

Document of
The World Bank

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Report No: 34514-AR

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US\$40 MILLION EQUIVALENT

TO THE

ARGENTINE REPUBLIC

FOR A

NATIONAL URBAN SOLID WASTE MANAGEMENT PROJECT

January 25, 2006

Environmentally and Socially Sustainable Development
Argentina, Chile, Paraguay and Uruguay Country Management Unit
Latin America and the Caribbean Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective January 26, 2006)

Currency Unit = Argentine Peso (AR\$)

1 AR\$ = US\$.32927

1 US\$ = AR\$3.037

FISCAL YEAR

January 1– December 31

ABBREVIATIONS AND ACRONYMS

ACF	Argentine Carbon Facility
APL	Adaptable Program Loan
CEAMSE	Public Company for Ecological Coordination of the Metropolitan Area (<i>Coordinación Ecológica Area Metropolitana Sociedad del Estado</i>)
CEMPRE	Private Sector Recycling Commitment (<i>Compromiso Empresarial para Reciclagem</i>)
CER	Certified Emission Reductions
CFB	Carbon Finance Business
CoM	Consortium of Municipalities
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
ER	Emission Reductions
ERPA	Emission Reductions Purchase Agreement
FM	Financial Management
GEF	Global Environmental Facility
GOA	Government of the Republic of Argentina
IMA	Inter Municipal Agreement
MFP	Municipal Focal Point
MSW	Municipal Solid Waste
MSyA	Ministry of Health and Environment
MUSWU	Municipal Urban Solid Waste Unit
NGO	Nongovernmental Organization
NSWMS	National Solid Waste Management Strategy
NUSWU	National Urban Solid Waste Unit
OM	Operational Manual
PET	Polyethylene Terephthalate
PFP	Provincial Focal Point
PIU	Project Implementation Unit
PUSWU	Provincial Urban Solid Waste Unit
SAyDS	Secretariat of Environment and Sustainable Development
SEA	Sectoral Environmental Assessment

SEMP	Sectoral Environmental Management Plan
SIL	Sector Investment and Maintenance Loan
SW	Solid Waste
SWM	Solid Waste Management
TA	Technical Assistance
UNDP	United Nations Development Program

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ARGENTINA
National Urban Solid Waste Management Project

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ARGENTINA

AR-NATIONAL URBAN SOLID WASTE MANAGEMENT PROJECT

PROJECT APPRAISAL DOCUMENT

LATIN AMERICA AND CARIBBEAN

LCSSEN

Date: November 22, 2005	Team Leader: Horacio Terraza
Country Director: Axel van Trotsenburg	Sectors: Solid Waste 100%,
Sector Manager/Director: Abel Mejia	Themes: Pollution management and environmental health (P), Environmental policies and institutions (P), Climate Change (S)
Project ID: P089926	Environmental screening category: Partial Assessment
Lending Instrument: Sector Investment Loan	Safeguard screening category: Limited Impact

Project Financing Data

Loan Credit Grant Guarantee Other:

For Loans/Credits/Others:
Total Bank financing (US\$m.): 40.00
Proposed terms: FSL

Financing Plan (US\$m)

Source	Local	Foreign	Total
BORROWER	2.70	0.00	2.70
INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT	40.00	0.00	40.00
LOCAL SOURCES OF BORROWING COUNTRY	11.68	0.00	11.68
Total:	54.38	0.00	54.38

Borrower: The Argentine Republic
Responsible Agency: Secretaría de Ambiente y Desarrollo Sustentable (SAyDS), Ministerio de Salud y Ambiente. San Martin 459, Buenos Aires.
Director: Dr. Miguel Angel Craviotto (54 11 4348 8305, acraviotto@medioambiente.gov.ar);
Coordinador: Lic. Ana Corbi (54 11 4348 8623, acorbi@medioambiente.gov.ar).

A. STRATEGIC CONTEXT AND RATIONALE

1. Country and sector issues

1. About 60 percent of Argentina's solid waste is disposed in open dumps without sanitary controls. The economic crisis of 2001-2002 worsened solid waste management (SWM) practices, and the lowest socio-economic groups are disproportionately affected by poor service. In particular, the economic crisis forced many families to enter the informal recycling and separation business, which peaked at about 30,000 families in 2002. Extremely high health costs and negative environmental impacts are associated with these poor service levels.

2. As the economic situation improves, sub-national (provincial and municipal) governments are becoming increasingly interested in addressing these issues and have requested technical and financial assistance from the Federal Government. At the same time, National Law (*Ley Nacional*) 25.916, which established minimum requirements for SWM services, was enacted on September 7 2004. The Secretariat of Environment and Sustainable Development (*Secretaría de Ambiente y Desarrollo Sustentable*, or SAYDS) has therefore given top priority to SWM in the National Environmental Agenda.

3. As a first step, the SAYDS requested Bank assistance with the preparation of a National Solid Waste Management Strategy (NSWMS), financed through the Bank's ongoing Pollution Management Project. The Strategy was officially launched by the SAYDS on October 21, 2005, and agreed on by the provincial authorities. The overall objective of the NSWMS is to protect the health of the population. In addition, the Strategy recommends a wide range of policies and regulatory, institutional, and financial improvements over the next 20 years to achieve sustainable SWM services in all urban areas. The NSWMS emphasizes the following goals: (i) integrated SWM systems countrywide, (ii) strategic planning at provincial and municipal levels, (iii) introduction of regional final disposal facilities, (iv) closure of existing open dumps, (v) adoption of a sustainable cost recovery system, and (vi) establishment of realistic goals for waste minimization, recovery, recycling, and composting.

4. As a second step, the Government of Argentina (GOA) asked the World Bank to provide technical and financial support for the implementation of the NSWMS. Assistance will be provided through an investment operation designed to (i) improve final disposal practices through the construction of environmentally safe final disposal facilities and closure of open dumps, (ii) support the adoption of policies and regulatory and institutional frameworks that ensure the environmental and economic sustainability of the system at the sub-national level, (iii) provide technical assistance (TA) and training, (iv) support social rehabilitation of informal waste pickers, and, (v) encourage the adoption of long-term recycling and waste minimization policies. The GOA intends to carry out the project in a phased approach according to its implementation capacity. It is estimated that this project will finance safe final disposal of 20 percent of the waste currently disposed in open dumps.

5. The GOA is also seeking carbon finance support to improve the project's financial feasibility. As a developing country (non-Annex B) Party that has ratified the Kyoto Protocol, Argentina is eligible to participate in the Clean Development Mechanism (CDM) enabled under the Protocol. Waste disposed in landfills generates gases typically composed of 50 percent methane, a potent greenhouse gas (GHG) that can be captured and flared or utilized. Those emission reductions (ERs) can be negotiated for sale with Annex 1 Parties to generate economic revenue for the improvement of current SWM practices. According to the last update of the GHG National Inventory, emissions from landfills represent 7 percent of Argentina's total emissions.

6. Finally, the GOA is seeking the Bank's assistance to access grant resources from the Global Environment Facility (GEF) to deal with the closure and remediation of existing open dumpsites. These dumpsites are the main source of dioxins and furans emissions, according to the National Persistent Organic Pollutants (POPs) Inventory.

Major Sector Issues

7. **Lack of proper final disposal facilities and related health concerns.** Argentina collects 90 percent of its solid waste nationwide but disposes only 40 percent of this waste in an acceptable manner. More than 300 open dumps have been identified in the metropolitan area of Buenos Aires alone, and more than 2,500 countrywide. The main reason for the disparity between collection and proper disposal of solid waste has been the lack of popular and political will to tackle a problem that could be hidden away (dumps are located outside city limits, not in front of peoples' houses). In addition, before 2003 final disposal was not a priority for local authorities. Changing public opinion and a new legal framework are radically modifying this trend.

8. Problems resulting from disposal in uncontrolled dumpsites include inadequate buffering from inhabited areas, uncontrolled access by waste pickers and children, location of dumpsites that usually do not meet environmental protection standards in areas subject to flooding, and, in some cases, commingling of healthcare waste. These practices pose serious health and safety concerns, with hazards linked to surface and ground water contamination and breeding grounds for disease.

9. **Lack of cost-recovery policies for financial sustainability.** SWM expenses represent between 5 percent and 25 percent of typical municipal budgets. Currently, the main problem related to the financial sustainability of SWM services is the lack of an effective enforcement policy to ensure that the population pays for the SWM service. In 70 percent of the municipalities, only 30 percent of the population pays an SWM fee (known as ABL, or *Alumbrado Barrido y Limpieza*). In rare cases (less than 10 percent), municipalities achieve as high as 80 percent cost recovery because they charge the ABL service together with the electricity bill. To compound the situation, fees are generally set at levels below full cost recovery, and there is no differentiation in fees for industrial or commercial waste generators

10. Revenues generated through SWM services do not go to a segregated municipal account. Because municipalities typically have general accounts, there is no way to track revenues from SWM. As a result, it is extremely difficult to assign and maintain a transparent and realistic budget for SWM services.

11. **Lack of a regulatory framework at local level to deal with solid waste.** National Law 25.916 approved by the GOA set the minimum requirements for SWM nationwide. The law's scope, however, is still too broad to include specific economic, technical, or environmental principles, and it needs to be complemented by a regulatory framework. .

12. Few provinces have functioning SWM regulatory frameworks. The provinces need to enact their own laws and regulations, which cannot be less restrictive than the national law. They need to establish roles and responsibilities, particularly for budgetary commitments, to ensure (i) enforcement, control, and penalties, (ii) technical construction standards, (iii) tariff structures reflecting real costs, (iv) efficient cost-recovery mechanisms, (v) implementation of recycling, and (vii) waste minimization policies.

13. **Lack of institutional and technical capacity.** Argentina lags behind other countries in the region in terms of institutional and technical solid waste management capacity. In the country's federal structure, the SAYDS is the highest authority at national level responsible for domestic SWM policy, but the ministry lacks enforcement responsibilities. Provinces are responsible for establishing and enforcing local regulatory frameworks, but few provinces have enacted legal frameworks, and all lack the economic and technical resources to enforce them. Municipalities are responsible for waste management as well as fee collection from customers. In most medium-size cities, private companies provide satisfactory waste collection services, but in suburbs, informal settlements, and rural areas, these services need improvement.

14. **Strong NIMBY factor.** The not-in-my-back-yard (NIMBY) phenomenon has complicated and highly politicized site selection for new landfill sites. In some cases, opposition goes beyond the NIMBY syndrome. In the metropolitan area of Buenos Aires, for example, there are groups opposed to sanitary landfills as a sound technical solution for final disposal. Strong opposition to technically feasible SWM solutions is a consequence of inadequate communication campaigns, political polarization, lack of public involvement in decision making, and previous negative experience (positive local experience has never been disseminated). As a result, some urban areas face serious problems in siting new final disposal facilities, forcing the municipalities to postpone long-term solutions and maintain the status quo.

15. **Waste pickers in existing open dumps.** Waste pickers are found in dumpsites in every medium-size city in Argentina, their numbers fluctuating with local economies and the spot price for recyclables. The waste pickers live and work without basic economic or social security, under conditions that are extremely hazardous to health and detrimental to family, social, and educational development. Society has marginalized these groups, and the informality of their activity makes it difficult to integrate their contribution into the SWM system. Rarely have provinces or municipalities designed social plans to include the waste pickers formally in this sector or in other economic activities.

16. There are two types of waste pickers in Argentina. The first and larger group, called *cartoneros*, or cardboard collectors, live in the streets of metropolitan areas and are well organized. During the economic crisis of 2001, an estimated 30,000 families were involved in this kind of waste collection. The *cartoneros* mainly work on the streets separating cardboard and other materials, which is picked up by intermediaries who eventually sell the separated materials for recycling. The waste pickers in the second group go through waste at open dumpsites in large metropolitan areas. Participation of criminals in this second group has been identified, making it more difficult for authorities and nongovernmental organizations (NGOs) to approach them.

17. The Argentina SWM Project does not intend to solve the problem of the *cartoneros*, but rather will focus on the social inclusion of waste pickers working at the dumpsites to be closed or rehabilitated because of project activities. Project design took into consideration successful social inclusion experience from the region, for example, that of Brazilian Business Commitment for Recycling (*Compromisso Empresarial para Reciclagem*, or CEMPRE) and Argentina's El Ceibo Project and Ecological Coordination of the Metropolitan State Society (*Coordinación Ecológica Area Metropolitana Sociedad del Estado*, or CEAMSE).

Government Strategy

18. In order to address these issues, the GOA has included SWM as a first priority in the National Environmental Agenda. Consequently, the GOA designed an NSWMS that sets realistic long-term objectives and priorities. The main objective of the NSWMS is to protect human health through the establishment of environmentally, socially, and economically sustainable management of urban solid waste. The document takes a long-term approach, setting 2025 as the deadline to achieve its objectives. The Strategy was revised and endorsed by a Steering Committee representing NGOs, the private sector, and academia and endorsed by the provinces through the Federal Council for the Environment (COFEMA).

19. The specific objectives of the Strategy are listed below.

- Improve waste minimization to reduce waste currently sent for final disposal. Argentina needs to move up in the ladder of waste management to achieve higher levels of waste reduction, reuse, recycling, and recovery;
- Establish an integrated SWM system countrywide;
- Establish sanitary, safe, and environmentally sustainable final disposal facilities linked to the consequent closure of open dumps;
- Improve public participation and communication in the decision-making process;
- Modify production processes, use, and consumption to make them compatible with the sustainable use of natural resources;
- Establish and improve sub-national legal frameworks associated with SWM to guarantee environmental and economic sustainability; and
- Improve local technical and administrative capacity for SWM.

20. These objectives were determined based on a set of basic principles that included regionalization of final disposal facilities, social inclusion of waste pickers, and mitigation of climate change through technical solutions.

21. **Short-Term Goals.** The NSWMS establishes a schedule and short-term (2005–2007), medium-term (2007–2015), and long-term (2015–2025) goals related to these objectives. Short-term goals include (i) implementation of sustainable integrated provincial SWM and closure of open dumps in at least two provinces, (ii) establishing goals for minimization and recycling rates in those provinces, (iii) development of provincial SWM plans in at least three additional provinces, and (iv) establishment of awareness and communication campaigns in all provinces implementing provincial SWM plans.

22. **Solid Waste Generation.** The NSWMS is the first official document prepared by the GOA to carry out a comprehensive national assessment of SW generation rates and waste composition. The total national generation rate is approximately 12,325,000 tons/year, or about 34,000 tons/day, with a remarkable disparity among provinces. The province of Buenos Aires is the main generator, generating 4,268,000 tons/year (34 percent of the total), and Tierra del Fuego is the least significant generator, with only 26,000 tons/year (0.003 percent of the total). In terms of generation per capita,

Figure 2: Provincial GDP per Capita and Waste Generation per Capita in Argentina

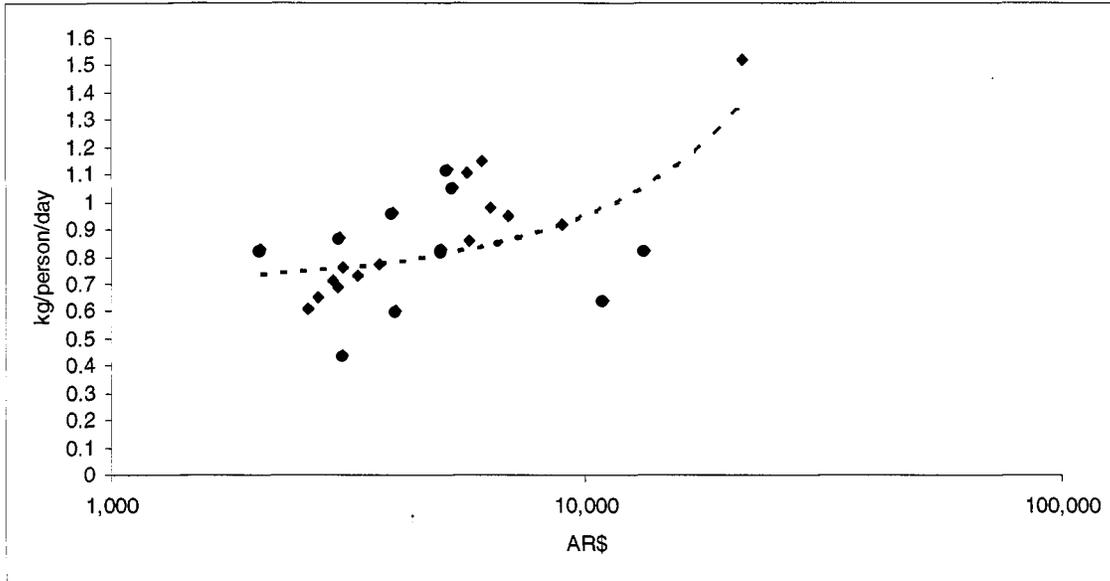
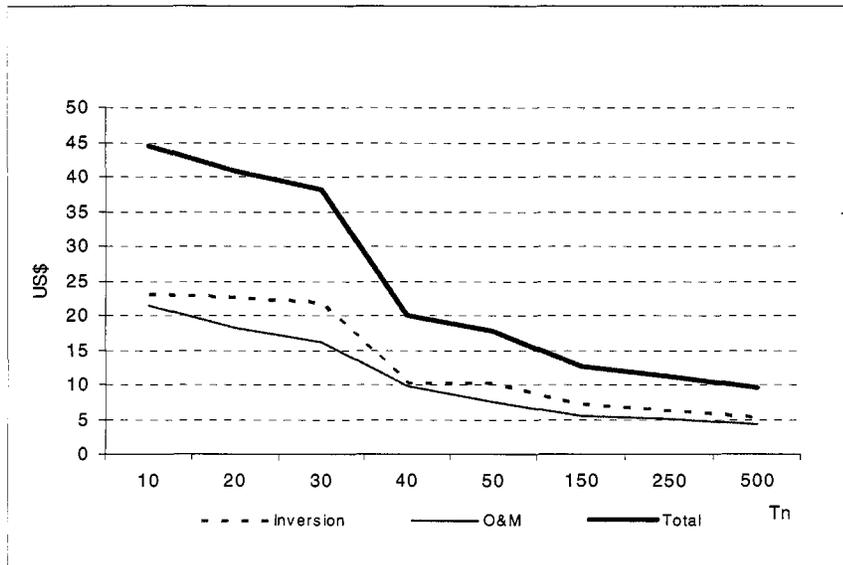


Figure 3: Final disposal costs per ton by size of final disposal facility



Source: Pollution Management Project, Argentina, World Bank 2005

24. Economic Incentive Program. The GOA has historically considered SWM a “public good,” and the design of the NSWMS follows this principle. In part, this position reflects the fact that uncollected and illegally discharged solid waste adversely affects general public health and the environment. Moreover, the GOA recognizes that the health and environmental risks associated with current inadequate final disposal practices represents a high cost for most local governments. Because local governments need an economic incentive and technical guidance to reach final disposal targets established in the NSWMS, the GOA plans to generate a temporary (one-time) Economic Incentive Program to stimulate the construction of environmentally acceptable final disposal facilities. All the Provincial SWM Plans have identified sanitary landfills as the best option for final disposal. The Economic Incentive Program follows successful experiences carried out in the European Union, the United States, Canada, Israel, and other countries. The Economic Incentive Program will finance only initial infrastructure and complementary activities such as closure or rehabilitation of open dumps, TA, and social assistance to waste pickers. Recurrent operating costs will not be financed. The municipalities will have to cover the O&M costs and construction of future cells.

25. National, provincial, and external financing sources will initially fund the overall Economic Incentive Program. The one-time subsidies will flow from the national government to the provinces. Funding will be transparent and available to every province that meets certain technical and financial conditions. The government intends to address disparities in poverty and health indicators across the provinces by providing higher incentives to the poorest provinces, which include some of those most affected by open dumping practices. The provinces will complement the partial subsidy on a cost-sharing basis.

26. Provincial Allocation Formula. Subsidy levels will be determined by a Provincial Allocation Formula that takes into consideration each provincial poverty index. The total subsidy will have two components. The first component is fixed and reflects the minimum amount of incentive estimated by the GOA to catalyze the transition. The second component is variable and focuses on compensating for socio-economic differences among provinces (see Annex 4 for individual provincial allocations). This component is based on an official comprehensive poverty index called the Household Poverty Index (*Indice the Privación Material de Hogares*, or IPMH). This index is public and available at the National Statistics Institute (*Instituto Nacional de Estadísticas y Censos*, or INDEC).

The temporary subsidy formula for the initial works includes the following components:

- i) Fixed component: 50 percent of the cost of the sub-project’s initial infrastructure.
- ii) Variable component: the remaining 50 percent of the infrastructure cost (IC) weighted by the provincial IPMH index.

The proposed equation for the subsidy allocation is shown below:

$$S = IC*0.5 + (IC*0.5* IPMH)$$

where:

- S = Subsidy for each sub-project
- IC = Infrastructure cost
- IPMH = Poverty index expressed in percentage

27. The total subsidy will range from a minimum of 61 percent for the province with the lowest IPMH index (Santa Cruz) to a maximum of 85 percent for the province with the highest IPMH index (Formosa). The remaining percentage not covered by the temporary incentive will be provided by the provinces. These percentages are only applied to the initial infrastructure costs and not to total project costs (initial infrastructure + future cells + recurrent costs). If compared to the total project cost, the subsidies average 15 percent.

2. Rationale for Bank involvement

28. The Bank is uniquely positioned to support the SAYDS in the implementation of the national SWM program. Its recognized technical expertise and ability to act as an “arms length” broker makes the Bank an important partner in addressing the complex public-private issues and arrangements associated with a sustainable SWM service. The project is fully compatible with the GOA’s SWM Strategy prepared under the Pollution Management Project, which acknowledges the need for a planned, integrated approach to SWM. The impact of Bank activities in this sector will be a tangible solution at low cost in a relatively short period. In addition, the Bank’s partnership will bring acknowledged experience in dealing with Carbon Finance initiatives and supporting sustainable SWM practices by providing a revenue stream through the sale of ERs. The project was envisaged in the April 2004 Country Assistance Strategy (CAS), and remains fully consistent with the three pillars that form the basis of that CAS as well as the proposed CAS for Argentina, which is scheduled to be presented to the Board in the first quarter of 2006: (i) sustained economic growth with equity, (ii) social inclusion, and (iii) improved governance.

3. Higher level objectives to which the project contributes

29. The project will contribute to the following higher-level objectives: (i) *improvement of public health and quality of life* through reducing exposure to pollutants and disease vectors from solid waste, (ii) *improvement of institutional capacity at local levels* through establishing cutting-edge technical and financial models for SWM, (iii) *enhancement of environmental policy* through improving the SWM legal and regulatory framework at provincial and municipal levels and facilitating recycling and waste reduction programs nationwide, (iv) *improved local governance* through enhancing cooperation among sub-national governments, and (v) *poverty reduction and social inclusion* through supporting social integration of informal waste pickers with training and formalization of waste separation programs.

30. The project’s specific goals are to:

- (i) Develop new environmentally safe and socially acceptable regional landfills as the backbone of final disposal operations and close existing open dumps;
- (ii) Develop legal and regulatory frameworks at the sub-national level;
- (iii) Improve municipal financial management and cost recovery systems to guarantee the sustainability of urban SWM;
- (iv) Ensure the positive social impact of the new SWM system on the waste pickers and informal sectors;
- (v) Establish provincial and municipal policies related to minimization and recycling; and
- (vi) Apply Carbon Finance mechanisms under the CDM of the Kyoto Protocol to reduce O&M costs for the municipality and encourage good operating practices.

B. PROJECT DESCRIPTION

1. Lending instrument

31. The proposed project will be financed through a Sector Investment and Maintenance Loan (SIL) operative from the end of FY2006 until FY2011. The project will be followed by two repeater projects to be implemented in FY2011–FY2015 and FY2015–FY2020, respectively, in line with the NSWMS. Repeater projects will be implemented provided a successful performance of the proposed initial project. The total amount of the SIL is US\$40 million.

2. Project development objective and key indicators

32. The objective of the proposed project is to improve public health and quality of life by developing environmentally and financially sustainable systems for urban solid waste management in Argentina. Several studies (annex 12) carried out in different parts of the world have demonstrated the strong link between poor solid waste management (open dumps) and the impacts on health through i.e. ground water pollution, disease vectors and air pollution. The specific objective is to increase the percentage of population served by sanitary landfills within the timeframe of this project. Key detailed performance indicators to measure the results of the project's intervention are listed in table 1 below.

Table 1: Key Performance Indicators for Monitoring Progress

Indicator type	Outcome indicator
Proper solid waste disposal ¹	Amount of waste sent to environmentally sustainable and sanitary final disposal facilities Number of open dumps closed
Institutional strengthening	Strategic planning for SWM (development of provincial and municipal plans) Enactment of provincial regulatory frameworks
Environmental sustainability	Average percentage increment of formally recycled or composted waste over a 5-year period
Social sustainability	Improved well-being of waste pickers participating in the project
Financial sustainability	Municipal financial management and cost recovery system in place and agreed program for its gradual improvements
Global environment and financial sustainability	GHG emission reductions and Carbon Finance mechanisms applied to implemented sub-projects

3. Project components

33. **Component 1: Policy and Institutional Strengthening (US\$4.9 Million).** Component 1 will finance TA for the agencies involved in the development and control of sector policies and regulations. This component will also strengthen the national institutional capacity of SAyDS to implement the project. At the local level, it will support the capacity of local authorities to make informed decisions and develop sustainable SWM services. The component will also support the government's long-term planning for SWM incorporated in the National SWM Strategy. All provinces are eligible for this component, which includes the following five sub-components:

¹ Several studies (annex 12) carried out in different parts of the world have demonstrated the strong link between poor solid waste management (open dumps) and the impacts on health through i.e. ground water pollution, disease vectors and air pollution.

- (i) Strategic Planning and Regionalization. This sub-component will finance the preparation of integrated SWM plans at municipal and provincial levels. The project supports regionalization, this is, the establishment of legal multi-municipal final disposal districts in which a single landfill receives the waste generated by several municipalities. The Provincial SWM Plans should include this regionalization concept in their design. The number of sites per province should be consolidated to minimize investments and operating expenses. This regionalization concept will result in significant economies of scale for participating municipalities.
- (ii) Training Program on SWM and Urban Finances Fundamentals. This sub-component will finance a National Training Program (NTP) on SWM fundamentals to increase the technical capacity of provincial and local governments (see Annex 4). The training will focus on national, provincial, and municipal staff involved in SWM. The sub-component will also finance a specific training program on improving urban finances for SWM through the development and adoption of effective and sustainable financial management. Moreover, this urban finance program will concentrate on cost recovery mechanisms for SWM at municipal level, including training on topics such as calculation of SWM fees, tariff structures, and user charge collection systems.
- (iii) Technical Studies. This sub-component will finance the following activities:
- Preparation of a national recycling strategy through market analysis and incentives for recycling;
 - Sub-projects' recycling market assessments;
 - National and provincial waste minimization programs in line with the NSWMS objectives; and
 - Technical studies for closure or remediation of selected dumpsites.
- (iv) Public Communication and Outreach Programs: This sub-component will finance TA for the development of Public Communications Programs for the SAyDS and participating provinces and municipalities. The objective of the sub-component is to increase education and public awareness related to issues such as health and environmental problems linked to open dumping, the role and responsibilities of households in the new SWM system, final disposal technical options and related costs, recycling, and minimization. The expected outcome is consensus and effective use of the new SWM system financed by the project, decreasing the amount of waste sent for final disposal, limiting the NIMBY effect, and promoting fee collection. Model national and provincial communication strategies adapted to the two pilot provinces will be designed before project effectiveness.
- (v) Project Management, Monitoring, and Evaluation. The main objective of this sub-component is to support appropriate fiduciary capacity and specialized technical consulting to ensure effective project implementation. The Waste Management Unit in the SAyDS will implement the project. This sub-component will finance relevant personnel (i.e., procurement, environmental, social, and financial management specialists) to ensure the Bank's fiduciary responsibilities (see Annexes 4 and 6 for more details).

34. Component 2: Construction of new landfills and closure of open dumps (US\$31.5 Million). This component will finance the construction of environmentally and economically sustainable final disposal facilities and closure of existing open dumps. It will also cover infrastructure and equipment for separation and recycling activities as part of the social inclusion plans (component 3). The project will finance composting activities only if a technical and economic study provided by the municipality demonstrates the sustainability of the enterprise. A set of eligibility criteria (section 37) was developed to identify provinces and municipalities that can participate in this component. While all the provinces will be eligible for TA, a limited number will receive funding for investment in final disposal sites in this first phase. This component includes the following two sub-components:

- (i) Construction of New Regional Sanitary Landfills in Eligible Provinces. The construction of new sanitary landfills covers the following activities:
 - Construction of only the first cell, general civil works, access roads, auxiliary and maintenance buildings, fencing, etc. Containment cells for industrial non-hazardous waste will also be eligible. Sanitary landfills will need to have a minimum lifespan of 12 years and adopt minimum technical standards related to strict environmental pollution control measures (impermeable clay or synthetic liners, leachate drainage and treatment, gas control and flaring systems, monitoring wells, etc.). The SAyDS will be responsible for determining these minimum standards in agreement with the Bank team; and
 - Setting up of transfer stations where deemed necessary based on the results of the Provincial SWM Plans and construction and equipping of waste separation plants in all sub-projects to support recycling programs as part of the social inclusion plans described under component 3. The new separation plants may be installed either at the transfer station, if any exists, or at a location near the new landfills. Eligible sub-projects will need to demonstrate the financial sustainability of the plant based on market assessment studies or social plans to provide a sanitary, safe environment for waste pickers to continue their separation activities.
- (ii) Closure or Remediation of Open Dumpsites. This sub-component will finance the closure (and remediation where necessary) of dumpsites in participating municipalities. To access these funds, municipalities will need an operating sanitary landfill in place, a social program for waste pickers, and a technical study for the dumpsite closure.

35. Component 3: Social Inclusion (US\$1.5 Million). This component will finance the implementation of social inclusion plans for the waste pickers working only at the dumpsites being closed or rehabilitated by the activities under component 2 and in the cases where needed. At the same time, this component will help strengthen national and local capacity to assess and manage complex social issues around the implementation of SWM interventions. During project preparation, a number of successful initiatives were identified both in Argentina and overseas. Waste picker cooperatives have been operating for almost 20 years in Sao Paulo, Brazil, where NGOs provide technical support and private sector companies provide the necessary equipment and training. This component will finance the following specific sub-components:

- (i) Capacity Building in Social Inclusion and Management. This sub-component will finance the incorporation of a social specialist in the NUSWU, training of provincial and municipal public officers on social issues, and the implementation of tailored social assessments and social inclusion plans at sub-project level. Specific methodologies, including social assessment guidelines for the use of the municipalities, were designed for these activities during project preparation.
- (ii) Technical Assistance for Micro-enterprises and Cooperatives. This sub-component will finance training and technical assistance to establish micro-enterprises and cooperatives of waste pickers. This task will be led by social specialists in the municipalities in collaboration with organizations that have extensive experience in informal garbage collection.
- (iii) Private-Public Partnerships. The project will support the establishment of a partnership between the SAyDS and a network of private companies for example (CEMPRE) interested in promoting more recycling in Argentina. This model was tested with great success in Brazil, where private companies, informal waste pickers cooperatives, technical NGOs, and the government came together to provide integral solutions to this issue.

