Summary

1. Outline of the Project

Country: Republic of Guatemala

Project Title: Technical Cooperation Project for Chagas Disease Vector Control

Issue/Sector: Infectious disease (Chagas disease)

Cooperation Scheme: Technical Assistance Project

Division in Charge: Human Development Department, JICA

Total cost (as of the time of evaluation): Approximately 177.49 million Japanese yen

Period of Cooperation (Duration):

(R/D): July 4, 2002-July 3, 2005

(Extended):

(F/U):

(E/N) (Aid)

Partner Country's Implementing Organization: Targeted Health Area Offices under the Comprehensive Health Care System (SIAS), ETV Section and General Direction of Surveillance and Control of the Ministry of Public Health and Social Assistance.

Supporting Organization: PAHO/WHO, University of San Carlos, University of Valle (private university), etc.

Supporting Organizations in Japan: None in particular

Related Cooperation: Tropical Disease Research Project (1991-1998)

Cooperation on Chagas Disease Vector Control (Dispatch of Expert and JOCVs) (2000-2002)

1-1 Background of the Project

Chagas disease is also referred to as the disease of the poor. The insect vectors (Triatomine bugs) thrive in houses with mud walls and thatched roofs feeding on human blood and transmitting *Trypanosoma cruzi*, which is a protozoa found inside their excrement, enter human bodies from mucous membranes and scratched wounds. Although there is a therapeutic agent at the acute stage, there is no effective treatment at the chronic stage and the patients might die within about 10 to 20 years of the infection due to heart disease and other ailments. It is estimated that in the Republic of Guatemala (hereinafter referred to as "Guatemala"), 730 thousand people are already infected, representing 7% of the national population.

Triatomine bugs that transmit Chagas disease are currently known to be vulnerable to insecticides, and the possibility of the development of a tolerance in the

near future is considered to be low.. Therefore, Chagas disease control is generally achievable through: (i) insecticide spraying, (ii) housing improvement and (iii) education. Seven Central American countries and the Pan-American Health Organization (PAHO/WHO) inaugurated the Central American Initiative for Chagas Disease Control (IPCA) with the aim of "interrupting of Chagas disease transmission in Central America by 2010."

The Cooperation on Chagas Disease Vector Control (2000-2002) in Guatemala was implemented through a combination of several schemes based on results achieved in the Tropical Disease Research Project conducted from 1991 to 1998. It was implemented by way of combining the dispatching of expert and JOCVs (Japan Overseas Cooperation Volunteers) and providing equipment to the four health areas in Guatemala where the infection rate for Chagas disease was high, and succeeded to bring about certain results. As a result of JICA and PAHO/WHO's review of these achievements, the importance of diffusing similar methods over a broader region was confirmed, and it was decided that the breadth of the support provided by Japan would be extended to other regions in Guatemala (nine targeted health areas) and into neighboring countries.

1-2 Project Overview

(1) Overall Goal

Transmission of Chagas disease will be interrupted in Central America by 2010 (Goal of PAHO)

(2) Project Purpose

To establish a model for Chagas disease vector control in Guatemala, which is applicable to other Central American countries

(3) Project Outputs

1. To eliminate the *R. prolixus.* and to reduce *T. dimidiata* by way of insecticide spraying in nine prioritized health areas in Guatemala
2. To establish Vector Surveillance System with community participation
3. To improve houses to eliminate the favorable conditions for the infestation of the vector
4. To strengthen the project method adopted in the Project in Guatemala and to introduce it as a susceptible means of vector control.
5. Vector control project is introduced to other Central American countries

(4) Project Inputs (as of the evaluation)

Japanese side:

Long-term experts	2 persons
Short-term experts	3 persons
Japan Overseas Cooperation Volunteers	7 persons
Third-country experts	2 persons (9.5M/M)
No. of trainees received in Japan	2 persons
Equipment supply	131 million yen[1]
Local cost	18.8 million yen[2]
Other	
Guatemalan Side:	
Assignment of counterparts	4 persons[3]
Procurement of land and facility for the Project	Inputted
Equipment purchase	Local currency
Local cost	8.25 million USD

2. Evaluation Team Overview

Members of the evaluation team

(Area in charge: name, title)

(1) Chagas disease control:

Yoichi Yamagata

Senior Advisor,, JICA

(2) Study planning:

Kaori Nishiyama

Junior Advisor, Infectious Disease Control Team, Human Development Department, JICA

(3) Evaluation analysis:

Saeko Ichikawa

Consultant, Global Link Management, Inc.

