THE NATURE AND ROLE OF LOCAL BENEFITS IN GEF PROGRAMME AREAS

CASE STUDY

Argentina – Bolivia: Bermejo Strategic Action Program

GEF

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LOCAL BENEFITS AND MISSED OPPORTUNITIES

IN THE SAP-BERMEJO (ARGENTINA -- BOLIVIA):

MIDTERM CONSIDERATIONS AND LESSONS LEARNED

MARCH 6, 2004

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> The *territory* is the place where sustainability puts down its ecological and cultural roots. It is the social space where stakeholders exert their power to control environmental degradation and to mobilize the environmental potential in self-managed projects designed to meet people's needs, aspirations and desires that cannot be satisfied by economic globalization.
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> The territory is the *locus* of people's demands for reconstructing their living space. It is at the local level that cultural identities are forged, where they express themselves as a social valorization of economic resources and as strategies for reappropriating nature. If globalization is the space in which negative synergies reveal the limits of growth, then the local space is what gives rise to the positive synergies of environmental rationality and of a new paradigm for eco-technological productivity.
>
> Enrique Leff*
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> *The Geopolitics of Biodiversity and Sustainable Development: Economic globalization, environmental rationality and the social reappropriation of nature*

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[1] All pictures courtesy of http://www.cbbermejo.org.ar/basin.htm

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Executive Summary

1. The Strategic Action Program for the Binational Basin of the Bermejo River (SAP-Bermejo), financially supported by the GEF, has the goal of reducing the generation, transport and deposit of sediments that this transboundary basin carries to the Plata River, and to promote sustainable development in this territory of 123,000 km² and a population estimated at 1,200,000. The project has a total budget of US$19.77 million, and a time horizon of 4.5 years (May 2001 -- October 2005).

2. This case study is one of a series of 20 studies sponsored internationally by the GEF, intended to identify the local benefits that have been produced, and how they have contributed to achieving the global environmental objective, as well as to identify negative impacts and any opportunities for generating greater local benefits that may have been missed because of the way the project was designed or implemented. In the SAP-Bermejo case, the study was based on 14 subprojects or components, seven for each country.

3. The study shows that, although these are demonstration projects, they have produced numerous and concrete local benefits in both countries: they are targeted primarily at a poor rural and indigenous population that is suffering the consequences of environmental degradation in the upper basin; they are increasing the physical and economic capital of these communities, and to a lesser extent their natural capital (in Bolivia) and their social capital (in Argentina), and in many cases have reduced the vulnerability of the target populations

4. The study also reveals that, if the conclusions of the Transboundary Diagnostic Analysis (TDA) are correct, the prospects that the project will contribute to global environmental improvement are negligible. Concomitantly, if the global environmental objective is achieved, this would not in itself mean benefits for the people living in the basin.

5. Following are the principal conclusions from the study:

- According to the Transboundary Diagnostic Analysis, it will not be possible to achieve the Global Environmental Objective of the SAP-Bermejo, nor do the subprojects appear to be geared to that objective. In effect, the subprojects are focused on producing local benefits.

- Social ownership or appropriation of the projects, and their sustainability, are both enhanced when the projects are integrated into existing development processes. This approach serves to maximize local benefits in the sense that it strengthens installed capacities and puts them to optimum use, generates synergies with other development stakeholders, leverages funds, achieves legitimacy more readily in the local social and institutional context, and has effects within a defined geographic area that are greater than if the projects were not integrated.

- The great majority of the subprojects examined are pilot or demonstration activities. Thus their real impact and sustainability will have to be measured in terms of their catalytic impact. Yet most of the subprojects risk having a fairly modest impact, when seen against the magnitude of the environmental problems in the basin, because those subprojects and components have no strategy for systematizing experience and thereby documenting and disseminating models and lessons learned.

- If there are to be local benefits, and if they are to be sustainable, there must be a proper balance between concrete actions, or works, and processes.

- Considering that a TDA and a Strategic Action Program (SAP) are essential stages to any subsequent intervention or action, local benefits will be greatest when the "break" between these two stages and SAP implementation is as short as possible and when the interface is carefully thought out.

- Among the subprojects that have a direct impact on communities, it is those that take the time to work with community organizations or local municipal institutions that will generate the greatest benefits and the most capital.

- In most of the subprojects examined, the connection between what the community wanted and what the project was offering was not mediated by any process of participation and negotiation in which local stakeholders might express their demands and explain the factors that make them vulnerable, as a basis for designing and configuring the scope of the interventions. This was clearly the cause of many missed opportunities

I. Introduction

6. This case study is part of a broader study that the Global Environmental Facility (GEF) is conducting to analyze the way in which the achievement of global environmental objectives can contribute to generating local benefits[2], and how the achievement of local benefits can contribute to achieving global environmental objectives, in accordance with the GEF's mandate. To this end, 20 GEF projects have been selected worldwide, including the Strategic Action Program for the Binational Basin of the Bermejo River (SAP-Bermejo), for analysis with respect to three aspects:

- The type and scale of local benefits and any negative impacts, intended or not, that have resulted from the project, including local perceptions of those impacts.
- The nature of the links between local benefits and the achievement of global environmental objectives.
- The extent to which project design has implied missed opportunities to generate greater local benefits.

7. The GEF hopes that this project study will provide lessons, in terms of maximizing the level of local benefits, for future policies, strategies and programs of the GEF, and for the design and implementation of new projects.

8. The SAP-Bermejo falls under the GEF's International Waters Program. Its principal objective is to help the governments of Argentina and Bolivia to address the root causes of the major environmental problems affecting the Binational Basin of the Bermejo River (BRBB), with the emphasis on their most relevant transboundary manifestations, namely sediment erosion, transport and deposit, and at the same time to promote sustainable development in the Basin.

9. The study was conducted simultaneously and in a coordinated manner in Bolivia (by Miguel Castro) and in Argentina (by Chris Van Dam), between September and December 2003. The first stage involved an in-house review of documentation. An internal workshop was held, followed by a workshop with the SAP technical teams from the two countries and representatives of the subprojects, to adapt the methodology and to identify the subprojects for inclusion in the study. The third stagy involved the field study itself, with visits to each of the subprojects and components, and interviews with those executing the project and with the local people, either individually or in groups. The fourth and final stage included a second workshop that was devoted to integrating the results and preparing the report.

10. Given the great number of projects and components in each of the national programs, and the short time available, it was decided to concentrate the analysis on a maximum of seven subprojects or components in each country, selected in accordance with the following criteria: there had to be local beneficiaries; the project must have been

[2] In this study, local benefits are defined as those resulting from the project that have positive impacts, directly or indirectly, on people and on ecosystems, within the project area or adjacent areas, and that provide tangible improvements to the life and economy of communities, and to the integrity of ecosystems.

underway for at least six months; and the project should, to the extent possible, be integrated into ongoing local or regional activities.

11. The study is divided into four parts: the first part presents an overview of the problems and issues in the Binational Basin of the Bermejo River, and the SAP-Bermejo. The second part summarizes the local benefits from the subprojects and components included in the study (as described in detail in Annex C). The third, and major, section presents the central issues emerging from the study, as input into consideration and discussion within the GEF, and by the SAP-Bermejo teams. A series of more specific questions is presented in the form of text boxes. The final part presents the general conclusions from the case study. Annex A provides a summary of the conceptual framework prepared by the GEF, and Annex B offers some methodological considerations for similar studies in the future.

12. It is important to note that the purpose of the study was not to evaluate the SAP-Bermejo itself, but rather to examine some key aspects that imply "opportunities seized" and "opportunities missed" in terms of synergy between local benefits and global benefits under the program.

13. It is worth noting that the consulting team decided to limit this report to 20 pages, in hopes of attracting more readers, many of whom are overwhelmed by the volume of documentation they must read. This has entailed omitting the treatment of certain other issues, and leaving out much of the information was collected during the study.

14. Finally, we wish to thank the members of the national technical teams and the subproject technicians, as well as the people of the locale, for the information they provided us, and for having allowed the researchers to share in their thinking about the activities conducted.

II. The SAP-Bermejo[3]

15. The Binational Basin of the Bermejo River covers an area of 123,000 km². The river rises in the Andes Mountains in northwestern Argentina and southern Bolivia and flows for some 1300 km across the vast Chaco plain, serving as an important ecological corridor linking the Andes to the Atlantic. This river system contributes the largest mass of Andean sediments to the Plata River system. The origin and the movement of the sediment has the potential to dramatically determine water uses in the Bermejo and Plata River systems.

16. The Upper Basin (50,000 km²) is shared by Argentina and Bolivia, while the Lower Basin (73,000 km²) lies entirely within Argentina. The basin is composed of three major features: the Eastern Cordillera of the Andes (with altitudes of between 3000 and 4600 m above sea level), the Sub-Andean Ridge that runs north-south at altitudes of around 2000 m, and finally the Chaco Plain, lying between 200 and 400 m above sea

[3] This summary is based on two documents, the Transboundary Diagnostic Analysis of the Binational Basin of the Bermejo River and the Project Document.

level. The population of the basin in 1991 was 875,000 on the Argentina side, and 188,000 in Bolivia.

17. In 1997, the governments of Argentina and Bolivia established the Binational Commission for the Development of the Upper Bermejo and Tarija River Basins. With support from the GEF, UNDP, OAS and a number of regional agencies, a Transboundary Diagnostic Analysis (TDA) was prepared, as the basis for the SAP. This initial phase of work (known as SAP 1, August 1997 -- December 1999) served to identify, apply and test sustainable land-use practices locally.

18. The TDA identified six priority problems relating to the conservation, rehabilitation and preservation of the basin's ecosystems:

I. Soil degradation and intense erosion and desertification;
II. Water shortages and limited availability;
III. Degradation of water quality;
IV. Habitat destruction, loss of biodiversity and deterioration of terrestrial and aquatic resources;
V. Losses from flooding and other natural disasters;
VI. Deteriorating living conditions for the basin's inhabitants and loss of cultural resources.

19. On the basis of an extensive process of public consultation, a long-term action plan was prepared, designed to not only to attack the fundamental causes of the critical environmental degradation affecting the basin, but also to promote sustainable development for the communities in the region. The second SAP (SAP 2) calls for four groups of priority activities, which constitute the four components of the project:

I. Institutional strengthening and development of an effective legal and institutional framework for integrated planning and management of water resources;

II. Protection and rehabilitation of the environment;

III. Sustainable development of natural resources;

IV. Promoting public awareness and participation and replicating project activities in other regions of the Plata River basin.

20. The project is to cost US $19.77 million[4], and is to run for 4.5 years (May 2001 -- October 2005), which means that we are now somewhat past the midpoint.

21. For each of the four broad components there are a number of subprojects or activities, which are being implemented by various executing agencies, including

[4] Of which the GEF is contributing $11.04 million, the governments $8.43 million, and the UNDP and OAS the remaining $0.30 million.

construction firms, consultants, government agencies and NGOs. The SAP has offices in both countries (Tarija and Buenos Aires), and on the Argentine side there is a local office in Salta. There is a technical team in each country, responsible for planning and supervising execution of the subprojects.

22. It is important to note that there is a degree of confusion over the prospect of achieving the global objective: while one of the principal conclusions of the TDA was that "there are no identifiable management measures in the upper Bermejo River basin that would substantially affect the quantity of sediments generated by the basin as a whole" and that "the most productive sediment zones in the Upper Bermejo River basin are not significantly affected by human activity at this time" (p:24), the Project Document notes that the central idea of the PEA (p:4) is that community-level initiatives at land-use management can contribute to the maintenance of the structure and function of the waterway.

III. The local benefits of the SAP-Bermejo

23. In the case of Bolivia, the local benefits generated by the pilot projects implemented under the SAP are clearly visible. This reflects the fact that most of them were targeted at rural people who enjoy little in the way of social and economic services while they are directly impacted by the long-term environmental degradation of the upper basin, and the threats this poses in terms of flooding, lack of water for irrigation, and the disappearance of cultivable lands.

24. In this context, the SAP-Bolivia projects show clear evidence of increasing environmental, economic and physical capital, and to a lesser extent human capital, and having equipped rural families with infrastructure, productive inputs, and the capacity to pursue diversified agriculture that is sustainable and that can strengthen food security, while in some cases creating surpluses for market.

25. While the Bolivian projects have not had a major impact on social capital, their contributions to institutional capital are important in setting the stage for synergies and cooperative efforts among the various stakeholders in the basin. The more-or-less balanced enhancement of the various types of capital, despite the social capital deficit, is in many cases helping clearly to fortify the resilience, and thereby reduce the vulnerability, of the target rural communities. A compelling example of this can be found among the farming communities of Pampa Redonda and Churquis (an area that has historically seen massive migration to Argentina and to the Bolivian Chaco), where the impact of the projects, especially on irrigation, on rehabilitating farmlands, and on diversifying output, are creating conditions that make it possible for some families to return, and are stemming the migration flow.

26. In the case of Argentina, the local benefits generated by the subprojects are again visible and concrete, and are benefiting farming families and poor indigenous people in very isolated areas (such as Los Toldos and Iruya) that are especially vulnerable to the basin's environmental problems, such as erosion, drought, flooding, and other climatic

irregularities, as well as to more structural and social factors such as the lack of capital for upgrading farm production, the inability to market their output under advantageous conditions, and the insecurity that affects land ownership and access to natural resources.

27. Generally speaking, the local benefits in Argentina have been felt mostly in the increase in physical, economic and social capital. Several of the Argentine subprojects were aimed at improving physical infrastructure, providing inputs, and creating new capacities for increasing, diversifying and sustaining farming and livestock production, as with the irrigation projects in Los Toldos and San Isidro, or the introduction of pastures and orchards in those same projects. At the same time they have created new sources of income by encouraging farmers to produce for market, and above all they have strengthened food security. In terms of social capital, the regularization of land titles in Los Toldos, for example, has given farmers greater legal security over their land and has reduced the potential for conflict among families, now that property boundaries are clearly established. In Los Toldos, the project is also helping to bolster social organizations (for both men and women), creating new links of solidarity and giving them the opportunity to launch collective undertakings such as revolving funds.

28. Some of the projects have succeeded in eliminating community vulnerability, or at least in reducing it significantly, by responding to key problems. With the projects in Huasamayo and Iruya, for example, structural works on the rivers have given greater security to people who for years have lived in fear of material damage and loss of life through seasonal flooding. Again, the land tenure problem has been alleviated in Los Toldos, where people were threatened with eviction because they did not have clear title to their land.