36. Design and preparation of the social inclusion plans started as part of the project preparation activities. More case specific details of the social inclusion plans will be defined after the project becomes effective but long before the new final disposal systems begin operation. Also at the same time, the provincial SWM units will carry out the necessary market studies for recyclables. Actual implementation of each sub-project's social inclusion plan (recycling activities) will occur once the new final disposal system has begun operations and separation facilities have been built. Meanwhile, the wastepickers will be able to still carry out their activities in the original dumpsite during the time of the construction of the new landfill facility.

37. **Eligibility Criteria.** All provinces will be eligible for TA (Component 1), but only selected provinces will receive funding for investment in final disposal infrastructure (Component 2). Eligibility for Component 2 will be based on demonstrated local needs and priorities, readiness to work with other municipalities and assume ownership of the project, willingness to attain financial sustainability, and selection of environmentally safe and cost-effective solutions. Participating provinces and municipalities seeking financing will be able to meet the eligibility criteria gradually through different stages of project preparation. Table 2 describes these criteria in detail .

Table 2: Eligibility Criteria for Component 2

Stage	Description
<i>Pre-selection</i>	1. Provincial SWM Plan developed with municipal participation and approved by provincial authorities and the NUSWU. The Plan must include the following: <ul style="list-style-type: none"> (i) Regionalization scheme based on province-specific technical economic analysis (ii) Plan for closure of dumpsites (iii) Introduction of appropriate sanitary landfills in conjunction with separation plants and an action plan for a SW minimization program or 2. Municipal SWM Plans for those cases involving only individual

	<p>municipalities.</p> <p>3. Provinces have drafted a legal and regulatory framework for SWM.</p>
<p><i>Sub-project Selection: Prior to approval for investment financing</i></p>	<p>4. Landfill siting process concluded, including Environmental Impact Assessment (EIA) and Public Consultation Process of the alternative locations.</p> <p>5. Land Titling: Municipalities will have to demonstrate legal ownership of the land, or legal usage rights satisfactory to SAyDS and the Bank</p> <p>6. Participating municipalities have signed a Inter-Municipal Regional Agreement (IRA) including the following²:</p> <ul style="list-style-type: none"> (i) A legal entity to manage and supervise a shared landfill and transfer stations. Only in specific cases will an entity be eligible for landfill operation. IRAs should include a cost-sharing agreement based on objective criteria such as population or tonnage. (ii) Participating municipalities agree to compensate adequately host communities for real or perceived nuisances (if needed). (iii) Municipalities draft an ordinance or by-law requiring commercial establishments, industries, institutions and other large generators to pay a differentiated fee for hauling and final disposal of waste at the regional landfill. <p>7. Provincial - SAyDS Subsidiary Agreement signed and through which:</p> <ul style="list-style-type: none"> (i) The province commits to complement the federal subsidy on cost sharing basis for the construction of a regional landfill and transfer station construction according to SAyDS parameters. (ii) The establishment of provincial and municipal technical teams is required to implement the project. The team's technical characteristics and responsibilities will be described in the Operations Manual (OM). <p>8. The province and municipalities have incorporated social specialists into their project's teams.</p> <p>9. Municipality or consortia of municipalities have developed a proposal for increasing their cost recovery efficiency through a tariff scheme that will enable them to guarantee a minimum level for economic sustainability of the new SWM (landfill) service. This minimum level should include the attention to both the fee³ price and the fees' collection rate. The SAyDS and the Bank will approve this proposal.</p> <p>10. Provincial-Municipal Agreement signed, ensuring the economic sustainability of the operation of the new landfill. The agreement will make clear that the municipal economic contribution for operation will be</p>

² See Annex 14 Legal Framework for Inter Municipal Arrangements for further detail

³ The fee refers to the value calculated according to the tariff scheme and which is needed to recover the full cost of constructing, operating and maintaining the new landfill.

	<p>guaranteed by the provincial co participation funds.</p> <p>11. In the cases where the municipality or consortia of municipalities have the intention to provide themselves the operation and maintenance services for the future landfill, they are required to provide proof of having the necessary equipment, technical capacity and adequate personnel needed to operate properly the facilities prior to issuing the public tender for designing and building the new landfill. The SAYDS will evaluate this operation and maintenance capacity and determine if it is acceptable.</p>
<p>Sub-project execution: <i>Prior to release of funds for landfill construction</i></p>	<p>12. Participating municipalities will seek carbon financing by capturing and flaring and/or utilizing landfill gas, or by composting or recycling to reduce methane emissions in the atmosphere. In turn, the revenues will contribute to the sustainability of the SWM system through the provision of additional resources. The participating municipalities agree to transfer ownership rights of the landfill gas to the regional operating entity (consortium of municipalities).</p> <p>13. Municipalities or consortia have agreed to apply the social development framework addressing the needs of informal waste pickers at dumpsites, if applicable.</p>
<p><i>Prior to release of funds for closure/rehabilitation of open dumps.</i></p>	<p>14. Social Inclusion Plans have been duly consulted with the affected waste picker groups and their views and concerns have been taken into account in the design of the Plan.</p> <p>15. Construction of the recycling facilities has been completed and the social inclusion plan is ready to be implemented</p>

38. **Transparency and Private Sector Participations.** In order to ensure a transparent process and provide a level ground for private sector participation during the bidding process, the GOA prepared a model of bidding documents for designing, building and operating landfills in compliance with Bank Procurement Policies. The final version of the model documents are being reviewed by the Bank and are expected to be approved before Board Approval. The municipalities participating in the project that wish to issue an International Competitive Bidding process for construction of the new landfills will have to follow this model. In addition, the Secretary of the Environment and Sustainable Development will appoint a high level civil servant to oversee the evaluation of proposals and the selection processes.

39. The task team carried out an extensive analysis of the private sector through a consulting process with the most experienced local firms in SWM sector, particularly those providing final disposal services. Most of the medium and large size municipalities have a private or semi/private collection and transport service. In terms of final disposal, the sector is divided into two types of firms, according to the company size, those operating in medium and small cities (up to 200 ton/day of waste generation) and those operating in large urban centers (above 200 ton/day). It is estimated that there are at least 5 companies of the first type capable of proving this type of service at an adequate level and at least another 5 in the second group. The legal contracts, both for collection/transport and final disposal, are generally long term (between 5 and 20 years) and municipalities are familiar with them because of the existing collection and transport services.

40. **Individual Municipalities.** Only in exceptional cases (to be evaluated by the SAYDS and the Bank), will specific individual municipalities be eligible for financing. These exceptional cases include (i) municipalities that because of their distance from other municipalities cannot establish an economically viable inter-municipal agreement for final disposal and (ii) municipalities with significant environmental impacts or risks due to lack of adequate final disposal facilities in provinces that are unable to develop provincial SWM plans. Individual municipalities will also have to comply with all eligibility criteria in table 2 with the exception of sections 1 and 3.

41. **Coordination with Other Operations in the Sector.** The Inter-American Development Bank (IADB) has expressed interest in investing in the solid waste sector. In response, the GOA has agreed that in case it would seek additional financing from other donors for further investments in SWM, the new projects will strictly follow the eligibility criteria established under this Loan Agreement.

42. As this loan is being prepared, the GOA is starting to negotiate an additional loan with the IDB for the SWM sector. The Bank team has conducted preliminary meetings with IDB officials. The IDB project amount will be approximately US\$10 million, and the project is at an early stage of preparation. It was agreed that the two institutions will work on a complementary basis, with the IDB supporting small sub-projects in provinces that have already complied with the eligibility criteria. It was also agreed that the IDB operation will follow in all cases the eligibility criteria established for this project.

43. **Project Component Cost and Financing.** Table 3 details the resources allocated to each component according to its funding source.

Table 3: Resources Allocated to Project Components

Component	Indicative cost (US\$)	Percentage of project total	Bank financing (US\$)	Local financing (US\$)	Percentage of Bank financing
1) Policy and Institutional Strengthening	\$ 7,600,000	14%	\$ 4,900,000	\$ 2,700,000	9%
- Strategic Planning and Regionalization					
- Cost Recovery and SWM Training					
- Technical Studies					
- Public Communication					
- Project Management					
2) Construction of new landfills and closure of open dumps	\$43,180,000	79%	\$31,500,000	\$11,680,000	58%
- Basic Landfill Infrastructure					
- Construction of First Cell					
- Methane Capture System					
- Recycling Plant					
- Closure/Rehabilitation of Dumpsites					
- O&M (100% local financing)					
3) Social Inclusion	\$1,500,000	3%	\$1,500,000	\$ -	3%
- Implementation of Social Plans					
- TA for Micro-enterprises					
Unallocated	\$2,000,000	4%	\$2,000,000		4%
Front End Fee	\$100,000		\$100,000		
Total project costs	\$54,380,000	100%	\$40,000,000	\$14,380,000	74%

Note: The amount indicated in the Social Inclusion Component does not include equipment financing. This will be financed through component 2.

44. **Provincial Readiness.** Project preparation included an assessment to determine provincial readiness to implement the investment component (Component 2). Based on the results of the assessment, provinces were initially classified in three groups (although some may move up, depending on efforts made over the next few years) according to the following criteria:

- (i) **Group I:** Provinces that are expected to comply with the project’s eligibility criteria before or within the first months of project effectiveness and be ready to start and/or finish sub-project implementation during the first 2 years of the project. There is a small possibility that some of these provinces may request financing on a retroactive basis.
- (ii) **Group II:** Provinces that have clearly given priority to SWM in their environmental agendas, drafted legal regulatory frameworks in accordance with the National Law, initiated dialogue with the national government on a technical and financial solution for SWM, and agreed to the basic eligibility criteria. The project will assist these provinces to comply with eligibility criteria during the first year of implementation. Selected sub-regions of these provinces that comply with the eligibility criteria are expected to receive investment financing during the later years of the project.
- (iii) **Group III:** Provinces that apparently have not prioritized SWM or established dialogue with the national government at project design stage. The project will assist these provinces to comply with eligibility criteria during the first year of implementation. Selected sub-regions of these provinces that comply with the eligibility criteria may receive investment financing during repeater operations.

45. Table 4 lists the provinces in each of the three groups according to their readiness.

Table 4: Provincial Readiness for Component 2

Group	Province
I	Tucumán, Chubut, Mendoza, Santa Cruz
II	Salta, La Rioja, Formosa, Santa Fe, Entre Ríos, San Juan, Córdoba, Jujuy
III	Buenos Aires, Corrientes, Santiago del Estero, Catamarca, Neuquén, Río Negro, La Pampa, San Luis, Tierra del Fuego, Misiones, Chaco

46. **Carbon Financing.** Greenhouse gas ERs can be instrumental in turning an environmental liability into a resource that can generate an economic revenue stream to improve current SWM practices. Through the inclusion of a strong Carbon Financing (CF) component, the project intends not only to benefit from the economic revenues, but also to support national capacity to design and implement effective climate change mitigation policies. The economic revenue will contribute only marginally to financing O&M costs. The project will draw from the experience of Landfill Gas (LFG) projects implemented by the Bank in the southern cone, for example, the Global Environment Facility (GEF) project in Maldonado, Uruguay, and CF operations in the Olavarría and Montevideo landfills. In addition, the project will coordinate activities with the Argentina Carbon Facility to generate underlying finance and innovative financial operations.

47. The proposed project is innovative because it is the first fully blended Carbon Finance operation within a programmatic SWM lending operation. This design follows the main regional recommendations for best practices in CF, i.e., mainstreaming CF in regular lending operations and applying programmatic approaches to scale up the size of the operations. To guarantee benefits from the CF revenues, the project includes technical and contractual conditions in its eligibility criteria. First, it is mandatory for each participating municipality, or municipal consortia, to include a landfill gas capture and flaring system in the engineering design. Second, it is mandatory for the consortia to sell its ERs either to the Bank or to some other broker or developer.

48. Between 1.2 million and 1.5 million tons of CO₂ equivalent could be mitigated and sold until 2012 through the implementation of the pre-identified sub-projects. At current international carbon prices of US\$6.0–US\$7.0 per ton CO₂ equivalent, this represents approximately US\$6–US\$10.5 million. These additional revenues may represent a reduction in a range of 10 percent to 30 percent of the O&M costs of the final disposal operation.

49. A bundling approach has been developed for national endorsement and Emissions Reduction Purchase Agreement (ERPA) signature. The framework agreement in Annex 15 was prepared in collaboration with the Designated National Authority (DNA) of Argentina—represented by the SAyDS—to obtain only one endorsement for all the sub-projects participating in this project. In addition, project design included preparation of a template for the Letter of Intent (LoI) and ERPA to be negotiated between participating municipalities and the Carbon Fund Business Group (CFBG) of the World Bank. These measures would allow all the sub-projects to be bundled together to avoid the administrative requirements of individual project processing. All the sub-projects that eventually decide to sell their ERs to the World Bank’s CFBG will be eligible for up front financing of 25 percent of the negotiated ERs.

4. Lessons learned and reflected in the project design

Countrywide

50. The Bank’s previous experience in Argentina’s SW sector includes the AR-Pollution Management (AR-PM) Project, the Olavarría Methane Capture Project, and the Second Municipal Development Project (MDP-II). The objective of the AR-PM Project was to strengthen the capacity of SAyDS through innovative pollution management instruments and initiatives. The project components included support for SWM-related activities such as preparation of the NSWMS, SWM plans for two provinces (Chubut and Tucumán), and SWM plans for several municipalities across the country. The proposed project will provide part of the necessary funding to implement the NSWMS and the related Provincial SWM Plans. The Olavarría Methane Capture Project is a carbon-offset activity whose main objective is to reduce greenhouse gas emissions and improve SWM practices in the Olavarría landfill. The MDP-II financed trucks in several municipalities, the design of the Provincial SWM Plan of the province of La Rioja, and civil works included in Rioja’s plan. The following conclusions drawn from those projects were incorporated in the design of the proposed project:

- (i) Inadequate technical capacity for strategic planning. Local governments lack adequate technical expertise to develop SWM strategies and plans. In addition, the private sector on many occasions has not delivered work to the expected technical standard. Previous experience clearly points to the need to work with more experienced and specialized firms;
- (ii) Public participation and communication. Experience clearly demonstrates that without a strong public participation and communication component to address public concerns, the project is doomed to fail;

- (iii) Low cost recovery. Low cost recovery is not strictly related to customer affordability. Simple modifications in the bill collection system, for example, tying a SW surcharge to bills for utilities such as electricity, result in essential cost recovery improvements. Low cost recovery is also linked to a municipal culture in which people often treat environmental services as quasi-public goods. This issue is evident in SW final disposal practices;
- (iv) Lack of regionalization. There has been poor collaboration among municipalities in clustering landfill operations. The trend has been to build individual city landfills when possible, ignoring the economies of scale derived from cooperative inter-municipal programs. This is a consequence of poor federal and provincial legal and regulatory frameworks as well as a lack of incentives;
- (v) Lack of integrated solid waste management solutions. Despite improvements in SW collection during the past 20 years in Argentina, final disposal is still poor. Most landfills built in previous Bank-supported municipal projects were not well operated. One of the main reasons for this failure was the fact that the construction of the landfill was an isolated activity instead of an integral part of a comprehensive system. In addition, no cost recovery analysis and strategy were ever linked to the construction activity; and
- (vi) Carbon Finance. The economic value of potential ERs from methane capture in landfills could become an essential tool in financing final disposal O&M. It has been estimated that the revenues from ERs could cover between 10 percent and 30 percent of the landfill's O&M costs.

Worldwide

51. International Bank experience with municipal SWM projects was taken into account during project preparation. The Mexico Second SWM Project, the Bosnia and Herzegovina SWM Project, the Tashkent SWM Project, and the recent solid waste sector work in China highlighted issues common to such projects and provided important lessons. Of particular interest was the Mexico project, which encountered numerous implementation difficulties because of the country's economic situation at the time. Some parallels can be drawn with the present Argentinean economy. The main conclusions of the project's Implementation Completion Report (ICR), listed below, were important in designing this proposed project.

- (i) Investment financing. Municipalities may determine that they can live with a primary level of environmental quality and public health protection, based on their level of income. However, provincial or central governments may require them to meet a higher standard. To help municipalities reach a higher standard of environmental protection, it is appropriate to create financial or economic incentives for municipalities that meet the targets. This is common policy in the EU. In the Mexico Second SWM Project, the financial incentives for constructing landfills were on an on-lending basis from federal to regional governments. This scheme proved inadequate because there was almost no demand. The ICR concluded that an incentive type of scheme using one-time partial grants would have been more successful;
- (ii) Social development programs and communication strategies. These strategies need to be mainstreamed into infrastructure financing programs and included as criteria for eligibility;
- (iii) Technical support. Training and technical assistance for administration of inter-municipal consortia is necessary to avoid delays and achieve long-term improvement in SWM in terms of both efficiency and environmental protection; and

- (iv) Regulatory framework and institutional capacity. Proper legislative and regulatory frameworks need to be in place at provincial level prior to any investment. Moreover,, provincial and municipal solid waste institutions need to be adequately staffed and independently funded in order to avoid project implementation problems and assure sustainability of the system.

5. Alternatives considered and reasons for rejection

52. The following alternatives were analyzed during project design:

- (i) On lending vs. on granting. After discussions with the GOA and upon their request, it was agreed that the project would support the national government's proposed program to provide incentives to provinces or group of municipalities. Under this program, the provinces would be responsible for complementing the partial subsidy on cost-sharing basis, varying according to a poverty index (IPMH). The GOA's justification for this program is that the significant implications of environmental and social externalities associated with poor SWM practices. In addition, this type of subsidized scheme has proven successful in many countries of the world. The Bank agreed to adopt this approach, in an on-granting manner more consistent with its existing health portfolio than with its existing municipal infrastructure portfolio, on the basis of the public health and environmental externalities to be gained, as well as the good practice documented from OECD countries.
- (ii) APL vs. SIL. As discussed at the Project Concept review stage, the project will be implemented as a Sector Investment Loan (SIL) followed by repeater projects rather than as an APL. The reason for this is the large number of pre-existing Adaptable Program Loans (APLs) in Argentina's project pipeline, not the characteristics of this project per se;
- (iii) Incineration vs. landfills. All the proposed Provincial SWM Plans have identified the landfill as their final disposal technological option and the Bank team supports this decision. The main reasons supporting landfilling are: it is the most cost-effective technology, guaranteeing environmental protection and health safety, it is a globally proven technology, that the country has ample land available, and local expertise and technical capacity are available for adequate construction and operation of landfills. This technological solution will be coupled with recycling and waste minimization programs. These programs are expected to grow overtime. Incineration was not considered viable because of extremely high investment and operating costs, limited technical capacity for operation, limited capacity for government enforcement, and hazardous emissions and health impacts associated with the risk of poor operational practices;
- (iv) Municipal solid waste vs. other wastes. The government strategy is to concentrate initially on municipal SW to support the new SWM National Law and NSWMS. Municipal SW includes industrial, commercial, and institutional waste with similar characteristics as domestic waste. Hazardous wastes require special management capacity that must be built up in the private sector by licensed operators; and
- (v) Regional landfills vs. smaller sanitary landfills. Shared municipal landfills through cooperation among numerous municipalities are necessary to maximize the benefits from improved sanitary landfill standards. Economies of scale dictate that the costs of maintaining more and smaller sanitary landfills for individual municipalities conforming to

the same standards would result in much higher costs that would not be cost effective and cannot be sustained in the current fiscal situation. Furthermore, it is unlikely that smaller-scale landfills can provide the same level of environmental protection (for example, LFG collection and utilization is not as efficient at smaller scales).

C. IMPLEMENTATION

1. Institutional and implementation arrangements

53. The National Urban Solid Waste Unit (NUSWU) within the SAyDS will execute the project and be responsible for all technical and fiduciary aspects, overall project management, and monitoring and evaluation. This new group will comprise the SWM staff already working at the SAyDS and use the existing staff of the Pollution Management (Loan 4281) executing unit. The staff roster has been submitted to the Bank for review. The NUSWU will be appropriately staffed in terms of procurement, environmental impact assessment, financial management, SWM, strategic planning, social issues, and communications. Overall implementation will be the responsibility of the project's National Director, a SAyDS staff member. According to the new Bank policy, the project will finance fiduciary-related personnel and specialized consultants. A group of consultants from the existing Pollution Management PIU will become employees of the new NUSWU, and their positions will be financed in a phased-out approach for the first 3 years of this project.

54. The NUSWU will be responsible for the following activities: (i) application of fiduciary responsibilities, including approval of the Sectoral Environmental Assessment and Environmental Management Framework to comply with World Bank's safeguards, (ii) approval of Provincial SWM Plans, (iii) evaluation of compliance with eligibility criteria, (iv) liaison with provincial management and technical teams, (v) technical advice to provinces and municipalities in developing SWM strategies and plans, (vi) development and implementation of the national SWM training program for provincial and municipal authorities (an NGO will be hired to provide training), and (vii) supervision of social programs.

55. A project Operational Manual (OM) will include all rules and regulations for the operation of the NUSWU (planning, monitoring, evaluation, institutional arrangements, environmental review, reporting, communication, human resources, coordination, procurement, and financial management) and implementation of each project component. Specific annexes to the OM will include templates for the ERPA and Nation-Province subsidiary agreement, samples of inter-municipal agreements, a sample provincial legal and regulatory framework, and minimum technical standards for landfill construction. The OM and any changes to it will require no objection from the Bank.

2. Monitoring and evaluation of outcomes/results

56. For proper monitoring and evaluation of key outcome results, the team has established a set of monitoring indicators (Annex 3). The NUSWU will prepare semi-annual progress reports and submit them to the Bank for review. These reports will describe progress in the various components and measure performance against indicators in the following areas: (i) implementation of civil works contracts, (ii) execution of works, (iii) training, (iv) development of Provincial SWM Plans, (v) social and communication programs, (vi) an environmental report indicating measures undertaken in each sub-region to ensure compliance with Bank safeguards, and (vii) activities performed by the NUSWU.

57. The semi-annual reports will also include information regarding disbursements and forecasts for the next period. The impacts of the project (e.g., enhanced waste disposal, closure of dumpsites, increased cost recovery, increased recycling, reduction of negative environmental externalities) will be assessed at mid-term review and project completion.

3. Sustainability

58. Long-term sustainability of SWM programs was a central objective throughout project preparation. The following interventions are expected to contribute to sustainability:

- (i) Strategic planning and regionalization through integrated, comprehensive, and technically robust Provincial SWM Plans that will lead to the construction of proper sanitary landfills, taking into account economic, environmental, technical, and social considerations;
- (ii) Successful operation and clear rules of association for inter-municipal consortia to ensure proper management of the newly created solid waste system;
- (iii) Achievement of financial sufficiency by gradually increasing revenues through an adequate tariff system, improved fee collection, and consequent cost recovery;
- (iv) Mainstreaming the capture of LFG to generate CERs, therefore reducing operational costs and guaranteeing proper long-term operation of the landfill;
- (v) Guaranteed municipal consortia contributions for landfill operation through provincial transfers (*fondos de coparticipación provincial*);
- (vi) Implementation of sub-projects only in provinces and sub-regions with demonstrated ownership, commitment, and demand for services;
- (vii) Implementation of communication campaigns and participation of stakeholders in decision-making; and
- (viii) Adequate technical training for municipalities and provinces.

4. Critical risks and possible controversial aspects

59. Table 5 lists the project’s potential risks and mitigation measures to address them.

Table 5: Project Risks and Mitigation Measures

Risk to Project Development Objectives (PDO)	Risk rating	Risk mitigation measure
(i) Lack of sustained political will to commit to financial sustainability of the project; cost-recovery issues and difficulties in enforcing collection fee charges or tariff increases	M	(i) Financial, institutional, and regulatory eligibility criteria have been set to guarantee sustainability and prepare the provinces and municipalities to access project funding. Financial sustainability is assured through mandatory minimum cost recovery at project entry and mandatory increment in collection of user charges over time for participating municipalities. Moreover, institutional eligibility criteria will include the signature of provincial-municipal agreements in which the municipalities commit to providing necessary funding for final disposal operations. This committed funding will be guaranteed through provincial transfers (<i>fondos de co-participación provinciales</i>).

(ii) Political disagreements between federal and provincial/municipal governments	L	(ii) As a result of the first consultation seminar, the SAyDS received strong commitment from the provinces. Meetings between provincial governors and the Ministry of Health have taken place, and strong support has been ensured. Some of the participating provinces have already earmarked the counterparting funding, and in one case the province will start the civil works by the first half of 2006.
Risk to component results	Risk rating	Risk mitigation measure
Component 1		
(i) Delays due to the NIMBY effect: Communities may not support preparation of Provincial SWM Plans and construction of sanitary landfills because of lack of information or participation.	S	(i) Countrywide consultation started as part of the preparation of the NSWMS, which was launched in October 2005. The NSWMS received wide support from the provinces, private sector, academia, and the best-known NGOs. There is a strong opposition from a limited number of small NGOs that do not accept dialogue with the government. A National Steering Committee representing all the above-mentioned sectors was set up by the SAyDS to review and comment. A communication campaign is under preparation at national level, and specific provincial campaigns will follow before construction of landfills begin.
(ii) Lack of technical and managerial counterpart capacity at national and local levels, particularly to prepare provincial SWM plans	L	(ii) Eligibility criteria will include establishment of a specialized project team in the SAyDS and coordination units at provincial level. A National Training Program on SWM and CF will be implemented. A toolkit including "model" legal inter-municipal agreements, provincial legal frameworks, bidding documents, contractual agreements and a set of minimum standards for landfill construction (SAyDS decree) were developed as part of project preparation.
Component 2		
(i) Lack of private bidders for designing building and operating the proposed new landfills.	M	(i) The GOA has prepared a model bidding document in accordance to the World Bank's Procurement Policies that will ensure a transparent process. In addition the GOA has assessed the potential interest of private companies to participate in the bidding processes. Also the potential revenues from Carbon Finance and the fact that the funds will come mainly from the Federal Government are important incentives for private sector participation.

(ii) Poor performance by the legal entities established to manage and supervise the newly constructed landfills.	L	(ii) The model Inter Municipal Agreements to be used under the project establishes the legal and financial guidelines for the entities, based on best practice. The IMA clearly defines responsibilities and organization of the consortiums so to ensure proper functioning. In addition, training under component 1 of this project will be provided to help strengthen the capacity of local personnel to perform their tasks.
Component 3		
(i) Delays in solving social issues related to waste pickers	M	(i) A social assessment was carried out during project preparation to develop adequate social programs for waste pickers. A toolkit is being prepared for the establishment of "social" companies, and El Ceibo, an experienced and organized group of waste pickers, has been hired as a consulting group to lead the dialogue with provincial waste pickers.

L = Low; M = Medium; S = Substantial

5. Loan conditions and covenants

60. The Loan Agreement does not contain any condition of effectiveness.

D. APPRAISAL SUMMARY

1. Economic and financial analyses

61. Project preparation activities included the elaboration of different economic and financial studies. The first of these was an assessment of the costs and benefits of the potential sub-projects to be implemented under component 2 (Construction of Regional Landfills). The study (Sanguinetti 2005) identified and quantified the private, environmental, and social costs associated with both the current SW final disposal practices (open dumping) and the possible future implementation of the sub-project (Regional Sanitary Landfills) in a group of selected municipalities and analyzed and compared the costs and benefits of both scenarios. The main conclusion was that the overall costs of implementing environmentally sound final SW disposal systems are lower than the current costs of open dumping once the externalities on the environment and people's health are taken into account. A summary of the study is included in Annex 9.

62. An additional assessment was made of the financial and economical aspects of SWM in selected Argentinean provinces and municipalities. The analysis showed that most municipalities currently have severe deficiencies in the financial management of SW services. In some case, SWM cost recovery may be as low as 19 percent (see Annex 1). Moreover, municipal governments lack precise cost accounting registries, making it difficult to plan SWM budgets and design efficient tariff systems. With this in mind, the project design included as part of component 1 training in budgeting, cost accounting, and financial monitoring to improve urban finances in the participating municipalities. To strengthen SWM financially and ensure the sustainability of project interventions, the team included in the eligibility criteria for component 2 minimum requirements for cost recovery, such as the implementation of a tariff system that would allow at least to achieve a 50 percent cost recovery. Finally, the assessment showed that the fiscal impact of the project (Annex 9) is marginal in the budget of the Ministry of Health and Environment and moderate compared to the expenses allocated to environmental activities in the provinces and municipalities.

2. Technical

63. The project supports the promotion of integrated SWM practices in Argentina through the construction of treatment and final disposal facilities operated by multiple municipalities. The location and design of the regional sanitary landfills depend on environmental, economic, social, and operational considerations. Those parameters will be determined from the results of studies carried out to prepare the Provincial SWM Plans. The technical characteristics of the sanitary landfills will comply with environmental and safety standards set by the Federal Government and the Bank's safeguard policies. The project will finance the following activities:

- (i) Preparation of Provincial Solid Waste Management Plans;
- (ii) Construction of the landfill's basic infrastructure and the first waste disposal cell (expected useful life of 4 years);
- (iii) Construction of a recycling facility where feasible;
- (iv) Construction of transfer stations where necessary;
- (v) Construction of a landfill gas capture and flaring system;
- (vi) Design of minimization plans;
- (vii) Communication campaigns; and
- (viii) Closure of open dumps.

64. The design of the new sanitary landfills will take into consideration the need to maximize generation and capture of methane in order to benefit as much as possible from Certified Emission Reduction potential revenues. Therefore, the landfill cells will have to comply with the following minimum design standards:

- (i) Sequenced filling in phases of a minimum of 3–4 years to achieve depths of more than 10 m;
- (ii) Bottom liner with a guaranteed permeability of less than 1×10^{-9} m/s;
- (iii) Leachate collection and treatment system;
- (iv) Landfill gas collection system;
- (v) Daily cover; and
- (vi) Final cover with a maximum permeability of 1×10^{-7} m/s.

3. Fiduciary

65. This section discloses findings and agreements from the Financial Management Assessment prior to PAD distribution to SECBO. This assessment has taken into consideration the experience and general performance of the existing PIU for the Bank-financed Pollution Management Project, Loan 4281-AR (P006052): effectiveness 04/27/1999, closing date 12/31/2005, loan amount US\$6 million (original amount US\$18 million, cancelled US\$12 million). The Financial Management Assessment found the PIU of the existing Pollution Management project to be appropriately staffed in terms of financial management, with support provided by SAyDS. This project will assume financial management responsibilities for the proposed project.

66. The aim of the Financial Management Assessment is to determine whether the implementing entity of the proposed project has acceptable financial management arrangements in place in accordance with the guidelines issued by the Financial Management Board on June 30, 2001, and revised on October 1, 2003. The assessment will analyze to what extent the FM system ensures that (i) funds are used only for the intended purposes in an efficient and economical way, (ii) accurate, reliable, and timely periodic financial reports are prepared, (iii) the entity's assets are safeguarded, and (iv) assets are subject to acceptable auditing arrangements. The proposed financial management arrangements meet minimum Bank requirements, and the NUSWU has sufficient capacity and resources to implement them.

67. While project implementation involves provincial and municipal participation at technical and institutional level, the FM responsibilities will remain at central level. The NUSWU, with a simplified flow of funds, will direct the flow of funds from the central level to the consultant or supplier bank account in participating areas. The NUSWU will be in charge of project coordination and in control of implementation. The NUSWU has already participated in the Pollution Management Project, which is still under implementation. Taking into account the experience and performance of the existing unit, no relevant issues are expected

68. The Financial Management Assessment will result in an Action Plan comprising proposed FM improvements to be carried out by the borrower for its full implementation. The following main issues identified to date will be included in the Action Plan:

- (i) Set a separate budgetary line in the Ministry's annual budget to keep track of project execution (prior to effectiveness); and
- (ii) Adjust the existing Administrative Operational Manual, which comprises the internal control system and procedures to be implemented, and submit it for Bank approval. Adjustments will include preparing the Chart of Accounts for the project, agreeing on format and contents of the annual financial statements and the FMR format for monitoring and evaluation purposes, and setting up terms of reference for the external auditing.

