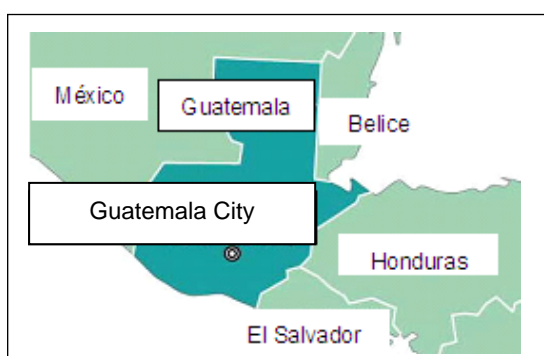


(Guatemala)

Ex-Post Monitoring of Japanese ODA Loan Project
“Social Investment Fund Project”

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Field Survey: July, September 2009

1. Outline of the ODA Loan Assistance



Project area map



Small-scale irrigation-system development in the village of Chichicana

1.1 Objective

The objective of this project is to improve basic social services for the local people and to develop a foundation for economic activities in rural society by improving socioeconomic infrastructure and by implementing a number of small-scale sub projects through the Social Investment Fund (Fondo de Inversión Social (FIS)), thereby contributing to the economic development of Guatemala in all parts of the country excluding the Metropolitan Area of Guatemala City.

1.2 Outline of the Loan Agreement

Approved Amount/ Disbursed Amount	3,112 million yen / 2,962 million yen
Loan Agreement Signing Date/ Final Disbursement Date	December 1995 / December 2000
Ex-post Evaluation Year	Fiscal Year 2002
Executing agency	Fondo de Inversión Social (FIS)
Main Contractor (Over 1 billion yen)	Lizarralde & Lara CPA, Consultoría en Ingeniería y Construcción among others

Main Consultant (Over 100 million yen)	TUBOFORT, S.A., REGA Consultores, Maquinaria, Asesoría y Construcción, S.A., among others
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1.3 Background and reasons to conduct the ex-post monitoring of the project

The ex-post evaluation conducted in fiscal 2002 noted the need for improvements to operation and management (O&M) as a whole, identifying issues concerning the sustainability of manifestation of effectiveness, stating, “Sustainability of sub project results and effectiveness remain in doubt.” It identified the following points that should be improved: development of an O&M organization, thorough O&M, and raising the level of ownership among communities and beneficiaries. Therefore, this project was selected for an ex-post monitoring. Conclusions were derived through the review of the results obtained during the field survey, which were conducted based on the evaluation criteria.

2. Monitoring Results

2.1 Effectiveness (Impact)

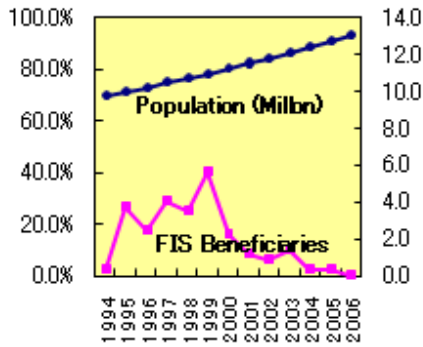
A total of 16,211 sub projects have been implemented since the establishment of FIS¹ in 1993 through 2006, cofinanced with numerous donors including the World Bank, Kreditanstalt für Wiederaufbau (KfW) of Germany, and the International Development Bank (IDB) of the United States. It is estimated that from 1995 through 2000, more than 20% of the total population enjoyed the benefits of FIS projects each year.² (Fig. 1)

Sub projects eligible for ODA loans belonged to FIS Phase I, accounting for 5.6% of all FIS sub projects (904 projects, Table 1) and approximately 7% by value. While geographically these covered the whole of the country, about 60% of investment took place in Huehuetenango, Petén, Alta Verapaz, Jalapa, and San Marcos, known to be particularly impoverished regions.

¹ The Fondo de Inversión Social (FIS) was an organization established under limited-time legislation, dissolved in May 2006 with the expiration of the law. However, the FIS liquidation committee (Comisión Liquidadora del FIS) was established within the Secretaría de Coordinación de la Presidencia (SCEP) under Ordinance 276-2008, to manage projects underway and the FIS database. The FIS was managed independently under the direct authority of the President, and its primary role was to manage the series of processes from appraisal to completion of each sub project. The FIS's responsibilities concerning O&M following completion of each project were to make clear the O&M organizations for each project during appraisal, to set fees, and to record this content clearly on the ex-post evaluation reports (FIS Informe de Evaluación). For these reasons, FIS was not in charge of implementation of O&M itself, paying costs, or similar matters. While basically it had been decided that O&M should be conducted at a community level, the FIS and the central government concluded a cooperative agreement stating that the government agency responsible would pay O&M costs if the community could not bear them.

² ZEA, Miguel y Osmar Velasco. *Informe final de la evaluación de impacto del FIS.* (IDB, Washington June 2007 / OVE0223 / Social-Fondos de Inversión Social)

Fig. 1: FIS Beneficiaries by Year



Source: UNDP, *Informe Nacional de Desarrollo Humano, 2007/2008*

Table 1: FIS Sub Projects by Sector (Yen portion)

Sector	Sub Projects
Water and Sewage	255
Basic latrines	292
Roads and Bridges	135
Small-scale irrigation	26
Farm silos	29
Occupational training	13
Others	154
Total	904

Source: See Footnote 2

Since it involved a wide range of sub projects and participation of numerous donors including Japanese ODA loan as described above, it is difficult to identify the degree of contribution of Phase I of the FIS project to economic growth and poverty elimination in Guatemala. For this reason, in this monitoring, matters such as the manifestation of project effectiveness through obtaining performance indicators for the five case studies covered during ex-post evaluation, and comparing planned with actual values were done to the extent possible. In addition, trends for the country as a whole from movements in typical socioeconomic indicators for all of Guatemala were analyzed as well. While this project covers all of Guatemala except for Guatemala City, due to limitations on available statistics we selected to use indicators for Guatemala as a whole. Also, for results and impacts that could not be ascertained quantitatively, an attempt to ascertain project results based on interviews with the Secretaría de Coordinación de la Presidencia (SCEP), local governments, other donors, researchers, and former FIS personnel, and on ex-post evaluation reports were made.