(4) Interpreter:

Aki Higuchi

Japan International Cooperation Center

Evaluation Period

From May 14, 2005 to June 5, 2005

Evaluation type: Terminal evaluation

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[1] Calculated with the exchange rate of 1 US$ =110 yen

[2] Calculated with the exchange rate of 1 queztal =15 yen

[3] 10 more persons will be added if those in charge of Chagas disease in each Health Area are included as counterparts

3. Overview of Evaluation Results

3-1 Achievements

(1) Project Purpose Achievements

This project has served an important role in achieving the Project Purpose, which was "to establish a model for vector control of Chagas disease in Guatemala, which is applicable to other Central American countries." Similar projects have been formulated and implemented in Honduras and in El Salvador, based on experiences in Guatemala, and the effectiveness of the project was recognized in the report by PAHO (IPCA FY2004).

(2) Output Achievements

As for Output 1, the infestation rate of *R. p.* has decreased to 0% (average infestation rate in the targeted health areas is 0.1%) other than in Chiquimula, after two cycles of insecticide spraying in all areas.. Vector control against *T. d.* resulted in an average domestic infestation rate of 2.7% in the targeted health areas after two cycles of insecticide spraying. Therefore, the goal has been achieved mostly. It is considered that Outputs 4 and 5 have been achieved due to the fact that similar projects have been initiated in El Salvador and Honduras. As for Output 2, although there have been records of vector (insects) by residents and follow-up actions taken in some targeted health areas, these records have not all been in the same format, and thus the establishment of a vector surveillance system with community participation could not be verified in all the targeted health areas. While Output 3 is outside the scope of the activities for which the Ministry of Public Health and Social Assistance (MSPAS) is responsible, data showing improvements in housing conditions achieved through self-help efforts and through a government fund, FOGUAVI, have been confirmed, as well as approaches from the project to FOGUAVI.

(3) Implementation Process

PAHO has promoted the initiative on the control of Chagas disease through activities such as holding meetings within health areas and dispatching evaluation teams. JICA has supported the achievement of the commitments made by the Guatemalan government to PAHO. Through this system, both the MSPAS and JICA have implemented countermeasures, and the MSPAS, PAHO and JICA have

supplemented each other's activities with a view to producing a strong synergetic effect.

3-2 Summary of Evaluation Results

(1) Relevance

It is considered that the relevance of this project is high for the following reasons.

- The IPCA was created in 1997 with the aim of "interruption of Chagas disease transmission through vectors and blood transfusion in Central America by 2010," and the Guatemalan government is one of the participants of IPCA. The Guatemalan government's policy on Chagas disease, which has outlined in the draft National Plan for Control of Chagas Disease 2004-2010, shares the same strategy and goal as the IPCA.
- The nine targeted health areas of the project were identified as areas of high risk for Chagas disease infection based on the studies carried out by JICA's Tropical Disease Research Project, which was implemented during the period between 1991 and 1998.
- About 80% of all cases of the disease are vector insect-transmitted. Therefore, the project's approach to strengthening vector control through insecticide spraying, establishing entomological surveillance systems with community participation and housing improvements is considered relevant.

(2) Effectiveness

Although the effectiveness of the project focusing on vector control has been high, challenges still remain in terms of maintaining the effects of insecticide spraying through the establishment of a vector surveillance system together with community participation.

