

Research on Low Income DSM Programs for Toronto Hydro for Fall 2004

Proposal prepared by:

Advocacy Centre for Tenants Ontario,
Canadian Environmental Law Association,
Income Security Advocacy Centre and
Toronto Environmental Alliance

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Low Income DSM Programs for Toronto for Hydro Fall 2004

Our Project

The four project proponents, Advocacy Centre for Tenants Ontario (ACTO), Canadian Environmental Law Association (CELA), Income Security Advocacy Centre (ISAC) and Toronto Environmental Alliance (TEA) are requesting funding from Toronto Hydro to work with them through the mobilization of the Low Income Energy Network (LIEN) to develop a set of ready to implement low income DSM programs that Toronto Hydro can implement in the fall of 2004. When this work is completed, the project proponents would like to seek additional funding from Toronto Hydro to work on developing a set of low income DSM programs that Toronto Hydro can implement in time for the 2005-2006 heating season. Our project objectives will be achieved through:

1. Sponsoring research that IndEco Strategic Consulting Inc. will carry out on the design of, and delivery options for a set of ready to implement low income DSM programs that Toronto Hydro can implement in the fall of 2004.
2. Preparing and submitting a report which documents the research and recommendations to Toronto Hydro.¹ These programs may be used by other LDCs across Ontario.

The target group for the first phase of our work, this project, is low income householders (tenants or home-owners) who pay their energy bills directly. We are targeting this group because they face the most immediate challenge. They will see the rise in electricity prices on their May 2004 electricity bill. Tenants who pay their electricity bills in their rent will not be impacted by the April 1, 2004 rate hike for at least another 9 months (January 1, 2005) because of the current legislative framework governing rent increases. Under the *Tenant Protection Act*², a landlord may increase a current tenant's rent once a year by an amount not to exceed the Annual Rent Increase Guideline released each August by the provincial government (the 2004 guideline is 2.9%). The Annual Rent Increase Guideline is calculated using a formula that reflects the increases in overall costs of running an apartment building, including electricity, averaged over a three-year period to smooth out the effects of inflation. In addition, landlords may apply for an Above-Guideline³ rent increase if the percentage increase for a utility cost (e.g. water, electricity, gas) is higher than the three-year moving average in the Table of Operating Cost Categories (for 2004, the three-year moving average for electricity is 1.45%). We intend to target this second group of low income householders in the second phase of our work. However, both groups will benefit from any improvements achieved through the work we hope to undertake in this project.

¹ The report would also be submitted to members of a funding group (e.g. Enbridge Gas Distribution, Hydro One), should one be formed by Toronto Hydro for the purpose of funding this research.

² The provincial government is committed to repealing the *Tenant Protection Act* and replacing it with new legislation on which it is now consulting with stakeholders (i.e. landlords and tenants).

³ Under the existing legislation, landlords can pass on capital costs associated with implementing DSM measures in their properties through Above - Guideline rent increases to their tenants, but there is no mechanism for tenants to share in the energy cost savings.

We are requesting \$30,000 (plus GST) from Toronto Hydro to support the research required to develop these low income programs for the fall of 2004. We are also seeking financial support from the Ministry of Energy and the Ministry of Community Services and Toronto Atmospheric Fund to support the capacity-building required to mobilize LIEN to participate effectively in providing input on the development of the low income DSM program recommendations.⁴

Workplan

The workplan for the research component will be overseen by the steering committee of our project. The steering committee will be a subset of LIEN members including the four project proponents plus up to three additional LIEN members. The steering committee will maintain ongoing liaison with Toronto Hydro during the delivery of the workplan either directly or through the project consultant. The work will be conducted by IndEco Strategic Consulting Inc⁵. The workplan consists of five main elements:

- Review the new rules for electricity DSM and identify the implications for program design
- Consult with potential delivery agents of low income electricity DSM programs in Toronto
- Conduct a brief literature review of low income electricity DSM programs in other jurisdictions
- Prepare a draft report containing recommendations on programs for broad review
- Finalize the report and submit it to Toronto Hydro (TAF, if funding is obtained) and the Ministers of Energy and Community and Social Services and conduct follow up communications work.

Each component is described below.

Review the new rules for electricity DSM

In May-June 2004 the Minister of Energy will release draft legislation on the new electricity framework for Ontario. It will describe in broad strokes the roles and mandate of the new Ontario Power Authority and Conservation Secretariat. The Minister will also issue a directive to the OEB on the removal of barriers to electricity DSM for Local Distribution Companies (LDCs) such as Toronto Hydro and what constitutes prudent electricity DSM expenditures.

We will need to review these new rules to identify potential opportunities and barriers to DSM program design and delivery. We will need to take into account these matters in the development of principles and design criteria for the DSM programs.

Together, these new rules will provide detailed guidance and reduce the risk for Toronto Hydro to pursue DSM in the intervening period between June 2004 and March 2005 until Toronto Hydro's new electricity rates are approved.⁶ However, sufficient risk remains for

⁴ This includes a September 2004 workshop for LIEN members to facilitate communication and awareness among members on energy and tenant issues, to obtain feedback on the draft low income DSM program recommendations, to secure funding for a half-time person to manage the LIEN Secretariat, and release time for the steering committee to manage this project and provide feedback on the research.

⁵ Steering committee members will also conduct interviews during the consultation part of the workplan.