69. Works initially financed with counterpart funds by participating provinces and municipalities, and the OM will contain provisions about the way this counterpart funds will be provided. Funds will be transferred from Provinces and Municipalities to a dedicated account before the initiation of works on those municipalities.

70. Procurement activities will be carried out by a NUSWU located at the National Directorate of Environmental Management of SAyDS. The NUSWU will take advantage of the existing Pollution Management (Loan 4281-AR) PIU. The Procurement Capacity Assessment revealed that the existing PIU is appropriately staffed in terms of procurement and that legal support is provided from SAyDS. The procurement expert is a civil engineer with good experience in Bank procurement. An Independent Procurement Review to the 4281-AR carried out during project implementation, did not reveal any issue of particular concern. Procurement risk is rated as AVERAGE.

4. Social

71. In the first half of 2005, government counterparts of the SAyDS, in close coordination with the Bank's technical team, commissioned a social assessment to better understand the possible impact of the proposed project on individuals and communities who depend on their work as waste pickers at the dumpsites. In addition, the assessment determined ways to constructively integrate provincial and municipal authorities, community actors, and neighbors during the design and implementation of the project.

72. GOA officers commissioned the consulting firm SIGLA to carry out the study and monitored its implementation in close coordination with Bank technical staff. The study included a comprehensive methodology based on a literature review; analysis of secondary data; focus group discussions with neighbors, merchants, informal waste pickers, and civil society leaders; in-depth interviews with local and provincial authorities, service providers, informal waste pickers, recyclers, and civil society organizations; and a survey of 1,260 waste producers. Field work was conducted in two provinces (Chubut and Tucumán) in six locations (San Miguel de Tucumán, Concepción, La Cocha, Trelew, Comodoro Rivadavia, and Esquel). In addition, and in the framework of the Sectoral Environmental Assessment (SEA), a second consulting firm, Cooprogetti, interviewed over 100 waste pickers at dumpsites.

73. The main findings of the social assessment are summarized below and presented in greater detail in Annex 10.

- (i) Informal waste pickers operate in many of the appraised dumpsites;
- (ii) Waste pickers migrate, following new final waste destinations;
- (iii) In many cases, children have access to dumpsites and work next to their parents;
- (iv) Waste separation at origin can be done with well-structured public education campaigns at extremely high cost;
- (v) Informal waste pickers are not homogenous groups and tend to resist formalization;
- (vi) Successful and sustainable solid waste management projects require the development of social activities;
- (vii) There is room for private sector involvement along the lines of the companies' corporate social responsibility agenda; and
- (viii) Low trust in government officials may require strategic partnerships with civil society organizations.

74. The project will address these issues through the implementation of plans to provide social inclusion for the waste pickers working only at the dumpsites being closed or rehabilitated by project activities. This social component was designed to mitigate the project's social impacts, ensuring that the waste pickers will not be affected by loss of income. During project preparation, a number of successful initiatives were identified both in Argentina (El Ceibo, Pepe Sanchez, CEAMSE's Norte III Recycling Program) and overseas (CEMPRE in Brazil). Waste picker cooperatives have been operating for almost 20 years in Sao Paulo, Brazil, where NGOs provide technical support and private sector companies provide the necessary equipment and training. This experience and the lessons learned were taken into consideration during project design. Specific activities are described in section 36 and Annex 4.

75. Sub-projects (closure, construction of new landfills, and construction of transfer stations) that after environmental and social screening may trigger the resettlement safeguard will not be eligible for project funding.

5. Environmental

76. The project's environmental impacts are expected to be minimal and manageable. All of the new landfill sites to be chosen will meet the legally binding technical and siting criteria to avoid significant adverse impacts on (i) wetlands or waterways of any kind, (ii) aquifers, (iii) existing or proposed protected areas or other critical natural habitats, (iv) involuntary resettlement, (v) lands inhabited or claimed by indigenous communities, and (vi) sites of cultural (archaeological, historical, religious, or paleontological) interest. In fact, the project will yield important environmental benefits because it will not only strengthen the institutional capacity of the environmental authorities and assist the government in reviewing environmental policies and regulations, but also construct environmentally adequate and socially acceptable final solid waste disposal facilities in selected municipalities that currently practice open dumping. The project design lays out provisions to ensure that potential impacts from the siting of such facilities are assessed and mitigated in accordance with the Bank's safeguard policies.

77. Project preparation included the elaboration of a Sectoral Environmental Assessment (SEA) for solid waste that addressed structural issues in the legal and regulatory framework; proposed sectoral guidelines for the design, construction, and operation of landfills; and defined institutional environmental management responsibilities. The study also proposed enhancement measures to ensure that participating institutions have the capacity to address any environmental issues associated with the project. Moreover, the SEA will serve as guidance for the policy and institutional-level strategic planning under component 1. As part of the SEA, two important tools were developed to ensure the environmental and social integrity of any project intervention under component 2. The first tool is a detailed Environmental Management Framework (EMF) for civil works. The EMF outlines the required screening criteria for site selection, including those noted in the previous paragraph, as well as mitigation and management procedures. Municipalities will have to complete the site-specific Environmental Impact Assessments (EIA), including the final determination of the site, before undertaking construction of landfills. The second tool is a Sectoral Environmental Management Plan (SEMP), which includes the preparation of technical standards for the design and construction of landfills, guidelines for the preparation of municipal SWM plans, environmental education and awareness programs, an institutional strengthening program, and strategies to provide incentives for recycling and waste minimization.

78. Because the project will support investments in locations yet to be determined, municipalities seeking finance under component 2 will have to apply the EMF as part of their site selection and landfill design and adopt the SEMP as part of the construction process. If a pre-identified landfill project is proposed for retroactive financing, the municipalities must update and retrofit the environmental work carried out for that specific case to meet the requirements of the EMF, including consultation and disclosure of all Environmental Impact Assessment (EIA) reports.

79. All relevant stakeholders were consulted as a part of the process of the preparation of the SEA. Additional consultations with local communities are planned during the implementation of the project, as part of the preparation of landfill project-specific EIAs and EMPs. The SEA will be available at the offices of the NUSWU and in the World Bank's Infoshop before Board approval. Future landfill project-specific EIAs and EMPs will similarly be made available to the public in each province.

6. Safeguard policies

80. Table 6 lists the safeguard policies triggered by the project.

Table 6: Safeguard Policies, Argentina NUSWM Project

Safeguard policy	Yes	No
Environmental Assessment (OP/BP/GP 4.01)	[X]	[]
Natural Habitats (OP/BP 4.04)	[]	[X]
Pest Management (OP 4.09)	[]	[X]
Cultural Property (OPN 11.03, being revised as OP 4.11)	[]	[X]
Involuntary Resettlement (OP/BP 4.12)	[]	[X]
Indigenous Peoples (OD 4.20, being revised as OP 4.10)	[]	[X]
Forests (OP/BP 4.36)	[]	[X]
Safety of Dams (OP/BP 4.37)	[]	[X]
Projects in Disputed Areas (OP/BP/GP 7.60)	[]	[X]
Projects on International Waterways (OP/BP/GP 7.50)	[]	[X]

Environmental Assessment Policy

81. Project interventions would trigger the Bank's Environmental Assessment Safeguard Policy OP 4.01. To comply with this policy, the borrower has prepared an EMF that includes screening criteria for site selection and a SEMP that specifies environmental guidelines for the design and construction of landfills and for the respective EIA. The team's environmental safeguard specialist reviewed the EMF and SEMP tools and found them acceptable to the Bank. The screening criteria will be used to identify the typology of each sub-project proposal, while the environmental guidelines will serve for the preparation of specific EIAs and EMPs to be considered prior to construction and operation of each landfill project.

82. Furthermore, the SEMP includes specific provisions mandated for the design and construction of a new landfill and requires the adoption of certain standards and measures for the design, bid tendering, construction, operation, and maintenance of the landfill and associated works.

7. Policy exceptions and readiness

83. The project does not require any exceptions from Bank policies and meets the regional criteria for readiness for implementation set forth in the procurement and financial management assessments.

Annex 1: Country and Sector Background

ARGENTINA: National Urban Solid Waste Management Project

General Context

1. Argentina's 2.8 million square kilometers encompass a wide variety of climates and natural habitats, ranging from frozen tundra to deserts and from mountainous regions to coastal areas. Those varied geomorphologic conditions are also reflected in demographic and economic distribution disparities that strongly influence all aspects of solid waste management (SWM). Argentina is a highly urbanized country, with 90 percent of the population living in cities. Nearly half of the population is concentrated in the five largest urban centers: Buenos Aires Metropolitan Area, Gran Córdoba, Gran Rosario, Gran Mendoza, and Gran La Plata. According to the latest national census in 2001, the total population was 36.3 million, with a decreasing growth rate—from 1.7 percent in the 1970s to 1.12 percent in 2001—resulting in part from a stagnating birth rate. Since the economic crisis of 2001, Argentina has implemented various strategies in the productive sectors to reactivate national economic activities. As a result, the country has regained its status as a strong exporter of raw materials and industrial goods. Unemployment has decreased gradually, from 18 percent in 2000 to less than 12 percent in 2005. Overall, after difficult negotiations with creditors and multilateral banks, Argentina's GDP has grown steadily in recent years, and average income per capita also has increased.

2. The country generates 12.3 million tons/year of solid waste (SW), nearly one-third of it in the province of Buenos Aires. About 60 percent of the waste, or 20,000 tons/day, is disposed in open dumps and the rest in controlled or semi-controlled dumps. The main problem related to solid waste management (SWM) is inadequate final disposal, which causes significant environmental and health problems such as groundwater and surface water pollution, air pollution from waste burning, negative visual impact, and disease vectors. The high concentration of waste generation in the main metropolitan areas, combined with the lack of proper final disposal facilities or official information campaigns, has brought the SWM issue to the front page of the country's newspapers. However, in most cases the population is concerned solely with removal of garbage from their curbsides and has not interest in knowing its final destination or paying for safe final disposal. Strong environmental education and awareness-raising campaigns are needed in Argentina to sensitize public opinion to the environmental and social aspects of this issue.

3. Waste pickers work in open dumps, while *cartoneros*, or cardboard collectors, generally carry out recycling on an informal basis. There is only one formal, well-operated recycling plant in Argentina, in the city of Manipur, Mendoza. A few small municipalities have attempted to produce compost, but the quality does not meet commercial standards. There is no legislation in Argentina requiring control of landfill gas emissions, and therefore most of the disposal facilities in the country have only passive landfill gas venting. Nevertheless, as a signatory to the Kyoto Protocol, Argentina can benefit from the Clean Development Mechanism by developing projects to capture and flare methane from landfills, generating additional revenues from the sale of certified emission reductions (CER).

Solid Waste Management Legislation

4. Argentina's Constitution establishes the autonomy of municipalities or town councils to (i) dictate regulations, (ii) elect authorities, (iii) self-administer, and (iv) self-finance. Nevertheless, the provinces have to regulate the institutional, political, administrative, economic, and financial content and scope of this municipal autonomy. Because of these institutional and legislative structures, urban SWM primarily falls under the jurisdiction of the municipalities. More precisely,

the municipalities must guarantee and establish frequencies and methods for collection, transportation, and final disposal of SW. The provinces are responsible for enforcing environmental regulations and controlling the impacts of final disposal.

National Regulation

5. The Federal Government has the power to dictate national regulations concerning minimum environmental protection requirements (*presupuestos mínimos*). Law No. 25.916 on Integrated Management of Domestic Waste defines urban solid waste as “all materials, objects and substances generated through consumption or development of human activities that are later disposed of. The origin may be residential, urban, commercial, sanitary, industrial, or institutional, with the exception of those regulated by specific norms.” The Law lays out the following national policy principles and guidelines for provincial and municipal regulation of urban SW:

- General principles and objectives for waste management that have to be reflected in local policies and legislation:
 - Promote recycling through adequate methods and processes and provide incentives for source separation.
 - Minimize the quantity of waste going to final disposal facilities.
 - Prevent and minimize the negative environmental impacts of waste handling.
- Obligations of each local jurisdiction:
 - Implement integrated solid waste management within its territory.
 - Minimize the negative environmental impacts of waste handling.
 - Dictate the necessary regulations to enforce the law, including the authority to sign agreements that facilitate implementation of regional strategies for one or more aspects of solid waste management.
 - Guarantee collection of domestic waste (defining methods and frequency) and transportation to authorized final disposal sites. Establish waste treatment and final disposal methods.

6. General Environmental Law No. 25.675 prescribes instruments such as Environmental Impact Assessments and basic norms to avoid or mitigate environmental damage. Public participation and access to the information are also essential aspects of this legislation. The environmental regulations comprised under this Law apply to all activities that may affect the environment and therefore cover any waste management project. Environmental Protection Law No. 25.612/02 is the national legislation concerning waste from industrial activities. This Law establishes general guidelines for management of industrial, requiring adequate treatment and final disposal. However, no national legislation provides technical requirements for landfill construction or operation. Norms for emissions from landfills may exist only at provincial level, as in the province of Buenos Aires.

Provincial Legislation

7. Argentina’s provinces differ significantly in terms of the extent and contents of waste management legislation. Mendoza, Santa Cruz, and Córdoba, have extensive legislation, while other provinces have very basic legislation or none at all. The main problem in most provincial legislation is the lack of a regulatory framework. One possible way to improve solid waste management (SWM) at provincial and municipal level is to establish inter-municipal consortia to deliver public services within the existing legal framework. This modality of cooperation may facilitate the implementation of better SWM legislation and practices and thereby promote economic and social development.

Solid Waste Management

8. Argentina faces serious challenges in managing solid waste, aggravated by the profound economic crisis of the past 3 years. Today an estimated 40 percent of the population still lives below the poverty line. In 2002 approximately 30,000 families were forced to earn their livelihoods from informal waste collection in urban areas and dumpsites. The cost to society of this economic marginalization is high in terms of public health, social impacts, and environmental degradation.

9. Per capita waste generation in Argentina has increased considerably in recent decades and now lies between that one of developing countries and industrialized countries. With increasing waste generation, poor or inadequate waste management becomes a greater concern. Table 1.1 lists Argentina's waste generation pattern by province.

Table 1.1. Solid Waste Generation in Argentina, by Province

Province	Population (2004 estimate)	Generation per capita (kg /person/day)	Total solid waste (1,000 tons / year)
Buenos Aires	14,312,138	0.83	4,268
Catamarca	359,963	0.69	90
Ciudad de Buenos Aires	2,721,750	1.52	1,493
Córdoba	3,177,382	1.05	1,204
Corrientes	979,223	0.87	306
Chaco	1,053,335	0.61	232
Chubut	433,739	0.95	148
Entre Ríos	1,209,218	0.60	261
Formosa	518,000	0.65	122
Jujuy	650,123	0.71	166
La Pampa	314,131	0.98	111
La Rioja	315,744	0.77	88
Mendoza	1,637,756	1.15	678
Misiones	1,033,676	0.44	163
Neuquén	508,309	0.92	169
Río Negro	571,013	0.86	178
Salta	1,157,551	0.76	316
San Juan	655,152	0.96	226
San Luis	399,425	1.12	161
Santa Cruz	211,336	0.82	63
Santa Fe	3,079,223	1.11	1,235
Santiago Del Estero	852,096	0.83	255
Tierra Del Fuego	113,363	0.64	26
Tucumán	1,405,521	0.73	369
TOTAL	37,669,169	0.91 (average)	12,325

Source: Argentina's National Solid Waste Management Strategy, 2005.

10. Table 1.2 shows a projection of the country's total solid waste generation between 2004 and 2025.

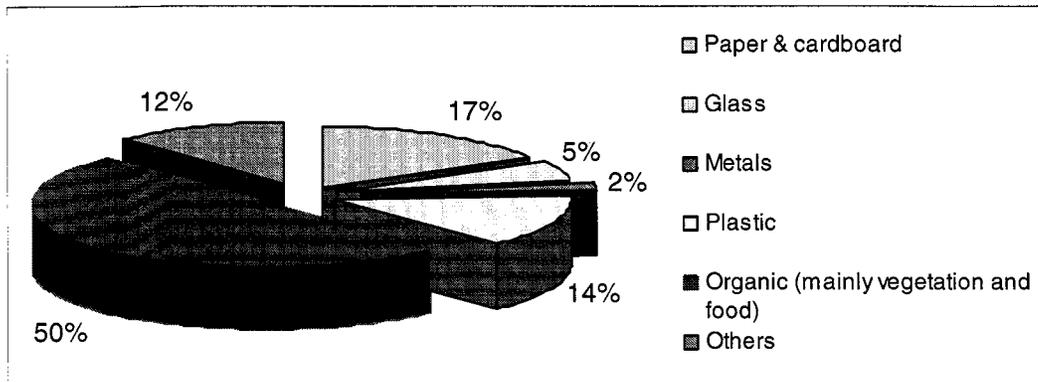
Table 1.2. Estimation of Solid Waste Generation in Argentina 2004 and 2025

Indicator	2004	2025
Daily generation per capita (GPC) (kg / inhabitant/day)	0.91	1.13
Annual generation per capita	333	415
Population	37,669	47,463
Total SW generation (1,000 tons/day)	12,325	19,107

Source: Argentina's National Solid Waste Management Strategy, 2005.

11. In spite of the increase in cardboard and polyethylene terephthalate (PET) consumption, municipal solid waste in Argentina is still dominated by biodegradable organic material (Figure 1.1)

Figure 1.1. Solid Waste Composition in Argentina



Source: Argentina's National Solid Waste Management Strategy, 2005.

Organization and Operation

12. Authorities have limited knowledge of responsibilities and relevant national and provincial legislations for waste management. Another important aspect that affects organization and operation of SWM systems in Argentina is the lack of formal provincial and municipal programs for periodic collection of data on general waste indicators such as generation (e.g., quantities, qualities, source distribution) or cost structures of collection, transport, and final disposal activities. In consequence, provincial and municipal authorities lack the necessary information for effective decision-making, organization, and planning.

13. Solid waste collection and street cleaning have been carried out properly in most municipalities, because medium-size and large municipalities rely on private contractors to provide the service. The degree of coverage (the percentage of domestic and commercial generators that receives waste hauling services) is between 90 percent and 98 percent in urban areas but much lower in rural areas.

14. Final disposal of urban solid waste represents a significant problem for local governments. A very small percentage of waste is finally disposed of under environmentally acceptable conditions,

especially outside the metropolitan area of Buenos Aires. Approximately 60 percent, or 20,000 tons/day, of the total solid waste generation in the country is disposed of in open dumps or semi-controlled dumps. This kind of disposal is even more prevalent in small and medium-size cities, as shown in table 1.3.

Table 1.3. Solid Waste Disposal in Argentina, by Size of Municipality and Disposal Category

Municipal category (by number of inhabitants)	Population	Generation per capita (kg/per/day)	Solid waste (tons/day)	Disposal category (tons/day)		
				Controlled landfill	Semi- controlled dump	Open dump
< 9,999	4,347,361	0.78	3,408	0	978	2,430
10,000–49,999.	6,906,234	0.78	5,401	295	1,659	3,447
50,000–99,999.	3,699,575	0.89	3,274	574	860	1,840
100,000–199,999	3,799,197	0.97	3,700	156	3,167	377
200,000–499,999	9,136,043	0.74	6,733	3,707	2,419	608
500,000–999,999.	4,348,264	1.07	4,661	2,281	2,380	0
>1,000,000	5,432,495	1.30	7,057	7057	0	0
	37,669,169	0.91	34,235	14,070	11,463	8,702
Total percentage of SW disposed	–	–	100 %	41.1 %	33.5%	25.4%

Source: Argentina's National Solid Waste Management Strategy, 2005.

Economic and Financial Aspects

15. Today in Argentina it is very difficult to collect fees for solid waste management. On average, the percentage of generators that pay their fees regularly is low, between 40 percent and 60 percent. In extreme cases tariff payment is 15 percent or lower. This means that most of the population enjoys the services free, regardless of their economic situation. As a result, municipal governments face a huge deficit in covering SWM costs, and the burden of proper final disposal translates into indiscriminate open dumping of urban refuse. Table 1.4 shows fee collection levels in different municipalities.

Table 1.4. Examples of Municipal SWM Tariff Payment

Municipality	Province	Population	Percentage of payment
Pilar	Buenos Aires	233,508	40.8
Quilmes	Buenos Aires	518,723	49.3
San Miguel	Buenos Aires	253,133	66.4
Catamarca (Capital)	Catamarca	141,260	39.6
Tinogasta	Catamarca	14,509	85.2
Bell Ville	Córdoba	31,949	54.7
La Carlota	Córdoba	11,505	32.4
Laboulaye	Córdoba	19,815	43.6
Las Varillas	Córdoba	14,583	79.6

Marcos Juarez	Córdoba	24,136	35
Rio Ceballos	Córdoba	16,406	30.5
Charata	Chaco	27,813	14.9
General San Martin	Chaco	31,758	28.6
Puerto Madryn	Chubut	57,791	45.5
Trelew	Chubut	89,547	25.2
Goya	Corrientes	87,235	31.1
Mercedes	Corrientes	35,207	65.4
Saladas	Corrientes	18,333	58.6
Santo Tome	Corrientes	22,534	41.4
San Jose	Entre Ríos	14,965	95.9
Metan	Salta	28,872	31.8
Esperanza	Santa Fe	35,869	82.1
Funes	Santa Fe	14,665	49.3
Tostado	Santa Fe	14,249	37.1
Chimbas	San Juan	73,829	34.6
Famailla	Tucumán	30,951	74.2
Lules	Tucumán	28,359	48.1
San Miguel de Tucumán	Tucumán	527,607	53.8
Average			50.5

Source: Sanguinetti, Juan , *Economic and Financial Analysis of the Solid Waste Management Sector in Argentina*, 2005.

16. Because municipal governments lack a clear understanding of the costs associated with SWM, the value of the tariffs is completely arbitrary, with no economic or technical basis. The fee is often related to the size of the household as a percentage of the property tax or to the area of the dwelling (including the garden). In other cases, the fee is consolidated with other public service charges such as electricity or water. These cases are not common practice, and the positive effect of fee consolidation on improving fee collection for SWM has not been adequately disseminated. Because industrial waste similar to domestic waste, does not usually have a specific fee, the Polluter's Pay Principle is not applied. As a result, when combined with the payment factor, the range of cost recovery for the SWM system varies enormously among Argentinean municipalities, as shown in table 1.5. The analysis is based on the provinces and municipalities initially participating in this project.

Table 1.5. SWM Costs and Percentage of Cost Recovery in Selected Municipalities

Area	SWM cost ¹ in AR\$	SWM cost as percentage of total municipal budget	Income from SWM fee collection in AR\$	Percentage of SWM fee payment	SWM percentage of cost recovery
Mendoza Metropolitan Area					
Capital (2002)	3,395,507	10.7%	6,411,808 ²	83%	189%
Guaymallén (2002)	2,538,624	10.6%	1,594,155 ²	37%	63%
Godoy Cruz (2002)	5,072,047	18.0%	2,997,689 ²	45%	59%

La Heras (2002)	5,123,427	28.4%	1,279,305 ²	28%	25%
Lújan (2002)	4,066,549	22.3%	2,186,778 ²	60%	54%
Maipú (2002)	3,034,164	17.4%	1,736,696 ²	37%	57%
Lavalle (2002)	722,414	14.8%	235,761 ²	53%	33%
Central Region					
Tupungato (2002)	755,200	16.0%	268,270 ³	10%	36%
Tunuyan (2002)	917,920	16.0%	929,320 ³	46%	101%
San Carlos (2003)	812,640	16.0%	427,520 ³	30%	53%
Eastern Region					
San Martín (2002)	2,375,100	21.0%	1,717,950 ³	46%	72%
Rivadavia (2002)	1,099,575	13.5%	819,510 ³	23%	75%
Junin (2002)	789,070	19.0%	360,630 ³	38%	46%
Santa Rosa (2002)	300,600	10.0%	62,120 ³	19%	21%
La Paz (2002)	212,160	6.5%	85,510 ³	46%	40%
Chubut Province					
Puerto Madryn (2004)	1,780,000	7.1%	1,554,000	46%	87%
Rawson (2003)	645,138	5.0%	840,000	30%	130%
Trelew (2004)	1,903,200	4.3%	2,119,386 ⁴	n/a	111%
Comodoro Rivadavia (2002)	4,484,646	6.0%	6,600,000 ⁵	40/60%	147%
Tucumán Province					
San Miguel de Tucumán (2004)	22,080,000	8.8%	12,302,989	53%	56%
Santa Cruz Province					
Río Gallegos (2003)	4,748,350	9.0%	879,588	n/a	19%

¹ Includes waste collection, urban and street cleaning, waste transfer, and final disposal

² Income from property tax

³ Total income from municipal fees according to the Provincial Finance Department

⁴ Income from municipal services fee, including waste collection, water distribution, sewage, and other services

⁵ Urban cleaning fees

Source: Sanguinetti, Juan, *Economic and Financial Analysis of the Solid Waste Management Sector in Argentina*, 2005

Recovery and Recycling

17. Studies in Argentina show a potential for recycling up to 30 percent of waste materials, but this potential is limited by current technological, technical, and economic constraints. Moreover, there is little culture of recycling in the country. Waste pickers collect most recyclable materials, searching through garbage piles in the streets or at dumpsites and sanitary landfills. There is little experience with source separation or privately organized recycling. Nevertheless, in some cases waste pickers have successfully organized to establish recycling cooperatives, thus institutionalizing their activities and improving their social, working, and economic conditions. Table 1.6 shows a sample of recycling percentages and selling prices in different areas of the country

Table 1.6. Examples of Recycling Percentages and Selling Prices in Argentina

Material	Termas de Río Hondo		Mendoza Metropolitan Area		Chascomús	
	Estimated recycling percentages and prices		Estimated recycling percentages and prices		Estimated recycling percentages and prices	
	%	Unit price AR\$/kg	%	Unit price AR\$/kg	%	Unit price AR\$/kg
Paper and cardboard	18.72	0.25	9.1	0.1	12	0.15
Plastics	20.26	0.60	10.3	0.2	10	0.10
Metals (iron)	3.13	1.00	0.9	1.0	4	1.80
Metals (non-iron)	0.30	2.00	0.2	3.2	-	-
Glass	7.27	0.10	2.6	0.1	5	0.20

Source: Argentina's National Solid Waste Management Strategy, 2005.

18. There is a market for recyclable materials in Argentina, recovered either formally or informally. An illustrative case is recycling of PET, which has grown in the last years and achieved a certain degree of formality. One of the main reasons behind this phenomenon is that international markets pay attractive prices, so that exports of collected PET bottles provide significant profit margins. Argentina intends to build processing plants to take advantage of these revenues. Table 1.7 shows the growth pattern in PET recycling from 1997 until 2004.

Table 1.7. PET Recycling Data in Argentina

Year	Recycled PET (tons)	Bottles (millions)	Virgin PET (millions)	Percent of Recycled PET
1997	780	18	70.000	1.11
1998	2,700	61	90.000	3.00
1999	3,500	80	105.000	3.33
2000	6,600	150	130.000	5.00
2001	8,580	200	145.000	5.91
2002	10,250	238	115.000	8.91
2003	13,700	342	135.000	10.14
2004	22,100	443	160.600	13.7

Source: Asociación Civil Argentina Pro Reciclaje del PET (ARPET), 2005.

Social Aspects

19. Dumpsites in every medium-size city in Argentina have waste pickers. Their numbers fluctuate according to local economies and the spot price for recyclables. The waste pickers live and work without basic economic or social security, under conditions that are extremely hazardous to health and detrimental to family, social, and educational development. Society has marginalized these groups, and the informality of their activity makes it difficult to integrate their contribution into the SWM system. Rarely have provinces or municipalities designed plans to include waste pickers formally in this sector or in any other economic activity.

20. There are two types of waste pickers in Argentina. The first and larger group, the *cartoneros*, live in the streets of metropolitan areas and are well organized. During the economic crisis of 2001 an estimated 30,000 families were involved in this kind of waste collection. The *cartoneros* mainly work on the streets to separate cardboard, which is picked up by an intermediary who eventually sells the separated materials for recycling. The waste pickers in the second group go through waste at open dumpsites in large metropolitan areas. Criminals may be involved in these groups, making it difficult for authorities and nongovernmental organizations to approach them.