- The infestation rate of *R. p.*, the primary vector of Chagas disease in Guatemala, was reduced to a level close to elimination after two cycles of insecticide spraying (except for the rate of 0.2% in Chiquimula). The domestic infestation rate of *T. d.* also decreased significantly from 10.3% prior to insecticide spraying to 2.7% after the two cycles of spraying.
- In order to maintain the elimination of vector R. p. and the diminution of vector T. d. through insecticide spraying (Output 1), the establishment of a vector surveillance system with community participation (Output 2) will be essential. Vectors are nocturnal insects, and as the number of vectors decreases, it becomes more difficult for insecticide sprayers to identify such insects during daytime, and the importance of surveillance

and reporting by the local community increases. While activities such as the development of educational materials through the project, the education of local communities by sprayers and the fostering of volunteers in the *R. p.* habitat regions are being implemented, recording methods, follow-ups and vector surveillance recording by local communities have not been standardized, and have been entrusted to the discretion of the health areas in question.

- JICA projects aimed at interrupting Chagas disease infection began in El Salvador and Honduras in 2003 under the PAHO's IPCA. Vector control and surveillance systems were initially developed in Guatemala and approved by PAHO prior to being implemented in both countries. JICA experts and JOCVs have been working closely at the central and local government levels in these projects based on experience and achievements obtained in Guatemala, and they are promoting collaboration between both levels, and are achieving results.

(3) Efficiency

The overall efficiency of the project has been high. However, it is considered that there is some room for further improvement.

- MSPAS provided the necessary local costs for the implementation of the project. It should be duly noted that cost of employing about 100 sprayers on an annual basis was secured throughout the duration of the project.

- The project dispatched one long-term expert to the MSPAS (central level) for coordination and project management, and JOCVs to the Health Area Offices for the purpose of supporting activities at the local level. This system, together with technical support provided by short-term experts and third country experts in each specialized field, were highly evaluated by their Guatemalan counterparts as being effective overall.

- No participants of training programs held in Japan or third countries are currently directly involved in the project due to transfers and career changes.[4] Opinions were voiced by short-term experts on the Japanese side and by their Guatemalan counterparts that opportunities to participate in short-term training courses should have been provided to a wider range of cadre.

- It is considered that the provision of equipment, materials, insecticides and so on was adequate and that such materials were, in general, effectively used. While there was a

[4] However, both participants actively offered help on the occasion of this evaluation. Also, they are working at the PAHO Guatemala Office and the Epidemiology Department of SIAS, MSPAS respectively, working on the control of infectious diseases in Guatemala.

loss of 400kg of insecticide in the Health Area of Santa Rosa in 2003, the MSPAS announced a purchase of insecticide for the purpose of recovering that loss in May 2005.

(4) Impact

- The National Program of Chagas in collaboration with the National Laboratory of MSPAS, PAHO, University of San Carlos and JICA project has conducted serological surveys in the nine health areas covered by the project since 2004, focusing on regions that had been infested by *R. p.* in the past. The preliminary results showed that the seroprevalence rate was 0.0-3.03% among children from 1 to 5 years of age, depending on the health area. Although there is no comparable baseline data, one will in future be able to confirm whether or not new infections are being prevented by way of employing the serological survey data for this age group.
- As a result of strengthened cooperation with the Healthy School Initiative under the jurisdiction of SIAS/PROEDUSA and with activities aimed at encouraging local community participation, implementation of educational activities related to the control of Chagas disease was initiated as part of the SIAS activities.
- As a result of efforts made by this project, school management program by community self-government (Programa Nacional de Autogestión para el Desarrollo Educativo; PRONADE), which was implemented by the Ministry of Education, included Chagas disease prevention in its training sessions for teachers and school board (COEDUCA) members from May 2005.

(5) Sustainability

With regard to overall sustainability, the following concerns still remain.

- Technical aspects: Although the local ETV staff have gained basic spraying techniques, supervisory visits and monitoring by central MSPAS staff should be maintained so as to ensure quality control in project measures and improvements in the quality of data management. Also, the methods for conducting recording and follow-up actions by local communities currently differ according to the health areas in question, and instructions on the standardization of recording and follow-up actions should in future be implemented by the central government.
- Institutional aspects: At the health area officer level, directors and epidemiologists are more involved in the Chagas disease control activities in some health areas than in others. Also, the degree of involvement of schools, municipalities and health facilities (health posts, health centers, etc.) has not been standardized. The MSPAS should clarify the role of each stakeholder in the Chagas disease control activities. In this context,

approval from the National Strategic Plan for Chagas Disease Control is essential.
- Financial aspects: During the project period, the budget for the control of Chagas disease was secured by the MSPAS. The allocation of budgetary resources for Chagas disease control should be clarified in the future as well.

