications	165	191	169	185
Finance	174	242	206	186
Utilities	182	164	192	226
Nat'l Average	100	110	124	125

Source: Central Bank

The impacts of structural economic change on two key rural commodities– grains and coffee- have had important effects on rural production and natural resources use.

Grains

As shown in Graph 5, real prices of basic grains declined significantly since the 1980s. The impact of these low prices can be seen in the structure of rural incomes that are shown in Table 7. Sales of grains comprise only five percent of rural income even though almost 90% of all households produced them (see Table 10). The poor returns to the grain sector have placed a downward pressure on the area planted for maize as shown before.

The decline in the profitability of agriculture has driven down the real wages paid in the sector, particularly harvest wages, which in the case of coffee were down to almost a tenth of the 1978 level by 1997 (Graph 6). That a decline of this magnitude did not explode in social unrest speaks to the buffering of this sector by the

Graph 5

El Salvador: Erosion of real prices of the basic grains (1980=100)

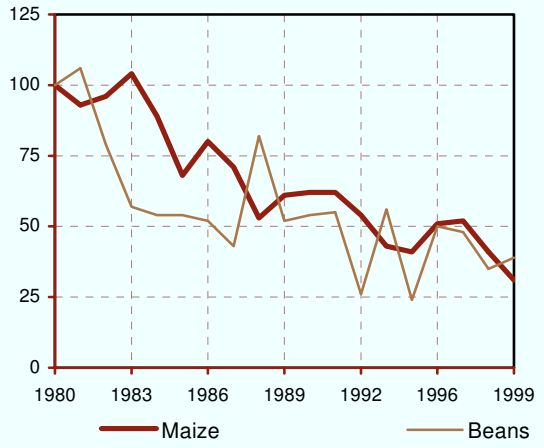


Table 10

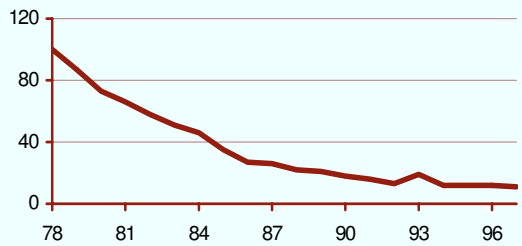
Rural household income sources (%)

Type of activity	%
Agricultural Income	38.6%
Grains	*5.3%*
Other Agricultural Products	*3.4%*
Animals	*11.5%*
Other Agric. Income	*0.4%*
Sale of Labor in Agriculture	*18.0%*
Non-Agricultural Income	52.3%
Work away from farm	*44.0%*
Other Income	9.2%

Source: FUSADES (1998)

Graph 6

El Salvador: Evolution of Coffee Harvest Wages (1978 = 100)



Source: PRISMA, based on data from PROCAFE and DIGESTYC

deep semi-proletarianization, access to land for self-provisioning as an outcome of agrarian reform, and the impact of remittances.

Thus, while grain farming is still important for food security and as a buffer against the vagaries of the economy (and thus grown by most households), the grain frontier as an *economic* frontier no longer is as significant in deforestation as it was in the 1970s. Grain production might more usefully be seen as domestic horticulture and provisioning rather than a commercial enterprise.