⁶ The new electricity rates will embed DSM expenditures for 2005 within them. Between now and March 2005, Toronto Hydro will need to provide its own funds to carry out DSM, but will be able to recover all

Toronto Hydro. Toronto Hydro is willing to consider being one of many funding partners for this project.⁷

Consult with potential delivery agents of electricity DSM

Consultation is a major component of our research effort. Since one of our goals is to achieve consensus with as many members of LIEN as possible (within the budget constraints) on the recommendations for low income electricity DSM programs that Toronto Hydro can implement this fall, it is critical to canvas, consult with and interview LIEN members in advance of the preparation of our draft report. Moreover, there are non-LIEN organizations (e.g. Ontario Non-Profit Housing Corporation) that should be consulted including those that are actively involved in the delivery of DSM (eg. Clean Air Foundation and Clean Air Partnership) in Toronto that should be consulted as well to provide input to the development of the draft recommendations.

The consultation work will involve the following:

- Design and implement an email survey of LIEN members (approximately 30 members) on their existing low income programs and opportunities for delivery of electricity DSM
- Identify and describe existing electricity DSM programs delivered by non-LIEN members in Toronto and/or in the GTA area
- Consult with Enbridge Gas Distribution on their work being done this spring and summer in developing low income programs for their customers
- Conduct telephone interviews with the most promising program delivery agents. IndEco will conduct 5 to 10 45 minute interviews. Release time is being requested for Steering Committee members to conduct additional interviews (1.5 days for 2 organizations @\$400/day)
- Ongoing liaison with Toronto Hydro will be maintained to keep the utility abreast of our work and findings.

Ongoing liaison with Toronto Hydro will involve: a 1.5 hour kick-off meeting at the start of the project to finalize the workplan, a 1.5 hour meeting to obtain feedback on the draft recommendations, and a 1.5 hour meeting to present the final recommendations and discuss next steps. At the kick-off meeting it is requested that Toronto Hydro provide IndEco with documentation on the summer pilots as well as contacts to discuss the programs, and any other relevant information and suggested contacts regarding DSM and the DSM pilots underway.

prudent expenditures on DSM in March 2005 per the Minister's directive, as tracked by Toronto Hydro in a variance account. The government's rules will significantly reduce the risk to Toronto Hydro in making DSM expenditures in the intervening period.

⁷ Meeting on May 3, 2004 with Connie Turner and staff of Toronto Hydro and Mary Todorow (ACTO) Keith Stewart (TEA) and Judy Simon (IndEco) to discuss Toronto Hydro as a potential funding partner. Ms Turner indicated that Toronto Hydro would try to form a group of funders (e.g. Hydro One, Enbridge) of this project to fund a portion of the work.

Conduct a literature review of electricity DSM programs in other jurisdictions

Other jurisdictions, particularly those in the United States, have had regulated gas and electricity DSM programs for low income households for several years. As well, there are examples of Canadian jurisdictions that have unregulated DSM programs delivered through groups specializing in providing low income services. We will conduct a brief literature review of both these types of DSM programs, building on the literature review already conducted in previous work, this time focusing on program design and implementation strategies.

Prepare a draft report for review

Based on the preceding work, we will prepare a draft report for review by LIEN members at the workshop in early September, Toronto Hydro and others who have participated in the consultation process (as the budget permits). The draft report will contain a set of principles and design criteria for program design and delivery as well as a set of recommended low income DSM programs that Toronto Hydro can implement in the fall of 2004.

The recommended programs will piggyback onto, to the extent possible, existing DSM programs that are either in a ready to implement format or can be modified easily for a fall roll-out in Toronto.⁸ The delivery agents are likely to be those already experienced in delivery or those with extensive knowledge of the specific segment of the low income community being targeted in the particular program.

Prepare the final report and conduct follow up

Based on the feedback on the draft report including the feedback from the September workshop, we will revise and finalize the report. The report will contain:

- a set of principles and design criteria for the design and delivery of ready to implement low income DSM programs for Toronto Hydro for the fall of 2004
- a set of ready to implement low income DSM programs for Toronto Hydro for the fall of 2004 agreed to by as many LIEN members as possible within the budget constraints

The final report will be submitted to Toronto Hydro, TAF (should funding be obtained), and the Minister of Energy and the Minister of Community and Social Services. The steering committee will make the report available to other interested parties including LIEN members and non-LIEN members consulted in the development of the report as well as other local utilities, social housing providers and municipal governments.

Once the final report is completed, we will conduct appropriate follow up (a meeting with a presentation) with Toronto Hydro and the Ministers of Energy and Community and Social Services to promote the understanding and implementation of the recommendations.

⁸ An example of a new program that will be explored is offering low income renters in Toronto the option of having sub-metering and billing in their individual apartments provided by Toronto Hydro rather than the landlord, where the renter's apartment is not individually metered. Tenants would become LDC customers and be subject to the LDC's regulated rates and service. Options to mitigate the effects of new charges for this service (e.g. metering, billing fees) will need to be addressed effectively in program design.

Budget and Timeline

The total budget for the project excluding GST is \$31,200, \$30,700 for fees and \$500 for expenses. With GST the total budget comes to \$33,384.00. The budget and timeline for task completion is described in the table below.