Other donors' ex-post evaluation reports conclude that FIS has contributed to alleviating poverty³, as a result of assessment based on the number of sub projects implemented, subject sectors, and project implementation based on poverty maps. They also conclude that while some development issues that should be addressed in the future remain, all socioeconomic indicators are in an improving trend, and as such the project has contributed to raising the level of economic conditions of Guatemala as a whole. This fact was possible to confirm also from the

³ For details of each donor's ex-post evaluation methods and other information, see: FIS, *Evaluación Ex-Post de los Proyectos Financiados por el FIS con Recursos de Préstamos BIRF, KfW y OECF* (2002), KfW, *Programa FIS-KfW II Quiché Informe Final* (May 2008), ZEA, Miguel y Osmar Velasco. *Informe final de la evaluación de impacto del FIS*.(IDB, Washington June 2007 / OVE0223 / Social-Fondos de Inversión Social), IDB *La Utilización de Fondos de Inversión Social como Instrumento de Lucha Contra la Pobreza* (December 1998).

interviews conducted in this ex-post monitoring as well.

2.1.1 Quantitative Effects

During ex-post evaluation, effects were evaluated based on ascertaining the general conditions of the project, since it was judged that it would be difficult to ascertain quantitative effects, primarily for the following two reasons. The first reason that this is a dispersed project, made up of a wide range of small-scale sub projects totaling 904 in number. The second reason is that as a cofinancing project the results expected from the ODA loan component were unclear during appraisal. Since these conditions would remain unchanged in ex-post monitoring as well, it was judged that it would be difficult to ascertain quantitative effects. For this reason, together with analysis of five case studies brought up during ex-post evaluation, in this monitoring it was decided to check on trends in the main socioeconomic indicators across Guatemala as a whole, while taking into consideration that there are limits to how much the cause-and-effect relationship between results derived from socioeconomic indicators and this project can be clarified.

2.1.1.1 Case Studies

The five sub projects shown in Table 2 were covered as case studies during ex-post evaluation. However, these were addressed in ex-post evaluation to survey beneficiaries or examine qualitative effects, and project effectiveness indicators were not collected. In this ex-post monitoring, it was attempted to collect planned values and current project effectiveness indicators to the extent possible, to ascertain the operating conditions of each infrastructure project. While in ex-post evaluation no indicators of effectiveness of sub projects had been established during appraisal, in ex-post monitoring some indicators and planned values, while limited, were established since the ex-ante evaluation reports (FIS Informe de Evaluación) had been obtained from SCEP for each case study. (Table 2)

Table 2: Project Effectiveness Indicators for Case Studies

Sector	Locations	Indicator	Planned value*	Ex-post monitoring (vs. planned values)
Small-scale irrigation works	Huehuetenango Dept. San Sebastián Pueblo Viejo Chemiche	Irrigated surface area	21.08 ha (2000 effective value)	33.45 ha (158%)
	Huehuetenango Dept. San Sebastián Pueblo Viejo Chichicana	Irrigated surface area	23.96 ha	31.84 ha (133%)
Water supply	Zacapa Dept.	Water supply	100%	100%

system	Gualan Bethel	penetration rate		(125 households)
		Per-capital water supply	100 liters/day	170 liters/day (170%)
Sewage, sewage treatment facility	Chimaltenango Dept. Santa Cruz Balanyá	Sewage penetration rate	100%	100%
		Sewage treatment rate	100%	0%
Bridge	Guatemala Dept. San José del Golfo	Monthly average traffic volume	N/A	893 vehicles
		Time required from San José del Golfo to national highway	1 hour	20 - 25 minutes

* Planned values are based on the ex-ante evaluation report (FIS Informe de Evaluación) for each sub project. Since this report could not be obtained for Chemiche, for it alone 2000 effective values were compared.

As is clear from Table 2, with the exception of sewage and sewage treatment facilities four sub projects met or exceeded planned values. As such, manifestation of effectiveness could be confirmed within the scope of available indicators. Regarding sewage and sewage treatment facilities, while drainage ditches and sewage pipes have been developed, with the exception of the settling pond the sewage treatment facilities suffered a collapse within one year after construction. When the cause of the collapse was confirmed in the field survey conducted in ex-post monitoring, it was determined that while soil analysis had been conducted during appraisal, subsequent continual heavy rains led to a landslide that caused the collapse. Since Santa Cruz Balanyá has no other sewage treatment facilities, the current sewage treatment rate is 0 percent.

2.1.1.2 Socioeconomic Indicators

1) Poverty

The national average shows that, despite a decreasing trend in poverty there still are large gaps between rich and poor, as is clear from the Gini coefficient. While all main donors have assessed the FIS project to be contributing to alleviation of poverty as described above, since differences persist between urban and rural communities, between indigenous and non-indigenous populations, and by gender, they also note that these are issues that should be addressed in the future.