Coffee

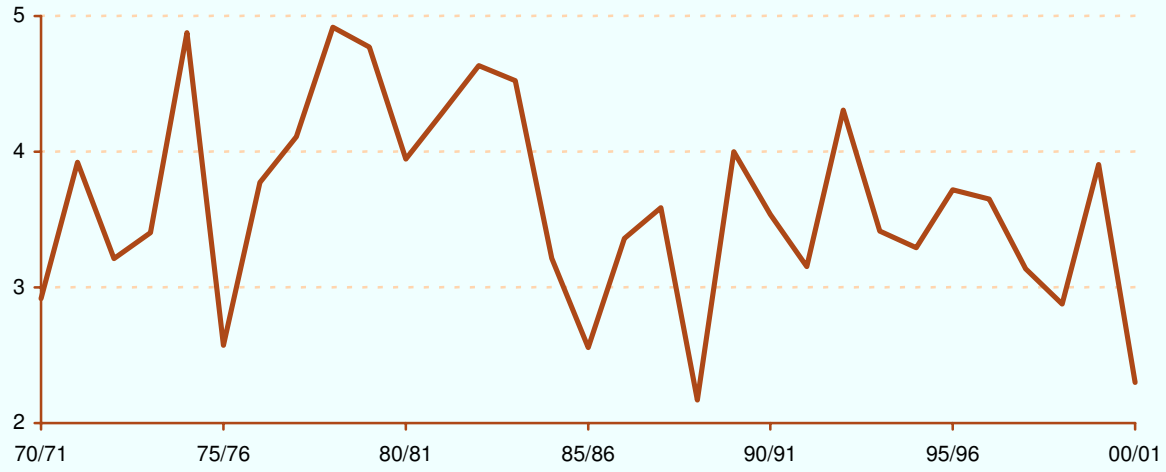
Global coffee production has expanded enormously since the late 1970s because virtually every tropical development project in the world now includes coffee in its suite of rural commodities. El Salvador's coffee sector has shown a slowly declining tendency since the eighties reflecting structural change in agriculture (as agrarian reform shifted the sector into many small holdings and cooperatives), global price volatility, a shift from plantations into housing lots for urban development, contraction of credit, and the continuing problems of banditry, extortion and theft of product in rural zones. While Salvadoran coffee can participate in "fair trade" markets, the caliber of most of the product limits its price in elite markets.

One of the historic sources of wealth in Central America, coffee remains critical to the rural economy and environment of El Salvador. Coffee forests cover about nine percent of the country, and of these roughly 80% are the high biomass, high diversity shaded coffee. Coffee is the largest generator of foreign exchange in agriculture and a significant source of seasonal direct employment. The volatility in the sector is revealed by the data on employment in the coffee harvest (Graph 7). The price fluctuations in the global market reverberated throughout the sector mainly because of the monopsony of its central buyers.

Graph 7

El Salvador: Changes in Harvest Employment in the Coffee Sector, 1970/71 – 2000/01

(Millions of Workdays per Year)



Source: PRISMA, based on data from PROCAFE.

While some cooperatives are seeking to further integrate themselves into fair trade markets, the sector as a whole is a price taker, and even though it receives roughly 80% of the agricultural credit in the country, investment funds are still scarce for small holders. About 88% of the coffee farms are on approximately 40,000 ha, and average 2.6 ha (PROCAFE 2000). The economic condition of these owners precludes shifts to sun-grown coffee, and minimizes the use of biocides in smallholdings. This is a plus for biodiversity, and the ability of these producers to enter niche markets if marketing coops can be developed.

Coffee cultivation has a significant role in maintaining forest cover in key environmental zones. Its distribution in the coastal volcanic and Western mountain areas has maintained aquifer recharge in areas of very intensive drawdown due to urban and industrial development. Additionally, its use of shade trees in one of the most ecologically sound and venerable commercial agroforestry systems has been key in maintaining biological diversity (Komar 1998). More than 125 bird species use the coffee areas (about 20% of the avifauna), and it is especially important for migratory birds (Komar l998). While coffee is quite nutrient demanding, it can be managed without immense amounts of inputs and through inter-planting with leguminous trees and ground covers.

Today about 7,000 ha of organic groves exist, and these have the potential to enter the high-end "green" market. In Mexico (Bray et al 1997), peasant cooperatives have become the world's largest exporters of organic coffee, whose net returns often average about 30% more than those of other traditional producers. Gobbi (2000) reports that the most viable investment opportunities for El Salvador are in its traditionally managed coffee forests.

The New Environmentalism

With agriculture waning as an economic alternative, the rural areas increasingly came to be viewed less as a zone for the production of commercial goods, than as a supplier of *environmental services*. This was a profound deflection in the rural development discourse away from agrarian toward ecological issues. This transformation reflected four main trends:

- The rise of the rhetoric of sustainable development throughout the 1990s as a product of international post war assistance and recuperation throughout war ravaged Central America. This approach was especially important in El Salvador due to its reputation of ecological ruin, and devastating social impacts of environmental hazards including earthquakes, floods, hurricanes and El Niño- related drought, whose effects were exacerbated by inappropriate land uses;[4]
- The increasing recognition by the nation of the importance of vegetation cover in regulating water flow for electrical power and urban-based development, and thus, the rise in the importance of the idea of environmental services;
- Regional integration in biological terms, through the Mesoamerican Biological Corridor (MBC);
- The increased availability of international and private funds for the development of environmental institutions and projects.