Budget Item	Amount	Timeline
Review the new rules for electricity DSM	\$2,000	June 2004
Consult with potential delivery agents of electricity DSM	\$10, 000	June – Aug. 2004
Conduct a literature review of electricity DSM in other jurisdictions	\$2,700	June - Aug. 2004
Prepare a draft report for review	\$10,000	August 25, 2004
Prepare the final report and conduct follow up	\$6,000	Sept. 30 report Oct. follow-up
Expenses (telephone, photocopying, admin support)	\$500	
Total budget (excluding GST)	\$31,200	

Partners

The founding members are the Toronto-based groups who undertook the initial educational and policy work; supporting are those who endorsed LIEN's core principles.

The founding members of LIEN are:

- Advocacy Centre for Tenants Ontario
- Canadian Environmental Law Association
- Community Social Planning Council of Toronto
- Income Security Advocacy Centre
- Toronto Disaster Relief Committee
- Toronto Environmental Alliance
- Share the Warmth

Supporting members of LIEN include:

- Centre for Urban and Community Studies, University of Toronto
- Etobicoke Housing Help Centre
- Albion Neighbourhood Services – Toronto
- Energy Action Council of Toronto (EnerACT)
- Green\$aver
- DisAbled Women's Network Ontario
- Prof. Valerie Tarasuk, Faculty of Medicine, University of Toronto
- Guelph-Wellington Coalition for Social Justice
- Centre for Social Justice
- Renters Educating & Networking Together
- Rainy River District Community Legal Clinic
- Community Legal Assistance Sarnia
- Community Homelessness Initiative Network- Sarnia
- Kenora Community Legal Clinic
- T.H.R.I.V.E, Essex County
- Public Interest Advocacy Centre (PIAC)
- Canadian Mental Health Association – Thunder Bay Branch
- Conservation Council of Ontario
- Canadian Auto Workers
- The Ontario Coalition for Better Child Care
- Catholic Family Development Centre – Thunder Bay
- Stuart Bailey, Director of the Nipissing Community Legal Clinic
- Ontario Coalition for Social Justice
- Parry Sound District Social Services
- North Lanark Community Health Centre
- Woolwich Community Services – Waterloo Region

EXECUTIVE SUMMARY

1. Background

The main objective of the United Nations Framework Convention on Climate Change is to achieve stabilization of atmospheric concentrations of greenhouse gases at levels that would prevent dangerous anthropogenic interference with the climate system.

The objective of the Kyoto Protocol is to reduce between the years 2008-2012 the greenhouse gases (GHG) emissions of industrialized countries in 5.2% of their 1990 levels. The protocol generates the baseline for an international market for companies to buy and sell tonnes of carbon dioxide reductions through three mechanisms such as Clean Development Mechanism (CDM).

Peru ratified the protocol at the end of 2002, as well as 100 other countries. The objective of this Study of National Strategy (NSS) in Climate Change financed by the World Bank with funds from the Swiss government is to assist the Peruvian government to evaluate its role within the CDM, to identify the potential of the investment in projects to mitigate GHG, and to develop national policies directed to participate in CDM.

One of the principal products of this study is the identification of projects to mitigate GHG, as well as to identify the principal existing options of funding in order to fulfill them.

Hopefully with a better comprehension of the international market for carbon (demand, offer, price, risks, etc.), the government will be able to take decisions regarding the options and opportunities that will overcome from this mechanism.

Selling Certified Emission Reduction (CER) credits will contribute to the development and realization of important initiatives for sustainable development in Peru. It will also have a very important demonstrative and educational role for the Peruvian private sector.

The NSS study was made by the CONAM with a team of national consultants, the Peruvian consultant *Finanzas Ambientales* S.A.C. and a team of international consultants (Carbotech S.A).

2. GHG Emissions in Peru

In accordance to the national inventory of 1994 (CONAM, 2001), the Peruvian total emissions were approximately 100 million tonnes of CO₂. A third of the emissions are from energetic sectors and two thirds from non energetic sectors (agriculture, waste, land use change). The sectors which consume more fuel are transportation (8 million of CO₂ tonnes or 25% of the total emissions of the energetic sector), residential/commercial sector (3.3 millions of CO₂ tonnes or 10%) and the industrial sector with 2.9 millions of CO₂ tonnes or 9% of the energetic emissions.

increase approximately 2 times in the mentioned period. The emissions of the energetic sector will increase 2.5, while the emissions of the non energetic sector will increase 1.7 times.

The development capacity of science and technology in Peru are restricted because of the low national priority given to these activities by the government and the universities, institutes and companies. The assigned budget and the used of such budget, regarding the percentage assigned to scientific and technological development are very limited.