Annex 2: Major Related Projects Financed by the Bank and/or Other Agencies

ARGENTINA: National Urban Solid Waste Management Project

Sector Issues	Projects (Most Active)	Latest Supervision Ratings (Bank Financed Projects only)	
		Implementation Progress (IP)	Development Objective (DO)
Solid Waste Management (SWM)	Argentina – Olavarria LFG Recovery – To mitigate climate change by financing the improvement of municipal SWM, helping the enhancement of potable water and water heating supply in the rural village of Espigas (P088934)	Signed ERPA 12/07/2004	
General Industry and Trade and Government Administration	Argentina – Pollution Management – To strengthen public-private partnerships for pollution management and provide TA for municipal environmental management and municipal and regional pollution management (P006050)	HS	HS
Climate Change and SWM	Uruguay – GEF –MSP Landfill Methane Recovery Demonstration – To eliminate methane emissions from the Las Rosas municipal landfill (P058303)	S	S
SWM	Tashkent – Solid Waste Management – To return the existing SWM system to a satisfactory level of service, improving its technical, financial, and institutional basis (P049582)	S	S
SWM and Government Administration	Bosnia-Herzegovina – Solid Waste Management – To improve solid waste services (collection and disposal) in priority areas and increase administrative and technical capacity to improve cost recovery, encourage private sector involvement, and reduce health hazards (P057950)	S	S
Water, Sanitation, and Flood Protection	Brasilia Environmentally Sustainable Project – To ensure quality water resources by abating water resources pollution loads (P089440)	Bank Approval 08/25/2005	
Sewerage	China – Shanghai Urban Environment APL Phase 2 – To support urban environmental infrastructure, including wastewater and solid waste (SW) management (P075732)	Bank Approval 07/05/2005	
Water, Sanitation, and Flood Protection	Turkey – Municipal Services – To finance activities in water, wastewater, and SW sectors (P081880)	Bank Approval 06/23/2005	
Water, Sanitation, and Flood Protection	India – Third Tamil Nadu Urban Development – To develop sustainable urban investments such as water supply and sanitation, wastewater collection, and SWM (P083780)	Bank Approval 07/05/2005	
Water, Sanitation, and Flood Protection	China – Liuzhou Environmental Management – To construct 1 SW transfer station and 42 waste collection stations with associated vehicles and provide TA to help implement the project’s wastewater, SWM, and municipal sanitation (P081346)	Bank Approval 05/24/2005	

Renewable Energy and SWM	Mexico – Waste Management and Carbon Offset – To reduce greenhouse gas (GHG) emissions supporting the development of three LFG facilities (P088546)	Signed ERPA 03/18/2005	
Health, SWM, and Water and Sanitation	Peru – Vilcanota Valley Rehabilitation and Management – To support the development of a regional SWM system (P082625)	S	S
Power and SWM	Brazil – Nova Gerar Landfill Rio de Janeiro – To minimize GHG emissions by upgrading the waste management disposal system through a gas collection system and a power generation plant (P079182)	Under Preparation	
SWM	Uruguay – Montevideo Landfill Gas Recovery – To help mitigate climate change through the facilitation of market-based mechanisms in support of clean energy sources and technologies (P094495)	Under Preparation	
Water, Sanitation, and Flood Protection	Ghana – Second Urban Environmental Sanitation – To finance the construction of sanitary landfills, improve use of refuse dumps, and scale up private SW collection (P082373)	S	S
Transportation, Government Administration, and SWM	Argentina – Second Municipal Development Project – To strengthen institutional capacity of municipalities and provinces to manage their resources more effectively and increase the efficiency of their systems for delivery of services (P006060)	Closed 06/30/2005	
SWM and Government Administration	Mexico – Second Solid Waste Management Project – To improve solid waste services, strengthen BANOBRAS capacity to provide TA to municipalities to encourage private sector involvement, and safeguard the environment (P007612)	Closed 12/31/2000	
Other Development Agencies			
USAID			
Health and SWM	Egypt – To support the Government of Egypt in privatizing SWM services to reduce health problems (hepatitis and meningitis) and environmental problems in Alexandria and Cairo		
Agriculture and SWM	Sri-Lanka – To compost SW in the city of Colombo to generate a source of quality nutrients for Sri Lanka’s agricultural needs.		
Health and SWM	Vietnam – Ho Chi Minh – To boost the efficiency of SWM and improve the working conditions of informal waste collectors		
IADB			
SWM	Argentina – Integrated SWM in La Pampa – To prepare an integrated SWM Plan for the province		
SWM	Ecuador – Investment Plan for SWM – To provide technical cooperation in SWM		
SWM	Guyana – SWM Program – To design sanitary landfill and implement a municipal SWM department		

Annex 3: Results Framework and Monitoring

ARGENTINA: National Urban Solid Waste Management Project

Project Development Objective	Outcome Indicators	Use of Outcome Information
<p>Improve overall health, environmental conditions, and quality of life of population by developing environmentally and financially sustainable systems for solid waste management</p>	<p>Number of waste pickers no longer working in controlled dumps</p> <p>Percentage of risk reduction of ground water pollution</p> <p>Percentage of risk reduction of explosions at waste disposal sites</p> <p>Reduced landfill gas emissions</p>	<p>Help valuate economically the benefits of improvement in SWM practices</p> <p>Promote the adoption of proper SWM practices throughout the country</p> <p>Promote the use of Carbon Finance as a tool for improving and strengthening SWM practices throughout the country</p> <p>Baseline data and argument for a possible improved repeater project</p>
Intermediate Outcomes	Outcome Indicator	Use of Results Monitoring
<p>Component 1: 1.1 Development and adoption of integrated SWM Plans at provincial level</p> <p>1.2 Increased training and technical capacity for SWM</p> <p>1.3 Development of effective and sustainable financial management for SW services</p> <p>1.4 Design of legal and regulatory frameworks for SWM at provincial and municipal levels</p> <p>1.5 Development of public communication programs</p> <p>1.6 Establishment of Project Management Unit</p>	<p>Component 1: Preparation of Provincial SWM Plans in at least 6 provinces</p> <p>Number of technical and financial management municipal staff receiving training: at least 2 per participating municipality</p> <p>Implementation in at least 10 municipalities of effective tariff systems (expected minimum payment coverage of 50 percent)</p> <p>Enactment of provincial SWM regulatory frameworks in at least 3 provinces</p> <p>Implementation of public communication programs in at least 6 provinces</p> <p>Tariffs based on actual expenditures</p>	<p>Component 1: Show level of commitment from SAyDS, Provincial and Municipal Governments to improve SWM</p> <p>Measure success of training programs and capacity building</p> <p>Strengthen community commitment to pay SWM tariffs and fees</p> <p>Indication of the appropriateness of the different instruments designed to bring together private sector, provincial and municipal authorities to provide an efficient SWM service</p>

	<p>Average number of months from call for proposal to signing contracts</p> <p>Overhead costs as a percentage of total project costs</p> <p>Number of subsidiary agreements signed: at least 6</p>	<p>Asses the performance of the PMU for implementation of the project.</p> <p>Alert in case of inefficient use of resources or project delays</p>
<p>Component 2:</p> <p>2.1 Construction of new sanitary landfills in eligible provinces</p> <p>2.2 Closure or remediation of open dumps</p>	<p>Component 2:</p> <p>Number of constructed landfills: at least 6</p> <p><u>Indicators of sanitary landfill performance</u></p> <p>Percentage of recycled materials (if apply)</p> <p>Tons of SW disposed at new facilities</p> <p><u>Environmental quality indicators</u></p> <p>Volume of greenhouse gas emissions reduced</p> <p>Number of closed or rehabilitated open dumps: at least 3</p>	<p>Component 2:</p> <p>Demonstrate the appropriateness of the design for subsidies</p> <p>Improve enforcement of regulations</p> <p>Disseminate the economic, social, and environmental benefits of inter-municipal sanitary landfills</p> <p>Demonstrate economic and technical sustainability of the SWM system</p> <p>Show political acceptance of sanitary landfills as the best alternative for SW final disposal</p> <p>Support implementation of the National SWM Strategy</p> <p>Support national waste minimization and recycling strategies</p>
<p>Component 3:</p> <p>3.1 Capacity building for social inclusion and management</p> <p>3.2 Technical assistance to conform micro-enterprises or cooperatives</p>	<p>Component 3:</p> <p>Number of informal groups of waste pickers reinserted in formal activities</p> <p>Income generated by the separating micro-enterprises or cooperatives</p>	<p>Component 3:</p> <p>Create innovative mechanisms for marketing recycling materials</p> <p>Demonstrate the capacity of socially excluded individuals to organize themselves and improve their overall quality of life</p> <p>Make society more sensitive to scavengers</p>

Outcome Indicators	Target Values							Data Collection and Reporting		
	Baseline	YR1	YR2	YR3	YR4	YR5	Total	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection
Results Indicators for Each Component										
Component 1: Policy and Institutional Strengthening										
C.1.1. Development and adoption of integrated SWM at provincial level										
<i>Number of provinces with SWM plans</i>	3	2	2	2			9	Annual		NUSWU
C.1.2. Increase training and technical capacity for SWM										
<i>Number of seminars held</i>	0	3	3	3			9	Semi-annual		NUSWU
C.1.3. Development of effective and sustainable financial management for SWM services.										
<i>Percentage of cost recovery through specific SWM fee⁴</i>								Bi-annual		PUSWU / MUSWU
C.1.4. Design of legal and regulatory frameworks for SWM at provincial and municipal levels										
<i>Number of provinces with a new legal framework for SWM</i>	0	0	2	2	2		6	Annual		PUSWU
C.1.5. Development of public communication programs										
<i>Number of programs developed</i>	0	3	2	2			7	Annual		PUSWU / MUSWU

⁴ Baseline and target indicators will be estimated on a case by case basis

Component 2: Construction of new landfills and closure of open dumps										
C.2.1. Construction of new sanitary landfills in eligible provinces										
<i>Number of new sanitary landfills built</i>	0	0	1	2	1	1	1	5	Annual	NUSWU / PUSWU / MUSWU (as the case may be)
<i>Percentage of Solid Waste properly landfilled⁵</i>									Annual	NUSWU / PUSWU / MUSWU (as the case may be)
<i>Volume of GHG emissions reduced</i>	0-	100,000	120,000	200,000	300,000	300,000	300,000	1,020,000	Annual	Independent Verifier
C.2.2. Closure or remediation of open dumps										
<i>Number of closed or rehabilitated open dumps (at least 3)</i>	0		1	1	1			3	Annual	NUSWU / PUSWU / MUSWU (as the case may be)
Component 3: Social Inclusion										
C.3.2. Technical assistance to conform micro-enterprises or cooperatives										
<i>Number of new micro-enterprises or cooperatives created</i>	0	0	1	1	1	0	0	3	Annual	NUSWU / PUSWU / MUSWU (as the case may be)

⁵ Target indicators will be estimated on a case by case basis and only for the service area that will be covered by the new landfill

Annex 4: Detailed Project Description

ARGENTINA: National Urban Solid Waste Management Project

1. The overall objective of the Argentina National Urban Solid Waste Management (SWM) Project is to improve public health and quality of life by reducing the population's exposure to pollutants and disease vectors from solid waste. The project has three components: (i) Policy and Institutional Strengthening, (ii) Investment for construction of new landfills and closure of open dumps, and (iii) Social Inclusion. The components have been designed to ensure successful implementation and address essential aspects of integrated SWM such as capacity building, legal framework, and cost recovery. The largest component in terms of budget, and the core of the project, is component 2, related to construction of SWM infrastructure. This design characteristic is based on Bank experience and demand for SWM projects at provincial and municipal levels. Two of the proposed sub-projects might be implemented on a retroactive basis. Project design included a strong set of eligibility criteria (table 4.3) to ensure project quality and readiness. Each component of the project is described in detail below

Component 1: Policy and Institutional Strengthening (US\$ 4.9 Million)

2. The main objective of component 1 is to finance technical assistance (TA) for the agencies involved in the development and control of sector policies and regulations. This component will strengthen the national institutional capacity of the National Urban Solid Waste Unit (NUSWU). At local level the component will support the capacity of authorities to make informed decisions and develop sustainable SWM services. The component will also support the government's long-term planning for SWM incorporated in the NSWMS. All provinces are eligible for this component, which addresses the following thematic issues related to SWM:

Strategic Planning and Regionalization

3. This sub-component will finance the preparation of integrated SWM plans at municipal and provincial levels. The concepts of strategic planning and regionalization support the establishment of legal multi-municipal final disposal districts, in which a single landfill receives the waste generated by several municipalities. The number of sites per province should be consolidated to minimize investment and operating expenses. This regionalization will result in significant economies of scale for participating municipalities. Both provincial and municipal SWM plans will have to include the regionalization concept in their design. Moreover, development of these plans will be one of the eligibility criteria for receipt of funds under component 2 (Investment for construction of landfills and closure of open dumps).

Training Program on SWM Fundamentals and Cost Recovery Mechanisms

4. To increase the technical capacity of provincial and local government, the project will finance the training of a group of professionals and decision-makers in basic concepts of urban SWM. These concepts include (i) planning and selection of alternative solutions, (ii) identification of investments, (iii) new technologies, (iv) minimization and recycling, (v) schemes for private sector participation, (vi) cost recovery and tariff structure, (vii) educational campaigns, and (viii) evaluation of environmental impacts. The short training will emphasize cost recovery and transparent budgeting and accounting, to encourage the adoption of effective and sustainable financial management mechanisms. The International Solid Waste Association (ISWA) will participate in designing the training course, based on a similar experience to be implemented in Brazil. The final design and training will be the responsibility of a local institution supervised by the Secretariat of Environment and Sustainable Development (SAyDS).

5. The implementation of the NTP will include preparation of training materials and delivery of training programs. The training programs will include the following courses:

- (i) *Executive seminars* designed primarily for the mayors of medium-size cities and their assistants, with participating cities given priority for attendance. The main objective will be to introduce basic concepts and fundamentals of SWM, including the strategic approach to SWM, cost recovery, the not-in-my-back-year (NIMBY) phenomenon, and community participation. The duration of each course will be 6 hours;
- (ii) *Introductory courses* for members of the SAYDS and environmental staff at provincial and municipal levels responsible for SWM services. The courses will focus on management of SW services, technologies, environmental and health impacts, separation and recycling, cost recovery, social programs, and community participation. The total duration of each course will be 4 days; and
- (iii) *Special workshops* designed on demand for (i) municipal and provincial administrative and technical personnel on specific topics such as hospital waste, regulatory framework, definition of tariffs and (ii) municipal personnel in charge of landfill operations and daily control where the municipalities provide the service directly.

Monitoring and Evaluation

6. The courses will be given according to the schedule in table 4.1.

Table 4.1. National Training Program Course Schedule

Activity	1 st year	2 nd year	3 rd year	4 th year	5 th year	Total
Executive seminars	1	2	1	1	0	5
Introductory courses	1	2	1		0	4
Special workshops	1	2	1	1	0	5
Total	3	6	3	2	0	14

Technical Studies

7. This sub-component will finance three types of studies:

- (i) Preparation of a national recycling strategy through market analysis and incentives for recycling. The implementation of this activity is one of the main outputs of the National Strategy. It will be an essential analytical piece for the development of the recycling targets at national and provincial levels and is expected to be implemented within the first year of project implementation;
- (ii) National and provincial minimization programs. This is another of the main outcomes of the National Strategy, which specifies the need for a national minimization program and guidelines for the provinces. There is a significant difference in waste generation depending on whether Argentina follows a “low”, “medium” or “high” growth. The actual rate will be

most influenced by economic development. The project will finance a comprehensive study at national level and programs for specific municipalities. The national program will be implemented during the first year of project implementation. Only municipalities or groups of municipalities that already have a sanitary safe and environmentally sustainable operating final disposal facility will be eligible for these programs; and

- (iii) Technical studies for closure/remediation of selected dumpsites. Open dumps have been identified in already participating municipalities, and closure costs have been estimated. However, detailed analysis will be performed to determine the environmental impact and actual costs.

Public Communication and Outreach Programs

8. This sub-component will finance technical assistance (TA) to the SAYDS, provinces, and municipalities to develop and implement public communication programs at the three levels of government. The objective will be to increase education about and public awareness of health and environmental problems linked to open dumping, the role and responsibilities of households in the new SWM system, final disposal technical options and related costs, recycling, and minimization. The expected outcomes are a consensus on and effective use of the new SWM system financed by the project, mitigation of the NIMBY effect, promotion of fee collection, and improved coverage of the topic by the media. By raising public awareness on the importance of proper waste management and promoting greater civil society ownership, this sub-component would also help isolate the project from political pressure and ensure smoother implementation. As part of preparation activities, the project designed a national and two pilot provincial SWM communication strategies.

Project Management and Monitoring and Evaluation

9. The main objective of this sub-component is to support appropriate fiduciary capacity and specialized technical consulting to ensure effective project implementation. The NUSWU will implement the project. This sub-component will specifically finance procurement, environmental, social, and financial management specialists in the NUSWU to ensure the Bank's fiduciary responsibilities. The NUSWU will also (i) act as liaison and maintain dialogue with the provincial governments and inter-municipal consortia, (ii) technically approve provincial and municipal SWM plans, (iii) approve bidding documents and procure according to Bank rules, (iv) review and approve Environmental Impact Assessments (EIA) according to Bank recommendations, and (v) review and provide technical assistance to service contracts. In addition, a robust mechanism will be in place to monitor and evaluate (i) project milestones and indicators, (ii) compliance with final disposal service contracts, (iii) environmental impacts and Environmental Management Plan (EMP) compliance, (iv) beneficiary perceptions of project impact, and (v) the impact of social inclusion plans.

Component 2: Construction of new landfills and closure of open dumps (US\$ 31.5 Million)

10. This component will finance the construction of environmentally and economically sustainable final disposal facilities and the closure of open dumps. Funds under this component will be made available on a nation-to-province partial subsidy basis. The level of funds granted to each multi-municipal investment project will be determined by a Provincial Allocation Formula following Government of Argentina (GOA) recommendation. The temporary subsidy formula for the initial works will consist of two parts.

- (i) A fixed component (50 percent of the cost of the sub-project's initial infrastructure) that reflects the minimum amount of incentive estimated by the GOA to encourage the construction of regional landfills; and
- (ii) A variable component (the remaining 50 percent of the infrastructure cost weighted by the provincial IPMH index) that focuses on compensating the deep socio-economic differences among provinces. Based on the official Household Material Poverty Index (*Indice the Privación Material de Hogares*, or IPMH), this comprehensive index is public and available from the National Statistics Institute (*Instituto Nacional de Estadísticas y Censos*, or INDEC).

11. Because of the variable component, the subsidy will never reach 100 percent. As shown on table 4.2, the total subsidy will range from a minimum of 61 percent for the province with the lowest IPMH index (Santa Cruz) to a maximum of 85 percent for the province with the highest IPMH index (Formosa). The remaining percentage not covered by the temporary incentive will have to be provided by the provinces on cost-sharing basis. Those percentages are only applied to the initial infrastructure costs (civil works, methane capture plant, recycling plant, and first waste disposal module) and not to the total project costs (initial infrastructure + future modules + recurrent costs).

The proposed equation for the subsidy allocation is shown below.

$$S = IC*0.5 + (IC * 0.5*IPMH)$$

where:

- S = Subsidy for each project
- IC = Infrastructure Cost
- IPMH = Poverty index expressed in percentage

Table 4.2. IPMH Index and Provincial Subsidy Allocation

Province	IPMH	Subsidy allocation*
GCBA	14%	57%
Santa Cruz	21%	61%
Tierra del Fuego	22%	61%
La Pampa	28%	64%
Córdoba	31%	66%
Chubut	32%	66%
Neuquén	34%	67%
Santa Fe	37%	68%
Buenos Aires	38%	69%
Río Negro	38%	69%
San Luis	39%	70%
Entre Ríos	42%	71%
Mendoza	42%	71%
La Rioja	44%	72%
Catamarca	51%	75%
San Juan	53%	76%
Tucumán	59%	80%
Corrientes	61%	81%
Salta	62%	81%
Jujuy	63%	82%
Misiones	65%	82%
Santiago del Estero	65%	82%
Chaco	67%	83%
Formosa	71%	86%

*According to the Provincial Allocation Formula

12. Project design also included the establishment of a set of eligibility criteria (table 4.3) to identify regions or multi-municipal districts that can be selected as recipients of the subsidy. While all the provinces will be eligible for TA (component 1), only a limited group will receive funding for investment in final disposal infrastructure (component 2). Eligibility will be based on readiness to work with other municipalities, adopt a strategic planning approach, assume ownership of the project, achieve financial sustainability, and select cost-effective and environmentally sound final disposal solutions.

Table 4.3. Eligibility Criteria for Funds Under Component 2

Stage	Description
<i>Pre-selection</i>	<p>1. Provincial SWM Plan developed with municipal participation and approved by provincial authorities and the NUSWU. The Plan must include the following:</p> <ul style="list-style-type: none"> (iv) Regionalization scheme based on province-specific technical economic analysis (v) Plan for closure of dumpsites (vi) Introduction of appropriate sanitary landfills in conjunction with separation plants and an action plan for a SW minimization program <p>or</p> <p>2. Municipal SWM Plans for those cases involving only individual municipalities.</p> <p>3. Provinces have drafted a legal and regulatory framework for SWM.</p>
<i>Sub-project Selection: Prior to approval for investment financing</i>	<p>4. Landfill siting process concluded, including Environmental Impact Assessment (EIA) and Public Consultation Process of the alternative locations.</p> <p>5. Land Titling: Municipalities will have to demonstrate legal ownership of the land, or legal usage rights satisfactory to SAyDS and the Bank</p> <p>6. Participating municipalities have signed a Inter-Municipal Regional Agreement (IRA) including the following⁶:</p> <ul style="list-style-type: none"> (iv) A legal entity to manage and supervise a shared landfill and transfer stations. Only in specific cases will an entity be eligible for landfill operation. IRAs should include a cost-sharing agreement based on objective criteria such as population or tonnage. (v) Participating municipalities agree to compensate adequately host communities for real or perceived nuisances (if needed). (vi) Municipalities draft an ordinance or by-law requiring commercial establishments, industries, institutions and other large generators to pay a differentiated fee for hauling and final disposal of waste at the regional landfill. <p>7. Provincial - SAyDS Subsidiary Agreement signed and through which:</p> <ul style="list-style-type: none"> (i) The province commits to complement the federal subsidy on cost sharing basis for the construction of a regional landfill and transfer station construction according to SAyDS parameters. (ii) The establishment of provincial and municipal technical teams is required to implement the project. The team's technical characteristics and responsibilities will be described in the Operations Manual (OM).

⁶ See Annex 14 Legal Framework for Inter Municipal Arrangements for further detail

	<p>8. The province and municipalities have incorporated social specialists into their project's teams.</p> <p>9. Municipality or consortia of municipalities have developed a proposal for increasing their cost recovery efficiency through a tariff scheme that will enable them to guarantee a minimum level for economic sustainability of the new SWM (landfill) service. This minimum level should include the attention to both the fee⁷ price and the fees' collection rate. The SAyDS and the Bank will approve this proposal</p> <p>10. Provincial-Municipal Agreement signed, ensuring the economic sustainability of the operation of the new landfill. The agreement will make clear that the municipal economic contribution for operation will be guaranteed by the provincial co participation funds.</p> <p>11. In the cases where the municipality or consortia of municipalities have the intention to provide themselves the operation and maintenance services for the future landfill, they are required to provide proof of having the necessary equipment, technical capacity and adequate personnel needed to operate properly the facilities prior to issuing the public tender for designing and building the new landfill. The SAyDS will evaluate this operation and maintenance capacity and determine if it is acceptable.</p>
<p>Sub-project execution: <i>Prior to release of funds for landfill construction</i></p>	<p>12. Participating municipalities will seek carbon financing by capturing and flaring and/or utilizing landfill gas, or by composting or recycling to reduce methane emissions in the atmosphere. In turn, the revenues will contribute to the sustainability of the SWM system through the provision of additional resources. The participating municipalities agree to transfer ownership rights of the landfill gas to the regional operating entity (consortium of municipalities).</p> <p>13. Municipalities or consortia have agreed to apply the social development framework addressing the needs of informal waste pickers at dumpsites, if applicable.</p>
<p><i>Prior to release of funds for closure/rehabilitation of open dumps.</i></p>	<p>14. Social Inclusion Plans have been duly consulted with the affected waste picker groups and their views and concerns have been taken into account in the design of the Plan.</p> <p>15. Construction of the recycling facilities has been completed and the social inclusion plan is ready to be implemented</p>

13. Provinces and their corresponding regions may become eligible for component 2 at different stages of the project. In a preliminary screening, the project team identified at least 6 potentially eligible regions to be ready within the first 2 years of the project effectiveness date. Other provinces and their regions may become eligible in subsequent years of project implementation.

⁷ The fee refers to the value calculated according to the tariff scheme and which is needed to recover the full cost of constructing, operating and maintaining the new landfill.

Construction of New Sanitary Landfills in Eligible Provinces

14. The selected provinces will be able to request funds for the following:

- (i) Civil works such as construction of only the first waste disposal cell (with a minimum operational life of 4 years), access roads, auxiliary and maintenance buildings, and fences. Containment cells for industrial non-hazardous waste will also be eligible. Sanitary landfills will require a minimum lifespan of 12 years and adoption of minimum technical standards related to strict environmental pollution control (e.g., impermeabilization, leachate draining and treatment, gas control systems, monitoring wells). The SAYDS will be responsible for determining these minimum standards, with the approval of the Bank project team;
- (ii) Setting up of transfer stations where deemed necessary; and
- (iii) Construction and equipment of waste separation plants supporting recycling programs. Eligible sub-projects will need to demonstrate the financial sustainability of the plants based on market assessment studies or social plans aimed at providing a sanitary and safe environment for waste pickers to continue their separation activities in transfer stations or facilities close to the landfill.

Closure or Remediation of Open Dumpsites

15. This sub-component will finance the closure (and remediation where needed) of dumpsites only in participating municipalities. To access these funds, municipalities will require an operating sanitary landfill, a social program for waste pickers, and a technical study for the dumpsite closure.

Sub-Project Information and Results of Regionalization Analysis

16. Project preparation identified six regions in four provinces (Chubut, Mendoza, Santa Cruz and Tucuman) that were eligible for component 2. These provinces have already taken important steps toward adopting an integrated SWM system based on the premises promoted by this project. So far Provincial SWM Plans have been approved by the competent authorities, multi-municipal consortia have been established, provincial regulatory frameworks and procurement documents have been drafted, and actions have been taken to ensure an adequate cost-recovery level to make the SWM system economically sustainable. Construction works are expected to be carried out within the first 3 years of project implementation. Table 4.4 provides detailed information on provincial readiness.

Table 4.4. Provincial readiness to implement integrated SWM

Region	Provincial SWM Plan	Inter-municipal agreement*	EIA under preparation	Cost-recovery strategy***	Bidding documents*	Possibility of retroactive operation
Metropolitan Tucumán	X	X	X	X	X	X
Metropolitan Mendoza	X					
Mendoza Center	X	X	X	X	X	X
Rio Gallegos	X	N/A	X			
Trelew/Madryn/Rawson	X					
Comodoro Rivadavia	X	N/A				

* Cost-sharing agreement under preparation

** Samples of bidding documents sent to Municipalities. Documents under preparation

***Under preparation

17. As part of the project preparation, two technical studies were carried out: (i) a model for calculating maximum economically viable radius for transportation of SW and (ii) a review of the technical and economic data from the Provincial SWM Plans. The model, developed by a team of Argentinian consultants and applied for the decision making of the regionalization scheme, accounted for local conditions and prices. The review verified the costs and preliminary engineering design included in the Provincial SWM Plans and was used for cost estimations. A description of key data for each of the candidate regions and the main results of the regionalization analysis are found below.

Chubut Province: Regions of Comodoro Rivadavia and Puerto Madryn/Rawson/Trelew

18. The province of Chubut has two main economic, political, and social geographical centers, which together account for approximately 80 percent of the population. Based on the results of the Provincial SWM Plan, provincial authorities suggested two SWM districts: the Northeastern Region, including the municipalities of Puerto Madryn, Rawson, and Trelew, and the Southeastern Region, including the municipality of Comodoro Rivadavia. The economic studies proved the impossibility of further regionalization because of extremely long distances, even if an alternate location were considered for a regional landfill between regions. Table 4.5 shows the results of the analysis, taking into account the maximum economic distance.

**Table 4.5. Results of Regionalization Economic Analysis
Chubut Province**

Indicator	Pto. Madryn/Rawson /Trelew	Comodoro Rivadavia
SW generation (tons/day)	170	150
distance to proposed regional Landfill (km)	30	370
Economically viable waste transportation radius (km)	95	95
Total cost of disposing at a local facility (US\$/ton)	\$ 14.60	\$ 16.81
Total cost of disposing at the regional facility (US\$/ton)	\$ 14.60	\$ 59.18

19. Table 4.6 summarizes key information on the sub-regions

**Table 4.6. Data on Proposed SWM Region
Chubut Province⁸**

Data	Comodoro Rivadavia (Southeastern Region)	Pto. Madryn-Rawson-Trelew (North-eastern Region)
Population	144,751	115,000
Population served	139,580	113,333
	96%	99%
Per capita SW generation (kg/day)	1.12	1.5
SW generation (tons/day)	156	170
SW generation (tons/year)	57,060	62,050
Costs (US\$)		
Civil works	\$ 2,073,472	\$ 2,522,353
Closure of dumpsites	\$ 823,872	\$ 509,598
Estimated O&M costs in 4 years	\$ 1,467,017	\$ 1,462,760
Costs eligible for finance	\$ 2,897,345	\$ 3,031,951
% of counterpart funding*	34%	34%
% of project funding	66%	66%
Expected amount granted under Comp. 2	\$ 1,912,247	\$ 2,001,088

Province of Mendoza: Metropolitan and Central Regions

20. The Mendoza Provincial SWM Plan identified three sub-regions eligible for component 2. Metropolitan Region comprises the capital city of Mendoza and all surrounding districts of Godoy Cruz, Guaymallen, Las Heras, Lavalle, Maipú, and Luján de Cuyo. This project will not include the cities of Maipú and Luján de Cuyo because there is already a treatment and final disposal facility in Maipú. The Eastern Region comprises the municipalities of San Martín, Rivadavia, Junín, Santa Rosa, and La Paz. A secondary analysis of the information provided in the Provincial SWM Plan demonstrated the possibility of bundling these two sub-regions through the construction of a transfer station in Eastern Region and the disposal of its additional 180 tons/day of SW into the Metropolitan regional landfill. This proposal is based on (i) the distance of only 65 km between the Metropolitan and Eastern regions, less than the maximum economically viable distance of 112 km, and (ii) the relatively good road infrastructure, which makes it technically and economically viable to link the two sub-regions. The third proposed sub-region is Central Region, which is formed by the municipalities of San Carlos, Tupungato, and Tunuyán. The road network is less developed there than in Eastern Region, and the area is sparsely populated. The sub-region lies approximately 130 km from the Metropolitan regional landfill. The economic study showed that the cost of transporting waste from Central Region to the Metropolitan landfill would be higher than the cost of disposing of waste in Central Region's own regional landfill. The risks of vehicle failure or accident also prompted the provincial authorities to decide to keep Central Region as a separate sub-region. Table 4.7 shows the results of the analysis, taking into account the maximum economic distance.

⁸ Foreign materials for construction of landfills are expected to represent around 20% of the total costs

Table 4.7. Results of Regionalization Economic Analysis

Indicator	Metropolitan Region	Eastern Region	Central Region
SW generation (tons/day)	684	180	74
distance to proposed regional Landfill (km)	30	65	130
Economically viable waste transportation radius (km)	72	73	71
Total cost of disposing at a local facility (US\$/ton)	\$ 11.21	\$ 15.12	\$ 17.39
Total cost of disposing at the regional facility (US\$/ton)	\$ 11.21	\$ 13.88	\$ 26.86

21. Table 4.8 summarizes key information about the sub-regions.

Table 4.8. Data on Proposed SWM Region - Mendoza Province⁹

Data	Metropolitan Region	Central Region
Population	1,045,000	97,382
Population served	961,904	92,350
% of Population served	92%	95%
Per cápita SW generation (kg/day)	0.74	0.74
SW generation (tons/day)*	684	74
SW generation (tons/year)*	249,660	26,966
Costs (US\$)		
Civil works	\$ 5,851,303	\$ 1,044,661
Closure of dumpsites	\$ 3,628,161	\$ 602,645
Estimated O&M costs in 4 years	\$ 2,540,220	\$ 425,332
Costs eligible for finance	\$ 9,479,465	\$ 1,647,307
% of counterpart funding**	29%	29%
% of project funding	71%	71%
Expected amount granted under component 2	\$ 6,730,420	\$ 1,169,588

* If the proposal to transfer SW from Eastern Region is accepted, landfill design will consider an additional 180 tons/day, thus approaching 900 tons/day.

** As calculated with the Provincial Allocation Formula.

Province of Santa Cruz: Río Gallegos Region

22. This proposed regional landfill will serve the city of Santa Cruz and nearby rural communities. Studies carried out under the Provincial SWM Plan suggested that it was not feasible to cluster in more municipalities for several reasons. First, Río Gallegos is geographically isolated, with the nearest municipality 500 km away (the maximum economically viable distance is 112 km). Second, most of the trucks that could be used to transfer the waste from other municipalities are old, increasing the risk of accidents and mechanical failure. None of the other provincial cities generates the minimum waste required to establish a mechanized landfill operation. The Provincial SWM Plan recommended the construction of manual landfills as the best alternative for communities or regions generating less than 30 tons/day and semi-mechanical landfills as the best alternative for communities or regions generating less than 50 tons/day. Table 4.9 shows the results of the analysis, taking into account the maximum economic distance.