29. A number of these activities have served to increase human capital in the Argentine SAP: the waste management project in Iruya, for example, has instilled a new attitude among local people, adults as well as children, to the handling of garbage. Under *Educar Forestando,* a tree-planting project in the schools, secondary school students are beginning to use the know-how acquired on an experimental plot and apply it to their parents' lands.

30. The increase in natural capital is less visible. Although several of the subprojects include reforestation and forest management, there have been few successes to date. The pilot nature of most of the productive activities and erosion control efforts also reduces the likelihood of any real impact on ecosystems.

IV. The major issues of the SAP-Bermejo as they relate to local benefits

31. Recognizing that if the study were limited to compiling an inventory of local benefits and missed opportunities in the SAP-Bermejo it would not meet the ultimate objective set by the GEF, i.e. to learn from the projects in order to maximize the level of local benefits in future policies, strategies and programs of the GEF, and in the design and implementation of new projects, the study team decided to identify "major issues" emerging from the SAP-Bermejo with respect to local and global benefits, as input for

consideration and discussion within the GEF. To keep this report manageable, we have had to restrict our treatment of each issue, using a minimum of examples in each country to illustrate our assertions and conclusions. We have also left some secondary issues aside.

A. Global considerations in the SAP-Bermejo

Finding. According to the Transboundary Diagnostic Analysis, it will not be possible to achieve the Global Environmental Objective of the SAP-Bermejo, nor do the subprojects appear to be geared to that objective. In effect, the subprojects are focused on producing local benefits.

32. As indicated earlier, there has been some confusion from the outset with respect to the global objective included in the project document. Although the Transboundary Diagnostic Analysis (conducted under SAP 1) had warned that in the case of the upper Bermejo River basin human activities were of minimal influence in the production of sediments, when the SAP 2 was formulated one of its central objectives was to address the root causes of what was seen as one of the principal environmental problems in the basin, the generation, transport and deposit of sediments, recognizing the fact that the Bermejo River is a major contributor of sediment to the Plata River.

33. Not only is the global objective apparently unachievable, but the global aspect of the SAP-Bermejo has become, over the years, simply a statement of principles, a kind of backdrop that is gradually becoming blurred. No one seems to attach much importance to it, either within the project or beyond. The SAP technical teams themselves have been replacing the stated global objective (to reduce the flow of sediments from the Bermejo Basin into the Plata River Basin) with other objectives, such as "sustainable development of the Bermejo Basin," "facilitating access to water," or "helping to resolve water shortages," the last two of which are issues of great importance to the local people. The many local stakeholders, and in particular the communities, do not know who is financing the project, or why. They are unaware that the GEF is specifically interested in certain global objectives, or that the rationale for the project is to reduce the flow of sediments from the Bermejo River into the Plata River. The SAP-Bermejo is seen as one more rural development project. In many of the activities under some of the subprojects, the generation of local benefits is clear and very effective, while the contribution to the project's global objective would seem to be only implicit. For example, in the Bolivian SAP, a number of works are in progress for containing sediments, and the SAP Bolivia technical team evaluates the cost-benefit ratio of these works in terms of reducing sedimentation at the San Jacinto dam, and consequently their contribution to the dam's useful life, which is a local benefit.

34. Beyond this factor, we must ask whether it is realistic to believe that one can "think globally and act locally," -- to what extent can we expect rural people, who have unmet basic needs and are beset by local dynamics that affect their environment, their productive systems, and their living conditions, to commit themselves to a process motivated by "global benefits" that will flow to humanity as a whole, or to other distant

regions or social groups. The global aspect is something abstract, remote, and far removed from people's daily concerns.

35. In the SAP-Bermejo case, the situation is even more critical, because the global objective has no impact on any possible local benefits: lower sediment flows into the Bermejo, or from the Bermejo into the Plata River, will not produce any benefits for the people of the upper basin, who are the target population of the SAP Bermejo. Sedimentation is a problem for the Plata River, and not for the Bermejo or its tributaries[5]. In this context, and on the assumption that local communities could in fact contribute to the global objective effectively, this would in any case have to be regarded as an externality, an environmental service, which would have to be recognized and paid for by the inhabitants of the Plata River basin. In effect, there would have to be a trade-off between those who represent these national or supranational interests, and the people of the upper basin, whereby local benefits are negotiated as the price of the desired global benefits.

B. Integration into existing regional processes and incorporation into public policies

Finding: The social appropriation of projects, and their sustainability, are both enhanced when the projects are integrated into existing development processes. This approach serves to maximize local benefits in the sense that it strengthens installed capacities and puts them to optimum use, generates synergies with other development stakeholders, leverages funds, achieves legitimacy more readily in the local social and institutional context, and has effects within a defined geographic area that are greater than if the projects were not integrated.

36. Recognizing that many of the SAP subprojects are necessarily demonstration undertakings (given their experimental nature and the amount of funding involved), we may say that unless they are appropriated by local grassroots organizations that can socialize them and replicate them, they will have a lasting impact only if they can be translated into public policies at the regional or municipal level. In this respect, the qualitative transformation of local pilot projects into public policies that can influence the overall management of the basin will also be enhanced if they can be articulated with or integrated into existing development processes.

37. Project integration into regional processes is more readily apparent in Bolivia, where the SAP has successfully influenced developments that are having a greater local environmental impact and that are setting the stage for synergy among different social and institutional stakeholders. An example is the involvement of municipal governments and various bodies under the departmental prefecture, as in the case of the "environmental zoning and land-use planning" subproject, which is strengthening planning in the department, or the Guadalquivir River environmental health project, which is complementing the technical capacities, the administrative skills and the human

[5] According to SAP-Bermejo experts, sediments are not a problem in the basin itself, but they are definitely of concern for the Plata River Basin and its waterway.

and financial resources already devoted to this purpose. The environmental planning subproject has produced major local benefits in terms of the department's environment, by strengthening institutional capital and fostering participatory planning approaches that find their expression in the Departmental Economic and Social Development Plan (PDDES) 2003-2008 for the Department of Tarija, involving coordination between the SAP and the planning unit of the departmental prefecture, supported by an analysis of macro-problems and potentials in the department; "risk mapping" (which is being used for the first time in a regional planning exercise) and highly detailed information on departmental infrastructure (education, health, irrigation systems). For its part, the SAP is benefiting from the incorporation into the PDDES, as departmental policies, of a series of activities relating to sustainable management of the Bermejo basin, and is in this way making progress in establishing regional "ownership" over the program and thereby ensuring its sustainability. Similarly, the "environmental zoning and land-use planning" subproject, by providing training and information to municipalities in the department, is encouraging them to formulate their own land-use plans under their own control, and to manage their own resources. The integration of SAP-Bolivia subprojects into various departmental development schemes is making the SAP an important regional player with a recognized role as a source of information and as a catalyst in the development process, and at the same time it has the benefit of placing the basin's environmental problems on the public agenda and moving towards a shared vision of those problems.

38. The conditions that favor this integration strategy in Bolivia depend, among other factors, on the fact that the Bermejo basin lies entirely within the political and administrative jurisdiction of a single department (Tarija); on the fact that there are processes for achieving social consensus on the broad guidelines for regional development; and on the existence of rules and policies to guide planning in the public sector. The region in which the SAP Bolivia operates also has a strong regional identity, for historic and geographic reasons, and because of long-standing concern over erosion in the Central Valley of Tarija. In fact, this has become a key issue for the departmental authorities, who have in recent decades received considerable financing through international technical cooperation. In Bolivia, then, the GEF is piggybacking on a regional construction process that is already under way, and in turn is helping to give continuity to that process.

39. In Argentina, the reverse is occurring. Because there is no regional approach to managing the basin, regional planning mechanisms are weak, and because the few development initiatives that exist are fragmented, the context is little conducive to integration. Nearly all the SAP subprojects in Argentina are new initiatives and are geographically tightly confined. In Argentina, then, the project has yet to move beyond a local to a regional scope, and the current experiments seem to expending all their energies at the local level (and in confined places like Los Toldos, Iruya and Tilcara).

The time variable in the SAP-Bermejo

While social processes are lengthy and are slow to mature, with no predictable time horizon, International Technical Cooperation (ITC), as we know, is something of a forced march, obliging itself and all those who receive its financing to achieve specified results according to a fixed schedule. This is the "project model."

Whether or not the outcomes planned in the PRODOC are achieved, ITC typically abandons projects to their own fate once the allotted time is up: there are other regions, other issues demanding attention, and there are many "development problems" to be resolved. Yet after a few years, other people (or the same ones) will discover that the initial problem is still there, and as in the myth of Sisyphus they must start all over again, while perhaps updating the terms used to classify the problems -- governance, environmental services, citizenship, etc.

The challenge here is to resist the temptation to "reinvent the wheel," and instead to climb astride processes already under way, as the SAP Bermejo has done in Bolivia - long-standing processes, regional processes. The key is to foster continuity, in policies, in technical teams, whenever they deserve it. And this can be difficult in countries where political and partisan considerations are omnipresent.

Recognizing that deadlines hang over projects like the sword of Damocles, we may ask how the time variable can be managed for the sake of local benefits. On this point, the SAP-Bermejo offers two illustrative examples. The first has to do with the time it takes get bureaucratic approval for a project. The delay in implementing the Baritu-Tariquia Binational Ecological Corridor meant that some of the potential threats to the area became a reality: new human settlements sprang up on the Bolivian side, and there was no regulatory framework for negotiating with the company building the Bermejo-La Marmora highway that runs through and disrupts the zone.

The second example has to do with difficulties in estimating the time needed to carry out activities: in the case of the land-use planning project in Los Toldos (SAP-2204), only 10 months was allowed for the entire process of regularizing land titles, a complex task in that isolated locality. Despite the team's excellent work, the process stalled at midpoint: some of the properties surveyed have still not been registered, and surveys could not even be conducted in some of the more remote areas. Many farmers could not come up with the 250 pesos[6] for the registration fee, and the process never reached the final stage, which was to negotiate with the firm (Argencampos) that claimed title to the land. It was only the personal commitment of team members that kept things moving after the contract expired in September 2003. And today, the prospects for continuity are uncertain, because the municipal government is in the hands of a political opponent of the *intendente* whom this technical team was advising.

These multiple time dimensions are thus a key element in achieving local benefits: project schedules must take account of people's time horizons, of human nature, and of politics -- to think otherwise is an illusion.

C. Catalysis, replicability and strategic partnerships

Finding: The great majority of the subprojects examined are pilot or demonstration activities. Thus their real impact and sustainability will have to be measured in terms of their catalytic impact. Yet most of the subprojects risk having a fairly modest impact, when seen against the magnitude of the environmental problems in the basin, because those subprojects and components have no strategy for systematizing experience and thereby documenting and disseminating models and lessons learned.

40. As noted earlier, some of the SAP Bolivia's subprojects are having significant catalytic effects through their integration into regional initiatives and processes already under way. Two additional and complementary strategies are important: a policy of

[6] About US$85.

strategic partnership with other stakeholders, and a proactive policy of replicating experiments.

41. Because they are pilot or demonstration initiatives, the SAP projects are bound to have a relatively modest impact when measured against the magnitude of the basin's environmental problems. Hence the need for policies that will move beyond micro, small-scale proposals to macro proposals that will address the basin's problems comprehensively and in this way generalize the local benefits.

42. Two additional and complementary strategies are important: a proactive policy of replicating experiments, and a policy of strategic partnership with other stakeholders.

43. Replication must not be approached uncritically: the demonstration experiments must first be assessed and validated. As an initial step, this will require gathering information (through a monitoring and evaluation system). Secondly, the experiences must be systematized, through a guided process of collective learning. Finally, based on these lessons and on discussion with the various stakeholders, position papers or policy documents must be prepared for moving the discussion forward and laying the basis for replicating experiments. These three management tools – M&E, systematization, and policy papers -- are lacking today in the SAP-Bermejo.

44. Strategic partnerships are a key element not only for ensuring social ownership and continuity of the proposals, but also for achieving a multiplier effect and broadening the spectrum of families or communities benefiting from the proposal. The *Educar Forestando* subproject in Iria illustrates this point clearly. With a budget of only US$1000, it has had a notable impact in Iria during two years of work. The key has been the strategic partnerships forged with the municipality, with neighborhood associations, with the school and many other institutions. As a result, various productive practices have been validated in an experimental field, trees have been planted in several neighborhoods, and many families have been induced to grow fruits and aromatic plants as a strategy of productive diversification. Although there are other factors behind the success of this project, the personal commitment of teachers and students, and the synergies achieved with other sectors, have been fundamental.

45. This is also the case with the sediment control project in the Tolomosa and Mena Rivers Basin, where SAP Bolivia has reached an agreement with the government agency responsible for managing the San Jacinto dam, which will take over responsibility for management of the physical works (dams, dikes and collector channels) once the subproject is completed, and will also undertake other sediment control initiatives at its own expense. Before this strategic partnership was negotiated, the agency was limited to running the San Jacinto dam and reservoir: now, thanks to the demonstration effect of the SAP activities, it has expanded its scope of action to the Tolomosa basin.

Local benefits and local impact: two sides of the same coin

The poet Antonio Porcchia once said "*Todo el bien que he hecho, cuanto mal ha hecho"* ("All the good I've

done has caused just as much harm"). At times, an idea that at first glance looks very positive runs the risk of turning out less happily, unless careful forethought is given to the secondary effects. This may yet happen with the process of land ownership registration in Los Toldos.

There is no doubt that the insecurity of land tenure has been a historic concern for the rural people of Los Toldos. The social benefits from this subproject are indeed many and varied: with registered title to their land, farmers have legal security and can invest more confidently, for example in making more sustainable use of their facilities. They can also obtain credit, or they can sell their land legally and receive a better price for it. They can will it to their children, or subdivide it. The existence of clearly demarcated property limits tends to diminish social conflict. And the people of Los Toldos no longer live in fear of being evicted from their land by a company (Argencampos) that for several years has claimed ownership of the entire valley. Today the people feel empowered over their land, and with their registered surveys in hand the inhabitants of Los Toldos are much less vulnerable.