Table 3: Basic Statistics on Guatemala Human Development

	1989		2000		2006	
	Female	Male	Female	Male	Female	Male
Population (millions)	4.5	4.2	5.8	5.6	6.8	6.2
Percentage of population employed (%)	25.5	74.5	36.0	64.0	38.3	61.7

Per-capita GDP (USD)	682.2	3,823.6	1,518.3	6,712.1	2,271.1	7,311.7
Literacy rate (%)	51.7	69.7	60.2	77.2	68.9	81.8
Average life expectancy at birth (years)	62.2	57.3	68.7	63.0	74.2	67.2
Poverty rate (%)	62.0		56.2		50.9	
Extreme poverty rate (%)	-		15.7		15.2	
Gini coefficient**	-		0.476*		0.448	
Human Development Index (HDI)***	0.538		0.634*		0.702	

* 2002

** The Gini coefficient is an indicator of factors such as inequality of income distribution in society. The Gini coefficient can range from 0 to 1 in value, with values closer to 0 indicating smaller gaps in income and values closer to 1 indicating larger gaps. An important fact to be noted is that the Gini coefficient tends to be different amongst institutions, due to the differences in the method to gather and use basic data. For example, according to the World Bank, the Gini Coefficient for 2006 is 0.537 indicating that there income inequality is larger than the one indicated in the table.

*** The Human Development Index (HDI) measures each country's degree of human development in the three fields of lifespan, knowledge, and humane standard of living. It takes a value between 0 and 1. The closer the value is to 1, the greater the degree of advancement of human development.

Source: UNDP, *Informe Nacional de Desarrollo Humano, 2007/2008*

2) Education

While the literacy rate averaged 60% for males and females in 1989, in 2006 it had risen to 75%. However, the gap between males and females still has not improved, with males having a literacy rate of 82% and females a rate of 68.9% in 2006. Similarly, the gap remains large between urban and rural communities, with the former having a literacy rate of 86% while the latter had a rate of 62% in 2006. While the literacy rate among indigenous peoples has risen from 35.6% in 1989 to 60% in 2006, the gap with non-indigenous peoples (with a rate of 83%) remains large.

However, as Table 4 shows, when looking only at population aged 15 through 24, the gaps between genders, urban and rural communities, and indigenous and non-indigenous population all show decreases, indicating that results of education are apparent among the younger generation.

Table 4: Comparison of Literacy Rates between Population Aged 15 and Above and Youth

(Unit: %)

	Population Aged 15 and Above			Youth Population (Aged 15 - 24)		
	1989	2000	2006	1989	2000	2006
Nationwide	60.3	68.2	74.8	74.8	81.7	87.8
Male	69.7	77.2	81.8	82.8	87.7	91.4
Female	51.7	60.2	68.9	67.5	76.3	84.8

Urban	79.6	83.5	86.0	89.8	93.1	94.5
Rural	48.2	56.9	62.3	65.8	74.1	81.1
Indigenous	35.6	50.1	59.6	54.2	69.8	80.3
Non-indigenous	73.8	79.4	83.4	85.9	89.0	92.2

Source: UNDP, *Informe Nacional de Desarrollo Humano, 2007/2008*

3) Health and Welfare

While the infant mortality rate was high in 1989 at 73 per 1000, over the six-year period from 2000 through 2005 it has decreased from 32 to 27. Regarding malnutrition among children aged five or younger, the rate of chronic malnutrition had fallen from 57.9% in 1987 to 46% by 1999, but then worsened slightly in 2005 to 49% and has since remained unchanged. Similarly, the gap between indigenous and non-indigenous population is large, with the rate among indigenous population trending largely in the range 70% - 71% from 1987 through 2002, with no improvement. On the other hand, the rate among the non-indigenous population improved considerably over the same period, from 49% to 36 percent.

4) Sanitation (Water and Sewage)

While the percentage of households with access to water supply systems improved from 71% in 2002 to 77% in 2006, in the impoverished region of Alta Verapaz the rate even in 2006 was much lower than the national average, at 41%, and the percentage relying on sources such as rivers and lakes was the highest in all of Guatemala at 22%.

While no statistics are available on development of sewer systems, data on latrine development shows an overall improving trend. While the percentage of households with flush toilets fell from 42% to 40% from 2002 through 2006 use of manual cleaning toilets has increased, and the percentage of households with no toilets has fallen from 14% in 2002 to 9% in 2006.

5) Roads

While development of main roads is advancing nationwide on average (Fig. 2), there are considerable gaps between regions (Fig. 3). Based on 2006 road-density data by region, road development is advanced in the southwest, central, northeast, and southeast parts of the country, partly because these regions produce agricultural produce for export. On the other hand, roads still are undeveloped in the impoverished regions of Petén Dept., the north, and the northwest.

Fig. 2: Road Development
(Unit: km)

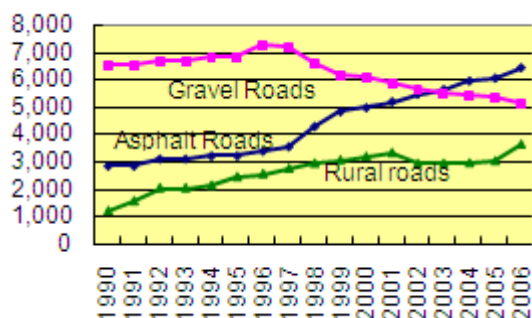
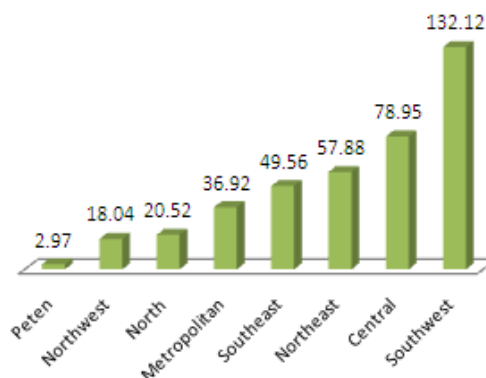