⁹ Foreign materials for construction of landfills are expected to represent around 20% of the total costs

**Table 4.9. Results of Regionalization Economic Analysis
Santa Cruz Province**

Indicator	Rio Gallegos	Caleta Olivia	Pico Truncado	Puerto Deseado	Las Heras
SW generation (tons/day)	71	29	12	8	7
distance to proposed regional landfill (km)	30	750	750	850	900
Economically viable waste transportation radius (km)	112	101	86	86	77
Total cost of disposing at a local facility (US\$/ton)	\$ 17.31	\$ 22.61	\$ 25.16	\$ 28.16	\$ 28.61
Total cost of disposing at the regional facility (US\$/ton)	\$ 17.31	\$ 135.68	\$ 164.95	\$ 188.96	\$ 226.6

23. Table 4.10 presents key information about the sub-regions.

**Table 4.10. Data on Proposed SWM Region
Santa Cruz Province¹⁰**

Data	
Population	78,962
Population served	76,230
% of population served	97%
Per capita SW generation (kg/day)	0.9
SW generation (tons/day)	71
SW generation (tons/year)	25915
Estimated Landfill Costs (US\$)	
Civil works	\$ 1,450,176
Closure of dumpsites	\$ 1,868,220
Estimated O&M costs in 4 years	\$ 681,204
Costs eligible for finance	\$ 3,318,396
% of counterpart funding*	39%
% of project funding	61%
Expected amount granted under component 2	\$ 2,024,221

Province of Tucumán: Metropolitan Area

24. The Provincial SWM Plan for Tucumán divided the province into six SWM regions, but the economic studies carried out under the plan resulted in recommendations to cluster some of those regions. Gran Tucumán Region (Region 1), which includes the municipalities of Alderetes, Banda del Río Salí, San Miguel de Tucumán, Tafí Viejo, Las Talitas, and Yerba Buena, was the only region identified during project preparation as eligible for component 2. Technical and economic analysis demonstrated that it was not feasible to join an additional region or municipality to Gran Tucumán Region. Nevertheless, the studies resulted in the recommendation to cluster Regions 2 and 3, with a regional landfill situated in the municipality of Monteros (Region 2). The Provincial SWM Plan recommended the construction of manual landfills as the best alternative for Regions 4 and 5.

¹⁰ Foreign materials for construction of landfills are expected to represent around 20% of the total costs

Table 4.11 shows the results of the economic analysis carried out for Region 1, while table 4.12 includes results for Regions 2 and 3.

**Table 4.11. Results of Regionalization Economic Analysis, Region 1
Tucumán Province**

Indicator	Gran Tucu	Region 2	Region 3	Region 4	Region 5	Region 6
SW generation (tons/day)	700	123	160	10	7	7
Distance to proposed regional Landfill (km)	30	90	130	100	90	130
Economically viable waste transportation radius (km)	73	72	72	68	52	52
Total cost of disposing at a local facility (US\$/ton)	\$ 11.31	\$ 15.86	\$ 15.17	\$ 25.53	\$ 28.61	\$ 28.61
Total cost of disposing at the regional facility (US\$/ton)	\$ 11.31	\$ 18.63	\$ 24.37	\$ 30.87	\$ 37.66	\$ 47.28

**Table 4.12. Results of Regionalization Economic Analysis,
Regions 2 and 3 - Tucumán Province¹¹**

Indicator	Region 2 (Monteros)	Region 3
SW generation (tons/day)	123	160
distance to proposed regional Landfill (km)	30	50
Economically viable waste transportation radius (km)	101	105
Total cost of disposing at a local facility (US\$/ton)	\$ 15.86	\$ 15.17
Total cost of disposing at the regional facility (US\$/ton)	\$ 15.86	\$ 7.22

25. Key information about the sub-regions is shown in table 4.13.

Table 4.13. Data on proposed SWM region - Tucumán Province

Data	
Population	1,000,000
Population served	910,000
% of population served	91%
Per cápita SW generation (kg/day)	0.636
SW generation (tons/day)	700
SW generation (tons/year)	255500
Costs (US\$)	
Civil works	\$ 6,662,176
	3,450,750
Estimated O&M costs in 4 years	\$ 3,316,181
Costs eligible for finance	\$ 10,112,926
% of counterpart funding*	20%
% of project funding	80%
Expected amount granted under component 2	\$ 8,090,341

* As calculated with the Provincial Allocation Formula

¹¹ Foreign materials for construction of landfills are expected to represent around 20% of the total costs

Component 3: Social Inclusion (US\$1.5 Million)

26. This component will finance the implementation of plans to provide social inclusion of the waste pickers working only at the dumpsites being closed or rehabilitated by the activities under component 2 (investment in Final Disposal Infrastructure). This component also will help strengthen national and local capacity to assess and manage complex social issues around SWM interventions. Only provinces and municipalities eligible for component 2 will be eligible for component 3. As reflected in the social assessment, this project operates in a complex social situation. A large number of informal waste pickers operate in some of the existing controlled dumps. During project preparation, a number of successful initiatives for social inclusion were identified both in Argentina and overseas. The experience of Brazil's Business Commitment for Recycling (*Compromisso Empresarial para Reciclagem*, or CEMPRE) and Argentina's El Ceibo were considered in the design of the social inclusion component of the project. Waste picker cooperatives have been operating for almost 20 years in Sao Paulo, Brazil, where NGOs provide technical support and private sector companies provide the necessary equipment and training. Component 3 will finance the following specific activities:

- (i) Capacity building in social inclusion and management. This sub-component will finance the participation of Social Inclusion experts as part of the NUSWU, training on social issues for provincial and municipal public officers, and tailored social assessments and social inclusion plans at sub-project level. Specific methodologies were designed to this end during project preparation, including social assessment guidelines to be applied by the municipalities;
- (ii) Technical assistance for micro-enterprises and cooperatives. This sub-component will finance training and technical assistance for the establishment of micro-enterprises and cooperatives for waste pickers. The municipalities' social specialists will lead the implementation of this task in collaboration with civil society and organizations with extensive experience in dealing with informal garbage collectors;
- (iii) Private-public partnerships. The project will support the establishment of a partnership between the SAYDS and a network of private companies interested in promoting recycling in Argentina. This model was tested with great success in Brazil, where private companies, informal waste picker cooperatives, technical NGOs, and the government came together to find integral solutions to recycling. CEMPRE Argentina will participate in financing training activities and preparing market studies to develop regional recycling strategies.

Annex 5: Project Costs

ARGENTINA: National Urban Solid Waste Management Project

Component Cost Summary (US\$ '000)

Component	GOA	IBRD	Total
1. Policy and Institutional Strengthening	2,700.0	4,900.0	7,600.0
1.1 Strategic planning and regionalization	0.0	2,400.0	2,400.0
1.2 Cost recovery and SWM training	0.0	250.0	250.0
1.3 Technical studies	0.0	250.0	250.0
1.4 Public communication	0.0	1,000.0	1,000.0
1.5 Project Management	2,700.0	1,000.0	3,700.0
2. Construction of new landfills and closure of open dumps	11,680.0	31,500.0	43,180.0
2.1 Landfill Infrastructure / closure of dumps	5,268.0	12,200.0	17,468.0
2.2 Construction of 1 st waste disposal cell	3,543.0	11,500.0	15,043.0
2.3 Methane Capture Systems	2,441.0	6,600.0	9,041.0
2.4 Recycling Plants	428.0	1,200.0	1,628.0
3. Social Inclusion	0.0	1,500.0	1,500.0
3.1 Implementation of Social Plans	0.0	1,000.0	1,000.0
3.2 TA for Micro-enterprises	0.0	500.0	500.0
Unallocated	0.0	2,000.0	2,000.0
Front end Fee	0.0	100.0	100.0
Total	14,380.0	40,000.0	54,380.0

Note:

Infrastructure costs had been estimated by local SWM specialists and updated on December 2006 during appraisal.

Annex 6: Implementation Arrangements

ARGENTINA: National Urban Solid Waste Management Project

1. The Secretariat of Environment and Sustainable Development (SAyDS) will be the executing agency, with responsibility for overall management, supervision, coordination, technical and fiduciary control. The SAyDS has designated the newly created National Urban Solid Waste Unit (NUSWU) as responsible for direct implementation of the project. This new unit will comprise the solid waste management (SWM) staff already working at the SAyDS and build on the existing staff of the Pollution Management (Loan 4281) Project Implementation Unit (PIU). The staff roster has been already submitted to the Bank for review. The NUSWU will be appropriately staffed in terms of procurement, environmental impact assessment, financial management, SWM, strategic planning, social issues, and communications. For the Carbon Finance activities, the NUSWU will require support from the Argentinean Carbon Facility (ACF). Overall implementation responsibility will be under the project's National Director, a SAyDS staff member. According to the new Bank policy, the project will finance fiduciary-related personnel and specialized consultants. A small group of consultants from the existing Pollution Management PIU will become employees of the new NUSWU, and the project will finance their positions in a phased-out approach (only the first 3 years).

2. The NUSWU will be responsible for the following activities: (i) application of fiduciary responsibilities, including approval of the Sectoral Environmental Assessment and Environmental Management Framework to comply with World Bank safeguards, (ii) approval of Provincial SWM Plans, (iii) evaluation of compliance with eligibility criteria, (iv) liaison with provincial management and technical teams, (v) technical advice to provinces and municipalities for developing SWM strategies and plans, (vi) development and implementation of the national SWM training program for provincial and municipal authorities, and (vii) supervision of social programs. A nongovernmental organization (NGO) will be hired to provide training.

3. In addition, each province where project activities will be implemented, will require its own Provincial Urban Solid Waste Unit (PUSWU), to be financed entirely by the provincial government. These sub-national solid waste units will be responsible for (i) liaison with the SAyDS, (ii) preparation of bidding documents, (iii) supervision and approval of the construction works, (iv) supervision and enforcement of environmental standards and requirements included in the landfill operating contract, (v) assistance in preparing and implementing the social program, and (vi) implementation of the communication campaign. The PUSWU will have to include at a minimum specialists in SWM, social programs, and communications.

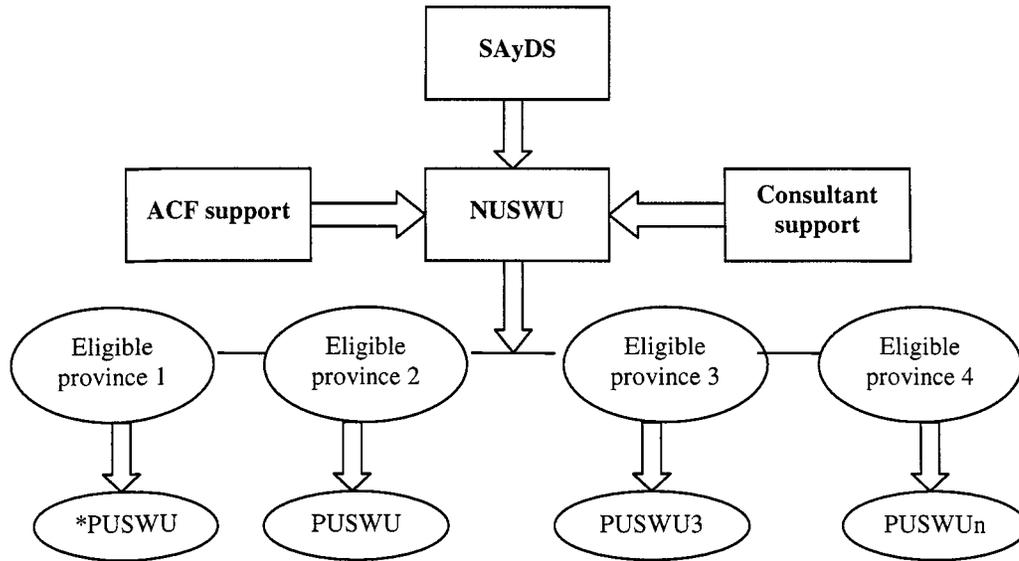
4. The institutional framework for the project will be legally defined by the following agreements to be signed between the interested parties (i.e., the national government, participating provinces, and municipalities):

- (i) Inter-Municipal Regional Agreement (IRA). This agreement will basically establish a legal entity to manage and supervise a shared landfill and transfer stations. Only in specific cases will an entity be eligible for landfill operation. IRAs should include a cost-sharing agreement based on objective criteria such as population or tonnage;
- (ii) Subsidiary Agreement I (Province – SAyDS). This agreement will mainly commit provincial governments to complement federal grants for regional landfill and transfer station construction according to SAyDS parameters. A draft of the document will be ready for project appraisal, and a revised version will be included in the negotiation package; and

(iii) Subsidiary Agreement II (Province – Municipalities – SAyDS). This agreement will ensure the economic sustainability of the operation of the new landfill. Cost recovery levels and mechanisms should be detailed and satisfactory to the SAyDS and Bank team. The agreement will make clear that provincial co-participation funds will guarantee the municipal economic contribution for operation.

The project institutional arrangement is illustrated in Figure 6.1.

Figure 6.1. Institutional Arrangements, Argentina National Urban SWM Project



*PUSWUs will be entirely financed by provincial funds

5. Table 6.1 shows the responsibilities of the project’s executing agencies during implementation.

Table 6.1. Responsibilities of Executing Agencies

Activities	National Unit for Urban Solid Waste (NUSWU)	Provincial Solid Waste Unit (PUSWU)	Argentina Carbon Facility (ACF)	Consultants
Component 1: Policy and Institutional Strengthening				
- Strategic planning and regionalization	▼, ▲, ♣, ●	●		■
- Cost recovery and SWM training	▼, ▲, ♣	●	■	■
- Technical studies	▼, ▲, ♣, ●	▼, ▲, ●		■
- Public communication	●	▼, ▲, ♣		■
- Project coordination and supervision	▼, ●, æ			
Component 2: Construction of new landfills and closure of open dumps				
- Basic landfill infrastructure	▼, ▲, *, æ	æ, ●, ♣		■
- Construction of 1st cell	▼, ▲, *, æ	æ, ●, ♣		■
- Methane capture system	▼, ▲, *, æ	æ, ●, ♣	■, æ	
- Recycling plant	▼, ▲, *, æ	æ, ●, ♣		
- Closure or rehabilitation of dumpsites	▼, ▲, *, æ	æ, ●, ♣		
Component 3: Social Inclusion				
- Implementation of social plans	▼, ▲, ●	▼, ▲, ♣		
- TA for micro-enterprises	▼, ▲, ♣	●		■

■ = Provide technical support

▲ = Prepare bidding documents

▼ = Prepare TOR for consultancy and/or technical specifications for works

æ = Participate in proposal evaluation committee

● = Review and approve products

* = Carry out bidding tender

♣ = Sign contract

Annex 7: Financial Management and Disbursement Arrangements
ARGENTINA: National Urban Solid Waste Management Project

Implementing Entity

1. The SAyDS will execute the project and be responsible for all technical and fiduciary aspects, overall project management, and monitoring and evaluation. The SAyDS has created the National Urban Solid Waste Unit (NUSWU) within the institution for direct implementation of the project. This new unit will comprise the SWM staff already working at the SAyDS and will build on the existing staff of the Pollution Management (Loan 4281) executing unit. The NUSWU will be responsible for project accounting, project reporting including preparation of Financial Monitoring Reports (FMRs), internal control, disbursements and external audit. During the last Financial Management (FM) supervision mission to the referred Pollution Management Project carried out on April 2005, the PIU's FM staff was assessed and considered adequate with robust experience and a solid background.

Accounting policies

2. Public Sector accounting standards in Argentina will be followed. The public sector accounting rules are comprehensive and consistent with public international standards. The Accountant General Office, Contaduría General de la Nación (CGN), sets the public accounting standards in Federal Government.

Uses of Funds:

3. All the project uses will be processed in the NUSWU's dedicated accounting system while supported by documentary evidence for the related works, goods and services procured in line with the Bank guidelines for the project.

Financial Management Information System

4. The NUSWU will keep the project accounts in its own accounting system with the chart of accounts reflecting the project categories, components and sources of funding.

Reporting and Monitoring, Flow of Funds and Disbursement Arrangements

5. Financial statements will be prepared on the accrual basis of accounting and shall be in line with the Bank requirements. Format of the interim and annual financial statements will be part of the adjusted operational manual. In addition, the NUSWU shall also prepare semiannual FMRs comprising at least:

- i) A financial section stating for the period and cumulatively (project life) cash receipts by sources and applications by main expenditures classification as well as beginning and ending cash balances of the project and a statement of accumulated investments by project component with a comparison between actual and planned expenditures;
- ii) An output monitoring section that: (a) sets forth physical progress in project's implementation, and (b) explains variances between the actual and previously forecast implementation target; and

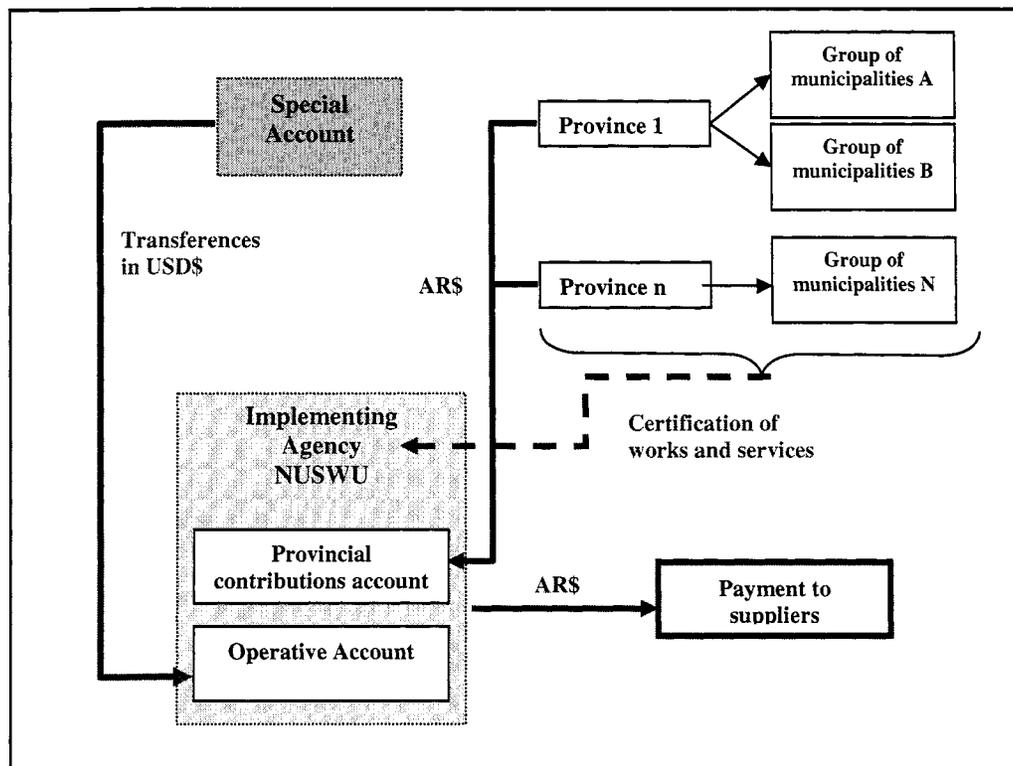
iii) A procurement section describing the status of procurement under the project, as of the end of the period covered by the report.

6. FMRs' formats will be agreed with the NUSWU and included in the Operational Manual. The Operational Manual prepared by the NUSWU and acceptable to the Bank is part of the Action Plan to be accomplished prior to negotiations. The NUSWU will be responsible for the project financial management, comprising accounting, timely submission of the FMRs, annual audits and disbursements and will record all transactions in its own system. FMRs will be submitted semiannually to the Bank. The physical progress indicators and the timing of the FMRs will be consulted with the TTL to ensure the usefulness of the FMRs in the overall project supervision.

Flow of Funds

7. The project will operate a Special Account in US dollars for processing disbursements for payments of project eligible expenditures. As in prior projects, the Special Account (SA) will be opened by the borrower in *Banco de la Nación Argentina* and will be under control of the NUSWU, responsible for coordinating the project.

Figure 7.1. Scheme for the Flow of Funds



8. Funds deposited into the SA as advances would follow the Bank's disbursement operating policies and procedures established as described in the Legal Agreement and in the Disbursement Letter as the case may be.

9. Flow of funds from the NUSWU to the participating municipalities and provinces will be simplified to gain efficiency and reduce transaction costs. Loan proceeds will be transferred directly from the SA to the supplier bank account for eligible services rendered or works or goods provided

and certified by the participating provinces. Withdrawals from the SA will be made for payments of project eligible expenditures.

10. Loan proceeds will be disbursed against the expenditure categories:

Project Cost by Category	Amounts Allocated	Percent of Expenditures to be Financed
Part A: Policy and Institutional Strengthening		
Consultant Services	4,000,000	
Consultant Services & Training for the NUSWU	800,000	
Goods	100,000	
Total Part A	4,900,000	100
Part B: Construction of new landfills and closure of open dumps		
Works	31,500,000	
Total Part B	31,500,000	86*
Part C: Social Inclusion		
Consultant Services & Training	1,200,000	
Goods	300,000	
Total Part C	1,500,000	100
Unallocated	2,000,000	
Front End Fee	100,000	
Total Project Costs	40,000,000	

*U] 9 t tl Provi Allocation F l

11. New Policy Framework on Eligibility of Expenditures in World Bank Lending applies for this project as the country's financing parameters for Argentina have been approved by the Bank.

12. Once the loan Agreement is signed, the Loan Department will send a letter – the Disbursement Letter – outlining the disbursement procedures to be followed by the loan. Traditional method for disbursements will be used. An Authorized Allocation (AA) for advances into the Special Account will be established. This AA will be set to cover a maximum amount of six months of expenditures and the project could request such advance as needed once the loan is declared effective. All Withdrawal Applications (WAs) will be fully supported by proper supporting documentation for all expenditures made under contracts requiring prior review by the Bank, and contracts whose value will be raised above the prior review limits because of amendments to the Loan Agreement. All consolidated Statements of Expenses (SOEs) documentation should be maintained by the NUSWU for post-review by the Bank supervision and audit purposes for up to one year after the final withdrawal from the loan.

13. Requests for replenishments to the Special Account should be sent to the Bank on a monthly basis or whenever the account needs to be replenished by at least 50 percent. Replenishments, up to the Authorized Allocation will be made based on Applications for Withdrawals (Form 1903) accompanied by the supporting and other documentation detailed in the Disbursement Handbook. The NUSWU will access Bank's Client Connection web page to get the 1903 Form from the web and to perform on a periodic basis the reconciliation between its bank account and resources received from the different sources. The recommended Special Account is 3 million dollars.

External Audit Arrangements

14. Project financial statements will be subject to an annual financial audit under Terms of Reference and by auditor acceptable to the Bank within six months of each fiscal year. It was proposed that the Argentina Supreme Audit Institution, *Auditoría General de la Nación (AGN)* carry out this task. Annual audit will cover all funding and expenditures reported in the project financial statements. For audit purposes, the fiscal year will be the calendar year. Interim semiannual reports on internal control issues and follow up on implementation of recommendations will be included.

Internal Audit

15. NUSWU as part of SAYDS and Federal Government is subject to internal audit of the General Syndicate of the Nation (SIGEN) which is the Federal Government's internal audit agency under the jurisdiction of the executive branch. SIGEN supervises and coordinates the actions of Internal Audit Units (IAUs) in all agencies, approves their audit plans, conducts research and independent audits, systematizes the information from its own reports and those produced by the IAUs.

Country Issues, Risk Analysis and Supervision Plan

16. The Country Financial Accountability Assessment (CFAA) prepared by the Bank in 2003-2004 states that at the central level, the Government of Argentina has a fully integrated budget, accounting, treasury, and public debt financial management system. These systems control the funds received by the central government from any source and provide sufficient information to determine if the funds were utilized as planned.

17. This CFAA covered the Federal Government central system and did not comprise the assessment of public financial systems at sub-national level, Provincias. A CFAA update of the Federal system in Argentina is planned for FY 2006 while the evaluation of Provincial systems is planned to be performed in FY 2007.

18. A FM issue raised in the Country Assistance Strategy (CAS), document issued in January 2004, was the chronic problem on the timely submission of audit reports to the Bank. However, since 2003 there has been some improvement on country audit report compliance. The audit compliance issue is being addressed by the Bank at portfolio level and through an IDF grant to strengthen the institutional capacity of the Auditoria General de la Nacion (AGN), the Borrower's Auditor General Office. The 2006-2008 CAS for Argentina that is currently under preparation develops a fiduciary action plan which aims at improving the timeliness and effectiveness of the external audit function in the country.

19. The International Monetary Fund issued an experimental Report on the Observance of Standards and Codes (ROSC) for Argentina in April 1999, which includes a section on Fiscal Transparency which commented that based upon the description of practices provided by the authorities and summarized in the report, Argentina has achieved a high degree of fiscal transparency. This is a reflection of the significant progress that has been made since the implementation of landmark legislation on financial administration and control in 1992.

Strengths and Weaknesses

20. Strengths: NUSWU has experience in implementing multilateral financed projects as well as highly skilled FM staff who has been working for the unit.

21. Weaknesses: FM assessment and internal control issues project level reported by the auditors of the on-going project point toward some weaknesses. Especially some delay in implementing FM recommendations. The timely provision of counterpart funds will also impose another risk to the project. These risks will be mitigated through the following measures: i) preliminary reports on internal control including a section on the follow-up of recommendations made in prior audit; ii) specific provisions to ensure adequate control and provision of counterpart funds in the OM and in the flow of funds.

Risk Analysis

22. The process to determine associated risks comprised the review of Financial Management Questionnaire, the CFAA, previous supervision missions and interviews with key NUSWU staff as well as a review of the internal control framework. The assessment of Procurement arrangements carried out for this project and its mitigation measures and risk assigned were taken into consideration for this risk assessment.

Inherent Risk		Risk Rating	Risk Mitigation Measures
	Country Specific	Modest	
	Entity Specific – Federal Level	Low	-NUSWU owns qualified and highly experienced accounting staff that has already participated in Bank-financed operations. Previous projects acceptable audit reports submitted to the Bank
	Project Specific Institutional and organizational aspects will remain the same as the ongoing project.	Modest	- Set a separate budgetary line in the Ministry annual budget to keep track of project execution. - Expand the scope for the external audit: AGN will produce preliminary reports on internal control to ensure that adequate FM arrangements continue in place.
Control Risk			
	Financial Management System New dedicated system (UEPEX) to replace the existing one will be developed and implemented; usual system implementation risks exist	Modest	New Government's FM system UEPEX for multilateral project execution (mandatory for project execution) will be implemented in NUSWU through project implementation. Operation of the new dedicated system will be reviewed with semi annual project supervision.
Overall Risk rating		Modest	

23. Sources of information on inherent risk in the NUSWU include the performance in Financial Management of previous Bank-financed projects where acceptable audits were produced and the NUSWU met Bank requirements. Acceptable audit reports were submitted to the Bank in previous projects implemented by the NUSWU and Bank requirements were generally complied with. The auditors' qualifications on previous Project financial statements did not indicate substantial

accountability issues that could affect project implementation and the NUSWU has taken appropriate actions to address auditors' comments through the past years.

Supervision Plan

24. Previous experience in implementing Bank-financed projects has been considered to define the FM supervision plan. Table below shows the FM supervision objectives, tasks and timing planned for this project.

Type	Timing	Mechanism	Objective
Visit	Twice through FM).	Integrating project team supervision missions.	Review S. Account reconciliation; uses of funds; follow up on External Audit recommendations/ raised issues. Review staffing.
FMR Review	Semiannually	Over the FMR submitted to the Bank.	Review FMR information consistency.
Internal Control Report Review	Semiannually	Over the preliminary report to be submitted by AGN	Ensure adequate financial management arrangements continue in place at SUPCEs' level.
Audit Review	Annually	Over the Audit Report submitted to the Bank	Review Audit Report.

Action Plan & Additional Covenants

25. The recommendation is to use in the legal agreement "Standard" wording for project audits and FMRs and a specific provision to prepare interim reports on internal control issues semiannually.

26. The current activities have to be implemented by the SAyDS prior to project Board presentation.

Action	Responsible Entity	Completion Date
1. Final version of an Administrative Operational Manual revised and approved by the Bank.	NUSWU	Prior to Board presentation
2. Chart of accounts approved by the Bank (to be included in OM).	NUSWU	Prior to Board presentation
3. Financial Sts. & FMR format approved by the Bank. (to be included in OM).	NUSWU	Prior to Board presentation
4. Terms of Reference for External Audit (to be included in OM).	NUSWU	Prior to Board presentation

Annex 8: Procurement Arrangements
ARGENTINA: National Urban Solid Waste Management Project

A. General

1. Procurement for the proposed project would be carried out in accordance with the World Bank's "Guidelines: Procurement Under IBRD Loans and IDA Credits" dated May 2004; and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated May 2004, and the provisions stipulated in the Legal Agreement. The various items under different expenditure categories are described in general below. For each contract to be financed by the Loan/Credit, the different procurement methods or consultant selection methods, the need for pre-qualification, estimated costs, prior review requirements, and timeframe are agreed between the Borrower and the Bank in the Procurement Plan. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

2. **Procurement of Works:** Works procured under this project would include: (a) new regional sanitary landfills in six (6) to eight (8) eligible provinces, which may comprise landfill cells, transfer stations and waste separation plants (including equipment), and (b) closure / remediation of open dumpsites. Though the operation of the sanitary landfills will not be financed by the Bank, a Design-Build-Operate (DBO) approach will be followed and a single responsibility contract used. The procurement will follow ICB and NCB procedures using the Bank's Sample Bidding Document for Design-Build-Operate of Solid Waste Facility with some adaptations to local conditions and practices (mainly that prequalification will not be used). For the closure / remediation of open dumpsites, Standard Bidding Documents for NCB based upon the Bank Standard Bidding Document for Smaller Contracts will be used. Some of the processes might follow advance-contracting.

3. **Procurement of Goods:** the project will finance the procurement of ICT equipment, tools and machinery to help implement social plans, which procurement will be done using NCB documents and Requests for Quotations acceptable to the Bank.

4. **Selection of Consultants:** The project will finance: (a) the formulation of regional strategic plans, other technical studies and training on solid waste management; (b) the design, management and implementation of a communication and outreach program; (c) technical assistance, capacity building and training aimed at increasing social-inclusion for waste-pickers and (d) project management, monitoring and evaluation. Requests for Proposals for contracts including non-consulting services, as it is the case of the implementation of the communication and outreach program, will include provisional sums representing the costs of these activities, to be subcontracted. The above-mentioned provisional sums will not be taken into account during the process of selecting consultant firms and the subcontractors will be subcontracted by those consulting firms following public bidding or shopping procedures to be described in the Operational Manual. Short lists of consultants for services estimated to cost less than \$500,000 equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

5. **Operating Costs:** will not be financed by the project

6. **Others:** The project will finance social plans for waste pickers working at dumpsites where new sanitary landfills will be constructed. Social Plans will aim at the social inclusion of waste pickers through formalized work for waste separation at transfer stations or recycling facilities nearby the

new final disposal sites. Social Plans will follow procedures to be spelled out in the Project Operational Manual.

7. The procurement procedures and SBDs to be used for each procurement method, as well as model contracts for works and goods procured, will be presented within ninety days of Loan Agreement signature in the project's web page: www.medioambiente.gov.ar.

B. Assessment of the agency's capacity to implement procurement

8. Procurement activities will be carried out by the NUSWU of the SAYDS on behalf of the benefiting Municipalities following Bank rules and federal procurement laws and regulations. The NUSWU will take advantage of the existing Pollution Management (Loan 4281-AR) executing unit. The existing Pollution Management PIU is appropriately staffed in terms of general coordination, procurement, environmental and financial management, and will need to be re-enforced from the technical point of view. Adequate legal support is provided from SAYDS. The procurement expert is a civil engineer with good experience in Bank procurement. An Independent Procurement Review to the 4281-AR did not reveal any issue of particular concern. A new feature present in this project is that the initial drafting of bidding documents will be done by Project Coordination Units at the Provincial / Municipal level.

9. An assessment of the capacity of the Implementing Agency to carry out procurement actions for the project has been completed by Andrés Mac Gaul, Senior Procurement Specialist, on November 9, 2005. The assessment reviewed the organizational structure for implementing the project and the interaction between the project's staff responsible for procurement and the Ministry's relevant central unit for administration and finance.