Yet land title regularization also brings with it the possibility of selling the land to people from outside the community. This is very likely to happen, in fact, because ecotourism operators have been casting hungry eyes at Los Toldos for some time, and have been held at bay only by problems of land tenure. Now that the issue of legal security has been resolved, and with improved access to Los Toldos thanks to the bridge over the Bermejo River and the paved highway linking Bermejo and Tarija,[7] the lands around Los Toldos will soon appear on the market. Invariably, as in so many other places, prices will rise sharply, meaning that land will become increasingly unaffordable for local people themselves, and many will be tempted to sell their holdings and move elsewhere, or hire themselves out to some tourist operator. All of this will imply a significant change in the town's life, and loss of control over its territory. Is this a benefit, or negative fallout? What is certain is that the process triggered by the land registration campaign will turn out in a manner quite unforeseen by the SAP Bermejo and without any opportunity for the people of Los Toldos to think about the different outcomes that these changes will entail, or to come up with their own ideas.

46. Strategic partnerships are not only a strategy for replicability, but they can also improve the quality of proposals, enriching them from different perspectives so that, besides responding better to the needs of local stakeholders, they can transversalize the key thrusts of the program, e.g. the need to manage the basin, in the policies and strategies of the partner organizations.

D. Local benefits as works and as processes

Finding: If there are to be local benefits, and if they are to be sustainable, there must be a proper balance between concrete actions, or works, and processes.

47. Some local benefits are much more tangible than others: that first category includes infrastructure works (physical capital), and improvements to productive systems (economic capital), or to the ecosystem and to the management of natural resources (natural capital). The methodology suggested for this study by the GEF, in classifying benefits under different forms of capital, allows us to visualize both kinds of benefits, those that are more concrete and visible, and those that while less visible are no less important, such as those involving social, human and institutional capital.

[7] Los Toldos will be only 6 hours from Salta and 1.5 hours from Tarija.

48. The latter category are much more difficult to achieve, and appear less frequently in the SAP Bermejo subprojects, particularly in Bolivia. Increases in social and institutional capital are the outcome of lengthy and often uncertain processes. Benefits of this kind do not arouse much enthusiasm among planners and politicians, whose pragmatic mindset (and a certain mistrust of those who speak of processes) leads them to look for short-term results that are readily observable

49. Nor is there much enthusiasm for such benefits among the communities themselves, and particularly the poorer ones that are grappling with so many unmet material needs. They too will be inclined to associate project benefits with, for example, the construction of greenhouses and irrigation works, improvements in farm output, or in monetary incomes.

50. Yet social capital (trust, solidarity, networks, social relations) is probably the most important kind of capital for any community. This assertion is commonplace today in development literature. Indeed, a social capital deficit can become an obstacle to maximizing local benefits, because it is this kind of capital that makes the other kinds more productive and sustainable.

51. On the other hand, focusing exclusively on social, human and institutional capital would not seem a sound strategy, particularly in a context marked by skepticism about development policies and projects, where intermediary institutions, public and private alike, often try to mask their inefficiency and wasteful expenditure behind talk of "processes," for which the indicators of success may be pretty obscure. Thus, lengthy processes such as those involved in land-use planning need to provide for a series of milestones against which progress can be measured (for example provisional building codes, relocation plans) that will give people confidence and the courage to continue with the process.

SAP Bermejo and the engineering mindset.

The SAP Bermejo technical teams, both in Bolivia and in Argentina, have educational backgrounds based to a greater or lesser degree in the "hard sciences" -- geology, hydrology, engineering and the like -- and this mindset has left its mark on the subprojects. Their approach places the emphasis on outputs rather than processes, all the more so if those outputs are concrete, tangible, physical works, and on outsourcing activities through tendering to private firms and consultants. Efficiency in these cases means achieving results at the lowest cost and in the shortest time possible. Under this approach, other projects – land-use planning, waste management, environmental education, social promotion -- will be subcontracted. While this strategy may be quite appropriate for constructing bridges or earthworks, it has its limitations when it comes to rural development processes, where the intent is to have local stakeholders assert ownership over the process to ensure its sustainability. Both in Argentina and in Bolivia, contracts for the subprojects analyzed varied between six and 18 months. To bring in construction firms or consultants does nothing to strengthen local institutions, and leaves behind nothing in the way of installed capacity. When institutions with local roots -- NGOs and especially grass-roots organizations -- are excluded, an opportunity for local benefits is lost. From this viewpoint, we may ask: what are the capacities, the experience and the specialties that the person or group implementing a proposal should have? Does hiring a consultant, who will take off for another destination as soon as he has handed in his report, have the same impact as relying on a local institution with firm roots in the region?

This point can perhaps be illustrated by the land-use planning project at Tilcara (SAP-2210) sponsored by

the Grupo Huasamayo. This group, consisting of geologists and hydrologists, has stressed certain aspects in land-use planning, such as the summer flood risk to people living on the exposed volcanic slopes. Consistent with this viewpoint, the group's proposed solution is to relocate these people to the other side of the river, although this means making housing lots of the little available farmland on which the rural communities of the area depend for their livelihood. If the Huasamayo group included other disciplines, this would perhaps enrich the approach to land-use planning, and might produce proposals that would address local issues more comprehensively.

E. Diagnostic analysis and local benefits

Finding: Considering that TDAs ands SAPs are essential prior stage to any subsequent intervention or action, local benefits will be greatest when the "break" between these two stages and actual SAP implementation is as short as possible and when the interface is carefully thought out.

52. Both during the SAP formulation phase, when the main task was to conduct a transboundary diagnostic analysis, and in some of the subprojects in the current phase (for example in land-use planning), the preparation of a diagnostic analysis is a key activity. We must then ask ourselves: when can a diagnostic analysis be regarded as, or translate into, local benefits?

53. The answer to this question may depend above all on the characteristics of the diagnostic analysis:

- The use to which it will be put: for example, whether it is addressed primarily to specialists, or whether the information will be passed on to the community at large.
- The degree of involvement by local stakeholders in the process of compiling and analyzing the information: the greater their involvement, the better the prospects that they will appropriate and use this information for their own purposes.
- The quality of the information: whether the information generated will be useful to local stakeholders.

54. For example, in the case of the land-use planning component in Iruya, it seems unlikely at this time that the diagnostic analyses will translate into local benefits: they were conceived as inputs for a second consultant's study, which will also be performed by a group of technicians. Local people have had virtually no involvement in compiling and processing information. And in their current format -- documents written in academic language with more than 200 pages in each volume -- it is hard for local stakeholders to appropriate these studies. The "break" between those studies and the possibility of subsequent action is too great. One interesting factor, however, is that these two studies are of high quality, and if they were translated into an accessible format, in simple language, they could potentially enhance the human and institutional capital of the Iruya communities.

55. Others consider that local benefits can be said to exist when the people conducting the studies are local scientists, as is the case in SAP Bolivia, because this helps to build local capacities; or when previously unknown information about local conditions is brought to light, because this generates knowledge about the region that can subsequently be used by policymakers in regional planning and in setting investment priorities, all of which produces local benefits.

F. Participation and local benefits: the short road and the long road

Finding: Among the subprojects that have a direct impact on communities, it is those that take the time to work with community organizations or local municipal institutions that will generate the greatest benefits and the most capital.

56. The development process can take two roads: the short road and the long road. The short road, which appears more efficient in the short term, is that of technical solutions to technical problems, identified by more or less interdisciplinary technical teams. Their objective is to produce a concrete and visible product as quickly and as cheaply as possible. The long road, which is more complex, tedious and uncertain, involves dialogue at each stage with local stakeholders. Its objective is social ownership, empowerment, and sustainability. In reality, both roads are "ideal types," subject to infinite variations.

57. The subprojects and components of the SAP Bermejo, with few exceptions, have taken the short road. This reflects the fact that the financing granted for the subprojects rarely goes beyond 12 months. The SAP subprojects define participation as nothing more than consultation with the beneficiaries, for purposes of legitimizing or adapting the proposals prepared by the technicians.

The need for a set of rural development instruments

One of the most important conclusions from this study is that, in Bolivia and in Argentina alike, projects are not maximizing local benefits, because they have failed to address several of the issues involved in rural development, and they make only limited use of the broad array of instruments available today for outreach and communication, monitoring and evaluation, participatory diagnosis and formulation of local projects, strengthening grassroots organizations, training social promoters, etc. Many of the strategies that are commonly found in rural development proposals today are present in only limited form in the SAP Bermejo, not only in the proposals but in the team discussions themselves: these strategies include taking advantage of local knowledge and know-how[8], the gender focus, the relationship between technicians and the community and the local accountability of projects, the search for mechanisms that will give continuity to the processes initiated, to name only a few.

The impression is that many of the SAP subprojects still fail to recognize the community relationship as a complex field of action, and they underestimate the know-how needed to engage the interest and participation of local people in implementing and asserting ownership over the projects. The usual attitude toward the community is a simplistic one that sees everything in homogeneous terms: there is no stakeholder analysis, no recognition that in any given territory (for example the basin) there are many

[8] In Argentina, for example, a specific project is planned for "retrieval and recognition of local knowledge," but it has not yet been launched.

players with different and sometimes conflicting interests who will naturally seek to influence, adopt or perhaps reject a new proposal, depending on whether they see any benefit in it for themselves. People tend to distrust the unknown -- different cultures, with different ways of reasoning and of expressing their demands. Thus local institutions, their experience and their management capacity, often go unrecognized, and they are not brought into discussions and decisions as the project advances.

58. Generally speaking, the projects are not very participatory at the formulation stage: the institutions tend to present them to people more or less as a *fait accompli*, with little margin of flexibility. In this context, the project's "acceptance" by the community cannot be taken as an indicator of agreement (and then listed as a local benefit), since communities that are so poor and disadvantaged in every respect will never say no to an outside offer: even when it is completely unrelated to their priorities and expectations, any proposal is welcome.

59. With the sediment containment subprojects in Bolivia, the scanty information available to the communities on the dimensions of the initiatives creates uncertainty and false expectations about the true scope of local benefits. While the SAP experts pay periodic visits, they have not fostered any permanent process of local participation. They hold information meetings, but they frequently overlook the particular features of the area that will affect different people's participation, for example in the subproject for controlling sediments in the Tolomosa Basin-Mena River, where many local people move as seasonal migrants to Argentina from April to October.

60. Some of the subprojects, however, such as the Integrated Management of Natural Resources in Iruya, or the Tilcara Land-Use Planning Project, have ventured along the long road. Yet in these cases, the appeal is not to the municipal governments or existing social organizations (for which there are doubts about their representativeness[9]), but rather to the population as a whole, individually or in groups and families. For the project, this represents a shortcut -- participation on an individual basis is easier to manage and less risky, while organizations and their leaders, and municipal governments, have a greater ability to negotiate, they are often more familiar with the world of projects, and what they can derive from them, all of which makes participation a trickier and more difficult undertaking. The road will then be even longer, but also sounder in terms of increasing social capital.

61. The stage at which stakeholders are invited to participate in the process is critical, and if this is not done at the right moment and with adequate information it can generate resentment that will crystallize into active opposition. An example was the failure to include the small-farmers union (*Central de Campesinos*) of Arce in the process of implementing the Baritu-Taraquia ecological corridor: its spokesman was strongly opposed to the corridor, considering it to be just one more protected area, when in fact it is not. Thus the initial reaction of community leaders to the limited information they were

[9] Or where their representativeness is simply unknown: the lack of a social and institutional "map" has in many cases meant that key stakeholders, with full legitimacy and representativeness, were not accepted as project interlocutors.

given by the subproject executing team was to reject it on the basis of their experience with the Taraquia forest and wildlife reserve, where the regulations prohibited a number of traditional community activities. In this case, the provision of timely information would have facilitated a proper understanding of the nature of the proposed corridor, and could have secured local people's cooperation.

62. Information is undoubtedly a key factor for participation. Yet if the input of information is to facilitate participation, it must be timely, clear, accessible and understandable, particularly in the case of communities where education levels are generally low. The projects examined for this study did not include the production of educational or outreach materials designed to socialize information among local communities, and this represents a missed opportunity and an obstacle to participation.

63. Finally, culture is an essential aspect in this link between participation and local benefits. There can be no true participation without the retrieval and recognition of traditional knowledge -- what is now called the "dialogue of knowledges" -- nor can there be genuine participation if the mechanisms and procedures for discussion and decision-making between the project team and local stakeholders fail to take account of the cultural forms in which people are accustomed to expressing their demands and reaching decisions. Assertions about supposedly universal participation mechanisms are based on a lack of familiarity with local cultural realities. There has been no such debate in the SAP Bermejo.

64. To a great extent, then, local benefits depend on the quality of the participatory process:[10] the increase in social capital, human capital and institutional capital will depend on the mechanisms and opportunities that the beneficiaries have for participation, on their ability to move from being objects to being subjects of the process, and on the degree to which this participation involves established organizations, rather than a collection of individuals or families.

G. Project preparation and prioritizing areas of intervention

Finding: In most of the subprojects examined, the connection between what the community wanted and what the project was offering was not mediated by any process of participation and negotiation in which local stakeholders might express their demands and explain the factors that make them vulnerable, as a basis for designing and configuring the scope of the interventions. This was clearly the cause of many missed opportunities

[10] And also on the "issues" that are open to participation: in one meeting held with the Huasamayo group and the inhabitants of Tilcara, it was clear that the technical experts saw the project as participatory because it had "created opportunities for people to give their opinion" or "it transferred to them the responsibility for organizing themselves to take over the land-use planning process," while on the other hand the local people felt that participation meant getting involved in budget details, debating how the funds were to be used, or mechanisms for mobilizing people, aspects that they considered much more substantive.

65. As noted earlier, the SAP Bermejo embraces a series of subprojects and components that are mutually independent. Each subproject is thematically associated in turn to one of the four lines of action identified during the program formulation phase that flowed from the Transboundary Diagnostic Analysis.

66. Both in Argentina and in Bolivia, it was the SAP technicians who were responsible for selecting the areas of intervention. In Argentina, when it came to the "land" projects,[11] this selection was based on rather fortuitous factors: Los Toldos and Las Naranjas were chosen because one of the NGOs (Pro Yungas) most involved in preparation of the SAP Bermejo was active in those localities; Iruya was selected because it was under particular threat from the transport of sediments, and stood on the banks of the tributary that contributes the greatest quantity of sediments to the Bermejo River; Tilcara, because it was the primary area of involvement for the Huasamayo group, the SAP Bermejo partner in Jujuy. Nevertheless, the total population of these three areas amounts to no more than 12,000 or less than 1.5% of the people living in the Argentine portion of the Basin.