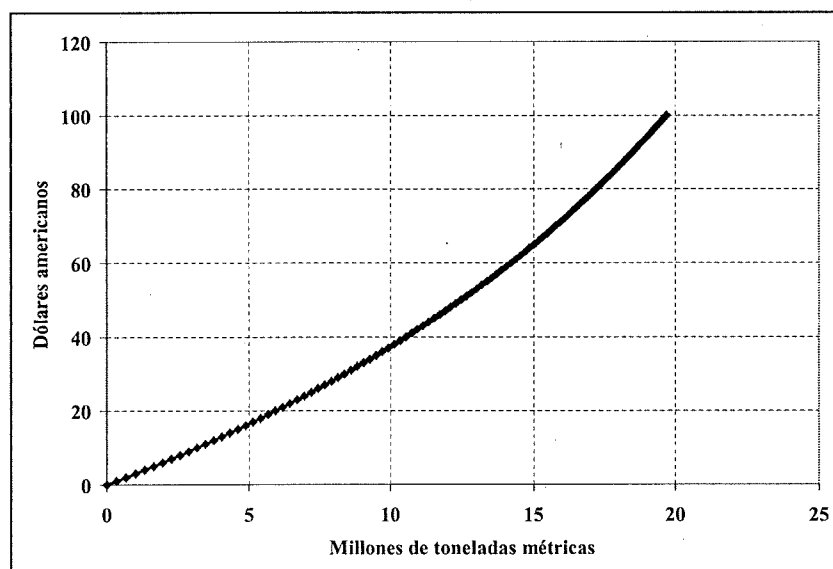
For example, no more than the 0.02% of the PBI is assigned annually to activities directly related to science and technology. This places Peru as one of the last regarding scientific investment in science and technology in Latin America. In the context of a poor economy, the little innovation consisting of simple ways of constructed models applied over old technologies could be considered as low technological development. These innovations only allow the earning of a few points in efficiency and competence in industries and activities. Therefore the potential transference of technology that the CDM projects would produce, would contribute to the sustainable development of Peru.

3. The Marginal Costs of Mitigation

From the marginal costs of mitigation, the offer of emissions that Peru could place in the international market at a determined price could be calculated (US\$ for CO₂ tonnes). The costs of mitigation were calculated by a simplified version of RICE-99 and DICE-99 models created by William Nordhaus and Joseph Boyer. The model RICE-99 (the Regional Integrated Model of Climate and the Economy) allows the study of the economical impact of climate change, analyse the effectiveness of the mitigation politics and calculate the cost of such politics. It is a calculus "from up to down" which allows the analysis of the theoretical offer available for Peru.

Figure No. 3 shows the offer of Peru of CRE for the 2008-2012 period in constant dollars of 1994. For example, in a price of US\$ the offer of Peru would be 9 million of CO₂ tonnes reduced annually.

Figure No 3. Mitigation Marginal Costs (1994 US \$/TM CO₂)



Source: Bruno Seminario

The biggest seller in Latin America would be Mexico. However, a higher participation of Latin America is expected because Asian countries, especially China and India, cannot exploit their potential completely because of their low capacity for implementing CDM projects. Latin American countries will tend to be favoured by investors from the US and Canada.

The participation, more than proportional, of Latin America in the GHG market reflects that approximately 75% of the financial flows of carbon from CDM in the 2001-2002 period were directed to Latin America, while it was limited to Asian countries. The flow to Latin American countries was the same as the financial flows from JI in the same period. Latin America has also been able to attract some special programs such as the Latin American Program of Carbon of the CAF (Programa Latino Americano de Carbono). Therefore a volume of 50 to 800 millions of American dollars from CRE exportation from Latin America is expected.

With the actual range of prices Peru can aspire to export annually between US\$ 5 to US\$ 10 million for the concept of CRE. These exports would have a market because the Kyoto Protocol permits the use of the emitted certificates since 200 for the first period of commitments, 2008-2012 (*banking*).

However, a more realistic strategy would be to exploit these exports potential gradually. To export US\$ 5 millions with prices in the international market of US\$ 4. Taking into consideration that the CRE only funds from 10% to 20% of the total investment of the project, it could mean that an annual investment in reduction emission projects form US\$ 50 to US\$ 100 millions¹ annually.

Chart No. 2. Peruvian CRE's exportations scenarios

Scenario	World Price (US\$ / TM CO ₂)	Annual Exportations (Mills TM CO ₂)	Exportations income (Mills US\$/year)
Low	2	~ 1	~ 2
Standard	4	~ 2	~ 8
High	6	~ 3	~ 17
Optimistic	10	~ 5	~ 47

Source: Based on CERT 1.3

These numbers are conservative since that in the projections energy projects have been considered and non energetic projects have not, where Peru has a great potential.

In the last years, several voluntary activities from municipalities, governments, countries, regions, companies, NGOs have emerged. These activities have the same central objectives of the Kyoto Protocol but do not have the same procedures. These initiatives are called "parallel markets". The prices in the parallel markets have a great variation depending on the requirements of the buyer. For example, they go from very low prices for carbon sequestration projects not accepted by the protocol (forest forestation) but with high requirements (for example, in additional impact terms) and with higher transaction costs.

¹ The direct foreign investments in 2001 went up to US\$250 millions.

5. Emission Reduction Projects

Twenty five projects were identified which represent 36 million of CO₂ tonnes with 754 millions of dollars of investment, located in the most important sectors, such as energy, industry, transportation, solid wastes and drains. Form the total of the projects, 3 projects are at the level of feasibility, 9 are at the level of pre-feasibility. From the other 13 projects, 7 are at the project profile level and 6 are at the idea of project level.