10. The key issues and risks concerning procurement for implementation of the project have been identified and include the following:

- (i) The NUSWU does not have a Procurement Information System; and
- (ii) The previous project's Operational Manual is not updated.

11. The corrective measures which have been agreed are the following:

- (i) The NUSWU will implement an Excel-based Procurement Information System acceptable to the Bank within ninety days of Loan Agreement signature. Such a system will be implemented under Terms of Reference to be agreed with the Bank prior to Negotiations; and
- (ii) An Operational Manual acceptable to the Bank will be adopted prior to Board presentation.

12. In addition to the above listed project-related issues and risks concerning procurement the following country issues and risks were identified:

- (i) During the recent implementation of infrastructure projects in Argentina, it was found that sometimes pre-bid cost estimates were not precise and updated enough;
- (ii) During recent post review work in Argentina it was found that the list of contracts from where the sample to be reviewed would be selected that the implementing agency provided to the Bank was not accurate enough; and
- (iii) Local procurement law, regulations and practices are not fully consistent with Bank rules.

13. The corrective measures corresponding to the country and sector issues which have been agreed are the following:

- (i) The Operational Manual will include procedures for preparing, reviewing and updating pre-bid cost estimates;
- (ii) The NUSWU will prepare semi-annual procurement reports under TORs to be agreed at Negotiations; such reports to include lists of contracts signed and procurement processes initiated under the project and such lists to be certified by the project financial management auditor; and
- (iii) The Loan Agreement will include the Special Procurement Conditions listed in Section E.

The overall project risk for procurement is AVERAGE

C. Procurement Plan

14. The Borrower, at appraisal, developed a procurement plan for project implementation that provides the basis for the procurement methods. This plan has been agreed between the Borrower and the Project Team on **December 16, 2005** and is available at www.medioambiente.gov.ar. It will also be available in the project's database and in the Bank's external website. The Procurement Plan will be updated in agreement with the Project Team annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

D. Frequency of Procurement Supervision

15. In addition to the prior review supervision to be carried out from Bank offices, the capacity assessment of the Implementing Agency has recommended annual supervision missions to visit the field to carry out post review of procurement actions.

E. Special Procurement Provisions

16. The following shall apply to procurement under the project:

General

- Foreign and local contractors, service providers, consultants and suppliers shall not be required: (a) to register; (b) or establish residence in Argentina; (c) or enter into association with other national or international bidders as a condition for submitting bids or proposals.
- The invitations to bid, bidding documents, minutes of bid opening, requests for expressions of interest and notifications of award of all goods, works and services (including consultants' services), as the case may be, shall be published in the web page of *Oficina Nacional de Contrataciones* in a manner acceptable to the Bank.

Goods and Works

- A two-envelop system of procurement will not be used for the procurement of goods, services (other than consultants services) or works.
- After the public opening of bids, information relating to the examination, clarification and evaluation of bids and recommendations concerning awards shall not be disclosed to bidders or other persons not officially concerned with the bidding process until the award is published. Bidders shall not be allowed to review or make copies of others bidders' bids.

- Contracts of goods, services –other than consulting services- and works shall not be awarded to the “most convenient” bid but to the one that has been determined to be substantially responsive and the lowest evaluated bid, provided that further the bidder is determined to be qualified to perform the contract satisfactorily.
- The lowest evaluated bidder shall not be required to reduce its bid as a condition of contract award.
- Price Adjustment for Civil Works Contracts shall follow the Price Adjustment Methodology agreed between the Government of Argentina and the Bank, which methodology is described in the document to be attached to the Minutes of Negotiations.

Consultant Services

- Bank models of contracts will be used and the use of “*Convenios*” will not be permitted.

F. Details of the Procurement Arrangements Involving International Competition

1. Goods, Works, and Non Consulting Services

(a) List of contract packages to be procured following ICB and direct contracting:

1	2	3	4	5	6	7	8	9
Ref. No.	Contract (Description)	Estimated Cost*	Procurement Method	P-Q	Domestic Preference (yes/no)	Review by Bank (Prior / Post)	Expected Bid-Opening Date	Comments
1	Tucuman Regional Final Disposal Center	\$15,500,000	ICB	NO	NO	PRIOR	November 2006	
2	Gran Mendoza Regional Final Disposal Center	\$12,100,000	ICB	NO	NO	PRIOR	March 2008	
3	Chubut 1 Final Disposal Center	\$5,300,000	ICB	NO	NO	PRIOR	January 2007	
4	Chubut 2 Regional Final Disposal Center	\$6,400,000	ICB	NO	NO	PRIOR	March 2008	
5	Regional Final Disposal Center 1	\$7,500,000	ICB	NO	NO	PRIOR	March 2007	
6	Regional Final Disposal Center 2	\$10,000,000	ICB	NO	NO	PRIOR	November 2006	
7	Regional Final Disposal Center 3	\$20,000,000	ICB	NO	NO	PRIOR	February 2008	
8	Regional Final Disposal Center 4	\$10,000,000	ICB	NO	NO	PRIOR	February 2009	

* Refers to the design, construction and 5 years of operation of a landfill. The World Bank is only financing design and construction of basic infrastructure and the 1st waste disposal cell.

(b) Civil Works contracts estimated to cost above \$3,000,000 per contract, the first two (2) civil works and goods contracts under each procurement method regardless of amount and all direct contracting will be subject to prior review by the Bank.

2. Consulting Services

(a) List of consulting assignments with short-list of international firms.

1	2	3	4	5	6	7
Ref. No.	Description of Assignment	Estimated Cost	Selection Method	Review by Bank (Prior / Post)	Expected Proposals Submission Date	Comments
1	SWM Plans for Region 1	\$525,000	QCBS	PRIOR	September 2006	

(b) Consultancy services to be provided by firms estimated to cost above \$200,000 per contract, the first two (2) contracts with firms under each selection method regardless of the amount, consultant services to be provided by individuals amounting \$50,000 or more throughout the live of the project and single source selection of consultants (firms and individuals) will be subject to prior review by the Bank.

(c) Short lists composed entirely of national consultants: Short lists of consultants for services estimated to cost less than US\$500,000 equivalent per contract, may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

Annex 9: Economic and Financial Analysis
ARGENTINA. National Urban Solid Waste Management Project

1. The economic and financial analysis of this project comprises three parts. The first part is an analysis of the cost-effectiveness of implementing an adequate system for final disposal of solid waste in sanitary landfills, taking into account the reduction in environmental damage and direct impacts on people's health compared with the open dumping prevalent in the vast majority of Argentinean municipalities. The analysis computes the environmental and social costs of solid waste disposal as an integral part of the operation. The second part of this annex covers local development of cost-recovery systems in solid waste management (SWM). The third part analyzes the fiscal implications and sustainability of the project.

Private, Environmental, and Social costs of Solid Waste (SW) Disposal: Proper vs. Improper Disposal Systems

2. The project is targeted at financing environmentally safe and socially acceptable final SW disposal systems to minimize the environmental impacts of this service and its effects on the population as a whole. These systems will also include recycling activities and in some cases, the construction of transfer stations and the transportation of waste to the final disposal facility.

3. The private costs and benefits of proper final SW disposal systems include (i) investment costs for purchase of land, civil works, construction of modules or cells, system for methane capture, collection and treatment of leachate, and, in some cases, construction of a transfer station and a recycling plant and (ii) operation and maintenance costs. Because the operation of the disposal sites will be in private hands, the operator's profits and the depreciation of works and equipment are also included in the calculation. Some of the private benefits of the project are the potential income generated by the sale of CO₂ certified emission reductions and recycling and composting activities.

4. SW management in general, and final disposal in particular, even when carried out in sanitary and controlled conditions, has environmental impacts and imposes additional costs (externalities) on society as a whole. These external costs (other than private-financial costs) may derive from different factors. The most important of these factors are soil and groundwater pollution due to percolation of leachate, emission of greenhouse and trace gases into the atmosphere, and noise and strong odors generated by the operation of final disposal sites. At a different level, the poor management of SW may significantly damage the health of residents as well formal and informal workers in direct contact with waste. To make a fair assessment of the costs of a SWM system, these impacts must be measured and included in the cost-effectiveness analysis.

Scenario without "Proper Final Disposal Systems"

5. Presently most Argentinean municipalities dispose of their SW in individual open or semi-controlled dumps. Few use operating and control mechanisms similar to those of a sanitary landfill being usually provincial capitals or large urban areas. Information on final SW disposal practices is available in the provinces targeted by the project. According to provincial reports, the procedures for waste treatment and disposal in those locations do not show substantial differences from practices currently in the rest of the country. In these provinces official disposal facilities operate as open dumpsites in which waste is disposed of indiscriminately and without any treatment (in a few cases, however, the waste is covered every day).

6. Generally, sites do not have perimeter fencing or systems to control material access and discharge, which means that informal workers (scavengers) and animals can move around the sites without restriction. Sometimes the dumps are close to urban areas or major roads with significant value for tourism development, as in the case of Puerto Madryn and Comodoro Rivadavia in the province of Chubut. Because there is no daily cover at the dumpsites, there is significant dispersion of light material, strong odors, and indiscriminate incineration. On occasions disposal sites have fires that jeopardize the population and pose a serious hazard to local farming and cattle raising. Moreover, in most dumps grazing animals endanger the population's health and significantly affect cattle raising because of the infections that proliferate in these sites. Scavengers are present in most disposal facilities. None of the sites have systems for leachate collection and treatment nor gas capture and flaring systems. This results in serious damage to the environment, causing soil and aquifer pollution as well as health impacts.

Scenario with "Proper Final Disposal Systems"

7. The Argentina SWM Project seeks to develop sanitary disposal facilities that minimize the impacts on the environment and on people's health. These landfills are also expected to be financially sustainable. Therefore, the project promotes the construction of regional sanitary landfills to take advantage of the efficiency gains deriving from the economies of scale involved in this type of infrastructure project. At this stage, the project has identified seven possible landfill construction activities in the four identified provinces (Chubut, Mendoza, Santa Cruz, and Tucumán) that would benefit 2.6 million residents. Four of the seven ventures would provide a regional solution to the final SW disposal problem.

8. Implementation of proper final disposal systems involves, among other things, acquiring a plot of land, installing perimeter fencing, setting up systems to control access and material discharge, building access roads, building the necessary facilities for the project personnel, establishing hygiene and security measure, carrying out daily operations, setting up systems for collection of leachate and for landfill gas capture and flaring, controlling disease vectors, and, in many cases, installing recycling plants. Every activity is expected to generate income from recycling materials and sales of CO₂ certified emission reductions. In some cases, the project team also analyzed the possibility of building transfer stations. The capacity of the proposed sanitary landfills was calculated based on projections for the population covered by the SW collection service and the average volumes of SW generation per capita in each location. The figures in table 9.1 indicate the population covered by each potential project, the estimated volume of waste generation, and the characteristics of the solutions proposed for each case.

Data and Assumptions Considered in the Analysis

9. Preliminary feasibility studies carried out by the provinces for each activity provided information on financial costs.¹² These actual costs calculated at market value comprise investment, operation, and maintenance costs. In this analysis, the useful life of the project was estimated at 20 years. The disposal volumes and the capacities of the proposed solutions are consistent with the projections for population with SW collection services and the waste generation rates identified at each location. Data were obtained from provincial research studies. On the other hand, it was assumed that the waste generation rate would increase 1 percent each year where no new landfills

¹² Deloitte and ERM. 2003. "Proyecto de Gestión Integral de Residuos Sólidos Municipales para Chascomús (Provincia de Buenos Aires) y Comodoro Rivadavia (Provincia de Chubut)," October, 2003; Universidad Tecnológica Nacional, Regional Mendoza. 2004. "Diseño de un Sistema de Gestión Integral para los Residuos Sólidos Urbanos del Área Metropolitana Mendoza," March 2005.

are implemented and 0.7 percent per year where new final disposal systems are implemented, due to the waste minimization factor. An annual discount rate of 6 percent was applied for all components. Table 9.2 shows the criteria adopted to identify and value the externalities associated with each of the scenarios. The table presents the impacts taken into account at this stage of the study.

10. With respect to health issues, the main risk is the incidence of gastrointestinal infection among the population with direct exposure to SW, i.e., informal workers and scavengers. After consultation with secondary sources, the project team established the incidence of this type of infection at 80 percent for people who work in dumps and 40 percent for people who would work in the proposed sanitary landfills.¹³ The cost of this impact was estimated based on the medical care expenses corresponding to each occurrence (3 days of hospitalization, adding up to US\$120/day¹⁴). The costs resulting from acute and mild respiratory infections were not estimated at this stage. The estimations for the open dumping scenario included health impacts for people who live near the disposal sites and are exposed to the effects of SW. The risk of intestinal infection was also taken into account. Based on research in other countries, the incidence of this type of diseases was assumed to double the figures that apply to the population in general.¹⁵

11. With regard to environmental impacts, this analysis includes three categories in terms of costs: the so-called “greenhouse effect” caused by emissions of biogas into the atmosphere, pollution of soil and water resources from percolation of solid elements and leachate, and land appreciation or depreciation caused by the closure of waste dumps and the construction of new sanitary disposal sites. Impacts were assessed for the whole life of the project (20 years), although many of them will last longer.

12. The cost resulting from the greenhouse effect was estimated based on research studies developed for the European Economic Community.¹⁶ The values adopted were US\$12/ton of SW for open dumps and US\$6/ton of SW for sanitary landfills, which, as noted, are provided with systems for gas capture and venting.¹⁷ The cost resulting from leachate pollution was estimated at US\$2/ton. This impact was not taken into account for the proposed activities in the identified provinces because sanitary landfills include systems for leachate collection and treatment. Finally, it was pointed out that the proposed ventures would bring about an additional benefit represented by the appreciation of the land affected by or exposed to the dumpsites to be closed, adding up to a 20 percent–25 percent average increase in price per hectare over a radial area of 3.5 kilometers. Damage to real property and crops because of the operation of the final disposal sites was not included in the study, nor was the negative impact of these sites on the regional landscape.

Results of the Analysis

13. This section compares the results of the economic analysis of the activities proposed under component 2 of the Argentina SWM Project in the identified provinces with the economic analysis of open dumping. The study consisted in identifying, measuring, and assessing the costs and benefits (private, environmental, and social) of waste disposal with a technological system capable of minimizing the impacts of this service on people’s health and environment (construction and operation of regional sanitary landfills) and disposal of waste in non-controlled open waste dumps, the current practice in the identified provinces.

¹³ This implies manual separation and recycling in sanitary landfills.

¹⁴ According to costs reported by Public Hospitals with Decentralized Management, Resolution MS 372/2001

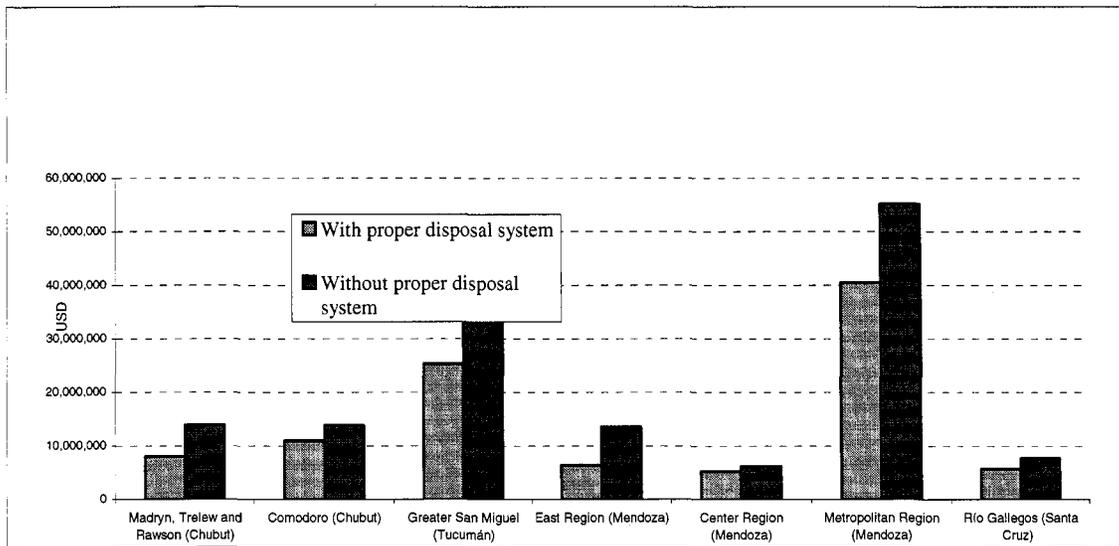
¹⁵ OPS. 2002. “Análisis Sectorial de Residuos Sólidos. Ecuador.” Organización Panamericana de la Salud. Organización Mundial de la Salud. División de Salud y Ambiente. May.

¹⁶ European Commission. 2000. “A Study of the Economic Valuation of Environmental Externalities from Landfill Disposal and Incineration of Waste.” DG Environmental. October.

¹⁷ Assuming that sanitary landfill methane emissions are 50 percent lower than open waste dumps

14. Figure 9.1 summarizes the results of the project economic assessment. As noted, the total cost (private, environmental, and social) of improper SW disposal is higher than that of proper SW disposal. For example, in the metropolitan region of the province of Mendoza, the overall net cost for the next 20 years without a proper system of SW disposal would be approximately US\$55 million, while the cost of disposal in an environmentally sound sanitary landfill would be US\$40 million. Strictly speaking, the current system of SW disposal used in the metropolitan region of Mendoza, which is deficient from the point of view of health and environment, generates an approximate cost of US\$17 per disposed ton, while a system with the proper environmental considerations would cost about US\$13 per ton.

Figure 9.1. Overall Net Cost of SW Disposal with/without Proper SW Disposal System



15. Table 9.1 presents the costs with/without a proper SW disposal system according to the different categories analyzed in this research study.

Table 9.1. Characteristics of Proposed Projects for Proper SW Disposal

Projects/ Locations	Population census 2001	Demographic growth projection (var. between censuses)		Per capita SW general. (kg/day)	Population with SW service		Daily SW generation (tons/day)		Characteristics of proposed disposal system				
		2006	2026		2006	2026	2006	2026	Capacity (tons/year)	Gas capture system	Transfer station	Recycl. Plant	Energy recovery
DF Madryn, Rawson and Trelew, Chubut	173.521	189.613	237.889	0,90	95%	95%	162	203	Yes	No	Yes	No	
Puerto Madryn	57.791	65.882	90.154	0,95	95%	95%	59	81					
Rawson	26.183	28.409	35.085	0,93	95%	95%	25	31					
Trelew	89.547	95.323	112.650	0,85	95%	95%	77	91					
DF Comodoro Rivadavia, Chubut	137.061	143.427	162.527	1,00	95%	95%	136	154	Yes	No	Yes	No	
DF Greater San Miguel de Tucumán	738.479	807.158	1.013.193	0,64	85%	95%	439	616	Yes	Yes	Yes	No	
DF East Region, Mendoza	221.438	236.012	294.310	0,70	90%	95%	149	196	Yes	No	Yes	No	
San Martín	108.448	114.033	136.373	0,70	90%	95%	72	91					
Rivadavia	52.567	55.668	68.074	0,70	90%	95%	35	45					
Junín	35.045	39.128	55.459	0,70	90%	95%	25	37					
Santa Rosa	15.818	16.696	20.207	0,70	90%	95%	11	13					
La Paz	9.560	10.487	14.197	0,70	90%	95%	7	9					
DF Center Region, Mendoza	99.005	109.179	139.702	0,7	85%	95%	69	98	Yes	No	Yes	No	
San Carlos	28.341	30.807	38.204	0,74	85%	95%	19	27					
Tunuyán	42.125	45.895	57.206	0,74	85%	95%	29	40					
Tupungato	28.539	32.477	44.293	0,74	85%	95%	20	31					
DF Metropolitan Region, Mendoza	1.018.470	1.084.016	1.280.653	0,74	90%	95%	722	900	Yes	No	Yes	No	
Capital City	110.993	106.165	91.680	0,74	90%	95%	71	64					
Guaymallén	251.339	268.053	318.195	0,74	90%	95%	179	224					
Godoy Cruz	182.977	184.715	189.930	0,74	90%	95%	123	134					
Las Heras	182.962	198.422	244.803	0,74	90%	95%	132	172					
Lavalle	32.129	35.197	44.402	0,74	90%	95%	23	31					
Maipú	153.600	170.957	223.027	0,74	90%	95%	114	157					
Luján de Cuyo	104.470	120.506	168.615	0,74	90%	95%	80	119					
DF Río Gallegos, Santa Cruz	79.144	88.641	117.133	0,90	98%	98%	78	103	Yes	No	Yes	No	

Source: Sanguinetti, Juan, *Economic and Financial Analysis of the Solid Waste Management Sector in Argentina*, 2005, and based on information provided by INDEC, NSWIMS 2005 and ad-hoc studies.

Overall Conclusions

16. The study presented an assessment of the costs and benefits of urban solid waste management alternatives, in this case represented by two scenarios—sanitary land filling and open dumping. As part of the analysis, environmental economic valuation techniques were used to integrate costs accruing from environmental and social externalities into the equation. Commonly, authorities in developing countries such as Argentina do not account for these externalities in their decision making process. As a result, in the case of SWM, open dumping is seen as the cheapest alternative to deal with the problem until severe consequences arise and society's attention is focused on the problem. In a typical private cost evaluation, the cost of sanitary landfills would be noticeably greater than that of open dumping.

17. Final disposal of solid waste will always represent a cost to society and governments. Therefore, the intention of this assessment was to provide an insight into the real costs (including environmental and social externalities) associated with the current practice of open dumping compared with those associated with the construction of sanitary landfills. The results of the study provide the necessary reference for decision-makers to select the most economically efficient solution for final disposal of SW. In other words, the results help authorities select the alternative with the least cost to society as a whole. In addition, this economic analysis provided important information to the GOA about the savings that would accrue from constructing sanitary landfills to justify the implementation of this project.

Table 9.2. Identification and Measurement of Environmental Costs Resulting From Proper SW Disposal Vs Open Dumping

Impact	Physical factor	Receptor	Valuation criterion	Incidence	Estimated cost (USD)	
With proper SW disposal system						
Impacts on health	Gastrointestinal infections	air/water/soil/accidents	Populat. with direct contact (scavengers/collectors)	Medical care cost ³	40%	360 per occurrence
	Respiratory infections (mild and acute)	air/soil/water	Exposed population ¹		n/d	No data available
		air/water/soil/accidents	Populat. with direct contact (scavengers/collectors)		n/d	No data available
	Real property damage due to emissions	Air	Real property, soil, crops	Secondary sources ⁴	n/a	No data available
Envir. Impacts	Greenhouse gas emissions	Air	Atmosphere		n/a	6 USD/ton SW
	Land appreciation (areas where dumps are closed)	n/a	Exposed population ¹	Hedonic prices (secondary references)	n/a	+ 10/15% hectare value
Without proper SW disposal system						
Impacts on health	Gastrointestinal infections	air/soil/water	Exposed population ¹	Medical care cost ³	0,012 ⁶	360 per occurrence
	Respiratory infections (mild and acute)	air/water/soil/accidents	Populat. with direct contact (scavengers/collectors)		80% ⁷	360 per occurrence
		air/soil/water	Exposed population		s/d	No data available
	Real property damage due to emissions	air/water/soil/accidents	Populat. with direct contact (scavengers/collectors)		s/d	No data available
Envir. Impacts	Greenhouse gas emissions	Air	Real property, soil, crops	Secondary sources ⁴	n/c	No data available
	Soil and water resources pollution	Air	Atmosphere		n/c	12 USD/ton SW
		Leachate	Miscellaneous ²		n/c	2,0 USD/ton SW
Negative impact on landscape	Odors, noise, visual impact	Exposed population ¹	Contingent valuation	n/c	No data available	

Notes:

- (1) People residing in a radial area of 1.5 km from the Disposal Site.
- (2) Aquifers, crops, domestic and breeding animals, population without basic sanitary services.
- (3) Includes 3-day hospitalization expenses.
- (4) A Study on the Economic Valuation of Environmental Externalities from Landfill Disposal and Incineration of Waste. European Commission, DG Environmental. October 2000.
- (5) Percentage of informal workers exposed to diseases caused by direct contact with SW.
- (6) Incidence rate on exposed population for every 100,000 residents. According to secondary sources, the incidence rate for such population doubles the mean for the population in general.
- (7) Percentage of workers exposed to diseases caused by direct contact with SW. Secondary source.

Table 9.3. Overall Net Cost Of SW Disposal (current cost in USD and USD/ton)

Projects	Private costs		PROFIT			Externalities costs		Benefits	Overall net cost
	Investment	O&M	Total	Impacts on health	Environmental impacts				
With proper SW disposal system									
Madrin, Trelew and Rawson (Chubut)	5.721.939	3.915.691	3.373.170	13.010.800	270.615	4.281.822	9.545.511	8.017.726	
	7,2	5,4	4,4	17,1	0,4	6,0	8,8	14,7	
Comodoro (Chubut)	4.889.869	3.940.422	3.090.602	11.920.892	425.252	3.611.856	4.973.369	10.984.631	
	7,5	6,5	4,9	18,8	0,7	6,0	5,7	19,8	
Greater San Miguel (Tucumán)	9.877.497	8.478.476	6.424.591	24.780.564	869.833	11.639.428	11.910.988	25.378.837	
	4,5	4,3	3,1	11,9	0,5	6,0	4,5	13,9	
East Region (Mendoza)	4.850.102	5.655.516	3.676.966	14.182.584	483.240	3.941.395	12.157.171	6.450.049	
	6,5	8,5	5,2	20,2	0,7	6,0	11,9	15,1	
Center Region (Mendoza)	3.530.933	1.219.635	1.662.699	6.413.267	193.296	1.900.539	3.225.073	5.282.029	
	9,9	3,8	4,8	18,4	0,6	6,0	6,8	18,2	
Metropolitan Region (Mendoza)	14.389.626	11.950.516	9.219.050	35.559.192	676.537	19.137.457	14.866.204	40.506.981	
	4,0	3,7	2,7	10,4	0,2	6,0	3,6	13,1	
Río Gallegos (Santa Cruz)	2.713.208	2.034.836	1.661.815	6.409.860	77.318	2.072.426	2.844.660	5.714.944	
	7,0	5,8	4,5	17,3	0,2	6,0	5,7	17,8	
Without proper SW disposal system									
Madrin, Trelew and Rawson (Chubut)	0	1.957.845	0	1.957.845	565.875	11.413.335	81.042	13.856.012	
	0,0	2,6	0,0	2,6	0,8	15,0	0,1	18,3	
Comodoro (Chubut)	0	1.970.211	0	1.970.211	924.381	11.010.773	68.362	13.837.003	
	0,0	3,1	0,0	3,1	1,5	16,4	0,1	20,9	
Greater San Miguel (Tucumán)	0	4.239.238	0	4.239.238	1.896.235	29.536.145	220.301	35.451.318	
	0,0	2,1	0,0	2,1	1,0	14,5	0,1	17,5	
East Region (Mendoza)	0	2.827.758	0	2.827.758	1.017.221	9.788.759	74.599	13.559.139	
	0,0	4,1	0,0	4,1	1,5	14,3	0,1	19,9	
Center Region (Mendoza)	0	609.817	0	609.817	393.841	5.204.337	35.700	6.172.295	
	0,0	1,8	0,0	1,8	1,2	15,3	0,1	18,2	
Metropolitan Region (Mendoza)	0	5.975.258	0	5.975.258	1.480.649	48.081.941	362.216	55.175.631	
	0,0	1,8	0,0	1,8	0,5	14,4	0,1	16,6	
Río Gallegos (Santa Cruz)	0	1.017.418	0	1.017.418	157.536	6.533.088	39.225	7.668.818	
	0,0	2,8	0,0	2,8	0,4	16,7	0,1	19,9	

Notes: (1) Including income from sale of CO2 certified emission reductions and recycled materials, and land appreciation due to dump closure.
Source: Sanguinetti, Juan, *Economic and Financial Analysis of the Solid Waste Management Sector in Argentina*, 2005

Economic and Financial Management – SWM Cost Recovery

18. In countries with a significant economic development, the waste generators (i.e., households, retail stores and industries) and governments fund the costs of collection, transportation and final disposal of SW. Financing for investment is commonly obtained by a number of ways such as municipal bonds and borrowings. However, over the past decades when governments and society wanted to improve final disposal, increase recycling, implement recovery facilities, and develop landfill gas to energy projects, a set of new economic incentives have been adopted. These governmental incentives include i.e. earmarked grants (as in the case of the EU's grants to accession countries for sanitary landfills or the US Superfund for mitigation of toxic dumpsites) as well as tax credits. Despite the wide implementation of these financing mechanisms, local governments still must simultaneously develop economic systems to recover efficiently the full cost associated with these services. An adequate cost recovery system is vital to achieve sustainability as well as to promote the incorporation of the private sector concerning the provision of these services.

19. In an ideal situation, an effective cost recovery mechanism first requires the development of a tariff system. A detailed statement of the operating and maintenance costs, as well as the investments needed for the urban solid waste service, is necessary for designing the tariff system. If possible, the unit cost of the service for the various user groups (households, commercial establishments, industries) must be determined to establish differentiated service fees. The application of service charges for waste generating agents or ad hoc fees for solid waste collection and disposal is the most economical and efficient way to recover a significant portion of the costs involved in urban waste management. Service fees, when correctly applied, are capable of generating a considerable flow of resources while providing proper incentives to reduce waste generation

20. The analysis of municipal accounts in a large number of developing countries shows that the percentage of cost recovery is still low, with many chances for improvement. There are many options to generate efficient cost recovery systems. The instruments selected depend on several factors, such as political and institutional factors, the level of local development, the federal organization, and some tax considerations. Some of the most popular instruments are the implementation of fees for SWM services, the wide implementation of rates for urban services, and the implementation of taxes relating to ecological issues.

Description of Local Solid Waste Management

21. In Argentina, municipal governments are mainly responsible for urban hygiene, waste collection, and disposal services. As in most countries, SWM costs represent an increasingly larger portion of municipal budgets. Unfortunately, there are no recent statistics about the incidence of SWM costs on the total expenses of the municipal public sector in Argentina. Therefore, local governments do not usually assign the budget classification of expenses in terms of purpose and function. The Argentine Ministry of Economy published in 1997 the most recent estimates for the municipalities as a whole. These studies show that, on average, Argentine municipalities allocate 10.9 percent of their budgets to street sweeping and collection, treatment, and disposal of SW. Table 9.4 shows the relative weight of such services on municipal budgets for the four identified provinces (Chubut, Mendoza, Tucumán, and Santa Cruz) under this project.

Table 9.4. Municipal Provincial Public Sector Expense

	Total expense 2003 ¹	Waste collection, street sweeping and cleaning	
Chubut	155.0	25.8	16.6%
Mendoza	270.0	30.6	11.3%
Santa Cruz	106.5	29.0	27.2%
Tucumán	310.6	34.7	11.2%
Total municipalities - countrywide	8,830.7	963.3	10.9%

22. The relative weight of SWM on municipal budgets depends on the technology applied and the mode chosen to render the service. Most often, operating costs and are much more significant when waste management is in the hands of a contractor who, besides taking care of street cleaning and daily collection of waste, operates a disposal site with sanitary controls. When compared to an SWM system that disposes of the waste collected in an open dumpsite without any control whatsoever, the impact on the budget is much less.