67. In Bolivia, the selection was based on the technical feasibility of constructing civil works, and in particular the sediment retention dams, where the criterion for the inclusion of beneficiaries was defined by the area of direct influence of the microbasin created by the reservoirs. On occasion this criterion sparked community discontent: people could not understand why they should be excluded when they suffered the same levels of poverty and vulnerability as the designated beneficiaries. In other cases, the priority went to those projects that, by their nature, could be combined with development efforts already underway and could in this way contribute to broadening and sustaining the impacts from the initiatives.

[11] It is these projects that were the focus of this study, as explained in the introduction. There are several other projects underway in the SAP that were not considered in this study, and still others that have not yet begun execution.

Land-use planning and building social capital

Bolivia has long experience with land-use planning and its attendant rules and regulations, developed in part with international technical support. The SAP Bermejo has made a special contribution through preparation of the Land Occupancy Plan, which has been added to the existing Agro-Ecological Zoning Plan, and conditions are now ripe for finalizing the Land-Use Plan for the Department of Tarija. This process has encouraged participation with a great impact on regional planning that is now being replicated at the municipal level through the Municipal Land-Use Plans.

The success in strengthening institutional, human and social capital in Bolivia reflects the strategy of integrating the subproject into an existing process, as well as coordination between the SAP and the departmental prefecture, which has resulted in activities where the emphasis was on the complementarity of resources.

Argentina, on the contrary, has lagged behind in this area. In the province of Salta, as in Jujuy, local governments have no experience with land-use planning, although municipal charters assign them that responsibility. The experiments launched by the SAP in three municipalities --Iruya, Los Toldos and Tilcara[12] -- represent in fact pioneering initiatives in this part of the Bermejo Basin, and although they have been in place for only a short time they offer a number of lessons as to how these exercises can translate, or not, into a varied range of local benefits.

A key aspect is the role that local governments and local people must play in the exercise. In these three cases, such participation was limited for various reasons. Although in theory this should speed up the process of preparing the proposal, in practice is presents two major obstacles:

- The exercise ends up in something of a vacuum, because no one -- neither the political authority nor the local stakeholders -- will take responsibility for the results. This poses a risk to continuity and sustainability. This was the case in Iruya, where the land-use regulation project was initiated on the basis of two consulting studies that produced technical reports of more than 200 pages each in academic language: this meant that, despite their undoubted technical quality, few people in the village were able to process that information.
- It bears the imprint or the bias of the professionals involved. For example in the Tilcara project, which involved geologists and engineers, the emphasis was on the location of dwellings and the threats to them, while the local people were more concerned by the disorderly growth of tourism, the heavy influx of outsiders, and the consequent erosion of their cultural identity.

As Rolando Miranda (Los Toldos) puts it, " land-use planning regulations should be very simple, very pragmatic, and they should take due account of the municipality's capacities, both technical and political. A small town or one with little political clout for securing funding from the province must not be too ambitious. People's resources and their level of education must also be considered."

Finally, it is not an easy issue to define the scope or extent of regulations. In the case of Iruya, focusing regulations on the town itself without considering the interplay of relationships between the village and the surrounding rural communities may end up improving conditions in the town and thereby aggravating the influx of migration from the countryside to Iruya since the town, with only 1400 people, now offers all the services that rural communities lack -- roads and transportation, a hospital, a high school, electricity, drinking water, social services.

[12] Every experiment has its own specific features: in Los Toldos it focused on a problem of key local concern, the regularization of land title; in Tilcara, on producing a series of thematic maps with a special focus on urban expansion into high-risk areas, identifying neighborhoods and dwellings that would have to be relocated; in Iruya, where people, homes and properties are exposed to various threats, the project was designed to establish an early warning system, and included a social and cultural survey of two indigenous communities.

68. In macro projects of the kind that, because of their scale, are financed by the GEF, political factors are likely to dominate in the identification of intervention areas and in the preparation of subprojects, without much in the way of participatory processes. Nevertheless, it would perhaps be advisable to incorporate some basic strategies for maximizing local benefits:

- Give priority in selecting areas of intervention to those that are environmentally, socially and economically representative of the basin as a whole, so that these experiments can subsequently be replicated.
- Take into account the views/analyses of local stakeholders before beginning the intervention, so as to identify who those players or groups are, their needs, interests and demands, how they relate to each other (including any elements of conflict or domination), so that interventions can be better targeted.
- Introduce greater flexibility into the projects so that their design can be adapted as they proceed in order to maximize local benefits. The fact that technical experts and communities have gone down the same road together not only makes for greater mutual understanding but also allows objectives and strategies to be negotiated.

V. Lessons Learned

69. The study produced much more food for thought, which we have had to gloss over in this report in order to keep the report under 25 pages. In this last section we summarize those further considerations in a few short paragraphs.

- Local stakeholders seem to place the highest value on local benefits that mean improvements in physical and economic capital,[13] while they show little interest in those that might enhance their social or institutional capital. This may reflect the fact that benefits of the first kind are more concrete and visible, and hold the most immediate promise of reducing poverty.

- The conceptual framework of the study suggests that resilience can be maximized and vulnerability minimized through a balanced increase in all these forms of capital. Yet our analysis of the various subprojects shows that reducing vulnerability in fact depends on how certain key problems within a given community/locality are resolved (for example in Iruya, the threat that flooding of the river poses to people and crops, in Los Toldos the threat of being evicted from their lands for lack of property title, and in the high valleys the lack of irrigation systems that leaves farming hostage to the weather) and this suggests that the emphasis should be placed on improving specific kinds of capital.

[13] This conclusion must be accepted with a degree of caution since time limitations confined the study to short and structured interviews and meetings. Had we been able to engage in broader and more intensive interaction in other settings with local stakeholders, we might have found that they also value other benefits.

- Based on these analytical categories, and the experience of some of the SAP Bermejo subprojects, it might be reasonable to suggest that the starting point for any rural development project should be to address the problems that contribute to that community's vulnerability, even though this may mean that specific institutional objectives are left aside for the moment. The challenge is to identify clearly the factors that make a community feel insecure and vulnerable, and how to address those factors.

- One question that arises from the study is the extent to which the municipality is the expression of local reality. On one hand, it obviously constitutes the local form of government organization, with responsibility for land management, economic regulation and social policies. The municipality also has the duty and the authority to see that the public interest ("the common good," in other words local benefits) prevails over private interests. Theoretically, the municipality can ensure continuity for actions undertaken. Yet experience with the SAP Bermejo subprojects in involving the municipalities has been mixed, and closely intertwined with political questions in the case of Argentina. The main lesson here is that, when seeking local interlocutors, the municipality should not be the only one, but neither should it be excluded.

- In speaking generically of local benefits or negative local impacts we run the risk of viewing the local situation as a homogeneous unit that will either benefit or suffer uniformly from a project activity or strategy. The community is typically composed of individuals and groups with differing and sometimes conflicting interests, and what may be of benefit to some may be prejudicial to others. For this reason, we need to take a closer look at the local scene to see who are enjoying local benefits and who are excluded from them.

- Similarly, we must try to distinguish impacts that are harmful to the bulk of the community (or its poorest members) from those that are negative for only a few but that, on the other side of the coin, are associated with local benefits on a much greater scale.[14]

- There is a tendency to assume that the more participatory the subproject is, the greater will be its local benefits. This is not necessarily the case, especially when the project requires in-depth technical or legal expertise, and where the contribution of local people -- farmers for example -- is necessarily limited, as was the case with the land title regularization project in Los Toldos. We must abandon the idea that the participatory approach is the only politically correct one -- that notion often turns participation into a mere slogan, and tends to devalue the concept and strip it of its meaning.

[14] The establishment of an animal health unit in the community of San Isidro (Iruya) was strongly resisted and criticized by the local veterinarian who until then had looked after local farmers' livestock and obviously felt threatened by the new facility.

Annex A. Conceptual framework for the Study

The main elements of this framework are a typology of local benefits, an identification of the ways that local benefits can enhance global environmental benefits and a model that links both local and global benefits to the dynamics of local people's livelihoods. The framework is depicted in Figure 1.

The typology identifies five generic categories of improvement to livelihood capital, which can be seen as the core of local benefits in global environmental projects:

- Improved access to **natural capital**, including plants and animals harvested from the local resource base, surface and ground water, fuelwood and environmental services such as safe waste disposal and tourism and recreation values. Such changes will increase the sustainability of **resource management**, reflected in factors such as the reversal of ecosystems deterioration, retained biodiversity values, the regeneration of forests, rangelands and wetlands and improvements to water quality.

- Increased **livelihood opportunities, income** and **financial capital**. This includes increases to the productivity of existing and opportunities for new livelihood activities such as farming, fishing or tourism, increases in cash income and improvements to the ability to save or availability of capital.

- Improved **social capital, equity** and **institutional capacities** in local communities. This reflects the enhancement of community-level institutional capacities and contact networks and the improved ability in local communities to deal with outside agencies. It also reflects improvements to gender and social equity at the local level, especially through the empowerment of women and minority groups in decision-making.

- Improvements to **physical capital**, including investments in tools and machinary, access to or the ownership of land and buildings and access to infrastructure such as transport, telecommunications or water supply and irrigation.

- Improvements to **human capital**: the skills, knowledge, work ability and management capabilities of local community members. There is typically a need for a gender focus in this that emphasises issues such as functional literacy and management skills of women.

Increases in the livelihood capitals available to communities will promote improved **health** and **food security**, including improvements to key indicators such as child and infant mortality, reduced morbidity from diseases that reflect poor environmental conditions and improvements to both the absolute level of nutrition and a balanced diet.

Strengthened livelihood capitals and improved health and food security will, in turn increase the **resilience** of local communities to withstand shocks from external factors that are beyond their effective control. Increased resilience in turn promotes reduced

vulnerability to, for example, natural disasters such as floods, droughts and cyclones, environmental degradation, loss of ecosystem integrity, deforestration and climate change and variability as well as to such forces as social, political and market disruption.

Annex B - Commentary on the methodology suggested by the GEF for this study[15]

1. The technical team felt that the suggested methodology was perhaps too ambitious, given the available time and resources, the number of subprojects and components included in the SAP-Bermejo, and the many aspects that were to be analyzed in each case. We therefore chose to focus our research on:

- A reduced group of subprojects and components, seven per country (14 in total).
- Analyzing local benefits (including their relationship to the global objective, possible negative impacts, and missed opportunities), leaving aside the GEF Review Criteria, which we felt were not central to the study, and which, given their complexity (sustainability, "ownership" by the country, etc.), would require a much more exhaustive analysis.

2. In order to create a climate of trust and open collaboration with the technical teams, we had to make clear repeatedly that this was a study of specific aspects (local benefits and their relationship to the global objective), and not a project evaluation as such. In this light, and for the reasons explained in the preceding paragraph, we decided to leave aside the analysis of whether the various subprojects are achieving the expected outcomes.

3. We encountered no major difficulties in identifying local benefits using the "capitals" typology. Nevertheless, compiling an inventory of local benefits was not in itself sufficient to reach any very significant conclusions. Because of this, and recognizing the GEF's ultimate goal for the study, we decided to identify some “issues” that emerged with particular force from the study. For the interested reader, the totality of the information collected is reproduced as Annex A [C perhaps??], in the form of a fact sheet for each subproject,

4. It would perhaps be useful here to supplement the methodology with some guidelines on how to move from matrices or inventories of local benefits, negative impacts and missed opportunities to the identification of issues emerging from the study.

5. Generally speaking, the various stakeholders have different perceptions as to what the local benefits have been. We therefore suggest creating an information gathering tool that can distinguish: (a) the opinions of the program's central technical teams; (b) the opinions of those executing or implementing the subproject; (c) the perceptions of beneficiaries; and (d) what is reflected in the documents and progress reports. In case (a), the team itself could be asked to perform the exercise by filling in the matrices; in terms of (b) and (c), the matrix should be completed jointly in the course of an interview, explaining the objectives of the study and the categories in the conceptual framework. The “capitals” approach and the concept of "missed opportunities" need to be explained.

6. The fact that the SAP-Bermejo has no very clearly formulated logical framework with well-constructed benchmarks, the lack of a baseline, and in particular the lack of any monitoring and evaluation system for comparing outcomes against benchmarks, meant that in most cases we were unable to quantify local benefits, and had to be content with listing and characterizing them.

[15] This contribution was not included in the terms of reference for the consulting study. However, because the case study of the SAP-Bermejo is part of an initial group of six studies that are designed to validate the GEF methodology for use in preparing the remaining case studies, we thought it useful to include some comments about the methodology suggested by the GEF.

7. Just as there is a typology for analyzing local benefits, the concept of negative local impact should also be more thoroughly spelled out. One possibility would be to use the same typology as that for local benefits (looking at reductions rather than increases in capital), but it would probably be better to use other categories.

8. The concept of "missed opportunities" also needs to be further elaborated, so as on one hand to distinguish opportunities for maximizing local benefits that may be lost because of project design from those that are lost during implementation, and on the other hand to differentiate those that are lost for reasons of focus, perspective, or inappropriate strategies, and for which additional financing is not therefore an issue, from those that are lost because of necessary limitations (program targeting, limited funding, etc.).

9. Natural, physical and economic capitals are clearly distinct. But in the case of social, institutional and human capitals, the dividing lines can be somewhat blurred. When it comes to rural communities, an improvement in economic capital (in terms of enhanced productive systems) nearly always produces an improvement in food security, which implies that this local benefit is counted twice.

10. There are some local benefits that are fairly obvious and visible (in general those sought by the project), but there are also other benefits that are less obvious, and that are generally related to ongoing processes or that emerge as am unintended, secondary effect. Benefits of this latter type may be at least as important as the first type, and it is important to be on the lookout for them carefully as part of the study.

11. With several of the subprojects, where support is being provided to NGOs with long local track records and various sources of financing, it is difficult to determine whether the local benefits are the result of the GEF's contribution through the SAP-Bermejo or whether they are the product of previous stages or of other sources of financing. This question becomes even more complicated when we try to identify increases in social and institutional capital.