Chart No. 3. Portfolio of Projects

	Name of Project	GHG Reduction (TM CO ₂ ,10 años)	CO ₂ , Income (US\$)	Investment (US\$)
ENERGETIC PROJECTS				
01 ^{a/}	Electric Energy Plant - Bagaso, Paramonga	770.000	3.080.000	10.600.000
02 ^{a/}	Hydroelectric Plant Cia. Minera del Norte	500.000	2.000.000	8.900.000
03 ^{c/}	Rural Isolated Electrification, Tocache - Bella Vista	840.000	3.360.000	15.100.000
04 ^{c/}	Hydroelectric Plant Tarucani	2.228.000	8.912.000	42.000.000
05 ^{c/}	Hydroelectric Plant Norte Poechos	453.470	1.813.880	16.500.000
06 ^{c/}	Hydroelectric Plant Huanza	2.200.000	8.800.000	98.900.000
07 ^{b/}	Electric Plant Enersur Ilo	2.000.000	8.000.000	100.000.000
08 ^{b/}	Additional demand Gas, Ramal Norte	1.900.000	7.600.000	115.000.000
09 ^{a/}	Hydroelectric Plant Quitaracsa	500.000	2.000.000	75.856.000
10 ^{d/}	Pumping Station 9 Closed Oleoducto Nor Peruano - Olmos	256.770	1.027.080	44.200.000
11 ^{d/}	Eolico Park Malabrigo	40.000	160.000	10.000.000
ENERGY SECTOR SUB TOTAL		11.688.240	46.752.960	537.056.000
INDUSTRIAL PROJECTS				
12 ^{a/}	Increase % of puzolana in cemento	1.070.000	4.280.000	320.000
13 ^{c/}	Energetic efficiency, Calderos	170.000	680.000	5.000.000
14 ^{a/}	Methane Reinjection, Talara	146.000	584.000	726.000
INDUSTRIAL SECTOR SUB TOTAL		1.386.000	5.544.000	6.046.000
FORESTATION PROJECTS				
15 ^{a/}	Forestal Plantation with indutrial purposes, Selva Central	487.292	1.949.168	13.861.500
16 ^{a/}	Reforestation with local species for industrial purposes, striaes Selva Baja	364.000	1.456.000	1.351.000
17 ^{b/}	Reforestation with local species, San Martín	671.913	2.687.652	14.810.700
18 ^{b/}	Forestation in desertic arid areas Costa Norte	547.038	2.188.152	15.360.700
FORESTAL SECTOR SUB TOTAL		2.070.243	8.280.972	45.383.900

However, we have to be aware that the potential reduction for the expansion of the interconnected national system is not high since it has a composition of 81% hydraulic and 19% thermal. The possible generation of electricity based on natural gas forms part of the potential reduction of GHG.

From the 11 identified energy projects, two of them were developed to the pre-feasibility level:

- Extension of the national network Tocache-Bellavista with the objective of providing trustworthy electric energy through the access to the national network to 250,000 inhabitants located in the central northern selvatic zone of the country. In a 21 year period it is expected a 2.5 to 3 millions of TM CO₂ reduction (in other words, 150,000 TM CO₂ per year).
- "Paramonga" project with the objective to change the energy generation system which actually uses diesel as fuel, by a system that uses bagasse, consuming the waste of the sugar canes, principal product of the company AIPSA (interested company). It is estimated a reduction of 700,000 TM CO₂ in 10 years, an average of 70,000 TM CO₂ per year.

Transportation

The transportation sector is the second sector in the final consumption regarding total energy in Peru. In the 1985-2001 period the energy consumption in this sector increased in a 2.6% annual rate. The opportunities to reduced GHG are principally located in fuel switching, to fuel with lower carbon level (for example, bio-fuel, fuel for light vehicles, fuel cell, etc.), vehicle change to more efficient ones (such as buses or trucks of bigger size, light diesel vehicles, etc.) system change or transportation patterns (such as, fast massive transportation systems, public transportation encouragement, etc.) and management improvements (adequate inspection / maintenance, eco-management). A combination of various factors e.g., new systems of transportation with new vehicles and new fuels can generate a high impact. The concrete experience with CDM projects in this sector is close to none.

The developed project was "ProTransporte". Its objective is the progressive establishment of massive transportation services, prioritizing in high capacity buses through exclusive carrels in the most often used zones. The massive transportation system reduces the emissions per passenger-kilometre of CO₂ and would finance the scrap ironing of the retired units and the training of the people that loose their jobs. The emission reductions come basically from:

- Replacement of old units for new fuel efficient units (buses).
- Replacement of small units for bigger ones.
- The higher occupancy possible per unit in order to reduce emissions per passenger-kilometre.
- Change to public transportation should give a better comfort, security and reduction of waiting time (therefore a cost reduction for the user).

The expected total quantity of reduction is between 1.7 to 4.1 millions of CO₂ tonnes in accordance to a 10 year calculated scenery, an average of 170,000 to 400,000 CO₂ tonnes per year.

Another interesting proposal to be developed in this sector is to use ethanol as bio-fuel. Peru has the climate characteristics which favour the agricultural production such as sugar cane and sweet sorghum which are used as raw materials to produce ethanol.

Chart No. 4. Reforestation Land distribution (Ha)

Region	Land fit for plantation	Reforested Lands	Lands to be Reforested
Costa	500,000	34,877	465,123
Sierra	7'500,000	357,026	7'142,974
Selva	2'500,000	20,797	2'479,203
Total	10'500,000	412,700	10'087,300

Source: Peru Forestal en Numeros (INRENA 1999)

This resource in Peru occupies 78.8 millions Ha of natural forests; 74.2 millions are located in the jungle, 3.6 millions in the coast and 1.0 millions in the highlands. With this land Peru is in second place regarding the extension of natural forests in South America and in ninth place in the world. These are forests that have a great variety of biological diversity and they have a great economical and environmental value for the society.