3-3 Factors that Contributed in the Production of Effects

(1) Planning

The project implementation design, in which long-term experts were placed at the national level of the MSPAS and JOCVs in local health areas, has facilitated coordination between the two levels and improved the quality of data management. Also, by adequately allocating short-term experts and third country experts to each specialized field, specialized knowledge among parties involved in the project was improved.

(2) Implementation Process

Through quarterly meetings and instructions given by visiting central government personnel, progress in activities at all health areas mutually understood, resulting in improvements of understanding and presentation capabilities among those in charge of Chagas disease in the health areas in question. At the same time, this has also contributed to the promotion of understanding and involvement on the part of the directors and epidemiologists in charge of Chagas disease control.

3-4 Problems and Factors that Raised Problems

(1) Planning

Consideration of activities and indicators related to Output 2 (establishment of a vector surveillance system with community participation), as well as the sharing of common understanding among those involved, had been insufficient.

(2) Implementation Process

There was a period during which activities were interrupted due to a change of government, which occurred at the end of 2003.

3-5 Conclusion

PAHO/WHO regards Chagas disease as the most important disease to be

addressed following malaria and dengue fever, and one that can also be eliminated. PAHO aims to interrupt the transmission of Chagas disease in Central America by 2010, and in 1998 adopted a resolution to put forth an effort to achieve this goal in Guatemala. Because this project sets this PAHO's goal as its overall goal, and it is being implemented in order to support the MSPAS while also working closely with PAHO, it is considered that the relevancy of this project is high.

The project has succeeded in reducing the infestation rate of vector *R. p.* to a level close to elimination, while reducing the infestation rate of vector *T. d.* by about 76% compared to the pre-project rate.

Although the vector surveillance system with community participation is established in Health Areas of Zacapa, Jalapa and El Progreso, challenges still remain in terms of standardization throughout all the targeted health areas. Promoting sustainability in health areas with insufficient system should be a challenge in the future.

3-6 Recommendations (Specific Measures, Recommendations and Advice Related to this Project)

- Although insecticide spraying is behind schedule in Chiquimula, insecticides are already being supplied from JICA to the region, and it is expected that the second round of spraying will be completed.
- It is desirable that the draft National Plan for Control of Chagas Disease 2004-2010 be deliberated and formulated by the MSPAS in a prompt manner.
- It is necessary that an information system be established in order to acquire the approval of PAHO regarding the interruption of Chagas disease infections. It will be important to prepare a format for basic epidemiological data, to process chronological information and to disclose processed information on a regular basis and in an easily understandable fashion.
- There is a risk that achievements in the control of triatomine bugs at project sites will relapse due to the migration of triatomine bugs in neighboring regions. It will be essential to ensure that local governments and other donor organizations remain vigilant so as to also ensure the promotion of vector control activities in neighboring regions.

3-7 Lessons Learned (Matters Helpful for Determining/Planning Similar Projects Derived from this Project and the Implementation, Operation and Administration Thereof)

- This project succeeded in obtaining technical support and evaluation through cooperation with PAHO. Also, the conclusion of a bilateral cooperative alliance between JICA and the government of Guatemala as a part of this project enabled the automatic participation of Central American countries in IPCA, of which PAHO serves as secretariat, resulting in a smooth formation of an extensive project encompassing El Salvador and Honduras. Thus, cooperation with PAHO had been beneficial to the project at every stage of the planning/formation, implementation and evaluation processes.
- Projects aimed at interrupting Chagas disease infections should use not only the domestic infestation rate of triatomine bugs as an indicator, but also should prepare a framework wherein achievements are measurable by way of the results of serological surveys that verify the interruption of infections.