ANNEX C. Local benefits of SAP-Bermejo subprojects and components of the PEA-Bermejo

Subprojects in Argentina

Subproject name and code **2204** Environmental Zoning and Land-Use Regulation
Executing institution Municipality of Los Toldos
Place (Region, Municipality, Communities) Yungas - Department of Santa Victoria Oeste, Municipality of Los Toldos, Communities of Los Toldos, El Arazay and El Condado
Subproject beneficiaries Urban dwellers and small-scale local producers (total of 299 land surveys)

Local benefits

NATURAL CAPITAL ▪ People have a greater interest in investing in their property, which creates opportunities for more sustainable productive systems.
ECONOMIC CAPITAL ▪ Land values rise and farmers see an increase in their assets ▪ "We can sell our land as we wish " ▪ With their land as collateral, producers have access to credit. ▪ There have been considerable savings to people: individually, the entire process of surveying and registering land would have been too costly for the majority ▪ The Municipality can now derive greater revenue from taxes
PHYSICAL CAPITAL ▪ The Municipality's properties office now has proper land survey charts with documentary and technical background
SOCIAL CAPITAL ▪ Having approved plans in hand enhances legal security ▪ The existence of clearly delimited lots and legal title reduces the potential for social conflict (there used to be much overlapping of property lines). ▪ People feel "empowered" over their lands ▪ Lands can now be legally subdivided or passed on to heirs.
HUMAN CAPITAL ▪ There is now greater information on the status of land ownership in Toldos

INSTITUTIONAL CAPITAL

- There is now a draft municipal land-use ordinance (although it has not been approved and is unlikely to be approved in the short term)
- The way is now open to proper urban planning [16]

To what extent has there been improvement in food security and people's health?

None

To what extent has there been improvement in resilience and reduced vulnerability?

- The process of regularizing land title (which to date has involved the granting of survey plans approved by the provincial properties office) has reduced people's worries over the appearance of a company –Argencampos- with an officially documented claim to ownership of the entire valley. For the first time they have legal security.
- Land has always been a political football in Los Toldos, as the subject of election promises and as a way of denigrating opponents; people always felt that they were being used. Thanks to this process, that is no longer the case.

Negative local impact

- With regularization of property title, a market in land is bound to emerge shortly. The end of isolation for Los Toldos (thanks to the bridge and the construction/paving of the Bermejo-Tarija Highway) will bring in new investors, and the resulting higher land prices will have two impacts: local people will find it increasingly difficult to buy land, and many will sell their land and migrate or become employees. .
  - ⇨ legal security facilitates investment from outside
  - ⇨ residents gradually lose control of their territory.

Non-obvious local benefits

- The General Directorate of Properties has acquired the capacity to resolve this kind of landholding situation. It will serve as a precedent for other areas of the province (replicability – local benefits in other zones).

Opportunities for other local benefits missed because of the way the subproject was designed or implemented

- The 10-month period allowed for regularizing land title was too short for such a complicated process. That process is now stalled in several respects:
- It failed to include all the small producers in the municipality, nor did it include the more remote and poorest communities such as Misión and El Condado
- Procedures for registering lots with the Properties Office are for the most part still underway (and few have paid the requested 250 peso fee)
- One of the most important issues, the competing ownership claim of Argencampos, has yet to be resolved: this will either have to be settled out-of-court through negotiation (a necessarily slow process) or by a judicial ruling (even slower). This step is key to the entire process.

This subproject has also suffered from a problem of timing: if it had not been started so late (with six months elapsing between formulation and approval), the entire process could have

[16] Which was not the case previously, because urban and rural areas/lands were not clearly delimited.

been completed: the subproject is continuing today, without funding, thanks to a commitment by the executing unit. But with the coming changes in the municipality, it may never be completed.

- Local people were initially told that the process would cost them nothing, but then they learned that they would have to pay a fee of 250 pesos per lot. This created mistrust, especially among the poorer groups, who did not understand why they should pay the same amount for a lot of 1500 m2 as that required for a property of 3 or 4 ha; the poorest simply cannot pay (installments are not allowed).

In what way do local benefits contribute to global objectives?
As land title is regularized and as people feel more secure in their property rights, they will see greater interest in investing in soil conservation for their lands, and this will mean less erosion and less sediment carried by the Bermejo River.

Observations
Although the title of the subproject is "environmental zoning", in reality this was a way of disguising a project for regularizing land title (an absolute priority for Los Toldos) so that it would fit within the SAP-Bermejo framework and its guidelines (Cf. land-use planning).

Subproject name and code
2210
Management of the Río Grande Basin – Systematization of the Río Huasamayo Basin – Land-use planning in Tilcara

Executing institution
Grupo HUASAMAYO – Unidad of Gestión Integral of Cuencas Hidrográficas (Integral Watershed Management Unit) of Jujuy
Formed by the provincial government of Jujuy (UGICH), the National University of Jujuy (UNJu) and the National Water Resources Ministry

Place (Region, Municipality, Communities)
Quebrada / Inter-Andean Valleys - Municipality of Tilcara

Subproject beneficiaries
Urban population of Tilcara (to a lesser extent the rural population)

Local benefits

NATURAL CAPITAL

- Greater protection for the basin (through civil works and awareness campaigns). Hillside and soil conservation through planting and civil works (runoff control)

ECONOMIC CAPITAL

- Savings in terms of relocation and reconstruction expenses in case of flooding (through civil works)
- Protection of crops from flooding (through civil works)
- Small-scale employment impact: civil works contractors are required to hire local labor for unskilled jobs
- Cleanup of the watercourse and reforestation make the town safer and improve the landscape, which is beneficial to tourism

PHYSICAL CAPITAL

- The bridge is protected (thanks to cleanup of the watercourse)
- The tree nursery represents new infrastructure

SOCIAL CAPITAL

None

HUMAN CAPITAL

- Considerable effort at sensitization through various environmental education activities (competitions, CD, etc.), and through prevention and mitigation campaigns
- Students and the general public are now more aware.
- Knowledge and labor skills for future reforestation projects
- The local population is aware of the proposed land-use regulations

INSTITUTIONAL CAPITAL

- The local government (Municipality) has been strengthened and is more involved in land management. It now has information (through the property regulations) that it would not otherwise have access to.

To what extent has there been improvement in food security and people's health?

None

To what extent has there been improvement in resilience and reduced vulnerability?

- The town's vulnerability to flooding has been reduced; [17] this was a particular problem for the poorest population living near the river. Future deaths will be prevented.
- There is a greater feeling of security, especially in areas close to the cleaned-up watercourse

Negative local impact

- Politically-inspired tensions between the Subproject and the Municipality surfaced in the September 2003 elections, and could have a negative impact.
- The cleanup of the river banks blocked (and destroyed) an irrigation uptake channel that was very important to a group of small farmers

Non-obvious local benefits

[17] "The disastrous incursions of the Río Huasamayo in 1984 and 1993, to mention only the most recent ones, left scars that have yet to heal."

None

Opportunities for other local benefits missed because of the way the subproject was designed or implemented

- There is an SAP subproject for the retrieval of local knowledge (PEA 2223), but it has not yet begun and it is not regarded as a cross-cutting project: in the case of Tilcara, neighbors insist that they know perfectly well where the areas at risk of flooding are, and that they could help identify them.
- The SAP identified 11 actions under this subproject. But according to the coordinator, for reasons unknown, the SAP coordination office in Buenos Aires has approved startup of only one action at a time. This has led to much delay, and to phasing problems with different actions. For example, the production of seedlings in the nursery is being held back because there is nowhere to take them: the runoff control works (actions 2 and 7) that would use these plants have not been started, and many of the seedlings are likely to reach maturity too soon.
- Some components are missing: a. There has been no provision for regularizing landholding, and an estimated 500 persons have no property title; b. Regulation of tourism: there are serious tensions between traditional residents and newcomers involved in tourism; c. There is a trend to convert farmland to nonproductive uses, and land prices are rising.
- Execution has not made any allowance for a community outreach component. The subproject tends to underestimate the importance of extension work with the community; it has no social specialists, nor anyone with experience in working with the community.
- Under the Municipalities Act, the municipality is responsible for land-use planning. But for a variety of reasons, this responsibility rests with the UNJu, which acts on behalf of the municipality. The municipality will always have only a weak commitment to implementing such planning.

In what way do local benefits contribute to global objectives?

- The subproject is making no significant contribution to reducing the amount of sediment that the Bermejo River pours into the Plata River. Indeed this does not figure among its objectives: neither the executors nor the local people are interested in the global objectives, and their attention is focused on the various risks to the city of Tilcara - flooding from the rivers, landslides, etc. In other words, the higher objective is viewed in purely local terms as well. As in Iruya, the ultimate objective relates to the town.

Observations

- The project is still recent, and only 4 of the planned 11 actions have been started; many aspects still exist only on paper, and as yet few concrete local benefits are evident

Subproject name and code
2222
Productive diversification under conditions of sustainability in the Upper Basin of the Bermejo River

Executing institution
PRO YUNGAS – "Fundación ProYungas" for Conservation and Development of Subtropical Montane Forests

Place (Region, Municipality, Communities)
Two locales, far from one another, within the Yungas
- Department of Santa Victoria Oeste – Municipality of Los Toldos – Communities of La Misión, El Condado, Toldos, El Arazay, Lipeo and Baritú
- Department of Orán, Municipality of Orán, Communities of Los Naranjos and San Andrés

Subproject beneficiaries
Small producers / farmers, male and female

Local benefits

NATURAL CAPITAL
- Restoration of degraded areas through reforestation
- Soil conservation through the building of terraces (2002) and the introduction of vegetation cover

ECONOMIC CAPITAL
- The farm economy has been improved, both for cash crops and more particularly for subsistence farming, through a variety of activities: a. irrigation; b. reforestation (clumps, windbreaks); c. orchards; d. gardens and poultry raising (with homegrown balanced feed); e. grain conservation using silos; f. bee-keeping
- A few producers are beginning to market surpluses (peaches, honey, eucalyptus fence posts and strapping) – the result of previous projects.
- Families save money because they can produce their own eggs and vegetables

PHYSICAL CAPITAL
- fencing of woodlots and orchards
- silos
- micro-irrigation systems
- tree nurseries (4)

SOCIAL CAPITAL
- Social organizations (for men and women) have been strengthened
- People have a greater capacity to critique social policies
- Greater capacity to manage multifamily projects
- Exchange of experience between Los Naranjos / San Andrés and Toldos
- The "Mothers' Clubs" are running revolving funds

HUMAN CAPITAL

- Producers have theoretical training for various activities: producing tree seedlings, irrigation, fruit growing (grafting, pruning, pest control, ongoing care)
- Women are trained in market gardening and poultry raising
- Social promoters are better equipped to provide technical assistance

INSTITUTIONAL CAPITAL

- "Mothers' clubs" and fruit producers are better organized
- There has been a break with the "welfare" approach to social policies: communities and families must contribute to every activity

To what extent has there been improvement in food security and people's health?

- Gardening and farming have improved the local diet, and families can meet all their needs for eggs and vegetables
- A more diversified diet means better health

To what extent has there been improvement in resilience and reduced vulnerability?

- The community is better equipped to face tough economic times, and is better organized to deal collectively with problems as they arise.

Negative local impact

- The presence of promoters paid by the project (although they were trained in 1995) has created some bad blood among other producers in the same communities. As a result, it has been decided not to use a system of promoters in the communities of Lipeo and Baritú (Los Toldos)
- The revolving funds have been devoted exclusively to handicraft production of woolen goods, and marketing problems are causing women to wonder if they can repay the funds.

Non-obvious local benefits

- The community has begun to debate productive strategies, and the topic is now on the agenda of the local community councils (San Andrés)
- Incorporation of the "polimodal" approach (geared to livestock raising and farming) in the Project (with rabbit-breeding and an experimental field). Instructors and students are sharing their training and their nursery practices (San Andrés)
- Men and women are forming social organizations (fruit growers, mothers' clubs) based on their productive activities (Los Toldos)

Opportunities for other local benefits missed because of the way the subproject was designed or implemented

- The residents of Los Toldos are facing increasing problems in marketing their staple surpluses and some of their commercial produce (peaches, honey, would): the project did not make allowance for this component, which is particularly important in Los Toldos for two reasons:
- there is in fact a dual market, the Argentine (Orán) and the Bolivian (Tarija)
- the fact that it is through marketing that several types of output becomes sustainable, and it is here that people can earn cash incomes and so accumulate capital.

In what way do local benefits contribute to global objectives?

- Through better management of farming properties (forestation, agroforestry, ground cover), especially those on steep slopes subject to erosion, soil conservation is being improved, and this means less sediment flowing into the Bermejo River.

Observations

- Given that PRO Yungas (formerly LIEY) began its work with the communities of Los Toldos in 1992, and since then has focused on productive diversification, and the fact that ProYungas has support from other funding sources for its local efforts, it is often difficult to identify benefits directly attributable to financing from SAP-Bermejo (or other donors), and to the period covered by that financing (2003)

Subproject name and code
2209/1
Integrated Management Program for the Iruya River Basin
Component 1: Land-Use Planning
1.A. Socio-territorial analysis of environmental risks to the Town of Iruya
1.B. Socio-territorial survey to assess and make use of culture as a factor for integrated development (Colanzuli-San Isidro-Iruya)

Executing institution
Through the work of consultants: 1.A. Claudia Natenzón, Mariana Gasparotto, Ana María Murgida, Sebastián Ludueña, Institute of Geography, UBA; 1.B. Luis Hocsman, U.N. of Córdoba

Place (Region, Municipality, Communities)
Valles de Altura ("High Valleys"), Department of Iruya, Municipality of Iruya: 1.A Town of Iruya; 1.B. Communities of San Isidro and Colanzuli

Subproject beneficiaries
For now, none. In the future, if the land regulation work is completed, all the inhabitants of the municipality of Iruya will benefit.

Local benefits

NATURAL CAPITAL
None

ECONOMIC CAPITAL
- The areas most vulnerable and at-risk are now known, and this will indicate where investments are worthwhile (1.A.)
- Provided certain measures are taken, people will no longer be at risk of losing their homes, their crops and their goods (1.A.)
- Analysis of productive systems (1.B.)
- Deeper understanding of how people resolve their economic problems through their productive systems and through barter (1.B.)

PHYSICAL CAPITAL
- It is now possible to prepare plans for vulnerable and high-risk areas (1.A.)

SOCIAL CAPITAL
- The analysis of perceived risks and of "perceived risk zones" offers valuable knowledge for the community (1.A.)
- This makes it possible to close the gap between those who are at risk and those who are not, and to help the first group (equity) (1.A.)
- Organizational capacities are being restored (1.B.)