6. Financial Options for CDM in Peru

In Peru there are investment opportunities for emission reduction projects or carbon sequestration. However, there are financial barriers (as well as legal, cultural, corporate) which do not allow financial resources to reach to such projects. The carbon projects are a secondary component in a productive project. In financial terms the carbon component fluctuates between 5% and 20% in comparison of the size of the project investment. Therefore, to ensure the financing of the productive project is critical for the viability of the carbon projects.

Considering that the Peruvian companies have a low level of capitalization, risk capital funds are necessary to finance productive projects with a high carbon component. However, in Peru there is still no mature risk capital industry and the capital market is increasing. The CDM could represent an opportunity to "activate" the market of investment of risk capital funds, for carbon titles, financial innovations to reduce the relative risk of the project.

To confront these barriers, it is necessary, first to prioritize, since it is impossible to attack all at the same time. This is detailed in the following chart.

Chart No. 5. Solutions to eliminate the national barriers to the funding of CDM projects

Barriers	Proposed Solution
Transaction costs regarding the size of the projects	• Baseline: support of technical cooperation. PhD-MSc candidates make Baselines in Peru. • Times in the process: Harmonize the processes • Legal expenses: Standard Agreements
Size of small transactions	• Group small projects in umbrellas. • Promote carbon projects.
Difficult funding for PYME (small & medium companies)	• Create warranty mechanisms: funds, insurance. • Concession lines of credits
Weak capacity to formulate quality projects	• Train local consultants • Promote a "service cluster for CDM projects"
Taxation of CRE	• Exoneration of income tax and goods and sales tax of the CRE income

This additional income would improve the Internal Rate Return (IRR) of the selected productive projects. The profile of the risk capital fund would be developed, investing in the productive project and the generated carbon. In practice, various strategies are used simultaneously as well as complementarily to mitigate the risk of the carbon generated. A project promoter must know each strategy in detail in order to negotiate an optimal combination of maximum coverage and the low cost with investors and/or buyers of CRE

Chart No. 7. Profile of the Investment Fund

Entry	Detail
Denomination	Risk capital investment fund with its own CDM project
Objective	Place the capital in the productive project and/or in the carbon component, simultaneously, or alternatively, case by case.
Location	Projects located in the Peruvian territory.
Entry strategies to projects/carbon	Via equity, debt and/or quasi-debt, decided cases by case. The generated carbon by its own can also be bought, case by case.
Role of the carbon in the funding	It is considered as a future additional source of income with which debt can be emitted as shares and/or vice versa. If the client does not require funding, the client could only buy the carbon generated by the project.
Exit mechanism of the investments	Option to purchase shares (call) and to sell (put), Forward sales contracts (forward), Strategic sales of the company to a third party, Purchase by the managers (Management buy out), sinking funds for the repurchase by the same company, etc.
Exit mechanism of the carbon	The carbon is grouped in various projects and then is sold in a package to the buyers that offer better conditions, since the average volume of carbon generated by each project does not exceed a million of TM/ CO ₂ and the costs of the transactions are reduced.
Collection of investment funds	Institutional investors, carbon buyers, development banks, governments, NGOs, governments that promote new sustainable negotiations models, etc.
Carbon Tools	Baseline, matrix of carbon risks, risk abators of carbon, forward sales contracts of carbon, carbon futures, etc.
Financial tools	IRR, net actual value, ABC accountability, recovering period, ratio-analysis, financial models , etc.
Deal flow	It is given by the project creator of carbon, that "improves" the quality of the original proposals, searches for projects and pre-selects

This risk capital investment funds could be complemented with the local warranty funds industry and with the local financial cluster. There are initiatives with positive synergy, for example, CET (Centro de Eficiencia Tecnológica – Technologic Efficiency Centre) has developed warranties to finance cleaner production up to US\$ 2 millions that are administered by Banco de Credito (Peruvian bank) and covers the risk of the bank up to 50%. CET's mission is to verify the environmental performance of the project.

Another option is the financial mechanism of the project to modernize the industrial smelters, elaborated by *Finanzas Ambientales* with Oko Institute for MITINCI – (year 2002). It is a credit program administered by a local bank in order to place funds in a group of companies at low interest rate and with lower transaction costs. The risk of the operation will vest in the financial institution in return of a *spread* and the future flow of carbon resulted from the project are used as a warranty and a source of repayment. Reducing the risk of the credit for the company, this can be visualized in the following graph:

c) Increase the knowledge regarding CDM

Create small training groups (student exchange, training trips to countries with experience in CDM) to create a transmission network including the private and public sector and the civil society in general.

d) Umbrella projects

In developing countries the use of umbrella projects are promoted to group small projects to create a larger transaction with a lower cost. Improving the negotiation capacity, reducing transaction costs, diversifying the risk in a portfolio and promoting direct investment of the host country. However, this mechanism must be designed carefully because of the following reasons:

The entity and institutionalism of who groups these projects.

There are no solid institutions that represent the interests of both parts (buyers/sellers). The umbrellas are not companies they are alliances between governments and the private sector with initial subsidy because of the high transaction costs. There is no certainty that such institutionalism will be maintained in the long run and they are still in the experimental phase. In practice, they operate as a carbon broker without really being one; therefore the institutional architecture is critical to define its success and/or failure.