Fig. 3: Road Density by Region (2006)
(Unit: Km/100 Km²)



Source: UNDP, *Informe Nacional de Desarrollo Humano, 2007/2008*

6) Improving the Position of Women

All FIS Project donors have identified “improving the position of women” as a goal. While data such as gender development indicators shows an improving trend, there is a need for further effort. In response, the Secretaría Presidencial de la Mujer (SEPREM) was established in 2000. The SEPREM directly advises and assists the President on policies toward securing and improving women's rights and position in society.

Table 5: Advancement of Women in Society

	1989	2000	2006
Percentage of women members of congress (%)	6.0	10.2	8.9
Percentage of women in management positions (%)	32.2	41.1	32.6
Percentage of women in specialist/technician positions (%)	45.2	41.5	48.8
Gender Development Indicator (GDI)	0.502	0.609	0.684
Gender Empowerment Index (GEI)	0.389	0.461	0.442

Source: UNDP, *Informe Nacional de Desarrollo Humano, 2007/2008*

2.1.1.3 Internal Rate of Return (IRR)

In ex-post evaluation, the EIRRs for the water supply project (in Gualan and Bethel of Zacapa Dept.) and the small-scale irrigation project (in San Sebastián and Chichicana of Huehuetenango Dept.), were 11.9% and 63.2%, respectively. In ex-post monitoring, the EIRRs of these same projects were re-estimated using the same assumptions as in ex-post evaluation. The results were high for both projects, at 22.1% for the water supply project and 73.9% for the

small-scale irrigation project, due to increased benefits.⁴

2.1.2 Qualitative Effects

In ex-post evaluation, community participation was addressed as an indicator of the qualitative effects of the implementation process of this project. However, since residents were unaccustomed to such participation, it was deemed that the results were inadequate. The interviews and case studies used in ex-post monitoring showed that while participation in the sub-project implementation process in fact was low, it cannot be said that community participation is inadequate as a whole since there were cases of subsequent O&M being conducted on a community basis, as seen for example in the small-scale irrigation works and water supply projects described below.

In addition, from interviews with other donors it has been reported that community participation directly impacts sub-project sustainability, based on experiences in FIS Phase I as described above. As such, in Phase II and later, a greater focus has been given to community participation and governance improvements. In this way, it can be said that experiences in FIS Phase I have been put to use in Phase II.⁵

2.1.3 Impact

During ex-post evaluation, case studies were conducted for five sub projects. In this ex-post monitoring, beneficiary surveys were conducted for the same sub projects.⁶ As was done in ex-post evaluation, regarding improvement of the standards of living of residents and revitalization of economic activities the increases in income levels between before and after each sub project was conducted, and for any positive impact on health and sanitation conditions. While ex-post evaluation noted that some communities showed a strong inclination to form their own community-led projects following project completion, as one example of confirmation of

⁴ Assumptions of EIRR estimation: For the water-supply sub project, benefits are savings/day in time required to draw water and benefits from increased volume of water available compared with prior to the project, costs are investment and operation and O&M costs, and project life is 20 years. For the small-scale irrigation sub project, benefits are revenues from sale of produce and costs and project life are identical to those of the water-supply sub project.

⁵ The KfW's aid is restricted to Quiche Dept., in which a community-development committee (Consejos Comunitarios de Desarrollo) is formed in each village and the community and local government take part in all stages of the project cycle. This has shown substantial improvement in project and fund-management capabilities. Later, 2064 community leaders have proposed 70 new projects to regional government, NGOs, and other government agencies (according to the KfW's FIS Phase II ex-post evaluation, May 2008). The IDB has worked on community empowerment and production-capacity improvements through technical cooperation. This model has become the foundation of the community organization and capacity-building program (Programa de Organización y Capacitación Comunitaria (POCC)), which still is active in communities with numerous poverty-related problems

⁶ The beneficiary survey was conducted from July through September 2009, with sample sizes ranging from 30 to 50 persons per sub project.

improvements to citizen governance, ex-post monitoring discovered no particularly noteworthy facts relating to this matter.

Table 6: Revitalization of Economic Activities and Improvements in Residents' Standards of Living (From Beneficiary Survey Results)