HUMAN CAPITAL

- People now have information on the areas of greatest risk. (1.A.)
- People will be able to mount an early warning system (1.A.)
- Analysis of cultural and organizational aspects. (1.B.)
- Development of a program to strengthen the local culture in support of integrated development (and the area's cultural and archaeological heritage) (1.B.)

INSTITUTIONAL CAPITAL

- The analysis shows which institutions need to be strengthened, where to turn for help, and how to strengthen civil defense (1.A.)
- Identification of ways of cultural reassertion (1.B.)

To what extent has there been improvement in food security and people's health?

- None (except as regards the protection of croplands, and preventable deaths) (1.A.)

To what extent has there been improvement in resilience and reduced vulnerability?

- With an early warning system, people will be better placed to defend themselves against possible disasters (lower vulnerability). Once it is in place, the community will be properly organized to deal with floods. (1.A.)

Negative local impact

None

Non-obvious local benefits

- Through the coordination meetings, other components of the 2209 subproject and the SAP-Salta team (made up mainly of engineers) have been sensitized/informed about the complexity of local conditions.

Opportunities for other local benefits missed because of the way the subproject was designed or implemented

- There is no strategy for preparing the land-use plan for Iruya. For the time being there are only two reports, and subsequent stages have not been identified. As things stand now, although these two reports are interesting and well thought out, they will not produce the required land-use plan: additional inputs are needed (problem with the way the component was designed).

- The two consulting studies do not relate to each other very closely: the first is concerned with the town of Iruya, while the second examines the cultural dimensions of two rural communities, San Isidro and Colanzuli.

- These two studies have been distilled into reports of more than 200 pages each. Very few people in Iruya have the intellectual capacity to make use of this information as it stands.

- The consulting studies were produced by experts: local people and local institutions were not involved either in their design or in their implementation. People who could

implement the land-use plan have no "ownership" over this information, and the component has not provided training for any local people.

- According to the 1A team, finalizing the proposed early warning system will require another study or consulting contract to produce a scientific risk map[18], without which the early warning mechanism cannot be implemented.

In what way do local benefits contribute to global objectives?

None

Observations

- There is still no land-use planning process. All that exists are the two consulting studies, and there is no firm idea of how to proceed with the process in order to produce a planning proposal.
- Several of the local benefits are "potential".

[18] Flood risk indicators/objective information on risks and hazards. Historical records on threats/disasters are also missing. Vulnerable zones are identified according to people's perceptions.

Subproject name and code **2209/2** Integrated Management Program for the Iruya River Basin Component 2: Structural Measures for Erosion Control
Executing institution Comisión Regional del Bermejo (COREBE)
Place (Region, Municipality, Communities) High Valleys - Department of Iruya, Municipality of Iruya, Iruya-Town
Subproject beneficiaries Urban population of Iruya

Local benefits

NATURAL CAPITAL None
ECONOMIC CAPITAL ▪ Protection of mountainsides will avoid disasters that could destroy families' homes and property. ▪ Families are earning cash incomes through employment in building the protection works.
PHYSICAL CAPITAL Infrastructure works: ▪ Foundation wall ▪ Lateral defenses (rock cribs) ⇨ Containment/control of landslides
SOCIAL CAPITAL None
HUMAN CAPITAL None
INSTITUTIONAL CAPITAL None
To what extent has there been improvement in food security and people's health? ▪ No impact on food security ▪ No impact on health, but there is a lower risk of death for people living near the mountainside

To what extent has there been improvement in resilience and reduced vulnerability?

- The project has contributed significantly to reducing the vulnerability of the town of Iruya, which is at risk from the force with which the river is eroding its bed and embankments and destabilizing the mountain slopes, posing a risk to people's homes and farmlands. People are now less exposed to the natural hazards of high water and flooding.

Negative local impact

None

Non-obvious local benefits

None

Opportunities for other local benefits missed because of the way the subproject was designed or implemented

- There is an awareness of the need to stabilize the mountain slopes by reestablishing vegetation ("bioengineering"). This has not been done, however, mainly because there is no relevant experience or research on the species that can grow on the slopes (many of which are rocky with little or no moisture), and on how they should be planted.

In what way do local benefits contribute to global objectives?

- The project has had only a very limited impact on the flow of sediments from the Bermejo to the Plata River: although the structural works have succeeded in retaining some sediments and deepening the river as it passes through Iruya, this is valid only until the "fixed point" is reached, which happened in 2002/2003. From now on there will be no further limitation on sediment flow.
- Nevertheless, if the measures taken are successful (which will only be known after several years), this could serve as an example for retaining sediments at various points along the river, especially around other threatened communities (such as San Isidro).

Observations

None

Subproject name and code **2209/3** Integrated Management Program for the Iruya River Basin Component 3: Management and Conservation of Natural Resources " Management of Natural Resources with a View to Sustainable Development of Production with Indigenous Communities in the Iruya River Basin"
Executing institution API, Asociación para la Promoción Integral ("Association for Integrated Promotion")
Place (Region, Municipality, Communities) High Valleys - Department of Iruya, Municipality of Iruya, Communities of Colanzulí and San Isidro
Subproject beneficiaries Indigenous families in two communities, 126 in Colanzulí, 78 in San Isidro

Local benefits

NATURAL CAPITAL ▪ Less erosion (improved water flow and drainage means less water loss through rill erosion) ▪ Better ground cover through rotational pasturing and fallowing ▪ Water savings through better channeling
ECONOMIC CAPITAL ▪ Increased area of irrigated cropland and pastures ▪ Revolving funds (seeds, veterinary supplies) mean cost savings and local availability of inputs (reduced travel costs) ▪ Local produce markets are flourishing (*cambalaches*) ▪ Income from the marketing of handicrafts ▪ Improved livestock management (optimization of pastures, forage reserves, animal health)
PHYSICAL CAPITAL ▪ Irrigation equipment (intakes, sand filters, holding tanks, water troughs, dams, channeling, piping) ▪ Fencing of pasture lands
SOCIAL CAPITAL ▪ Empowerment of the community in terms of decision-making ▪ Greater involvement of women in meetings and decision-making ▪ Revival of the practice of trading and bartering ▪ Revolving funds

HUMAN CAPITAL

- Better community participation and decision-making (in project formulation, in financial management)
- Greater capacity for innovation and experimentation as a result of debate and sensitization efforts
- Exchange of lessons learned (e.g. Valles Calchaquíes)
- Skills development in animal health, rangeland management, revolving fund management, detection and measuring of water sources, flow rates, irrigation works.

INSTITUTIONAL CAPITAL

- Regulations governing revolving funds (veterinary stations/seeds)
- Social organization (committees), for handling multifamily projects and watering shifts
- Strengthening of the Kolla Council (Colanzuli)

To what extent has there been improvement in food security and people's health?

- Increased production of meat and corn (greater food security)
- With greater availability of water, people go longer have to get up at the crack of dawn in winter: fewer respiratory diseases

To what extent has there been improvement in resilience and reduced vulnerability?

None

Negative local impact

- The SAP-Bermejo works not with "social organizations" but through NGOs that have their own skills (and their own interests and costs): social organizations feel excluded.
- Some families are unhappy because they received no benefits: funding is necessarily scarce and it has not been possible to satisfy all demands. There was lengthy argument and disagreement, for example, over which of the proposed fencing projects would be approved, and the allocation of benefits is subject to debate.
- Disparities have been heightened. The center-periphery problem is being reproduced at the local level: people who live further away tend to be poorer and to receive less attention from the experts; they take less part in meetings and are less likely to benefit (they are also less well informed). They feel they are being discriminated against …
- When the community veterinary station was established, the local veterinarian in Iruya who served San Isidro saw this to his disadvantage. He is upset with the project.
- The fencing of range lands has created much conflict because, although they were formerly appropriated by individual families, they became common lands as they degraded, and now the fences have returned them to private status.

Non-obvious local benefits

- The project has improved relations between the people and the authorities. When the authorities of Finca Potrero refused to let the project use the community hall and equipment for meetings, people realized that this is a community project, and its meetings are community meetings (not API events). This led people for the first time to question their leadership, and to build a new form of relationship. [¿? This sentence is not very clear]
- Constant visits from outsiders attracted by the project – consultants, assistants, etc. - are

raising people's self-esteem. They now feel that they have something to show, that they are attracting interest.

Opportunities for other local benefits missed because of the way the subproject was designed or implemented

- The project focused on San Isidro instead of embracing the entire Finca Potrero, i.e. it excluded the more isolated communities.
- Because there was no initial coordination with other institutions, e.g. the health post, the school, the Finca Potrero committee, valuable opportunities for synergy and strategic partnerships were lost and disputes have erupted.

In what way do local benefits contribute to global objectives?

- The project is helping to reduce sediment production by encouraging sounder livestock practices, in terms of grazing land use, roundups, pasture seeding, animal health. Channeling works have also reduced the risk of erosion in some areas.

Observations

- Since the API has been working on production issues with the communities of Colanzulí and Nazareno since 1996, and has other sources of financing for these communities, it is sometimes difficult to determine whether specific benefits should be imputed to financing under SAP-Bermejo or to other donors, or to the period covered by this financing (2002-2003)

Subproject name and code
2209/4-A
Integrated Management of the Iruya River Basin
Component 4: Environmental Education
Activity. Waste Management in the Town of Iruya

Executing institution
SEMADES, Secretariat of Environment and Sustainable Development of the Province of Salta

Place (Region, Municipality, Communities)
High Valleys - Department of Iruya, Municipality of Iruya, Iruya-Pueblo

Subproject beneficiaries
Residents of the town of Iruya

Local benefits

NATURAL CAPITAL
- Less pollution of soils and water
- Less pollution of the landscape.

ECONOMIC CAPITAL
- Compost: a new source of fertilizer for farming
- Improvements to the landscape, contribution to tourism
- Employment generation through construction of the sanitary landfill

PHYSICAL CAPITAL
- Trash cans in high-traffic areas
- Sanitary landfill
- Composting shed

SOCIAL CAPITAL
- The process has led people to voice concerns about other waste management issues, and to become aware of them: water quality, sewers, slaughterhouse wastes.

HUMAN CAPITAL
- Education and sensitization of adults and children about garbage: people now recognize that garbage is a problem, and that they are part of the solution.
- Local skills for manufacturing plastic baskets and craft paper

INSTITUTIONAL CAPITAL
None

To what extent has there been improvement in food security and people's health?
- Through identification of pollution at water points, sources of infection can be addressed.

To what extent has there been improvement in resilience and reduced vulnerability? ▪ The community, and in particular the children, are less vulnerable to diseases caused by garbage pollution.
Negative local impact None
Non-obvious local benefits ▪ There are fewer accidents: before, plastic bags flying about in the wind frightened horses and mules, spilling their riders. ▪ Burros go longer eat plastic.
Opportunities for other local benefits missed because of the way the subproject was designed or implemented ▪ The project trusted and depended on the Municipality instead of working more directly with the people and forming a neighborhood watch and monitoring committee.
In what way do local benefits contribute to global objectives? None
Observations None

Subproject name and code
2209/4-B
Integrated Management of the Iruya River Basin
Component 4: Environmental Education
Activity: *Educar Forestando* [School tree-planting program]

Executing institution
Cooperativa Escolar del Colegio Secundario 5058 "Emilio E. Correa," Iruya [a high-school cooperative]

Place (Region, Municipality, Communities)
High Valleys - Department of Iruya, Municipality of Iruya, Pueblo of Iruya

Subproject beneficiaries
High school teachers and students – small producers of Iruya

Local benefits

NATURAL CAPITAL
- Restoration of native biodiversity: trees (*yapán, algarrobo* [carob]), fodder plants, aromatic plants (3 species of cedron)
- Restoration of forested areas

ECONOMIC CAPITAL
- Genetic improvement in sheep, goats and cattle
- Plantations of aromatic plants (very recent)
- Future gas savings, by planting trees for fuelwood

PHYSICAL CAPITAL
- Maintenance of irrigation channels
- Tree nursery: wood for fencing, roof repairs, more room for producing compost and organic products; tools

SOCIAL CAPITAL
- Closer ties between the school and producers

HUMAN CAPITAL
- Teachers and students in the general course have acquired new productive knowledge and skills
- Students are acquiring leadership skills
- Students are acquiring the capacity to do research and to think critically

INSTITUTIONAL CAPITAL
- The poorer neighborhoods (*barrios*) of Iruya have formed treeplanting organizations
- Students and parents (producers) have organized themselves to run the irrigation shifts.

To what extent has there been improvement in food security and people's health?

- Fruits and vegetables are more available, thanks to establishment of orchards and produce gardens.

To what extent has there been improvement in resilience and reduced vulnerability?

None

Negative local impact

- People in the community of Iruya feel that the Colegio is "invading" their space, in a town where open space is almost nonexistent. (This also reflects the fact that the high school is venturing into areas that are considered none of its business, such as productive activities. This perception has been fading.)

Non-obvious local benefits

None

Opportunities for other local benefits missed because of the way the subproject was designed or implemented

- The funding, in limited amounts and for only one year, has not allowed for much productive impact or continuity: e.g. the herb plantations (thyme, lavender, cedron, oregano) are highly productive (3 crops a year, 700 Kg. per ha.), but the low absolute volume makes marketing difficult.

- There were no staffing provisions made for performing maintenance work when the teachers are not there (weekends, vacations). The solution has been to strike a deal with the municipality, which has made available three of its staff, with working instructions. The question here is: Might this not have been an opportunity to make the students themselves responsible?

- The cultural dimension of the project was overbooked, particularly in terms of retrieving local knowledge, especially from the oldest residents.

- Lack of articulation with SAP subprojects: although this is a high school with an environmental education program, it was left out of the provincial schools selected under project 2227, " Environmental Education Program."

In what way do local benefits contribute to global objectives?

The reforestation of mountain slopes is reducing erosion

Observations

The activity was planned only for the year 2002. Nevertheless, teachers have continued the activity during 2003.