This greening of national politics was reflected at all levels: from the president-appointed National Development Commission proposal, *Plan de Nación* (CND 1998), which emphasized that any development would have to take on environmental issues in a substantive way, to the emergence of the peasant "social-environmental" coalitions such as CACH (*Comité Ambiental Chalatenango*-- the Chalaltenango Environmental Committee), an outcome of the end of 50 years of authoritarian regimes and decentralization.

In this new context, approaches to environmental governance tended in two contradictory directions: one focused on community resource management, the other on a highly privatized model of conservation.

The first two areas of environmentalism- sustainable development and ecosystem services- tended to be linked to reconstruction after the civil war and focused on community initiatives. CACH, one of the earliest of such coalitions, developed in the mountain areas of Chalatenango, a former rebel stronghold. Their approach is twofold: it is based on collective environmental protection (such as fire control), regional forest management, watershed councils, etc. and emphasizes broader territorial coordination among the municipalities through the development of associations of adjacent municipalities (*mancomundidades*), which are more appropriate for resource management and strengthen the political power of the municipalities.

CACH is a model that has inspired other regional programs. Its significance lies in its coalitions that produce regional rather than isolated municipal strategies, and that mobilize the social capital produced by the war and by reconstruction after it. This community and collective approach contrasts with the privatization of

[4] The most devastating landslides, such as that of Santa Tecla on the outskirts of San Salvador, were the outcome of faulty road and urban construction.

conservation embraced by international conservation agencies and the Ministries involved with natural resources, the Ministry of Agriculture (MAG) and the Ministry of Environment and Natural Resources (MARN).

The "formal" side of the new Salvadoran environmentalism produced a conservation strategy endorsed by the central state that focused on regional (in the sense of Central American) conservation and international monies. Emphasizing the National Park of El Imposible (which is not run by the state but rather by a private NGO, SalvaNatura, which is funded by subscription, grants and endowments), and on the private coffee forests, this park and its surrounding "corridor" is now the organizing principle for much national natural resource funding (GOES 1999).

Financed by the Global Environment Facility (GEF) and the Central American Commission on Environment and Development (CCAD), as well as other donors, funds will mainly go to developing technology packages, certification programs and international markets. This, however, has produced a disjuncture between "social" versus "formal" conservation in the country. By privileging privatized forms of conservation, innovations that could affect a great deal more territory than the 4% of El Salvador likely to benefit from the MBC, face a funding and policy void.

The Context and Contradictions of Conservation

Central American environmental approaches have historically been dominated by conservation ideologies that emerged from ecologists associated with the United States. Many influential researchers (often informed by Malthusian models of resource destruction that seem to attend a certain misanthropy) emphasize "set-asides" as the key approach to conservation (see, for example, Brandon et al 1998).

The impact of these researchers on resource policy in Central America is significant because of their prestige, their capacity to shape the international discourse about environment, and to mobilize international economic resources for national ecological projects (such as national parks). El Salvador barely counts in their scheme of things, because, as in the harsh assessment of the distinguished ecologist Terbourgh (and many others): "In El Salvador, nature has been extinguished" (1999) .

Their position has several implications. First, rural Salvadorans remain very poor, and absent from economic transfers and market products that support peasant incomes. Accordingly, they have increasingly focused on activities to enhance their ability to mobilize environmental funds from international cooperation, green trade and fair trade initiatives, and through payment for environmental services. These efforts in the context of the decentralized state of El Salvador have produced formidable organizations for regional resource management as well as more local efforts to manage water resources, forests and biodiversity through a range of collective agreements. The mobilization of such social capital creates good perspectives for success in these kinds of environmental enterprises (Gibson et al 2000).

This very positive trend in approaches to resource management runs up against serious bias, not just from Salvadoran ruling elites who have embraced the neoliberal ideology of privatization,[5] but from the international environmental community unwilling to invest money, effort and policy development in anthropogenic

[5] Virtually all Latin American countries that underwent structural adjustment programs privatized many previous state monopolies associated with resources (such as water). None, however, have privatized natural resources as completely as El Salvador.

forest ecosystems other than those associated with coffee or indigenous people,[6] because other anthropogenic systems don't "count" and are viewed as uninteresting ecologically (Vandermeer and Perfecto 1997).