23. Table 9.5 describes SWM in a series of selected municipalities in the provinces of Mendoza, Chubut, Tucumán, and Santa Cruz. The table shows data corresponding to population and volume of waste generated, type of service, mode chosen to render the service, and disposal technology applied. As shown in the table, the operating modes include sub-contracts to private operators, especially in the most important municipalities, direct operation by municipal administrations with their own staff and equipment, and the combined operation (public/private). Under the latest system, the private sector usually takes care of the collection and cleaning services in central urban areas, while the municipalities cover peripheral areas and sectors with smaller populations. In most municipalities outside Buenos Aires Province, waste is disposed of in open dumpsites that are barely controlled by the authorities or not controlled at all. Out of the sample of 21 municipalities in table 9.5, only the Municipality of Maipú in the province of Mendoza uses a landfill with sanitary controls, which also has a system for waste separation and treatment. Three municipalities have partially controlled landfills, and the rest use open dumps.

Current Systems for Cost Recovery

24. The deficiencies in SWM become even more serious because the mechanisms for cost recovery are poor or completely inexistent. The absence of integrated systems for financial administration, the lack of budgeting for programs, and the absence of specific units to gather information about the costs of municipal services limit the development of strategies for cost recovery, for this service as well as for other municipal services. On the other hand, the absence of baseline studies on urban public services hinders the accurate evaluation of the current urban service rates and their economic results. Therefore, most often the fees paid by users cannot cover all the expenses incurred in the provision of the main urban services. Estimates based on the information provided by budget implementation units at the municipal level and specific waste management studies carried out by the provinces point out that, on average, cost recovery from urban service fees amounts to slightly more than 60 percent of the current expenses for SWM. However, such an average percentage of recovery must be carefully analyzed, as urban service

rates not only cover the expenses resulting exclusively from SWM but also provide funds for other basic municipal services.

Table 9.5. Description of Urban Hygiene, Waste Collection and Urban Solid Waste Disposal Services in Selected Municipalities

	Population (Census 2001)	SW generation tons/day	Type of service provided	Mode of service operation	Disposal type			
					OD	TP	SL	PCL
Province of Mendoza								
Metropolitan region								
Capital city	110.993	71	WC,SC and SS	A	100%			
Guaymallén	251.339	179	WC,SC	Comb.	100%			
Godoy Cruz	182.977	123	WC,SC and SS	Comb.	100%			
Las Heras	182.962	132	WC,SC	Comb.				100%
Luján de Cuyo	104.470	80	WC,SC	A	100%			
Maipú	153.600	114	WC,SC	Comb.		100%		
Lavalle	32.129	23	WC,SC	A				100%
Center region								
Tupungato	28.539	20	WC,SC	A	100%			
Tunuyán	42.125	29	WC,SC	A	100%			
San Carlos	28.341	19	WC	A	100%			
East region								
San Martín	108.448	72	WC,SC	A	100%			
Rivadavia	52.567	35	WC,SC	A	100%			
Junín	35.045	25	WC,SC	A	100%			
Santa Rosa	15.818	11	WC,SC	A	100%			
La Paz	9.560	7	WC,SC	A	100%			
Province of Chubut								
Puerto Madryn	57.791	59	WC,SC	C	100%			
Rawson	26.183	25	WC,SC	A	100%			
Trelew	89.547	77	WC	C	100%			
Comodoro Rivadavia	137.061	136	WC,SC	C	100%			
Province of Tucumán								
San Miguel de Tucumán ¹	738.479	439	WC,SC	C				100%
Province of Santa Cruz								
Río Gallegos	79.144	79	WC,SC	A	100%			

Notes: WC,SC: Waste collection and street cleaning; WC: Waste collection; WC,SC and SS: Waste collection, street cleaning and special services; A: by Administration; C: sub-contract; Comb.: Combined; OD: Open dumpsites; TP: Treatment plant; SL: Sanitary landfill; PCL: Partially controlled landfill.

(1) Since 2005, USW is temporarily disposed in Pacará Pintado Treatment Plant.

Source: Sanguinetti, Juan, Economic and Financial Analysis of the Solid Waste Management Sector in Argentina, 2005, and based on studies carried out by the Pollution Management Project, Secretariat of Environment and Sustainable Development.

25. Moreover, waste management expenses do not always take into account the depreciation suffered by the infrastructure and the equipment used to offer these services. It is worth noting that data on municipal expenses for SWM shown in table 9.6 corresponds to 2002 and do not reflect the increase in the cost of municipal services after the economic crisis and the subsequent devaluation the following year. Such costs may have increased significantly over the current year. Generally, Argentine municipalities charge general fees for services in order to obtain funds for urban hygiene

and waste collection, transportation, and disposal services. In most cases, the fees are associated with real estate taxes, such as the *Tasa de Alumbrado, Barrido y Limpieza*, or ABL, applied in many provinces, the *Tasa or Contribución por Servicios a la Propiedad*, or the *Tasa Propiedad Raíz* applied in the province of Mendoza. Tax regulations rarely establish a specific charge or fee for waste collection, street cleaning, or waste disposal.

26. Table 9.6 shows that, except for some cases in the province of Chubut, such as Trelew and Puerto Madryn, the municipalities do not specify waste management service fees. In relation to the fee assessment criteria, municipalities commonly use one of three calculation methods: estimation based on the linear meters covered by the property façade, estimation based on a particular characteristic of the property (e.g., area or fiscal valuation), or the use of a flat rate on each property. Using the property value directly to determine the service fee has important drawbacks because house values are obtained from the provincial registries of real estate, which are usually obsolete. Moreover, those parameters are usually supplemented by a fee system based on service zones and coverage levels. On the other hand, fee systems adjusted by user or service type are poorly developed. Even though there is not much information from the group of identified cases, in medium-size and small municipalities it is uncommon to charge special fees to commercial or industrial waste generators.

27. In terms of revenue, the possibility of collecting such fees effectively in Argentina is uncertain. According to a survey carried out during the preliminary stages of this project, the cost recovery potential (fee value times collection rate) of urban service charges corresponding to a sample group of municipalities is about 50 percent. Table 9.6 shows the recovery percentage for the identified municipalities. The table also shows that recover ratios in small municipalities are substantially lower than the average values, in some cases as low as 10 percent. Finally, another negative factor that affects the adoption of a sustainable SWM system is the lack of awareness of the population. People forget about waste as soon as they get rid of their garbage. They do not care about the final destination or the volume, type, or final disposal method. This is partly because, dumpsites are often out of sight, and impacts do not affect the urban population directly. In addition, in most cases SWM appears together with other services in the municipal tax systems. Therefore, taxpayers do not really acknowledge how much SWM costs and believe that final disposal is free.

28. In this context, the proposed project has established eligibility criteria for receiving financing under component 2 that will help raise the scheduled disbursements needed to implement financially sustainable SWM. These criteria and conditions were devised to ensure adequate cost recovery for the landfills financed by this project. Specifically, the criteria will require municipalities to achieve a minimum cost recovery for the final disposal system of 50 percent, paying attention to both the value of the SWM tariff and the fee collection rate. The conditions will also require that municipalities draft an ordinance or by-law establishing differentiated SWM service fees for households, commercial establishments, and industries. Finally, municipalities will be asked to contribute to the financing of the regional site for waste disposal by means of their revenue share as municipal entities, in order to offer certainty to the sanitary landfill operators.

Table 9.6. Description of SWM Systems in Selected Municipalities

	SWM cost in ARS	SWM cost per unit in ARS/ton	SWM cost - % of overall municipal budget	Specific rate for SWM financing	Ad hoc fees according to type of service/user	Revenue - Urban services rates (USR) in ARS	USR recovery potencial %	SWM cost recovery (%)
Province of Mendoza								
Metropolitan region								
Capital city (2002)	3,395,507	131	10.7%	No	Yes	6,411,808 ²	83%	189%
Guaymallén (2002)	2,538,624	39	10.6%	No	n/d	1,594,155 ²	37%	63%
Godoy Cruz (2002)	5,072,047	113	18.0%	No	n/d	2,997,689 ²	45%	59%
Las Heras (2002)	5,123,427	106	28.4%	No	n/d	1,279,305 ²	28%	25%
Luján (2002)	4,066,549	139	22.3%	No	n/d	2,186,778 ²	60%	54%
Maipú (2002)	3,034,164	73	17.4%	No	Yes	1,736,696 ²	37%	57%
Lavalle (2002)	722,414	86	14.8%	No	n/d	235,761 ²	53%	33%
Center region								
Tupungato (2002)	755,200	26	16.0%	No	n/d	268,270 ³	10%	36%
Tunuyán (2002)	917,920	22	16.0%	No	n/d	929,320 ³	46%	101%
San Carlos (2003)	812,640	29	16.0%	No	No	427,520 ³	30%	53%
East region								
San Martín (2002)	2,375,100	22	21.0%	No	n/d	1,717,950 ³	46%	72%
Rivadavia (2002)	1,099,575	21	13.5%	No	n/d	819,510 ³	23%	75%
Junín (2002)	789,070	23	19.0%	No	n/d	360,630 ³	38%	46%
Santa Rosa (2002)	300,600	19	10.0%	No	n/d	62,120 ³	19%	21%
La Paz (2002)	212,160	22	6.5%	No	n/d	85,510 ³	46%	40%
Province of Chubut								
Puerto Madryn (2004)	1,780,000	31	7.1%	Yes	Yes	1,554,000	46%	87%
Rawson (2003)	1,487,750	57	8.0%	Yes	Yes	1,786,972	30%	120%
Trelew (2004)	1,903,200	21	4.3%	Yes	Yes	2,119,386 ⁴	s/d	111%
Comodoro Rivadavia (2002)	4,484,646	33	6.0%	Yes	Yes	6,600,000 ⁵	40/60%	147%
Province of Tucumán								
San Miguel de Tucumán (2004)	22,080,000	30	8.8%	No	No	12,302,989	53%	56%
Province of Santa Cruz								
Río Gallegos (2003)	4,748,350	60	9.0%	n/d	n/d	879,588	n/d	19%

Source: Internal research based on municipal budget implementation, provincial reports and internal estimates.

Notes: (1) Including waste collection, street cleaning, ISW transportation and disposal; (2) Revenues corresponding to real estate rates (tasa Propiedad Raíz) (3) Total revenues corresponding to municipal rates according to the Tribunal de Cuentas (agency for government control in administrative matters) of the province of Mendoza; (4) Revenues corresponding to service rates for

Fiscal Impacts of the Project

29. Table 9.7 shows the fiscal impacts of the project and details the expenses incurred by the national Ministry of Health and Environment, as well as the provincial and municipal expenses for environmental activities in the four provinces identified at this stage of project preparation. The data correspond to the period 2002–2005 and include a projection for the project implementation period. The overall cost of the project, including a projection for the operating and maintenance expenses of the possible regional interventions for waste disposal to be financed, is estimated at US\$83 million. Through this operation the Federal Government will finance approximately 48 percent of such cost; the provinces will cover 34 percent with their own resources, and the municipalities will be responsible for the remaining 18 percent.

30. After analyzing the table, we may conclude that the project's impact on the Ministry of Health and Environment's budget is not significant. Over the whole period covered by the project, the national government contribution represents 1.7 percent of its expenses. In the provinces, the project impact is relatively more significant, but it does not represent a concern in relation to the fiscal situation of such jurisdictions. The average increase in the provincial expenses in environmental activities due to the implementation of the project amounts to 19.4 percent. Finally, table 9.7 shows the incremental cost associated with the operation and maintenance of the possible new landfills to be financed, which on average represent 4.2 percent of the expenses corresponding to environmental activities in the municipalities.

Table 9.7. Fiscal Impacts of the AR-NUSWM Project
in million US\$

	2002	2003	2004	2005	Year 1	Year 2	Year 3	Year 4	Year 5	Total
WITHOUT PROJECT IMPLEMENTATION										
Expenses of the Ministry of Health and Environment ¹	175.2	314.2	420.6	414.6	420.5	441.6	463.6	486.8	511.2	2,323.7
Provincial expenses ² in environmental activities	19.9	22.1	24.0	25.6	26.0	27.3	28.6	30.1	31.6	143.4
Municipal expenses ³ in environmental activities	53.8	56.5	59.3	62.3	65.4	68.6	72.1	75.7	79.5	361.3
WITH PROJECT IMPLEMENTATION										
Expenses of the Ministry of Health and Environment ¹	175.2	314.2	420.6	414.6	428.5	453.6	475.7	492.8	513.2	2,363.8
Provincial expenses ² in environmental activities	19.9	22.1	24.0	25.6	31.5	35.6	37.0	34.2	32.9	171.3
Municipal expenses ³ in environmental activities	53.8	56.5	59.3	62.3	65.4	68.6	76.1	81.2	85.0	376.3
IMPACTS ON BUDGET										
Increase in Ministry of Health and Environment expense					1.9%	2.7%	2.6%	1.2%	0.4%	1.7%
Increase in provincial expense					21.4%	30.6%	29.2%	13.9%	4.4%	19.4%
Increase in municipal expense					0.0%	0.0%	5.5%	7.3%	6.9%	4.2%
Memo Items										
USWMP incremental cost					13.6	20.4	24.4	15.7	8.9	82.9
- Investments					13.6	20.4	20.4	10.2	3.4	67.9
IBRD financing (national)					8.0	12.0	12.0	6.0	2.0	40.1
Provincial partner					5.6	8.3	8.3	4.2	1.4	27.8
- O&M identified municipal projects							4.0	5.5	5.5	15.0

Source: Internal research based on CEPAL - *SERIE Medio Ambiente y desarrollo* N° 90 sobre datos de la Dirección de Gastos Sociales Consolidados, MECOIN, Oficina Nacional de Presupuesto and internal projections.

Notes: (1) Period 2002-2004 budget implementation figures by the Secretary of Finance of the Ministry of Economy of Argentina; 2005 data from Budget Law (*Ley de Presupuesto*) 2005. (2) Expense in environmental activities in the provinces of Chubut and Mendoza.

Annex 10: Safeguard Policy Issues

ARGENTINA: National Urban Solid Waste Management Project

Environment

1. Project interventions would trigger the Bank's Environmental Assessment Safeguard Policy OP 4.01. To comply with this policy, the borrower has prepared an Environmental Management Framework (EMF) that includes screening criteria for site selection and a Sectoral Environmental Management Plan (SEMP) that specifies environmental guidelines for the design and construction of landfills and for the respective Environmental Impact Assessment (EIA). The project team's environmental safeguard specialist reviewed the EMF and SEMP tools and found them acceptable to the Bank. The screening criteria will be used for identifying the typology of each sub-project proposal, while the environmental guidelines will be used for the preparation of specific EIAs and environmental management plans to be considered prior to construction and operation of each landfill project.
2. Furthermore, the SEMP includes specific provisions mandated for the design and construction of a new landfill and requires the adoption of certain standards and measures for the design, bid tendering, construction, operation, and maintenance of the landfill and associated works.

Environmental Category: B (Partial Assessment)

3. Project preparation activities included the elaboration of a Sectoral Environmental Assessment (SEA) for solid waste that addressed structural issues in the legal and regulatory framework as well as defining institutional environmental management responsibilities. The study also proposed enhancement measures to ensure that participating institutions have the capacity to address any environmental impact associated with the project. Moreover, the SEA will serve as guidance for the policy and institutional-level strategic planning under component 1.
4. As part of the SEA work, two important tools were developed to ensure the environmental and social integrity of any project intervention under component 2. The first tool is a detailed EMF for civil works, and the second tool is a SEMP.

What are the main features of the EMF and the SEMP, and are they adequate?

5. The EMF outlines the required screening criteria for site selection (including those noted in the previous paragraph), as well as mitigation and management procedures. Municipalities will have to complete the site-specific EIA, including the final determination of the site, prior to undertaking construction of landfills.
6. The SEMP includes technical standards for the design and construction of landfills; guidelines for the preparation of municipal solid waste management (SWM) plans, environmental education and awareness programs, and an institutional strengthening program; and strategies to provide incentives for recycling and waste minimization.

7. Because the project will support investments in locations yet to be determined, municipalities seeking finance under component 2 will have to apply the EMF as part of their site selection and landfill design and adopt the SEMP as part of their construction processes.. In the event that a pre-identified landfill project receives financing retroactively, the municipalities must have updated, concluded, consulted, and disclosed their EIAs and EMPs according to the requirements of this project's Environmental Safeguards and the Bank Disclosure Policy OP 4.01.

How have stakeholders been consulted at the stage of (a) environmental screening and (b) draft EA report on the environmental impacts and proposed environment management plan? Describe mechanisms of consultation that were used and which groups were consulted.

8. The main stakeholders were consulted as a part of the preparation of the SEA. First, the project team took advantage of existing consultation processes set up by the government during the development of the National SWM Strategy. The Secretariat of Environment and Sustainable Development (SAyDS) put together a multidisciplinary Consultative Group of over 15 environmental civil society organizations with whom a number of elements of the project were discussed. In addition, Tucumán Province established a consultation group of NGOs with whom project team members met on a number of occasions during project preparation. Second, the project team held a number of consultations with environmental NGOs, community associations, private sector representatives, academicians, the media, and national, provincial and local authorities. Third, on several occasions project team members interviewed informal waste pickers working in existing dumpsites in a number of localities. Finally, an extensive social assessment (SA) was conducted in two of the participating provinces, Chubut and Tucumán.. The SA covered 6 localities andI included a survey with over 1,000 observations, 23 focus groups, and over 50 in-depth interviews with relevant stakeholders. Specific social guidelines were developed as part of the SA to be used during project implementation. Additional consultations with local communities are planned before additional localities are added through the lifetime of the project and during the preparation of the EMPs.

9. The SEA will be available at the offices of the National Urban Solid Waste Unit (NUSWU) in the SAyDS and in the World Bank Infoshop before Board approval. Future landfill project-specific EIAs and EMPs will similarly be made available to the public.

What mechanisms have been established to monitor and evaluate the impact of the project on the environment? Do the indicators reflect the objectives and results of the EMP?

10. The technical standards for the design and construction of landfills developed under the SEMP will be integrated into the contracts with private sector providers that will be responsible for building, operating, and maintaining the solid waste final disposal systems. Mitigation measures will be included in the contractors' bidding documents as well. The appropriate procedures by which the NUSWU will monitor environmental indicators will be described in the Operational Manual.

Social

Main Messages from the Social Assessment

11. During the first half of 2005, the SAyDS commissioned a social assessment to better understand the impacts that the project may have on individuals and communities currently carrying out waste picking at selected dumpsites and determine how to constructively integrate community actors and neighbors during the design and implementation of the project. The specific objectives of the social assessment are listed below:

- (i) Identifying relevant stakeholders and determine their attitude to solid waste management in their communities in order to incorporate their concerns during the design phase;
- (ii) Promote ownership of the project by a wide range of stakeholders early in the process;
- (iii) Determine the potential social impact of the proposed operation;
- (iv) Explore citizens' preferences regarding a variety of instruments and intervention modalities; and
- (v) Identify potential resistance to the proposed interventions.

12. To achieve these objectives, the study carried out a stakeholder analysis covering the following dimensions: (i) characteristics of the population involved, (ii) experience of citizens with waste management systems, (iii) expectations regarding the potential benefits of the project, (iv) levels of social capital and potential for participation, and (v) levels of trust in public and private institutions.

Methodology

13. Government of Argentina (GOA) officers contracted the study to the consulting firm SIGLA and monitored its implementation in close coordination with Bank technical staff. The study's comprehensive methodology included a literature review; analysis of secondary data; focus groups with neighbors, merchants, informal waste-pickers and civil society leaders; in-depth interviews with local and provincial authorities, service providers, informal waste-pickers, recyclers, and civil society organizations; and a survey of 1,260 waste producers. Field work was conducted in Chubut and Tucumán provinces in the following locations: San Miguel de Tucumán, Concepción, La Cocha, Trelew, Comodoro Rivadavia, and Esquel. A second consulting firm, Cooprogetti, conducted a separate survey, interviewing over 100 waste pickers in dumpsites.

Main Findings

14. The stakeholder analysis included in the study recognizes a variety of actors that need to be taken into consideration during project preparation and implementation. These actors include local, provincial, and national authorities; media agencies at both local and provincial levels; a number of civil society organizations; waste pickers operating in existing dumpsites, and area residents in general.

15. The social analysis concluded that although a few producers separate waste at origin, there is room for improvement. Survey respondents indicated that there is a lack of information about how to separate the waste and finally dispose of the separated waste. The study concluded that well-conceived public information campaigns could have a positive effect on behavioral change.

16. A well-articulated solid waste management project in Argentina needs to include a social dimension. There are a number of reasons for this. First, a significant number of families make their living from waste picking and may perceive the project as threatening. Second, it is important to anticipate potential NIMBY effects and put constituency building measures in place. Finally, waste separation at origin requires a change in behaviors that should be supported by public communications campaigns.

17. Informal waste pickers are not a homogenous group, and they resist formalization. The social assessment identified different groups of waste pickers with differential distribution of power and subsequent access to the recyclable materials. In the “waste circuit” some groups working in urban areas (*cirujas*) have “assigned” zones and get the “cream” of the waste. Others (*carreros/cartoneros*) have their own mobility, usually a carriage and a horse and access to recycling warehouses in addition to picking waste in urban areas. In many cases, municipal employees in charge of waste collection, also “select” waste in their way to the dumpsite.

18. Finally, a vast group of waste pickers (*quemeros*), work in the dumpsites picking whatever valuable waste they can find in this last part of the circuit. These workers - informal by definition - resist formalization and mechanisms such as the establishment of work schedules or prohibition of their children entering the dumpsites. Many waste pickers who were interviewed indicated their resistance to enter cooperatives, which they perceive as a potential loss of autonomy. This culture of informality poses important challenges for this project.

19. Waste-pickers migrate following the establishment of new dumpsites. This is an important factor because the project expects to open new sites in areas in which there are no waste pickers today and to close others where waste pickers are currently working. It is expected that those affected by the closing of existing sites will migrate to the new sites, reproducing the same type of work. This is a complex situation in two ways. First, opening new sites will not solve the social problems per se. Second, social tensions may be created in the new sites between waste pickers and longer-term residents. Finally, the social assessment identified high levels of mistrust on government authorities and a perception that the relocation of dumpsites will affect their sources of income.

20. In many cases children take an active role in waste picking. The social assessment identified a number of families living near the dumpsites in precarious housing. Many waste pickers work in the dumpsters with their children, who would otherwise be left alone in their homes. The project may need to consider alternatives such as nearby childcare centers to make sure that children do not enter the dumpsites while their parents work.

21. There seems to be a strong potential for involving private sector companies in project activities. Private participation in waste management has proven to be effective in other countries (e.g., Brazil), and a number of companies have shown interest in participating in the project a socially responsible manner. Following the successful experience of CEMPRE, an umbrella organization of private companies concerned about the environment, in Brazil, the Argentine branch is now willing to engage with government authorities and community-based organizations in a constructive way. This Corporate Social Responsibility (CSR) agenda also showed some results in Tucumán, where private companies and public schools partnered for the recycling of materials and generated almost US\$ 7,000 (about AR\$20,000) in profits for the schools.

22. In many locations, the social assessment found low levels of trust on public officials. This is especially important since the project will rely on local authorities for its implementation, pointing out to the need of partnering with civil society organizations and community groups on which citizens have higher levels of trust.

Recommendations

23. Because dealing with complex social realities is key to the success of the project and because the SAyDS has limited capacity to deal with these issues, it is important to strengthen the capacity of the SAyDS. To this end, the participation of a Social Inclusion Specialist in the

National Urban Solid Waste Unit to help provinces and municipalities deal with issues related to waste pickers and their organization at local level will be invaluable.

24. Taking into account the fact that this operation envisages the incorporation of additional municipalities over a 4-year period, it is important that local governments have the capacity to assess social dimensions as they incorporate into the program. The social assessment provided a set of guidelines for local self-assessments, which will need to be accompanied by concrete training.

25. Working with excluded populations is always difficult, and especially challenging when entire families may perceive the project as a threat to their subsistence. Working with intermediary organizations that are often closer to these populations has proven highly effective. In Argentina there are a number of cooperatives with concrete experience in community organizing and formalization of waste pickers, and these may be of great help to the project.

26. Engaging the media in a constructive manner is key for the success of the project. Since the program has many benefits to show, it would be important to proactively engage the media during its first implementation and later. This set of actors – who have taken already an important role – will be strategic allies when seeking public support for the implementation of the program, as well as, to overcome a potential resistance from groups opposed to the project.

27. Tailored communication campaigns are essential to help the project achieve its objectives. In particular, they will be key in reaching out to the various provincial institutions, public and private, to ensure that the necessary level of ownership. In addition to traditional mass media campaigns focused on the public, other targeted initiatives will have to be designed to reach each of the relevant audiences. These initiatives can range from specific presentations for key decision makers to informational workshops for cartoneros or visits to landfills by journalists covering environmental issues. The project will help the SAYDS and its provincial counterparts to formulate a communication strategy that encompasses all those aspects and is viable to implement with limited resources.

28. Participation activities should start before project effectiveness to build a constituency for reform among the different stakeholders, avoid NIMBY effects at the local level, and support informal waste pickers in organization and formalization to take better advantage of the benefits of the project.

29. Incentives are important for the formation and sustainability of inter-municipal consortia. The social assessment found enthusiasm and an apparent political will to engage in this type of partnership. However, it is important to think beyond current administrations and develop the necessary institutional tools to ensure the sustainability of these new bodies. It is also important to think of mechanisms to dissolve consortia that prove not to be working as expected.

30. The project should support informal waste pickers in organization and formalization. As witnessed in Argentina and other parts of the world, waste pickers benefit substantially from organization and formalization. They can avoid intermediaries and transaction costs, improve their working conditions, and strengthen their self-esteem and empowerment. Organization will also help reduce the chance of social conflict, which in turn may hamper the effectiveness of the project.

31. Technical environmental actions should be accompanied by institutional capacity building at the local level. Strengthening the capacity of provincial and municipal authorities, civil society

organizations (including neighborhood associations many times co-opted by local political leaders), and waste picker associations can yield high dividends during project implementation. This will also help moderate the expectation of all actors. A number of actors believe that “waste is a great business” Unreasonable expectations can lead to high levels of frustration and resistance to the project.

32. The project should take advantage of other public interventions to strengthen its effectiveness. For example, coordinating activities with the formal education system and with health services may be good vehicles for public education.

Annex 11: Project Preparation and Supervision
ARGENTINA: National Urban Solid Waste Management Project

	Planned	Actual
PCN review		September 1, 2004
PID to PIC	December 2, 2005	December 2, 2005
ISDS to PIC	December 2, 2005	December 2, 2005
Appraisal	December 6, 2005	December 5, 2005
Negotiations	December 16, 2005	December 16, 2005
Board/RVP approval	February 28, 2006	
Planned date of effectiveness	July, 2006	
Planned date of mid-term review	December, 2008	
Planned closing date	July, 2011	

Key institutions responsible for preparation of the project:

- World Bank
- SAyDS
- Dirección Provincial de Medio Ambiente de Tucumán
- Subsecretaría de Medio Ambiente de la Provincia de Mendoza
- Subsecretaría de Recursos Naturales y Medio Ambiente de la Provincia de Chubut
- Subsecretaría de Medio Ambiente de la Provincia de Santa Cruz

Bank staff and consultants who worked on the project included the following:

Name	Title	Unit
Horacio Terraza	Task Manager	LCSSEN
Abel Mejía	Sector Manager	LCSSEN
Carter J. Brandon	Sector Leader	LCSSES
Francisco Grajales	JPA	LCSSEN
Roberto Aiello	Technical Specialist	ENVCF
Roberto A. Senderowitsch	Sr. Social Scientist	LCSPS
Andrés Mac Gaul	Sr. Procurement Specialist	LCOPR
Antonio L. Blasco	Financial Management Spec.	LCOAA
Sandra Cointreau	Solid Waste Mgmt Advisor	TUDUR
Dan Hoornweg	Sr. Environmental Engineer	LCSFW
Juan D. Quintero	Sr. Environmental Spec.	LCSSEN
Santiago Sandoval	Program Assistant	LCSSES
Eduardo Dopazo	Sr. Operations Officer	ENVCF
Alex Kossoy	Sr. Financial Specialist	ENVCF
Carl Bartone	Solid Waste Mgmt. Expert	External
Juan Sanguinetti	Financial-Economic Consultant	External
AF consulting	SWM consultants	External
FARN	Legal consultants	External
El Ceibo	Social consultants	External

Bank funds expended to date on project preparation:

1. Bank resources:	USD\$252,023.33
2. Total:	USD\$252,023.33

Estimated approval and supervision costs:

1. Remaining costs to approval:	USD\$30,000
2. Estimated annual supervision cost:	USD\$95,000

Annex 12: Documents in the Project File
ARGENTINA: National Urban Solid Waste Management Project

1. Project Documents

Project Concept Note
Project Information Data Sheet
Integrated Safeguards Data Sheet
Minutes of the PCN Review Meeting
Minutes of the QER Meeting
Project Appraisal Document

2. Projects Reports and Studies

- AF Consulting (Sweden); Fundación Ambiente y Recursos Naturales (FARN, Argentina). 2005. *Design of a Solid Waste Management Regulatory Framework Model and other Related Documents for Argentina.*
- COOPROGETTI, 2005. *Evaluación Ambiental Sectorial (Residuos Sólidos Urbanos en Argentina).*
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- Rosso, M. 2005. *Costos de Rellenos Sanitarios para distintas Tasas de Generación de Residuos.*
- Rosso, M. 2005. *Modelo para el Cálculo del Radio Máximo entre un Centro Urbano y un Relleno Sanitario Regional.*
- Sanguinetti, J. 2005. *Análisis Económico de los Proyectos de Disposición Final de Residuos Sólidos Urbanos.*
- Sanguinetti, J; Tomasi F. 2005. *Relevamiento de información de recaudación y aplicación de fondos para la recolección, tratamiento y disposición final de residuos sólidos urbanos en municipios de Argentina.*
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3. References

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Annex 13: Statement of Loans and Credits
ARGENTINA: National Urban Solid Waste Management Project

Project ID	FY	Purpose	Original Amount in US\$ Millions				Cancelled	Undisbursed	Difference between expected and actual disbursements	
			IBRD	IDA	SF	GEF			Orig.	Frm. Rev'd
P092836	2006	AR Inst. Strengthening - ANSES II TA	25.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00
P088220	2005	AR (APL1) Urban Flood Prevention and Drainage	130.00	0.00	0.00	0.00	0.00	118.50	3.24	0.00
P070628	2005	AR-Provincial Road Infrastructure Project	150.00	0.00	0.00	0.00	0.00	150.00	0.00	0.00
P088032	2005	AR(CRL1)Buenos Aires Infrastr SIDP (1APL)	200.00	0.00	0.00	0.00	0.00	199.00	11.00	0.00
P071025	2004	AR-Provincial Maternal-Child Health Inv Ln	135.80	0.00	0.00	0.00	0.00	121.68	-1.60	0.00
P072637	2004	AR-Prov. Maternal-Child Hlth Adj PMCHSAL	750.00	0.00	0.00	0.00	0.00	150.00	150.00	0.00
P078143	2004	GEF AR Enabling Act. Convention on Climate Change	0.00	0.00	0.00	1.14	0.00	0.71	0.50	0.00
P083982	2004	AR Economic Recovery Support SAL	500.00	0.00	0.00	0.00	0.00	500.00	500.00	0.00
P088153	2004	AR National Highway Asset Management	200.00	0.00	0.00	0.00	0.00	175.87	85.88	0.00
P070374	2002	AR PROFAM LIL	5.00	0.00	0.00	0.00	0.00	2.20	2.20	2.20
P069913	2002	AR Santa Fe Provincial Reform	330.00	0.00	0.00	0.00	0.00	126.70	126.70	0.00
P068344	2001	AR Cordoba PRL5	303.00	0.00	0.00	0.00	0.00	75.00	75.00	0.00
P064614	2001	AR- Second Secondary Education Project	56.99	0.00	0.00	0.00	0.00	13.57	13.57	0.00
P057473	2001	AR Indigenous Community Development LIL	5.00	0.00	0.00	0.00	0.00	2.72	2.72	0.92
P044447	2001	AR Catamarca Provincial Reform	70.70	0.00	0.00	0.00	0.00	24.30	25.00	0.00
P049012	2001	GEF AR-Marn.Pollution.Prevention	0.00	0.00	0.00	8.35	0.00	7.42	4.68	4.27
P055482	2000	AR-Public Health Surveillance and Disease Control.	52.50	0.00	0.00	0.00	0.00	6.28	6.28	-0.46
P045048	1999	GEF AR-Renewable Energy in Rural Markets	0.00	0.00	0.00	10.00	0.00	9.38	8.87	0.08
P057449	1999	AR State Modernization	30.30	0.00	0.00	0.00	0.00	18.17	18.17	-9.93