Sub-project location/sector	Improvements in residents' standard of living Revitalization of economic activities
<p>Huehuetenango Dept. San Sebastián Pueblo Viejo Chemiche Chichicana Small-scale irrigation works</p>	<ul style="list-style-type: none"> • Main agricultural products have shifted from traditional produce such as corn to garden produce such as green beans that can be sold with high levels of value added. Beginning four years ago, the village of Chemiche has participated in ASOMAM, selling green beans to exporters at wholesale. • At present, average monthly income per household in the village of Chemiche is 2600 quetzals. (While no data is available on income prior to this development, average monthly income from going to work at a coffee farm is approximately 700 quetzals.) At the same time, average monthly income per household in the village of Chichicana has approximately tripled from a level of 216 quetzals before this development (1995) to 710 quetzals today. Since consumer prices have risen by approximately 2.5 times over the same period, real average monthly income can be said to have increased as well. • In both villages, residents' standards of living have improved as a result of rising incomes, and both child health and literacy rates among residents have improved as well.
<p>Zacapa Dept. Gualan, Bethel Water supply systems</p>	<ul style="list-style-type: none"> • All respondents said that the sub project had improved the living environment and that its results continued. • While previously there were numerous cases of illness, primarily concerning the digestive organs, the skin, and the bronchial tubes, at present all beneficiaries reported no illness. • Average monthly income per household has increased 2.6 times from 320 quetzals prior to the development (1997) to 852 quetzals today. Since this is a little more than the rate of increase in consumer prices (which have doubled), real average monthly income has increased as well. • With the time saved from drawing water, almost all the respondents considered that they "have more time to focus on working", and among the women, there was a case in which she started her own small business, thus indicating that the project has had an effect on economic activity
<p>Chimaltenango Dept. Santa Cruz Balanyá Sewage, sewage treatment facilities</p>	<ul style="list-style-type: none"> • Ninety percent of residents responded that development of sewage pipes had improved sanitary conditions in the village and that residents' health conditions had improved. While prior to sewage pipe development 84% of residents suffered from conditions related to the skin or digestive organs, incidence of these illnesses has decreased since just after development of the sewage pipes, and at present 70% reported "occasional" illnesses due to sewage.
<p>Guatemala Dept. San José del Golfo El Chato Bridge</p>	<ul style="list-style-type: none"> • While prior to bridge construction it took one hour to get to Guatemala City, now this time has been shortened to 20-25 minutes. • While immediately after bridge construction the majority of beneficiaries went to Guatemala City to work, at present 54% of beneficiaries go to Guatemala City to sell local products in wholesale markets in the city.

	<ul style="list-style-type: none"> • Average monthly income per household has approximately doubled from 1064 quetzals prior to construction (1995) to 2026 quetzals today. However, when the 2.5 times increase in consumer prices over the same period is taken into account, real average monthly income has decreased. • Seventy-three percent of residents responded that their standard of living had improved due to income increase. In particular, they now have access to high-quality healthcare.
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In addition to the above, when a survey was conducted on improvements in the standard of living of women, major changes could be seen as a result of the water supply and small-scale irrigation sub projects in particular. Prior to these infrastructure developments, collecting water was women’s job, consuming several hours each day. In addition, traveling back and forth on mountain roads with numerous cliffs resulted in many accidents and injuries, and both women’s health and their standard of living have improved markedly thanks to being freed from this heavy labor.

Regarding environmental impact, negative impacts on the environment from two projects were monitored: the Santa Cruz Balanyá sewage and sewage treatment facilities project, which was a case study examined during ex-post evaluation, and the Sayakuche water supply project in Petén Department. In this ex-post monitoring, in order to ascertain the current conditions of these two projects, site observations and interviews were conducted with beneficiaries for the sewage and sewage treatment facilities project and interviews with local government through SCEP for the water supply project.

First of all, regarding the Santa Cruz Balanyá sewage and sewage treatment facilities project, while the ex-post evaluation report noted that the local government was considering construction of a new sewage treatment facility, even today no new sewage treatment facilities have been constructed. Also, while it was reported that at the time of the ex-post evaluation sewage was released into a nearby river, in the site observation it was not possible to confirm that sewage was released into the river. Rather, it was discharged down the cliff from the settling pond. Since soil erosion due to sewage has advanced on the cliff, currently the farmers who own neighboring land are attempting to stabilize the soil through planting trees on their own. Furthermore, sanitary problems such as foul odors and large numbers of flies have arisen near the cliff, and negative impacts on the environment are thought to have worsened in comparison with the time of the ex-post evaluation. While this project has no direct negative impact, the cliff is used as a dumping ground for garbage. Local government has not come up with any measures for improving current conditions.

In addition, regarding the Sayaxche waterworks sub project in Petén Dept., while at the time of the ex-post evaluation the project was considered a cause of a worsening of the water quality of the Pasión River, in this ex-post monitoring it was verified by the local government that the cause had been illegal sewage dumping by residents in the rainwater pipes installed by the local government in 1996, and not the waterworks covered by ODA loans.

2.2 Sustainability

2.2.1 Entity in Charge of Operation and Maintenance (O&M)

2.2.1.1 Structural Aspects of Operation and Maintenance

While at the time of the appraisal it was expected that responsibility for O&M of sub projects in this project would be borne by beneficiary communities, with related central government agencies and local governments providing funding only when the community was unable to handle this responsibility (see Footnote 1), during ex-post evaluation it was noted that it was thought that related central government agencies and local governments were covering O&M costs, instead of communities. According to interviews conducted during this ex-post monitoring to clarify this point, current structure of the O&M organization is generally as shown in Table 7.

Table 7: Sub Project O&M Organizations and Groups

Sector	Responsible
Education, healthcare, roads and bridges	Related central government agencies, such as the Ministry of Education
Water and sewage systems, basic latrines, small-scale irrigation works	Local governments, communities

It is clear from interviews with other donors, local governments, and former FIS personnel that when O&M have been taken over by related central government agencies, small-scale infrastructure developments like this project are given low priority in many cases and the O&M structure is not developed sufficiently. At the same time, for sub projects with strong community ownership, such as waterworks and small-scale irrigation works, cases also have been confirmed in which O&M committees are established in communities, fees collected from residents, and O&M structures were developed. (Table 8)

Table 8: O&M Organization Structure and Details, From Case Studies

Sector	Location	O&M Organizations and Details
Small-scale irrigation work	Huehuetenango Dept. San Sebastián Pueblo Viejo	<ul style="list-style-type: none"> An O&M committee made up of eight beneficiaries is in charge. Committee members are chosen by majority vote every two years.