The quality of the promoters.

The quality of the promoters of CRE is critic since they are the ones responsible of the success or failure of the operation. With the umbrella, the companies with low level of credit rating offer carbon credits to the market but there is no warranty that such companies will continue in the market for 2012, when the first commitment phase of the Kyoto Protocol ends. Therefore, one must be very careful when choosing the quality of the participants.

Higher financial engineering.

The sale of CRE from “umbrellas” *ex-ante* requires a higher financial engineering than a proposed operation by a transnational branch of a country included in Annex No. 1. The sumatoria of C- risks does not transform into AAA in an easy, rapid nor cheap way; and risk abators must be worked very carefully as well as the operative institutionalism.

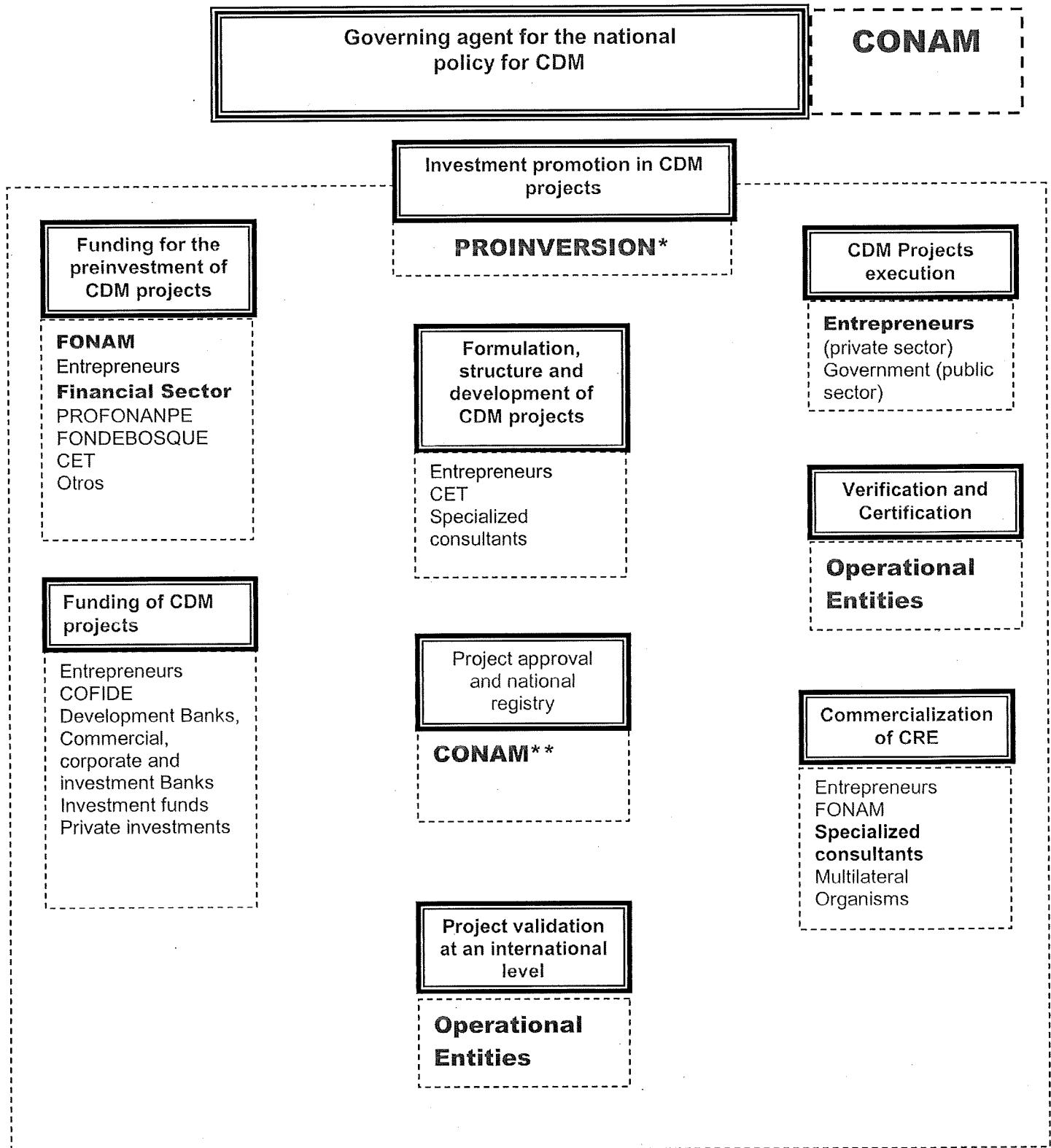
Institutionalism

It has been proved that the countries that have taken advantage of the CDM opportunities are not necessarily those with a low reduction marginal cost (countries with higher comparative advantages), they are those countries that created a support institutionalism for projects that qualify under the Kyoto Protocol framework.

Therefore, an office of orientation services and general coordination for the CDM promoters must be created in the country, in order to facilitate the presentation of projects with international quality.

The proposal consists of using the administrative infrastructure of the Government, with respect to the agents that actually participate in CDM activities. Also, the proposal is to involve entities that are not active on this issue but because of their nature and action plan have the objective to given services to investors. The idea is not to duplicate the efforts of the government entities.