The dynamics of forest trends are much more complicated now than they were a decade ago, and the importance and complexity of different types of secondary, anthropogenic forests, and their role as key elements in conservation remains still largely unrecognized.

The other issue is that while conservationists may have been emphasizing "hot spots" and conservation of selected forest fragments, they have missed, dare one say it, the forests for the trees. This is the emerging implication of the ecology of the matrices between conservation areas.

The Managed Matrix

The recent scholarship on fragment ecology, usefully organized in the collection of Schelas and Greenberg (1996) presents a complex picture of spatial structure and ecological change that cannot be summarized in one simple trend, due to the differing methods and goals of the researchers. One of the central points, however, is that the matrix-the ecosystems surrounding a conservation site- is an important key to the population and extinction dynamics of the reserves.

The endless repetition of the metaphor of islands and oceans that infuses the language of biogeography, and the development of research designs that analyze extinction rates in emphatically isolated forest fragments that are ecologically completely different from the surrounding ecosystems (i.e. water, young pasture) have obscured an important dimension of reality: forest fragments in the world are found in complex matrices- coffee plantations, diverse tropical fruit orchards, manipulated and secondary successions, woodlots, multi-cropped *milpas*, agro-forestry systems, abandoned or weedy pastures, dooryard gardens, hedgerows.

The dynamics and structure of matrices go far to explain why many highly endangered ecosystems do not experience the kinds of extinction rates that are predicted by theory (Whitmore 1997). In these areas, human actions of soil improvement and selection for edible foliage, fruit-bearing or seedy vegetation often enhances the value of these anthropogenic ecosystems for animals and can act as nurseries and havens for forest species (Ayers et al l999, Estrada et al 1993, Harvey and Haber 1999, Whitmore 1997, Komar 1998, Gomez-Pompa, Whitmore and Hadly 1991, Padoch and Peluso 1996, Chokkalingham et al 2001).

Data from Central America increasingly shows that the diversity in these sites is often significant (cf. Greenberg l996, Perfecto 1995, Harvey and Haber 1999, MacKenzie et al 2000, Harvey 1999). Thus it may be that human impacts on age and heterogeneity of habitats, seral complexity and enrichment of matrices might be on a par with "naturalness" in generating diversity at a landscape level. Yet these kinds of forests, from hedgerows and gardens to community successional forests are still largely invisible to conservationists, and thus, are largely ignored in policy and programs.

The larger problem has to do with the conservation discourse and its relentless focus on large parks devoid of people, as the primary conservation emphasis; a discourse that in the end ignores the "secret" forests of El Salvador, by refusing to see them as forests at all. This is not a question of semantics, because in the con-

[6] El Salvador's indigenous population underwent severe repression after an ethnic and political uprising in 1932. After the insurrection was put down, native language, dress and customs were forbidden in a process of "forced acculturation."

text of extreme bias against rural economies and no agrarian policy other than neglect, this "invisibility" places peasants and their landscapes in a regressive and shortsighted policy vacuum within a political economy of environmentalism every bit as vicious as that of the oligarchs.

Implications

The case of El Salvador has several implications that extend well beyond the boundaries of this small country. First this study highlights how the processes of globalization have enhanced forest resurgence in spite of the fact that 50% of its inhabitants reside in rural areas, and its population densities are over 225/km^2. This situation throws into question some of the long held Malthusian ideas about resource degradation in the area. Next, the research emphasizes how very locally-specific the effects of globalization can be: while in many areas of Latin America globalization increases deforestation, in this case global processes including war, international migration, the effect of free markets, and environmental ideologies all contributed to the resurgence of forest cover.

Conservation practice has not really addressed the importance of matrix ecology, although in many ways the Mesoamerican Biological Corridor does try to address some kinds of anthropogenic forests. Forest regrowth is occurring elsewhere in Latin America, and yet the social ecology, diversity dynamics and political economy of these areas are not well known. These areas, with their substantive contributions to environmental services of all kinds--conservation of biodiversity, protection against natural hazards, carbon sequestration, water provisioning, soil protection and aesthetics- are "policy orphans" in today's environmental focus.

Environmental funding remains one of the few economic transfers to rural areas, and many forest communities have mobilized to develop regional land management plans. These groups and the forests they manage, unfortunately are not viewed as priorities, because these resources are not considered "high value," in spite of relatively little research on the diversity dynamics of anthropogenic forests, or even the fact that most of the parks in Central America are in historically dense sites of human occupation and thus not "pristine" in the least (see Denevan 1992).