Subproject name and code **2209/4-C** Integrated Management of the Iruya River Basin Component 4: Environmental Education Activity: *Educar Produciendo* ["Learning by Producing"]
Executing institution Comisión Regional del Bermejo (COREBE)
Place (Region, Municipality, Communities) High Valleys - Department of Iruya, Municipality of Iruya, Finca Santiago, Community of Campo Tapial
Subproject beneficiaries Primary School of Campo Tapial – Small producers of Campo Tapial

Local benefits

NATURAL CAPITAL ▪ Production of seedlings for reforestation (little production so far, the plantations are not yet established)
ECONOMIC CAPITAL None
PHYSICAL CAPITAL ▪ Infrastructure for channeling drinking and irrigation water, (storage tanks, piping) ▪ Experimental farming plot (at the school)
SOCIAL CAPITAL None
HUMAN CAPITAL None
INSTITUTIONAL CAPITAL None
To what extent has there been improvement in food security and people's health? None
To what extent has there been improvement in resilience and reduced vulnerability? None

Negative local impact

- The project sparked a major conflict between the community and the school, which left a good deal of ill will. Among other things, the community shuts off the water supply to the school on weekends, when the children are not in class, making it difficult for the teachers who stay there over the weekend.
- Many of the pipes and materials were simply thrown down in the field and exposed to the sun, and they have deteriorated.
- Historically, the PRO-Huerta program provided vegetable seeds to the community of Campo Tapial. Realizing that COREBE would be providing support through *Educar Produciendo*, Pro-Huerta decided not to supply seeds for 2003. Due to the conflict, EP provided no seeds in the end, meaning that the community has had nothing to plant this year, from either source.

Non-obvious local benefits

None

Opportunities for other local benefits missed because of the way the subproject was designed or implemented

- The lack of clear and documented agreements at the beginning of the activity generated great misunderstandings which led to the conflict described above.
- The project implementation team had no one with rural development experience. The importance of the social dimension was underestimated and there was no proper analysis of community problems.

In what way do local benefits contribute to global objectives?

None

Observations

- The works have been stalled for several months because of the conflict between the community and COREBE (see above)
- A drinking water project for the school (which could not be financed under SAP-Bermejo guidelines) was "dressed up" to make it look like an environmental education project that would supply water to a piece of land near the school.

SUBPROJECTS IN BOLIVIA

Subproject name and code Sediment Control Works-pilot project in the Tolomosa basin
Executing institution Construction Companies: ERIKA Ltda..; CIABOL Ltda.., COMVACOL SRL, CIASUR SRL.
Place (Region, Municipality, Communities) Micro basin of La Tablada, Tolomosa River Basin, Central Valley of Tarija. Municipality of Cercado. Community of Tablada Grande.
Subproject beneficiaries Farming families of the community of Tablada Grande.

Local benefits

NATURAL CAPITAL - Creation of a microclimate around the dikes to promote the natural regeneration of surrounding vegetation. - Mitigation of soil and vegetation degradation.
ECONOMIC CAPITAL - Increased incomes for beneficiary families thanks to greater production for market through the introduction of irrigation.
PHYSICAL CAPITAL - Construction of 11 earthen dikes, 31 gabion (rock crib) dikes, and 54 log dikes. - Construction of agricultural irrigation systems.
SOCIAL CAPITAL The proposed civil works were discussed with the owners of the land, and agreements were negotiated. This process served to strengthen the communities' abilities to negotiate with other sectors.
HUMAN CAPITAL
INSTITUTIONAL CAPITAL - The San Jacinto Project authority is being strengthened through transfer of the infrastructure (dikes and retaining walls) for which it will take over the management. This transfer is being made under a contract. - The San Jacinto Project authority is assimilating the concept of watershed management and plans to invest in enclosures and small dams.

To what extent has there been improvement in food security and people's health? Food security has been improved as a direct result of the irrigation systems with the introduction of new crops (peas, tomatoes among others) and the possibility for beneficiary families to produce two yearly harvests of their traditional crops (corn and potatoes).
To what extent has there been improvement in resilience and reduced vulnerability? The fact that families in the participating communities now have irrigation will mitigate one factor of vulnerability, which is the dependence of their seasonal crops on rainfall.
Non-obvious local benefits In the time elapsing between conclusion of the project (March of 1999) and the date of this study (November 2003) some of the dike ponds have filled up with sediment, producing a kind of terrace that families are now using to grow corn and other produce.
Opportunities for other local benefits missed because of the way the subproject was designed or implemented According to the beneficiaries, the project executors did not coordinate with other institutions that might have been able to contribute initiatives that would give the project a more comprehensive character.
In what way do local benefits contribute to global objectives? The dikes built by the project are helping to reduce the generation and transit of sediments, and are thereby extending the useful life of the San Jacinto dam. Under "General Considerations", the project document states that sediment control in the Tolomosa basin is intended to prolong the useful life of the San Jacinto facility by reducing the quantity of sediment buildup at the dam.

Subproject name and code Agroforestry and sylvopastoral practices: Tolomosa Basin pilot demonstration project
Executing institution VIVE – Vida Verde ("Green Life") Organization, an NGO
Place (Region, Municipality, Communities) Micro basin of La Tablada, Tolomosa River Basin, Central Valley of Tarija. Municipality of Cercado. Community of Tablada Grande and Turumayo Norte.
Subproject beneficiaries Residents of Tablada Grande and Turumayo Norte

Local benefits

NATURAL CAPITAL - Forest enhancement and protection of the land through the planting of forest trees, orchards, windbreaks and "green fences", market gardens and pastures covering 160.2 Ha., occupying 29,595 m and benefiting 137 families. - Protection of the land, by reducing erosion and retaining sediments, through distribution channels, contour ditches, sediment traps with branches and trenches for retaining water, embracing 3967 m., and benefiting 42 families - Creation of a setting favorable to plant life through trenches over 100 m. - Improved soil preparation and cultivation by introducing tilling by reversible plows with metal moldboards, on 15 has.
ECONOMIC CAPITAL - Increased output and productivity by strengthening farming capacities and diversifying production through introduction of orchards, gardens and grazing lands for 137 families.
PHYSICAL CAPITAL - Construction of distribution channels, contour ditches, sediment traps with branches and trenches for retaining water, embracing 3967 m., and benefiting 42 families. - Protection of croplands, pastures and forests through fencing, embracing 30,922 m.
SOCIAL CAPITAL - The project has helped to prevent disputes over property boundaries, because the construction of fencing made it possible to identify the limits of fields more accurately. - The project helped neighbors to work together again, after a time when the community organization fell into disuse. People are now pooling their efforts for the benefit of the community through other projects in health and education, for example.

HUMAN CAPITAL

- Farmers have been trained in soil preparation, irrigation management, contour plowing, and crop rotation with legumes.
- Promoters have been trained to reproduce knowledge of sustainable production techniques. People are environmentally more aware.

INSTITUTIONAL CAPITAL

The project has created an opportunity for coordination that should produce synergies with the San Jacinto Project authority (the body that administers the dam of that name) and is using existing information from the former CODETAR (Tarija Development Corp.)

To what extent has there been improvement in food security and people's health?

Food security has been improved through the introduction of new crops and, in some cases, irrigation systems that allow for two harvests a year.

To what extent has there been improvement in resilience and reduced vulnerability?

Thanks to the diversification of production and the reduction in losses through the introduction of fencing, beneficiary families now have more food available and should therefore be better prepared to deal with emergencies such as recurrent droughts.

Non-obvious local benefits

Community members now have the opportunity to discuss and negotiate potential conflicts, particularly over property boundaries. This will facilitate future regularization of land title by the INRA (National Institute for Agrarian Reform), a legal process that is to be concluded by 2006 for all rural property owners and landholders.

Opportunities for other local benefits missed because of the way the subproject was designed or implemented

According to the beneficiaries, the project executors did not coordinate with other institutions that might have been able to contribute initiatives that would give the project a more comprehensive character.

In what way do local benefits contribute to global objectives?

The introduction of sustainable farming practices and land management is reducing sedimentation at the San Jacinto dam, prolonging its useful life and thereby mitigating the transport of sediments into the Bermejo and Grande de Tarija rivers.

Subproject name and code P7 Environmental zoning and land use planning
Executing institution Consultant: DHV Sudamérica S.R.L
Place (Region, Municipality, Communities) Department of Tarija.
Subproject beneficiaries Department of Tarija.

Local benefits

NATURAL CAPITAL - Inputs for regional planning from a sustainable development perspective. - Information for taking decisions on the management and use of natural resources at the municipal and departmental levels. - An "environmental risk map" to guide policies for preventing and coping with environmental disasters such as drought, flooding, etc.
ECONOMIC CAPITAL - Preparation of the Departmental Land Use Plan and its subsidiary plans will produce revenues for the Bolivian government.
PHYSICAL CAPITAL - A database has been established that will be available to the Prefecture's Land Use Planning Unit. - The Prefecture's Land Use Planning Unit is now equipped with computers
SOCIAL CAPITAL - Participation and coordination in workshops to examine the proposed Land Use Plan. - Local stakeholders at the municipal and departmental levels now have an opportunity to coordinate their visions of development.
HUMAN CAPITAL None.

INSTITUTIONAL CAPITAL

- The process of preparing the Land Use Plan has become an occasion for coordination among different public and private institutions.
- The municipalities are now motivated to produce their own land use plans.
- The project is based on experience and on information obtained by ZONISIG: Land Use Plan for the department, municipal land plan of Villamontes, agroecological and socioeconomic zoning for the Department, technical bases for land-use planning in Entre Ríos, inventory and classification of forests in the provinces of Gran Chaco and O'Connor. It also takes into account the Methodological Guide for Preparation of Departmental Land-Use Plans formulated by the Ministry of Sustainable Development
- Efforts are being coordinated through an agreement between the Prefecture, the Ministry of Sustainable Development and the OTN, which establishes the institutional framework and the commitments of each party for developing the project.

To what extent has there been improvement in food security and people's health?

None.

To what extent has there been improvement in resilience and reduced vulnerability?

According to the executors, the project provides a risk map that can be used for early warning purposes in the face of environmental emergencies, and in this way will help reduce the department's vulnerability to natural disasters; the Prefecture will be able to allocate available resources more efficiently for dealing with such emergencies.

This view is shared by the Director of Natural Resources of the Prefecture, who says that the risk map incorporated into the PDDES is already helping to establish investment policies in the Prefecture's budget and operating plan for 2004.

Non-obvious local benefits

The following initiatives are being coordinated inter-institutionally:

- Departmental Economic and Social Development Plan (PDDES), managed by the departmental Prefecture;

- Departmental Land-use Plan, initiated by ZONISIG (a Dutch-supported program) through the Agro-Ecological Zoning Plan, which the SAP is now supplementing through preparation of the Land Occupancy Plan.

As a result of this, the Prefecture, through its Planning Unit, has adopted the following SAP project instruments for use in preparing the PDDES:

- Diagnostic analysis of macro problems and potentials;

- Risk map, which is now being considered for the first time in the regional planning process;

Highly detailed information on departmental infrastructure (education, health, irrigation systems, etc.)

Besides cooperating with and providing inputs to the regional planning process, the SAP has succeeded in incorporating the major environmental concerns of the basin into those planning exercises. For example, there is a difference between the way the PDDES 2004 – 2008 deals with the issue of the Bermejo and Grande de Tarija rivers and its treatment in the Economic and Social Development Plan 1996 – 2000 which, while it identifies the integrated development of the Bermejo area and exploitation of the resources of the upper basin of the Bermejo and Grande de Tarija rivers as an item for regional investment, places the emphasis on resource exploitation (essentially irrigation) rather than preservation. That plan betrays a lack of information on the situation in the basin, a gap that has been filled in the current PDDES.

The SAP has sparked implementation of the land-use plan of the Municipality of Padcaya, prepared by the same executing agency (DHV Consultores) using experience and information from the land occupancy plan, in particular the territorially-focused diagnostic analysis; this is serving to prioritize and qualify social demands, which generally relate to infrastructure construction.

Opportunities for other local benefits missed because of the way the subproject was designed or implemented

Representatives of the Prefecture's Land-use Planning Unit feel that the failure to provide training for the unit's staff represents a missed opportunity, resulting from the way the project is being implemented (through a consultant). They insist that it would have been better to have the Prefecture's land regulation unit execute the project and thereby achieve a greater transfer of resources and capacities.

Representatives of the Planning Unit of the Departmental Prefecture feel that the information system project (part of the SAP) should have preceded the land-use planning project, so that the information would be more available for regional planning purposes.

In what way do local benefits contribute to global objectives?

The Land-use Plan will allow formulation of policies and activities for the sustainable management of natural resources and departmental lands, which in turn will help to reduce sediment creation, preserve biodiversity, and protect the “carbon sink” as a result of a lower rate of deforestation.

Subproject name and code

P20 Implementation of the Baritú – Tariquía Ecological Corridor

Executing institution

Design Phase: Tarija Environmental Protection Agency (PROMETA) and Argentina's National Parks Administration. Implementation phase: executing agency to be determined.

Place (Region, Municipality, Communities)

Municipality of Padcaya in the Province of Arce of the Department of Tarija (Bolivia) and Department of Santa Victoria, Province of Salta (Argentina)

Subproject beneficiaries Municipality of Padcaya in Bolivia and *Intendencia* (Municipal Government) of Toldos in Argentina.

Local benefits

NATURAL CAPITAL - Maintain genetic connectivity and preserve species (jaguar, tapir, deer) that because of their mobility cannot be protected in one of the reserves alone (Baritú or Tariquía); - Preserve the water retention capacity of the basin by preventing deforestation; - Restore the ecological balance by reestablishing the physical connection between river corridors and natural habitats. - Habitat protection by reducing illegal hunting, fishing and logging activities. - Encourage land conservation through a system of incentives to private owners. - Protect endangered species.
ECONOMIC CAPITAL - Improved productivity and output through support for productive and economic sustainability based on use of sustainable technologies and economic diversification for the local population. - Incentives to private landowners so that they will devote their properties to conservation purposes. - Additional incomes for local people and the municipality, from new activities sparked by the Corridor: tourism and organic farming, the latter with a view to the potential market in Northern Argentina.
PHYSICAL CAPITAL None.
SOCIAL CAPITAL - Closer relations between local communities on both the Argentine and Bolivia sides will lead to the exchange of experience and the strengthening of cultural ties.
HUMAN CAPITAL - Training for local communities in sustainable production. - Strengthening capacities through training in corridor management, and environmental education programs for making civil society aware and for striking a balance between human needs and conservation needs. - A public that is environmentally more aware

INSTITUTIONAL CAPITAL

- Institutionalizing environmental management in the area, and defining the roles of the different institutional players more clearly.
- Obtaining official declaration of the binational ecological corridor through legal and administrative processes, thereby consolidating a participatory legal and institutional framework, harmonizing regulatory provisions in the two countries, and coordinating stakeholder interests.
- Creating a coordination body among institutions in the two countries, for corridor management, policy formulation and supervision.
- Enforcement of environmental rules and resource regulations in each country, as well as local rules.
- Participatory planning for the conservation of special sites.
- Provision of tools to improve the management of local institutions: ecological and socioeconomic studies to identify the ecological services that the protected areas provide; biodiversity studies of the corridor and their natural dynamics; basic information on the hydraulic dynamics of the Bermejo River.
- The potential for coordination between the *Intendencia* of Toldos and the Municipality of Padcaya offers the prospect of pursuing joint projects.