P006043	1999	AR Renewable Energy in Rural Markets	30.00	0.00	0.00	0.00	0.00	25.22	25.22	2.29
P006046	1999	AR Water Sector Reform	30.00	0.00	0.00	0.00	0.00	17.76	17.76	17.76
P006058	1999	AR-Social Protection 4	90.80	0.00	0.00	0.00	0.00	5.10	5.10	5.10
P039787	1998	GEF AR-Biodiversity Conservation	0.00	0.00	0.00	10.10	0.00	6.31	5.62	3.41
P006041	1998	AR Small Farmer Development.	75.00	0.00	0.00	0.00	0.00	17.83	17.83	5.50
P052590	1998	AR National Highway Rehabilitation and Maintenance	450.00	0.00	0.00	0.00	0.00	30.22	30.22	30.22
P006010	1997	AR Provincial Agricultural Development I	125.00	0.00	0.00	0.00	0.00	43.61	43.61	14.28
P006052	1997	AR Flood Protection	200.00	0.00	0.00	0.00	0.00	17.48	17.48	-19.28
P006059	1997	AR-Maternal-Child Health and Nutrition 2	100.00	0.00	0.00	0.00	0.00	1.99	1.99	-1.08
P005980	1997	AR Provincial Roads	300.00	0.00	0.00	0.00	0.00	27.19	27.19	27.19
P040808	1997	AR N.Forest Protection	19.50	0.00	0.00	0.00	0.00	8.42	8.42	1.06
P039584	1997	AR B.A.URB.TSP	200.00	0.00	0.00	0.00	0.00	36.45	36.45	36.45
P006040	1996	AR FORESTRY/DV	16.00	0.00	0.00	0.00	0.00	2.93	2.93	2.93
P037049	1996	AR Public Investment Strengthening	16.00	0.00	0.00	0.00	5.70	0.48	6.18	0.68
Total:			4,596.59	0.00	0.00	29.59	5.70	1,967.49	1,278.21	123.59

ARGENTINA
STATEMENT OF IFCs
Held and Disbursed Portfolio
In Millions of US Dollars

FY Approval	Company	Committed				Disbursed			
		IFC				IFC			
		Loan	Equity	Quasi	Partic.	Loan	Equity	Quasi	Partic.
2000	ASF	4.00	0.00	0.00	4.10	4.00	0.00	0.00	4.10
1998	AUTCL	3.64	0.00	0.00	0.00	3.64	0.00	0.00	0.00
2004	Aceitera General	50.00	0.00	20.00	30.00	50.00	0.00	20.00	30.00
1995/97/99	Acindar	9.60	0.00	0.00	0.00	9.60	0.00	0.00	0.00
1994/95	Aguas	18.82	0.00	0.00	44.63	18.82	0.00	0.00	44.63
1999	American Plast	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00
2000/04	BACS	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1999/04/05	Banco Galicia	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2000	Bco Hipotecario	1.00	0.00	14.54	26.10	1.00	0.00	14.54	26.10
1997	Bunge-Ceval	0.00	0.00	5.00	0.00	0.00	0.00	5.00	0.00

1996	CAPSA	2.08	0.00	1.91	4.63	2.08	0.00	1.91	4.63
1995	CEPA	3.00	0.00	0.00	1.20	3.00	0.00	0.00	1.20
1994	EDENOR	3.75	0.00	15.00	0.00	3.75	0.00	15.00	0.00
1998	F.V. S.A.	3.75	0.00	4.00	0.00	3.75	0.00	4.00	0.00
1996	Grunbaum	2.50	0.00	0.00	3.33	2.50	0.00	0.00	3.33
	Grupo Galicia	0.00	3.06	0.00	0.00	0.00	3.06	0.00	0.00
1998	Hospital Privado	8.21	0.00	0.00	0.00	8.21	0.00	0.00	0.00
1992	Huantraico	0.00	27.00	0.00	0.00	0.00	0.00	0.00	0.00
2004	Jumbo Argentina	0.00	40.00	0.00	0.00	0.00	40.00	0.00	0.00
	LD Manufacturing	8.45	0.00	5.00	0.00	8.45	0.00	5.00	0.00
1992	Malteria Pampa	0.00	0.00	2.00	0.00	0.00	0.00	2.00	0.00
1997	Milkaut	0.00	1.61	0.00	0.00	0.00	0.38	0.00	0.00
1993/94/03	Molinos	30.00	0.00	0.00	30.00	20.00	0.00	0.00	20.00
1995	Nahuelsat	2.05	0.00	0.00	0.00	2.05	0.00	0.00	0.00
1996/99	Neuquen Basin	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
1993	Nuevo Central	0.00	3.00	0.00	0.00	0.00	3.00	0.00	0.00
	PCR	5.48	0.00	0.00	0.00	5.48	0.00	0.00	0.00
1998	Patagonia	1.76	0.00	1.00	0.00	1.76	0.00	1.00	0.00
1998	Patagonia Fund	0.00	9.37	0.00	0.00	0.00	2.40	0.00	0.00
1999/05	S.A. San Miguel	20.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00
1995	SanCor	9.10	0.00	20.79	0.00	9.10	0.00	20.79	0.00
1995	Socma	0.94	0.00	0.00	15.00	0.94	0.00	0.00	15.00
1998	Suquia	0.00	0.00	10.50	0.00	0.00	0.00	10.50	0.00
1997	T6I	4.44	0.00	5.00	7.50	4.44	0.00	5.00	7.50
1997	Terminal 6	4.44	0.00	0.00	3.25	4.44	0.00	0.00	3.25
1995	Terminales Port.	1.50	0.00	0.00	0.00	1.50	0.00	0.00	0.00
1995/00	Tower Fund	0.00	1.68	0.00	0.00	0.00	0.83	0.00	0.00
1995	Tower Fund Mgr	0.00	0.05	0.00	0.00	0.00	0.05	0.00	0.00
1996	Transconor	20.29	0.00	17.87	157.58	20.29	0.00	17.87	157.58
2001	USAL	9.27	0.00	0.00	0.00	7.27	0.00	0.00	0.00
1997/03/05	Vicentin	20.00	0.00	15.00	0.00	0.00	0.00	0.00	0.00
1993	Yacylec	0.00	2.52	0.00	0.00	0.00	2.52	0.00	0.00
Total portfolio:		313.07	93.29	138.61	337.32	196.07	52.24	123.61	317.32

FY Approval	Company	Approvals Pending Commitment			
		Loan	Equity	Quasi	Partic.
2004	Banco Rio TFF	0.02	0.00	0.00	0.05
2001	Gasnor	0.02	0.00	0.00	0.02
2001	ITBA	0.01	0.00	0.00	0.00
2005	Vicentin Exp.	0.00	0.00	0.00	0.05
Total pending commitment:		0.05	0.00	0.00	0.12

Annex 14: Legal Framework for SWM Inter-municipal Agreements

ARGENTINA: National Urban Solid Waste Management Project

Argentinean municipalities have been facing similar problems in terms of providing final solid waste (SW) disposal services but have not been successful in finding common solutions. Main municipal problems are related to lack of political agreement, institutional capacity, technical competence, adequate cost recovery systems, and financial resources. One of the main objectives of the proposed project is to support regional solutions for SW final disposal services through the establishment of inter-municipal regions. The technical studies carried out for the design of Provincial SWM Plans have provided sound economic and technical arguments favoring a stronger collaboration between municipalities.

Inter-municipal cooperation offers municipalities the opportunity to provide or pay for services collectively, for example, for construction of new infrastructure for SW final disposal, purchase of hauling and separation equipment, contracting collection and transport services, and institutional development for organization in charge of SW management. Some of the most important benefits accruing from inter-municipal cooperation in providing final disposal services are listed below.

- (i) Economies of scale in the construction and operation of solid waste management (SWM) infrastructure;
- (ii) Creation of an independent institution responsible for and with better institutional capacity for planning, managing, and supervising SWM systems;
- (iii) Improved cost recovery through the implementation of separate accounting and specific tariff and invoicing systems; and
- (iv) Increased negotiation capacity to attract more competent contractors

The project's eligibility criteria include (i) the establishment of the inter-municipal institution responsible for providing or financing the final disposal services and (ii) the definition of the objectives, scope, and responsibilities of the municipalities participating in an inter-municipal legal agreement. The legal characteristics of these entities will depend on the legal framework of each participating municipality. Therefore, provincial governments will have a catalyzing role in initiating and providing support for successful inter-municipal cooperation.

Legal Framework for Inter-municipal Cooperation

At the country level, Article 125 of the National Constitution recognizes the right of provinces to create regions to pursue common social and economic development. Therefore, a region is the result of a cooperation agreement between provinces. It is important to note that while regions do not constitute a higher level of political government than the participating provinces, they provide the opportunity to attain objectives that may go beyond the province's individual capacity. In line with this national-provincial legislative framework, provinces have developed local legislation to replicate the model at provincial-municipal level. Inter-municipal cooperation is already in place in many provinces, enabling their municipalities to reach specific cooperation agreements. As part of this project's preparation activities, an assessment of the legal conditions for inter-municipal cooperation was carried out in the pre-identified provinces of Chubut, Mendoza, and Tucumán. The Santa Cruz sub-project will not involve inter-municipal agreements. The main results are outlined in the following table.

Table 14.1. Legal Framework for Inter-Municipal Cooperation in Selected Argentinean Provinces

Province	Legal framework	Description
Chubut		
	Provincial Constitution Article 237	Municipalities have the right to create sub-regions for economic and social development and to create organisms within which to achieve their goals. Municipalities are entitled to sign inter-municipal agreements for the common provision of services, execution of public works, technical and financial cooperation, and activities of interest.
	Provincial Law No. 3098 for Municipal Corporations	Establishes, by approval of the deliberating council (<i>consejo deliberante</i>) different forms of inter-municipal associations. Article 44: The council has to authorize with a two-thirds vote of its members all consortiums, cooperatives or agreements. Article 45: Inter-municipal consortia can include the province, the nation, or neighboring municipalities. Municipal representation in consortia should be at least 51 percent, and the share of revenues accruing from the consortium will have to be invested in improving the provision of services. Municipalities can participate in the establishment of companies or societies of any type to achieve the public good. Article 46: The municipal services cooperatives should be established with capital from the municipalities and from users' contributions. Article 51: The council has to allow the provision of public services for street cleaning, irrigation, public lighting, water distribution, sewage, sanitary inspections, transport, and any other aspect relevant to collective welfare.
Mendoza		
	Provincial Law No. 6957	Authorization to municipalities for forming consortia for the provision and management of inter-municipal public services Article 2: Consortia formed under this law shall establish in their act the objectives, functions, and responsibilities, attributions, financial resources, administrative and managerial organization, and conflict resolution mechanisms. Moreover, consortia should be in accordance with all norms regulating their activities. Article 3: Consortia formed for solid waste management services will have to abide by Laws No. 5961 for environmental protection and N0. 5970 for closure of dumpsites and treatment of municipal solid waste. Article 4: The <i>Dirección de Personas Jurídicas</i> will approve the consortia's acts and authorize them to begin their functions provided that they comply with all legal requirements.
Tucumán		
	Provincial Law No. 5529	Defines the municipalities as autarchic, with full recognition of their rights as juridical entities in the sense that they can enter into contractual agreements and incur themselves Article 24: The role of the municipal deliberating council (<i>consejo deliberante</i>) is to (among others) to regulate the provision of public services that will satisfy local necessities and that are not under the jurisdiction of provincial or national authorities; authorize participation in inter-municipal agreements for the provision of public services, construction of public works, and design of common development plans; issue concessions for public services; and provide for public hygiene and urban cleaning.

As noted, there are several differences among provincial legislation in regard to the legal framework governing inter-municipal cooperation agreements. While provinces such as Mendoza and Chubut have detailed legislation for consortiums, including specifics for SWM, others such as Tucumán have more general frameworks. However, all provinces allow the creation of inter-municipal organisms for the provision of public services in one way or another. It is expected that there would be no legal impediment hindering the implementation of regionally managed landfills as promoted by this project.

Inter-municipal Agreements for SWM

To facilitate and support collaboration among municipalities, project preparation included the development of models for inter-municipal agreements based on existing legal conditions in Argentinean provinces. The project task team delivered three suggested models to the pre-identified provinces and group of municipalities as references. The proposed options for inter-municipal agreements are summarized below.

- (i) The first model presents a general framework agreement wherein the municipalities express their intention to cooperate around common SWM issues such as the construction and operation of a regional landfill. National and provincial SWM legislation principles are set out. This type of agreement will work as a starting point for municipalities to develop different joint projects. The agreement also provides an opportunity to enhance implementation of important SWM principles such as monitoring, fee systems, and cost recovery mechanisms in all the participating municipalities;
- (ii) The second model of agreement is based on cooperation in the form of an association between municipalities led by a steering committee. This would be a suitable model when the activities in common are not very extensive technically and economically, such as SWM awareness campaigns or contracting only operation and maintenance services; and
- (iii) The third model is an agreement in the form of a consortium. This type of organism is considered suitable for the construction and operation of regional landfills because the activities involved represent and require long-term commitments, extensive management, and large economic flows from the partner municipalities. There is experience with this kind of agreement in Argentina, but for purposes other than SWM.

Although the aims and forms of an inter-municipal agreement may vary, experience has shown some general content recommendations, as described below.

- A. **Purpose.** Visions, aims, and objectives of the cooperation should be clearly stated. Different municipalities may have different reasons for and interests in collaboration, but the common core activities will have to strive in a determined direction to ensure successful results.
- B. **Territorial scope.** The agreement should determine specifically the area covered and boundaries of the signing municipalities.
- C. **Definition of waste.** The types of waste included under the agreement, and therefore the object of inter-municipal management, must be defined. Distinctions and restrictions of wastes have to be clearly stated.
- D. **Duties and powers.** Clear distribution of power and responsibilities is vital in a multi-municipal organization. In simple forms of cooperation, the principle of “one municipality, one share” is an alternative, while in other cases it may be more suitable to distribute shares or positions of assemblies (boards) in relation to the number of inhabitants. The latter is relevant for multi-municipal organizations based on closer cooperation and deeper economic dependence around landfills, as population figures also could be considered an approximation of the generation of municipal solid waste.

- E. **Financial resources.** An essential element of the agreement is to determine the distribution of economic burdens and possible benefits of the common organization. This is especially important in activities with high economic risks. Initially, the joining partners might bring existing property or staff into the multi-municipal organization, for which the value should be assessed and compensated (as could be the case for the host municipality). The costs of operation will also have to be distributed among the partners. These costs could be determined as a fixed yearly contribution based, for example, on the population, and revised regularly to correct for differences in demographic growth. Costs could also be combined with a more flexible fee, reflecting the use of the common landfill, provided that there are ways to measure the incoming waste quantities by weight or by volume. A combination of fixed and flexible fees could provide incentives for waste minimization measures at the same time as stable income to cover the capital costs.
- F. **Net worth.** A definition of all properties, real estate, and chattels that will become the patrimony of the multi-municipal organism has to be included in the agreement. The net worth shall be made up of properties, real estate, and chattels that (i) provinces or municipalities may transfer to the multi-municipal organism for their use, (ii) the organism purchases to achieve its purposes, or (iii) public or private entities have donated.
- G. **Council of Administration.** It is important to specify in the agreement how the participating organizations will have access to information and decision making. In inter-municipal cooperation, as well as in solid waste management in general, openness to public participation and information is extremely important. A Council of Administration could be assisted and advised by a Council on Solid Waste as a consultative and non-binding body. The Council on Solid Waste, shall consist of a representative from each member's Town Council, a technical representative from each municipal environmental department, a representative from the provincial environmental/solid waste authority, representatives of nongovernmental organizations, and representatives of the business community (e.g., chambers of commerce).
- H. **Conflict resolution.** A conflict resolution mechanism has to be established in order to solve disputes among the parties prior to any legal action.
- I. **Winding up and liquidation.** The agreement should also specify the conditions for the timeframe, extension, and termination of the agreement, as well as the requirements for partners to join and leave the multi-municipal organism.

Annex 15: Carbon Finance under This Project
ARGENTINA: National Urban Solid Waste Management Project

The Carbon Finance Operations at the World Bank

The role of the World Bank's Carbon Finance Operations (CFO) is to catalyze a global carbon market that reduces transaction costs, supports sustainable development, and reaches and benefits the poorer communities of the developing world. The carbon finance initiatives are an integral part of the Bank's mission to reduce poverty through environmental and energy strategies. The threat climate change poses to long-term development and the ability of the poor to escape from poverty is of particular concern to the Bank. The impacts of climate change threaten to unravel many of the development gains of the past several decades.

The World Bank CFO manages a pool of funds contributed by governments and companies in OECD countries to purchase project-based greenhouse gas emission reductions in developing countries and countries with economies in transition. The emission reductions are purchased through one of the CFO's carbon funds on behalf of the participant, within the framework of the Kyoto Protocol's Clean Development Mechanism (CDM) and Joint Implementation (JI).

Unlike other World Bank development products, the CFO does not lend or grant resources to projects, but rather contracts to purchase emission reductions in the form of a commercial transaction, paying for them annually once they have been verified by a third party auditor. Carbon finance provides a means of leveraging new private and public investment into projects that reduce greenhouse gas emissions, thereby mitigating climate change while linking it to sustainable development.

The Bank's carbon finance operations have demonstrated numerous opportunities for collaborating across sectors and have served as a catalyst in bringing climate issues to bear in projects relating to several sectors, including solid waste management. The Bank is therefore making every effort to ensure that developing countries such as Argentina can benefit from international efforts to address climate change. A vital element of these efforts is ensuring that developing countries are key players in the emerging carbon market for greenhouse gas emission reductions.

CFO activities in Argentina: The Argentine Carbon Facility (ACF)

In line with the CFO activities in Argentina, the Secretariat of Environment and Sustainable Development (SAyDS) has announced the launch of the Argentine Carbon Facility (ACF). The objectives of this program are to (i) promote new investments in climate-friendly technologies in Argentina from both domestic and foreign sources, (ii) enhance the country's capacity to realize the full potential of its carbon market, and (iii) promote a partnership between the private and public sectors to deliver high quality emission reductions that address the global effort to mitigate the effects of climate change and promote national sustainable development.

The initiative is also intended to overcome several of the barriers identified by the SAyDS as contributing to a relatively small quantity of CDM projects either concluded or under development in the country. These barriers include (i) relatively little access to external financial markets to contribute to the underlying finance of CDM projects, (ii) reliance on the domestic financial market, which is recovering from the crisis of 2001–2002 and has many other competing priorities, (iii) uneven awareness among investors of the opportunity for carbon finance and its contribution to lowering investment risks, and (iv) uneven awareness about successful projects in various sectors and lack of capacity to replicate them, particularly in the private sector.

Carbon Finance and the Argentina SWM Project

The Argentina National SWM Project was designed to incorporate the possibility of developing CDM projects as a result of the construction of facilities, related to SW processing, generating GHGs and with potential for emissions reduction (ER). Consequently, it is expected that the municipalities or groups of municipalities would benefit from Carbon Finance through a stream of revenues generated by the potential sale of emission reductions (ERs). These additional revenues are expected to partially finance the operations and management (O&M) costs of the final disposal operation. In some cases they may cover up to 30 percent of these costs.

To guarantee benefits from the CF revenues, the project includes technical and contractual conditions in its eligibility criteria. First, it is mandatory for each participating municipality, or municipal consortia, to include a landfill gas capture and flaring system in the engineering design. Second, it is mandatory for the consortia to sell its emission reductions (ERs) either to the Bank or some other broker or developer. Between 1.2 million and 1.5 million tons CO₂ equivalent could be mitigated and sold until 2012 through the implementation of the pre-identified sub-projects. At current international carbon prices of between US\$6.0 and US\$7.0 per ton CO₂ equivalent, this represents some US\$6–US\$10.5 million. Table 15.1 lists the sites in which financial studies have been completed.

Table 15.1. Results of Financial Studies in Sites Proposed for /CDM Projects

Potential Sites	Total estimated CER income	CER percentage of O&M cost	Estimated CERs until 2012 (tCO ₂ e)	Estimated CERs until 2015 (tCO ₂ e)
Río Gallegos, Santa Cruz	\$ 701,353.00	21%	30,709.00	75,050.00
Mendoza Este	\$ 1,778,079.00	18%	77,855.00	190,267.00
Mendoza Centro	\$ 592,693.00	28%	25,952.00	63,422.00
Mendoza Metropolitana	\$ 7,307,172.00	30%	383,940.00	845,910.00
Pto. Madryn, Rawson, Trelew	\$ 1,679,296.00	23%	58,823.00	164,991.00
Comodoro Rivadavia	\$ 1,412,585.00	21%	49,481.00	138,787.00
San Miguel de Tucumán	\$ 6,820,027.00	30%	358,344.00	789,516.00

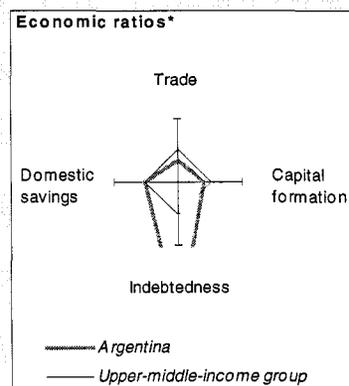
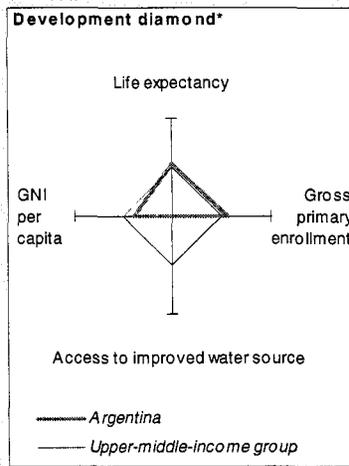
The World Bank takes note of the basic conditions and procedures set forth by the SAyDS of Argentina to be followed by interested sponsors for the submission and approval of CF projects originating from the SWM project. The main points are listed below:

- (i) Project approval. All projects would be submitted by the sponsors to the SAyDS as the Designated National Authority (DNA) for approval, in compliance with Resolution SAyDS N° 825/2004;
- (ii) Emission Reductions (ERs). 100% of the ERs resulting from the SWM project would be channeled through the ACF;
- (iii) Revenue. Revenue resulting from the sale of ERs of any activity resulting from the SWM project would be distributed between the SAyDS, the province and municipalities in accordance with the respective proportion of investment incurred during construction, operation and maintenance from each alluded entity during the entire lifetime of the facility;
- (iv) Reserve fund. Municipalities or Consortia would constitute a reserve fund with the total amount of the revenue stream resulting from the sale of ERs limited to their municipal proportion. These funds will have to be dedicated to ensure the construction of the second cell of the landfill and to finance O&M cost. Payments would be disbursed to a special account to be opened by the municipality or Consortia to warranty the total or partial financing of the future subsequent cells of the landfill and its O&M costs; and
- (v) Transaction costs. The SAyDS would charge a 2 percent transaction fee of the total ERs of projects derived from the SWM project, to cover its operational costs. This fee would be automatically discounted from the disbursements to the sponsors.

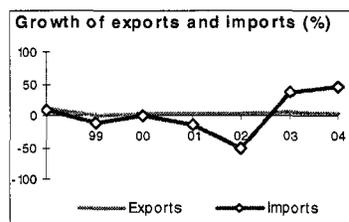
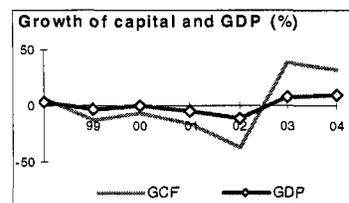
Annex 16: Country at a Glance

ARGENTINA: National Urban Solid Waste Management Project

POVERTY and SOCIAL	Argentina	Latin America & Carib.	Upper-middle-income		
	2004				
Population, mid-year (millions)	38.2	541	576		
GNI per capita (Atlas method, US\$)	3,720	3,600	4,770		
GNI (Atlas method, US\$ billions)	142.2	1,948	2,748		
Average annual growth, 1998-04					
Population (%)	10	14	0.8		
Labor force (%)	19	0.9	-0.9		
Most recent estimate (latest year available, 1998-04)					
Poverty (% of population below national poverty line)	..	..	..
Urban population (% of total population)	90	77	72		
Life expectancy at birth (years)	74	71	69		
Infant mortality (per 1,000 live births)	17	28	24		
Child malnutrition (% of children under 5)	..	..	..
Access to an improved water source (% of population)	..	89	93		
Literacy (% of population age 15+)	97	89	91		
Gross primary enrollment (% of school-age population)	119	123	106		
Male	120	126	108		
Female	119	122	106		
KEY ECONOMIC RATIOS and LONG-TERM TRENDS					
	1984	1994	2003	2004	
GDP (US\$ billions)	79.1	257.4	129.6	151.5	
Gross capital formation/GDP	20.0	19.9	15.1	17.7	
Exports of goods and services/GDP	7.6	7.5	25.0	23.4	
Gross domestic savings/GDP	22.8	16.9	25.9	22.5	
Gross national savings/GDP	..	15.6	20.7	17.9	
Current account balance/GDP	-3.2	-4.3	6.1	0.9	
Interest payments/GDP	4.1	12	10	10	
Total debt/GDP	61.8	29.1	128.2	109.5	
Total debt service/exports	63.4	25.2	38.5	30.9	
Present value of debt/GDP	143.9	..	
Present value of debt/exports	512.4	..	
	1984-94	1994-04	2003	2004	2004-08
(average annual growth)					
GDP	2.4	0.3	8.8	9.0	2.7
GDP per capita	0.9	-0.7	7.8	8.0	1.7

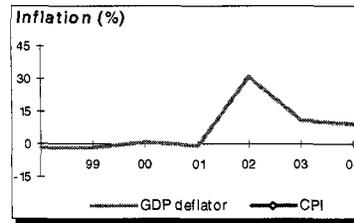


STRUCTURE of the ECONOMY	1984	1994	2003	2004
	(% of GDP)			
Agriculture	8.3	5.5	11.0	11.2
Industry	39.7	29.0	34.7	34.8
Manufacturing	29.7	19.3	23.9	23.9
Services	51.9	65.5	54.3	54.1
Household final consumption expenditure	..	70.0	62.7	69.7
General gov't final consumption expenditure	..	13.2	11.4	7.8
Imports of goods and services	4.8	10.6	14.2	13.7
(average annual growth)				
Agriculture	1.9	2.1	6.9	7.0
Industry	1.6	-0.6	16.5	7.0
Manufacturing	1.3	-1.0	16.0	7.0
Services	2.2	0.8	7.4	5.0
Household final consumption expenditure	..	-0.3	8.8	6.2
General gov't final consumption expenditure	..	1.1	15	9.5
Gross capital formation	3.3	-3.3	38.2	32.9
Imports of goods and services	13.8	-2.3	37.6	45.4



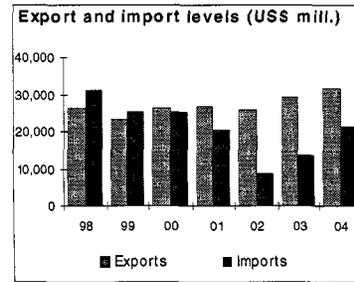
PRICES and GOVERNMENT FINANCE

	1984	1994	2003	2004
Domestic prices				
<i>(% change)</i>				
Consumer prices	626.7	..	..	..
Implicit GDP deflator	606.7	2.8	10.5	9.2
Government finance				
<i>(% of GDP, includes current grants)</i>				
Current revenue	0.0	18.4	20.5	22.4
Current budget balance	0.0	0.7	1.3	3.3
Overall surplus/deficit	0.0	0.0	0.5	2.4



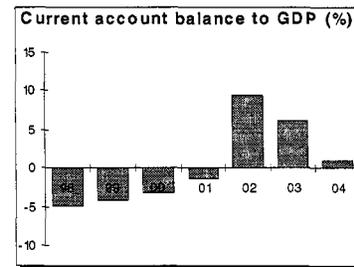
TRADE

	1984	1994	2003	2004
<i>(US\$ millions)</i>				
Total exports (fob)	..	15,866	29,376	31,746
Food	..	1,333	2,597	2,807
Meat	..	98	1,043	1,127
Manufactures	..	4,489	8,752	9,458
Total imports (cif)	..	21,524	13,813	21,323
Food
Fuel and energy	..	674	395	610
Capital goods	..	10,806	6,445	9,949
Export price index (2000=100)	..	96	107	110
Import price index (2000=100)	..	105	101	99
Terms of trade (2000=100)	..	91	106	111



BALANCE of PAYMENTS

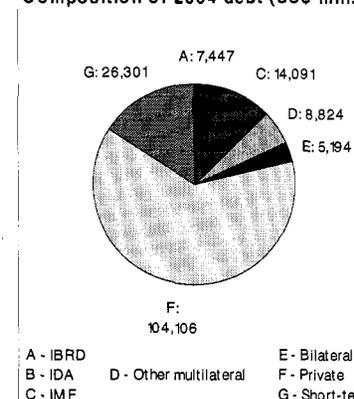
	1984	1994	2003	2004
<i>(US\$ millions)</i>				
Exports of goods and services	9,607	19,387	33,231	35,504
Imports of goods and services	5,961	27,305	18,485	27,154
Resource balance	3,646	-7,918	14,746	8,350
Net income	-6,143	-3,680	-7,425	-7,592
Net current transfers	..	..	..	..
Current account balance	-2,497	-11,100	7,941	1,421
Financing items (net)	2,469	11,100	-7,941	-1,421
Changes in net reserves	28	..	..	..
Memo:				
Reserves including gold (US\$ millions)	1243	14,327	14,153	..
Conversion rate (DEC, local/US\$)	1.00E-5	10	2.9	3.0



EXTERNAL DEBT and RESOURCE FLOWS

	1984	1994	2003	2004
<i>(US\$ millions)</i>				
Total debt outstanding and disbursed	48,857	74,846	166,086	165,963
IBRD	503	4,109	7,508	7,447
IDA	0	0	0	0
Total debt service	6,281	5,750	14,007	12,119
IBRD	132	709	3,350	1,065
IDA	0	0	0	0
Composition of net resource flows				
Official grants	5	16	37	..
Official creditors	-22	731	-733	-212
Private creditors	14	6,477	85	-2,254
Foreign direct investment (net inflows)	268	3,635	1,020	..
Portfolio equity (net inflows)	0	3,116	65	..
World Bank program				
Commitments	100	509	1,850	336
Disbursements	96	548	1,963	771
Principal repayments	76	425	2,968	832

Composition of 2004 debt (US\$ mill.)



Annex 17: Map
ARGENTINA: National Urban Solid Waste Management Project

MAP SECTION