	Chemiche	<ul style="list-style-type: none"> Two persons handle O&M, patrolling the main pipeline daily, in shifts. The O&M committee monitors whether beneficiaries conserve water and water actually is used in production of garden produce and manages matters such as the order in which irrigation water is distributed among all farmers and hours of use.
	Huehuetenango Dept. San Sebastián Pueblo Viejo Chichicana	<ul style="list-style-type: none"> An O&M committee made up of 11 beneficiaries is in charge. Committee members are chosen by majority vote by the community, every two years. Seven of these 11 members also are in charge of pipeline upkeep and inspection in the districts in which they live. Two committee members inspect the pipeline from the village of Chichicana to the water source daily, in shifts. When repairs are needed, they report such to the committee, which decides on how to respond.
Water supply system	Zacapa Dept. Gualan, Bethel	<ul style="list-style-type: none"> A community development committee made up of beneficiaries is in charge. Committee members are replaced every two years. One trained O&M technician is stationed at the project permanently. He/she patrols the main pipeline daily with two others.
Sewage, sewage treatment facility	Chimaltenango Dept. Santa Cruz Balanyá	<ul style="list-style-type: none"> The planning department of the local government (Oficina Municipal de Planeación (OMP)), is in charge.
Bridge	Guatemala Dept. San José del Golfo	<ul style="list-style-type: none"> While the Ministry of Communications, Infrastructure and Housing (Unidad Ejecutora de Conservación Vial (COVIAL)) is in charge of O&M of roads and bridges, actual operations are outsourced to private-sector firms through an annual bidding process. Two companies are chosen: one to assess the bridge and one to conduct O&M based on this assessment. O&M personnel number roughly 9-10 persons.

It was noted in the ex-post evaluation that in interviews with the World Bank, there were scattered cases of inadequate O&M since related central government agencies and local governments did not take part in the project formation and implementation processes. Similar conditions were confirmed in field surveys during ex-post monitoring as well. It is thought that the feasibility of O&M by the community should have been examined more carefully in the initial stage of formation of this project.⁷

2.2.1.2 Technical Aspects of Operation and Maintenance

There is no notable change since ex-post evaluation. O&M technologies continue to vary by project, and overall they cannot be said to be sufficient. A look at the case studies shows that

⁷ FIS specialist René Rodríguez Heredia has analyzed FIS at this time as a “project factory” that did not consider sustainability through efforts such as true community empowerment and strengthening local government. (Rodríguez Heredia, René. *Muera el FISDL, Viva el FISDL: Potencialidades de los fondos sociales de promover una lucha contra la pobreza con desarrollo local, descentralización, participación ciudadana y gobernanza*. Guatemala, 2008)

even though it is a same small-scale irrigation project, the project in the village of Chemiche involves various types of periodic training, including training on O&M technologies, thanks to the participation of the Asociación Mam de Agricultores para el Desarrollo Integral (ASOMAM), an agricultural cooperative selling green beans to exporters wholesale.⁸ On the other hand, the project in the village of Chichicana is not connected to any cooperative. For this reason, there are no opportunities to undergo training or similar programs, and only the minimal level of O&M needed to maintain current conditions of the project is conducted. Also, in the cases of the water supply sub project, in which community training was conducted, and the small-scale irrigation sub project, in which the infrastructure itself leads directly to increases in income, it was clear in this monitoring that the community was conducting O&M more proactively than in other projects.

Reflecting on the fact that O&M training was inadequate and that became a major threat to sustainability in FIS Phase I, to which this project belongs, O&M training, particularly training that can be conducted at the community level, was strengthened in FIS Phase II and later.⁹

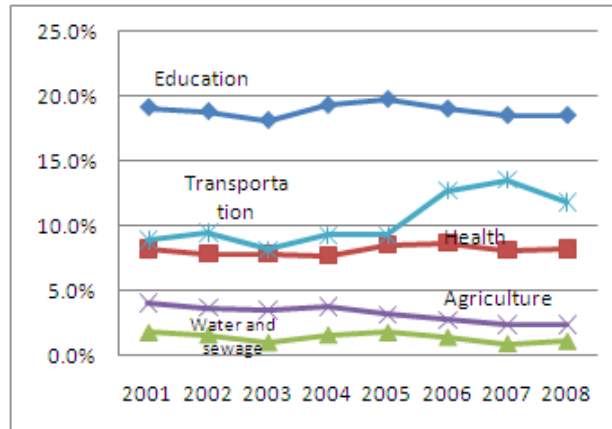
2.2.1.3 Financial Aspects of Operation and Maintenance

While it was impossible to monitor the financial conditions of O&M for 904 sub projects eligible for ODA loans, government expenditure by sector shows that while the education and health sectors accounted for just less than 20% and 9% of the total, respectively, from 2005 through 2008, the percentages of water and sewage systems and agriculture are in a decreasing trend. In the case of small-scale infrastructure projects such as the FIS sub projects, the extent to which O&M costs have been covered by expenditures from the central government is unclear. Therefore, concerns remain about securing funding for O&M costs.

⁸ Since ASOMAM has been certified by the Global Partnership for Good Agricultural Practice (GLOBALGAP), it is required to conduct periodic training of members. For this reason, the village of Chemiche undergoes training several times a year on subjects such as irrigation works, O&M, fertilizers, and use of agricultural chemicals.

⁹ See the literature cited under Footnote 3. The IDB is a typical example of experiences in FIS Phase I being reflected in Phase II. The IDB conducted community empowerment and production capacity improvements through technical cooperation. This model is the foundation of the community organization and capacity building program (Programa de Organización y Capacitación Comunitaria (POCC)), being used even now in communities faced with numerous poverty-related problems.