As long as anthropogenic and regenerating forests are "invisible" as conservation entities, they are potential sacrifice zones without environmental support. Certainly these biologically and socially important landscapes, and the people who inhabit them, deserve more policy attention that supports their positive impact on resources, and reflects an ecology of justice, and not just ecology.

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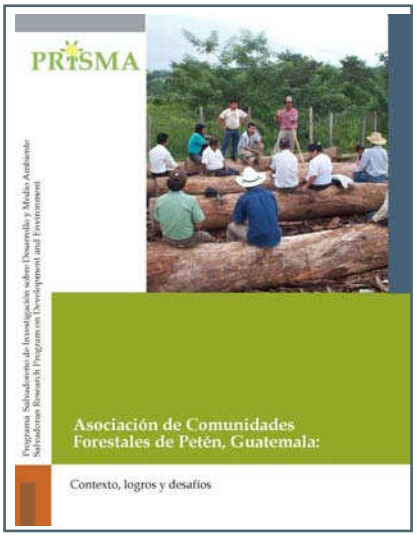

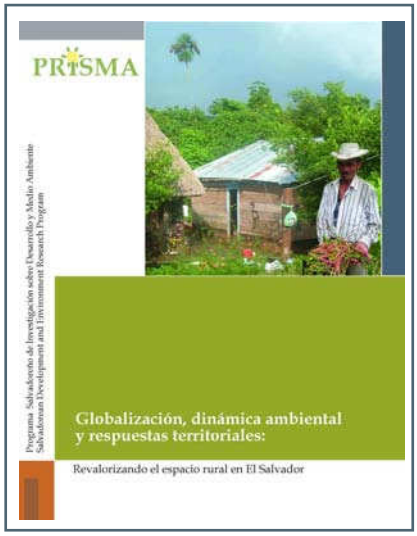

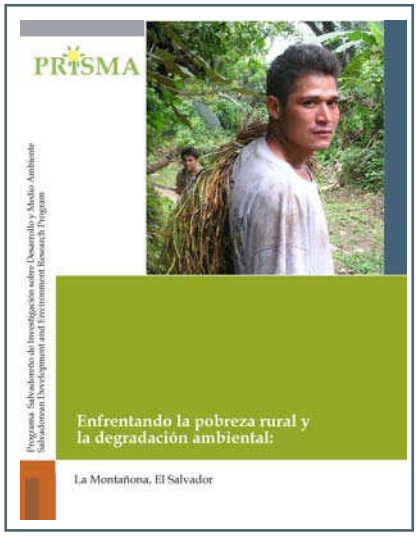

PRISMA

El Salvador is often seen as a classic environmental "basket case" of population growth, deforestation and collapsing biodiversity. In the popular consciousness, El Salvador is notorious for its degree of deforestation. Numerous articles assert that only 2%-5% of its forests remain, giving the impression of a blasted landscape with barely a tree in sight.

This view is faulty, and informed by the extension of older trends in clearing, whose logic and dynamics no longer hold given the enormous structural changes in El Salvador's and the global economy. This view also misses several processes that have encouraged forest recuperation and overlooks the widespread anthropogenic and regenerating woodlands that are significant in their total area, and in their ecological and social impacts. The view of "forest-free" El Salvador misreads forest trends, and devalues the importance of anthropogenic and disturbed forests, which are very important in biodiversity maintenance and other ecosystem services.

This publication outlines the dynamics of forest recovery in El Salvador and reviews the global processes, national policies, local politics and varying ideologies of environment and environmental practices that now shape rural landscapes. The paper also discusses the implications of these changes for conservation policy in the new global context.

Programa Salvadoreño de Investigación sobre Desarrollo y Medio Ambiente
Salvadoran Research Program on Development and Environment

www.prisma.org.sv
prisma@prisma.org.sv
3a. Calle Poniente No. 3760, Colonia Escalón, San Salvador
Tels.: (503) 2 298 6852, (503) 2 298 6853, (503) 2 224 3700; Fax: (503) 2 2237209
International Mailing Address: VIP No. 992, P.O. Box 52-5364, Miami FLA 33152, U.S.A.