**Figure No. 2. Functional organization and institutional
Proposal to implement CDM in Peru**



* El FONAM Hill support this issue.

** CONAM according to its Procedure ISO P34 approves CDM projects with the participation of an Ad Hoc Commission conformed by various institutions.

- Inform and train the national financial sector to contemplate the extension of the credits and investments in CDM projects, as well as the administration of investment funds and carbon funds.
- Inform and train the public sector to harmonize their strategies and development politics with the new international tendencies of environmental and social responsibility.

Fourth step – Promote the development of the legal frame

Since the proposal presented in this study (chapter about CDM institutionalism), the CONAM as an environmental regulator must begin the dialog between the competent sectors to design the legal frame that allows the CRE to be negotiable in the national finance system (the ideal objective would be to qualify it as securities). Convert the CRE into a security and a preferred warranty in accordance with the SBS (Superintendencia de Banca y Seguros – Bank and Insurance Superintendence) legislation.

Fifth step – Promote the financing of the projects

The FONAM must establish the relation with the international investment funds as well as carbon funds.

Cause the extension of national credits and investments in CDM projects, as well as the administration of investment funds, where eco-financial tools are used.

Incorporate the components of climate change, such as the CDM in the portfolio of projects that the Peruvian government negotiates with regional, bilateral and multilateral financial entities.

The Office for CDM Promotion with the support of the FONAM should initiate the dialog with the financial sector to materialize the reaction proposal of a risk capital investment fund specially designed to finance CDM projects mentioned above.

Sixth step – Incentive Transference of Technology

The success of various investment projects administered by CONCYTEC must be secured. These projects are for the generation of conditions and development of technological innovation. The technological component of the CDM projects could participate in this effort done by CONCYTED. The Office for CDM Promotion could help the access of additional resources of finance to develop these CDM projects with a component of technological innovation.

As shown in the following chart, once the present study is concluded, the Office for CDM Promotion will begin their functions beginning with the diffusion of information and the creation of experts. Gradually, and based on the obtained information they will begin to formulate the specific and detailed actions to eliminate the barriers. Then the activities will be programmed and the responsibilities assigned to comply with the mentioned activities. When coordinating and/or executing these actions the barriers will be eliminated in a progressive way, allowing the creation and development of productive clusters of CDM projects. The offer of CRE could be added to reduce the transaction costs and increase the power of negotiation in the carbon market.

		2.1.3. Administer training courses according to the needs of each sector and implement a quality warranty system in the consulting service for CDM.
	2.2 Have trained institutions to take advantage of CDM (at least three accredited local private institutions as Operational Designated Entities before the CDM Executive Board qualified to validate and/or verify and/or certify CDM projects) 12 months after the opening of the Office for CDM Promotion.	2.2.1. Invite certifying national companies / project qualifiers to develop complementary services regarding CDM and carbon markets. 2.2.2. Inform the interested companies in becoming Operational Designated Entities (EOD) about the training sources available.
	2.3 Promote the funding of the preinvestment of CDM projects stage (at least 2 projects of 10 receive funding for the preinvestment stage during the first 12 months after the opening of the Office for CDM Projects).	2.3.1. CDM Projects receive international technical cooperation for the preinvestment stage (feasibility studies, PDD elaboration, Baselines, etc.) of organisms such as PCF, CAF y others. 2.3.2. Private investment through the promotion of the <i>Public-Private Partnership</i> and/or tax incentives. 2.3.3. National Funds oriented to preinvestment of projects of subsectorial interest (for examples: PROFONANPE, FONDEBOSQUE) 2.3.4. Possible financial evaluation with external debt exchange for CDM Projects.
Strategy	Objective	Instrumental goals
3. Promote the legislation to facilitate the transference of capital and technologies.	3.1. Create a legal frame to regulate the operativity of CDM in the country	3.1.1. Define CRE property criterias and conflict resolution mechanisms through the implementation of an interdisciplinary Ad Hoc Commission which would create a proposed Law about CDM. The Ad Hoc Commission could be able to propose that the DS No. 095-2002 – PCM del 01/10/02 is given a Law rank 3.1.2. Validate the CRE as a security in the country and a preferred warranty according to the SBS legislation. 3.1.3. Increase the judicial security in the assignation of institutional competence for CDM through dialog and agreements between the sectors.
	3.2. Create the conditions and facilitate the funding of CDM projects (two of every ten CDM projects presented before the national CDM authority access to technological and financial resources nationally and internationally, within the first 12 months of operation of the Office for CDM Promotion)	3.2.3. Facilitate the entrepreneurs access to information of the export credits given by the financial entities through the technology providers (machinery and procedures). Information about more consenting national and international financial sources to fund a CDM project. Information to access warranty funds. Information to access financial instruments which minimize the risk perception of the investors. Information about the paid prices in the market and of the forecast prices to sell at the adequate time / more profitable, in other words, to maintain a transparent information system actualized about the carbon market development. Identify, contact and know the requirements of the CRE buyers (CAF-PLAC, PCF, IFC, brokers, between others) 3.2.2. Diff in the financial sector the use of innovative financial mechanisms use, such as the <i>Project Finance</i> , shares conversion, leasing, financial derivatives forwards, CRE placement in parallel markets, valorization of positive externalities of CDM projects, added negotiation, carbon <i>underwriting</i> , line of share subscription to warranty the sale of CRE, etc.