Fig. 4: Distribution of Government Expenditures by Sector



Source: Guatemala National Institute of Statistics

In the case of local governments, Article 257 of the constitution calls for the central government to provide local governments with subsidies for shortages in public expenditures. For this reason, when the O&M organization for a sub project is a local government, such as in the case of water supply and sewage projects, there seems no apparent problems in sustainability from a financial perspective alone. However, it cannot be asserted that there are no problems at all since local governments would be in the red if no subsidies were provided.



“El Chato” Bridge

In the case of roads and bridges, as shown in Table 7, the Unidad Ejecutora de Conservación Vial (COVIAL) of the Ministry of Communications, Infrastructure and Housing is the O&M organization. The Dirección General de Caminos and COVIAL, together account approximately for 70% of the Ministry’s budget¹⁰. However, since high priority is given to O&M of national highways and large-scale bridges, it cannot be said that the required O&M costs necessarily are allocated to small-scale infrastructure projects such as the FIS sub projects. For example, the priority given to O&M of the El Chato Bridge, which is covered by a case study, is in a decreasing trend, and the frequency of O&M, which had been conducted once monthly previously, had decreased to once every three months at the time of ex-post monitoring. The content of such O&M also is limited primarily to the degree of cleaning and painting.

At the same time, examples observed in this monitoring also included cases in which the

¹⁰ Guatemala Ministry of Finance, *Ministerio de Finanzas, Presupuesto General de Ingresos y Egresos del Estado*, (2002 -2009)



Water supply project in Bethel village

community had established O&M committees, collecting fees and handling O&M for small-scale irrigation works and water supply systems. In the water supply sub projects in the villages of Gualan and Bethel in Zacapa Dept., each of a total of 150 households pays 30 quetzals (approximately 380 yen) four times a year as O&M charges. In this O&M committee, one woman is in charge of bookkeeping, and an

accountant totals the books monthly. As of the end of June 2009, the balance was 17,200 quetzals (approximately 200,000 yen). O&M costs include daily wages for O&M specialists and accountants, as well as purchase of tools and components needed in O&M. Water supply is cut off to households not paying O&M charges. Among the case studies conducted in this monitoring, this example is a sub project with strong community participation from the start of project formation, and in which O&M personnel underwent little training. From beneficiary surveys and site observation as well, this example appears to involve strong community ownership of the water supply infrastructure and to have a functioning O&M structure.

2.2.2 Current Status of Operation and Maintenance

As shown in Table 9 below, O&M conditions of these case studies show variation in the O&M conditions of each sub project. While the water supply sub projects are examples of projects with strong O&M conditions, the sewage sub projects are examples of projects in which problems have arisen in O&M conditions.

Table 9: Case Study O&M Conditions

Sector	Location	O&M Conditions
Small-scale irrigation works	Huehuetenango Dept. San Sebastián Pueblo Viejo Chemiche	<ul style="list-style-type: none"> • Pipes frequently crack when pressure increases rapidly, since the diameter of the main pipeline changes from six to four inches and there are no pressure tanks. • While the irrigation infrastructure has deteriorated overall, only day-to-day inspection and repairs are conducted.
	Huehuetenango Dept. San Sebastián Pueblo Viejo Chichicana	<ul style="list-style-type: none"> • The state of O&M of the water source (about 5.5 kilometers from the village) is good. The river water level rises in winter and during the rainy season, making maintenance a little more difficult. • The state of O&M of the water storage tanks is good. Every day, debris such as tree branches and leaves is removed. Mud is common during the rainy season, and the mud needs to settle before the water can be used. • The state of O&M of the primary and secondary distribution pipes is good. While landslides occur several times each year,

		requiring relatively large-scale maintenance, there are no major problems with purchase of tools etc. for O&M use, particularly with regard to PVC pipes and other materials.
Water supply systems	Zacapa Dept. Gualan, Bethel	<ul style="list-style-type: none"> • Since completion, water supply has been stopped only a few times, ranging from several hours to a maximum of three days in length. While pipes have been damaged by cold in the winter, these already have been repaired. • The only problem is the fact that drinking water is not chlorinated, since no supplier of chlorine tablets has been found since about four years ago. In the future the planning department of the local government will seek a supplier.
Sewage, sewage treatment facilities	Chimaltenango Dept. Santa Cruz Balanyá	<ul style="list-style-type: none"> • There are problems with O&M of the sewage system, such as drainage ditches getting clogged with garbage. Without thorough improvements to the O&M structure, these could lead to breakdown of the sewage system. • With the exception of the settling pond, the sewage treatment facilities have been damaged by landslides. There is a possibility that the settling pond too could be damaged in the future if nothing is done, since soil erosion has advanced.
Bridges	Guatemala Dept. San José del Golfo	<ul style="list-style-type: none"> • Garbage has been left at the base of the bridge and in the drainage ditches, and rainwater collects in the bridge during the rainy season in particular. This could speed up wear on the bridge. As such, there is room for improvement in O&M. • A number of damaged spots were confirmed on the pedestrian railings. While these do not cause any problems with the structure of the bridge itself, out of consideration for pedestrian safety they need to be repaired.

As was true at the time of ex-post evaluation, today too the state of O&M of the FIS project as a whole varies greatly by sector and by type of infrastructure. In this ex-post monitoring these matters were verified based on interviews with local governments and other donors and on the ex-post evaluation reports of each donor. This information can be summarized with the following three points concerning average O&M conditions of the FIS project as a whole.