To what extent has there been improvement in food security and people's health?

None.

To what extent has there been improvement in resilience and reduced vulnerability?

None.

Non-obvious local benefits

While the project itself has not yet begun, the following unexpected local benefits could be produced, if conditions of social and institutional participation are right:

i) Establishment of a coordination body between the Municipality of Padcaya and the *Intendencia* of Toldos. There have already been contacts between these two entities relating to the corridor, but there is as yet no formal coordination. The corridor-related topics that might inspire such coordination are: a) a joint ecotourism proposal; b) exchange of productive experience; c) organizing fairs to market farm and handicraft production;

ii) Restoring cultural ties between the rural communities of Toldos (Argentina) and Arce Province (Bolivia). These communities, in both countries, have similar cultural characteristics. Until the first decades of the past century, in fact, they were all part of Bolivia, but with its incorporation into Argentina Toldos became acculturated. Today, many people working in the area think it is feasible and desirable to revive this cultural identity on the basis of contact with their Bolivian neighbors.

iii) The possibility of strengthening social capital in the communities involved in both countries. In Toldos people value the tradition of social organization and participation among the rural communities of Bolivia, and there have been some recent experiments, such as with the "Mothers' Clubs", which are now successfully producing and marketing their handicrafts.

Opportunities for other local benefits missed because of the way the subproject was designed or implemented

There is no doubt that the low degree of social participation sponsored by the project to date is a source of missed opportunities to take advantage of local know-how and institutional and social structures.

The delay in implementing the project means that opportunities are being lost to deal

appropriately with threats to the area's conservation, such as new human settlements and the failure to negotiate key issues affecting the corridor with the company building the La Marmora - Bermejo road
In what way do local benefits contribute to global objectives? While most local players have no clear vision of how local benefits from the project will contribute to the global objective, the SAP Bolivia officials believe that proper management of the corridor area, with stricter enforcement of environmental regulations, will help to reduce the current rate of deforestation and consequently the level of sediment creation.

Subproject name and code P43 Environmental cleanup of the Guadalquivir River
Executing institution Consultora CONAM S.R.L. (Consultant) Empresa Paula Construcciones (Construction)
Place (Region, Municipality, Communities) Upstream from Tomatitas, Municipality of San Lorenzo, communities of Tomatitas, Rancho Norte, San Lorenzo, Lajas and Canasmoro.
Subproject beneficiaries Communities of Tomatitas, Rancho Norte, San Lorenzo, Lajas and Canasmoro. The City of Tarija, downstream from the Guadalquivir River, is also considered a project beneficiary.

Local benefits

NATURAL CAPITAL
- Cleanup of the waters of the Guadalquivir River; - Recycling waste waters for use in orchard irrigation; - Implementation of the environmental cleanup plan will reduce pollution of water, land and air through the laying of 3006 m of collector sewers in built-up areas; the construction of 687 septic tanks and local wells, and installation of 350 latrines in 19 communities.
ECONOMIC CAPITAL
- Higher incomes for communities by reestablishing markets for their products, and through tourism, which will pick up as cleanup of the river proceeds. - Increased productivity as a result of facilities to transport treated water for irrigation.
PHYSICAL CAPITAL
- Improved basic sanitation infrastructure (in 10 communities) through the construction of 3006 m. of collector sewers in built-up residential areas; the construction of 687 septic tanks and local wells. - Construction of latrines (350) for more widely scattered dwellings for which sewer connections would be too costly to the municipality.
SOCIAL CAPITAL None.
HUMAN CAPITAL
- Disease prevention thanks to the newly installed basic sanitation infrastructure.

INSTITUTIONAL CAPITAL

- A system of coordination has been established between the SAP, the Departmental Prefecture and the Municipality of San Lorenzo. This is facilitating project execution and helping to leverage resources for expanding the project's impacts.
- The project, located upstream from Tomatitas, will be complemented by the Prefecture's efforts in the portion of the river running through the city of Tarija. The Prefecture will also institute a water quality monitoring system.
- The municipality is being equipped with basic environmental management tools for identifying pollutants and their sources, and an environmental cleanup plan.

To what extent has there been improvement in food security and people's health?

- Production is being increased and diversified, and this will improve the diet of beneficiary families.
- Health levels will improve with reduced pollution of water used for irrigation, and in some cases for domestic consumption

To what extent has there been improvement in resilience and reduced vulnerability?

Rural communities, which are dependent for the most part on produce gardening, will be able to improve their resilience by restoring their market reputation, which has been tarnished by the stigma of contamination.

Non-obvious local benefits

- The string of riparian communities along the Guadalquivir River between Canasmoro and Tomatitas has seen its reputation suffer in recent years from pollution of the waters used for irrigating local crops. It is therefore difficult for these communities to market their produce locally.

  The communities of Lajas and Canasmoro used to attract many tourists who would come in the summer to bathe in the waters of the Guadalquivir River, but whose numbers have been steadily declining in the face of growing pollution.

Local residents hope that cleanup of the Guadalquivir River will reopen access to their traditional markets, and also revive the tourism that helps to drive the local economy (transportation, food services, etc).

- The beginning of cleanup activities on the Guadalquivir River has encouraged riparian communities along the river to form an association to put together a common, comprehensive plan for the environmental management of this important watercourse, to optimize resource use, and to negotiate jointly with international cooperation agencies.

- The project will help the Normal School of Canasmoro to resolve its serious sanitation problems, caused by the lack of facilities for treating its waste waters. The Normal School is for eight months of the year home to 1000 people (greater than the population of many of the nearby communities) drawn from various parts of the department. The project will equip it with collector sewers and other facilities to take waste water to a treatment plant, after which it will be recycled for irrigation (especially for olive orchards).

  According to the school authorities, a number of students at Canasmoro currently suffer

from gastrointestinal ailments caused by the consumption of contaminated water.
Opportunities for other local benefits missed because of the way the subproject was designed or implemented The project is sure to have a major impact on the health of beneficiary communities, but this advantage will not be fully realized because there is no provision for a community development component to foster social adoption of new practices, habits and attitudes to health and hygiene, relating to the newly constructed waste management facilities (sewers, septic tanks and latrines).
In what way do local benefits contribute to global objectives? The project will have no impact on the transit of sediments, because it is focused on mitigating biological contamination of the Guadalquivir River caused by sewage discharges from riparian communities.

Subproject name and code P51 Control of sediments in Tolomosa – Río Mena Subbasin
Executing institution CIABOL LTDA: Hydraulic works component OINBOL SRL: Agroforestry practices component
Place (Region, Municipality, Communities) Subbasin of the Mena River, Central Valley of Tarija, municipality of Cercado, communities of Churquis and Pampa Redonda
Subproject beneficiaries 57 families of the communities of Churquis and Pampa Redonda

Local benefits

NATURAL CAPITAL

- A microclimate will be created in the area of influence of the dams, improving local vegetation;
- Soil protection and forest enhancement through the establishment of contour ditches (5725 m) designed to intercept surface runoff and prevent rilling; tree planting (10.000 trees) for biological control of unstable hillsides; barrier plantings along 13.077 m. reinforced by shrubs (6.540) and fences (13.000 m) to prevent indiscriminate livestock grazing and ensure that seedlins will take root and grow, and to favor the regeneration of native species. Protection with gravel (809 m3) for control of surface runoff.
- Maintenance and improvement of soil fertility, through the application of fertilizer (on 41 has.) using rotted dung, stubble and "green manure" (legumes). Foliar biofertilizers will also be used.

ECONOMIC CAPITAL

- Greater productivity and output thanks to irrigation, which will allow the introduction of new crops and plantations (vegetables and fruits), and the planting of winter potatoes (*miska*) which will boost incomes.
- Agricultural diversification with introduction of fruit species (3000) will produce new incomes for farmers.
- Pest and disease control will improve output and result in higher incomes.

PHYSICAL CAPITAL

- Sediment control works consisting of 12 earthen dams, 1 concrete dam, 1 gabion dam.
- Construction of 7 small irrigation systems.
- Protection infrastructure consisting of ditches (5735 m.) joined to collector channels (1245 m) and dissipation ponds (122 units);
- Fences along a length of 13,000 m;
- Expanded road infrastructure, with construction of 8 Km. of access roads.
- Provision of 3000 fruit trees and 10,000 forest trees;

SOCIAL CAPITAL

By working out agreements with landowners for the construction of civil works, communities are strengthening their ability to negotiate with other players.

HUMAN CAPITAL

Capacity building through technical assistance and 12 months of training in agroforestry practices, protection and management of farmland and erosion control, as well as soil fertility and cultivation techniques, pest and disease control.

INSTITUTIONAL CAPITAL

- Endowment with basic instruments for institutional and organizational management, through preparation of a complete diagnostic analysis of the intervention areas.
- Coordination with the San Jacinto Project authority (the agency administering the dam) has induced that institution to launch work on enclosures, and it is planning further works with its own resources.

To what extent has there been improvement in food security and people's health?

Food security will be improved, because families will be able to produce greater and more diversified output for their own consumption, with some surplus for sale.

To what extent has there been improvement in resilience and reduced vulnerability?

The prospect of irrigation means that communities will be less vulnerable to water shortages, which are a major threat and have driven increasing numbers to migrate to Argentina. As Sra. Haydee Cardozo put it, "If we had water we would stay here."

Non-obvious local benefits

One of the biggest problems facing communities in the project area is the vulnerability of the roads and bridges, which are often washed out in the rainy season. The crests of the dams (3.50 to 4 m wide) will serve as bridges, and traffic will be able to flow throughout the year.

Opportunities for other local benefits missed because of the way the subproject was designed or implemented

The construction company refused to build side roads to provide access to dwellings, beyond those programmed, even though in some cases these could have been useful for its own logistics, and certainly would have been very helpful to the communities. One of the reasons for this was that the SAP technicians, according to local people interviewed, failed to intercede with the company. If there had been better dialogue between the SAP and the communities, these further benefits might have been secured.

In what way do local benefits contribute to global objectives?

Dam construction and the introduction of sustainable farming and land management practices will reduce silting at the San Jacinto dam, prolonging its useful life and thereby mitigating the transport of sediments into the Bermejo and Grande Tarija rivers.

Subproject name and code P55 Integrated management of natural resource of the Santa Ana River Basin – Calderas River Subbasin
Executing institution ERIKA- GUADALQUIVIR Consortium, for the civil works; No executor has yet been selected for the agroforestry component: the call for tenders was voided.
Place (Region, Municipality, Communities) Subbasin of the Calderas River, Central Valley of Tarija, Municipality of Cercado, communities of Caldera Grande and Caldera Chica
Subproject beneficiaries 52 families of the communities of Caldera Grande (majority of beneficiaries) and Caldera Chica (Yesera Sur)

Local benefits

NATURAL CAPITAL - A microclimate will be created in the area of influence of the dams, thereby improving surrounding vegetation; - Optimization of water use through improvement to hillside ditches and re-lining of channels; - Protection of soils against erosion, with 10 gabion dikes, gradual terracing (12,300 m), "green fences" (40,185 m) and erection of stone walls (10,550 m). - Protection of soils against erosion and forest enhancement through strip planting of crops (4,240 m); tree planting (covering 30 has.) and fencing to allow the ground cover to regenerate (3.200 m.)
ECONOMIC CAPITAL - Increased farming productivity and output together with cost reduction through a micro irrigation system (covering 50 has) with works to regulate flows, and an earthen dike. - Increased and diversified production. Production is currently based on dry-farming methods, and irrigation faces serious problems during droughts: with dams and irrigation systems, people can obtain two harvests a year and can incorporate other crops and forest plantations.
PHYSICAL CAPITAL - Upgrading of irrigation infrastructure through construction of 3 micro irrigation systems, 2 stone dikes (13 and 9 m high) and 1 earthen dike (10 m). - Establishment of protective infrastructure, with construction of 10 gabion dikes of 2 and 3 m in height and a series of stone walls (10,550 m)
SOCIAL CAPITAL By working out agreements with landowners for the construction of civil works, communities are strengthening their ability to negotiate with other players.

HUMAN CAPITAL One year of training through workshops and technical assistance for beneficiary farmers (in soil conservation and organic fertilization)
INSTITUTIONAL CAPITAL The community will have a plan for integrated management of natural resources, involving: landholding, social structure, soil characterization, quantification and characterization of crops, livestock, vegetation, identification of critical areas and their degradation, improvements, solutions, etc.
To what extent has there been improvement in food security and people's health? Food security will be improved with introduction of new crops and the possibility of two annual harvests of corn and potatoes.
To what extent has there been improvement in resilience and reduced vulnerability? The inhabitants of Caldera Grande and Caldera Sur are increasingly vulnerable to drought. ("Until five years ago the rains were more abundant and they started in August and September, now it mostly rains in December and we don't know when to plant.") The arrival of irrigation makes them less vulnerable to drought.
Non-obvious local benefits The shortage of water, which has become worse in recent years, has led families to move to the Chaco and to Argentina, yet with the promise of irrigation many families are planning to return, and two have already done so. In Caldera Grande several families (5 according to one informant) have benefited from the new roads that the construction company built to provide access to the dam construction sites.
Opportunities for other local benefits missed because of the way the subproject was designed or implemented The International Plan has had a series of projects underway in the area for several years, including one to upgrade dwellings as a way of combating the *vinchuca* bug (the Chagas disease vector). Local people point to the lack of coordination with the SAP, which could help to leverage funding for productive development projects as a counterpart to the infrastructure that the SAP is providing.
In what way do local benefits contribute to global objectives? The new dams will retain sediments carried by tributaries of the Calderas, and sediment volumes will be reduced by better management of farmland and rangeland (reforestation and erosion control techniques).