1. Where related central government agencies are responsible for O&M, as in the cases of roads and bridges, O&M is limited to maintaining current conditions, due to low budgeting priorities.
2. As was true at the time of the ex-post evaluation, O&M is not conducted for basic latrine facilities, and in many cases these already are unusable.
3. For projects such as small-scale irrigation works, which are linked directly to increased income, community ownership is strong, and community-led O&M structures are in place. For these reasons, the current conditions of such infrastructures are relatively good.

As is clear from the above information, whether project results are expected to be maintained

or improved in the future can be said to vary widely depending on factors such as the O&M structures and ownership of each sub project.

3. Conclusions, Lessons Learned and Recommendations

3.1 Conclusions

In FIS Phase I, a total of 16,211 sub projects were conducted throughout Guatemala, with the exception of the capital. While it is difficult to ascertain the degree of contribution, it is the shared conclusion among donors that the project has contributed not insignificantly to improving the infrastructure of Guatemala. Although it is impossible to identify the degree of contribution of the project, it can be said that a certain degree of results has been achieved according to the Guatemalan socioeconomic indicators and the project effectiveness indicators of the five sub projects covered by case studies.

Regarding O&M of each sub project after completion, it was clear in ex-post monitoring that while it had been assumed at the time of appraisal that each community would be in charge of such tasks, in fact related central government agencies and local governments have taken over in many cases. Particularly where related central government agencies handle O&M, concerns remain about future O&M, since small-scale infrastructure projects like these tend to be given low priority in budgeting and in conducting O&M itself. However, the above case studies and interviews with local governments, other donors, and former FIS personnel show that in cases such as irrigation projects that lead to visible improvements in income and water supply projects that lead to improvements in community health conditions and standards of living, continuing the achievement of project effectiveness of infrastructure improvements include proactive establishment of committees by communities themselves, who also conduct O&M. In addition, examples such as the water supply development sub projects in the villages of Gualan and Bethel in Zacapa Dept., which involved community participation from the project proposal stage, reflected residents' needs in project formation, and provided training on O&M, the communities independently have developed systems for securing sustainability and these are functioning appropriately.

3.2 Lessons Learned

While FIS had been expected to serve as an O&M organization, at the time of each project appraisal its responsibility was to confirm whether or not an O&M structure had been established. While the communities were initially designated to be in charge of O&M of each sub project, results varied by the sector of sub project. It is thought that the reason for this is

because the activities required to secure project sustainability, such as increasing ownership through promoting community participation and thoroughly conducting training on O&M, were not conducted adequately during formation of each sub project. In addition, it is thought that the assumption that communities faced with various poverty issues would cover O&M costs, acquire technologies, and conduct O&M needed to be considered more carefully.

In the future, for projects in which the O&M organization differs from the executing agency, it will be necessary to make O&M organizations clear at the time of appraisal and discuss and reach agreement on specific, detailed responsibilities. In addition, it also is important to increase ownership through having O&M organizations (i.e., related central government agencies, local governments, and communities) take part in projects from the time of project formation, to secure sustainability following project completion.

In the case of small-scale infrastructure projects, even when the related central government agency takes over O&M for reasons such as inaccessibility of villages or small scale of the infrastructure itself, in many cases low priority is given to such tasks, and as a result O&M is not conducted sufficiently. As a result, the community handled day-to-day O&M. For this reason, there is a need to secure community participation in all stages of the project cycle and, similarly, to foster ownership. Also, in cases in which beneficiaries handle O&M, such as the small-scale irrigation and water supply sub projects, training beneficiaries on O&M is also needed for project sustainability. On the other hand, in cases such as roads, bridges, and sewage systems, in which beneficiaries do not necessarily handle O&M, activities to raise awareness among beneficiaries (such as teaching the consequences of throwing away garbage near the basement of the bridge and drainage ditches, and promoting cleanup activities among beneficiaries) also are important to securing sustainability.

3.3 Recommendations to Related Ministries and Local Governments

In the future, training on O&M and technology transfer, both targeting the community, will be needed to secure sustainability. Specifically, there is a need to strengthen the capabilities of the organizations in charge of O&M of regional infrastructure within related central government agencies and the planning department of the local government (Oficina Municipal de Planeación (OMP)) in each local government in charge of O&M as well as community guidance on O&M. It is conceivable that training and technical guidance could be outsourced to private-sector businesses and educational institutions. However, since examples from other donors confirm numerous cases in which, in indigenous Mayan communities, subcontracted engineers were not accepted by the community since they were unfamiliar with specific

community languages and customs, thus impeding manifestation of effectiveness. It is important to assign engineers familiar with the communities to ensure the achievement of project effectiveness.

Comparison of the Original and the Actual Scope

Item	Original	Actual
(1) Output	<p>1) Social services (medical, educational, food supply, occupational training, etc.)</p> <p>2) Social infrastructure (water and sewage systems, basic latrine facilities, schools, and health centers, etc.)</p> <p>3) Economic infrastructure (roads, bridges, small-scale irrigation works, farm silos, etc.)</p> <p>4) Manufacturing sector (loans to small and medium-sized enterprises)</p> <p>Of the above, the ODA loan was to cover 2) and 3).</p>	As left
(2) Dates	December 1995 - December 1998	December 1995 - December 2000
(3) Project cost		
Foreign currency	31.5 million dollars	24.4 million dollars
Domestic currency	15.61 million dollars	12.8 million dollars
Total	130.7 million dollars	120.4 million dollars
ODA loan (included above)	3,112 million yen	2,962 million yen
Exchange rate	\$1 = 98.79 yen = 5.9 quetzals (December 1995)	\$1 = 116 yen = 6.6 quetzals (average from December 1995 to December 2000)