



*executive committee of  
the directing council*

PAN AMERICAN  
HEALTH  
ORGANIZATION

*working party of  
the regional committee*

WORLD  
HEALTH  
ORGANIZATION



86th Meeting  
Washington, D.C.  
June-July 1981

Provisional Agenda Item 9

CE86/21 (Eng.)  
30 April 1981  
ORIGINAL: ENGLISH

PROPOSED PLAN OF ACTION TO ESTABLISH DEPENDABLE SOURCES OF FINANCING FOR  
THE PAN AMERICAN ZOONOSIS CENTER AND THE PAN AMERICAN FOOT-AND-MOUTH  
DISEASE CENTER OUTSIDE THE REGULAR PAHO BUDGET

In compliance with Resolution XVIII of the XXVII Meeting of the Directing Council of PAHO (1980), a proposal was drafted to provide the basic framework for attracting dependable and stable sources of financing, on a long-term basis, for the technical cooperation activities in animal health and veterinary public health required by the Member Countries.

The estimated total cost of the proposed program is US\$20,459,900, spread over a period of five years, to be sought from multilateral, bilateral, and private funding agencies.

The alternative mechanisms for obtaining the needed extra-budgetary financing have been outlined in a complementary document (Document RIMSA2/9).

During the course of the discussions of the XXVI Meeting of the Directing Council in 1979, concern was expressed over the effects of inflation on the budgetary situations of the Pan American Zoonoses and Foot-and-Mouth Disease Centers (CEPANZO and PANAFTOSA) and their relationship to the level of technical cooperation programs and health priorities. In Resolution XXVII, the Director of PASB was instructed to "give first priority to the performance of a comprehensive external evaluation" of CEPANZO and PANAFTOSA. Accordingly, the Director appointed an External Evaluation Team consisting of four members to evaluate the activities and funding of the two Centers. The External Evaluation Team completed its assignment in April 1980 and its report was submitted to the XXVII Meeting of the Directing Council in September-October 1980.

The External Evaluation Team cited in its report the valuable international program on zoonoses and foot-and-mouth disease being undertaken by CEPANZO and PANAFTOSA, respectively, and the need to develop a suitable mechanism that would ensure financial commitments on a continuing basis, over a period of years, for their operations. Two examples were given upon which to base a more stable ongoing financing mechanism: the consortium established by the World Bank in 1975 for financing "The Control of Onchocerciasis in the Volta River Basin Area Program" in West Africa, executed by WHO, and the Tropical Disease Research Program (TDR) of WHO.

After considering the report of the External Evaluation Team, the XXVII Meeting of the Directing Council in September 1980 approved Resolution XVIII which, inter alia, recommended "that the Director should seek voluntary extrabudgetary contributions from Governments, particularly through the Ministers of Agriculture, as recommended by the Evaluation Team, as well as from multilateral, bilateral, and private agencies to permit more effective functioning of the Centers."

To comply with the mandate of this Resolution, in particular operative paragraphs 8 and 9, the annexed proposal entitled "A Five-Year Comprehensive Program Proposal for the Control and Eradication of Zoonoses and Foot-and-Mouth Disease in Latin America and the Caribbean," was drafted to provide the basic framework for attracting more dependable and stable sources of funding, on a long-term basis, for the required technical cooperation activities in animal health and veterinary public health in the Americas.

This proposal was presented and discussed during the II Inter-American Meeting, at the Ministerial Level, on Animal Health (Document RIMSA2/7) held in Washington, D.C., in March 1981. The Ministers of Agriculture and their representatives expressed strong support of the objectives, activities, and guidelines established for the implementation of the program, and requested PAHO "to investigate on an urgent basis" the financing available in the various international, regional and national sources of credit for its implementation.

By unanimity, they urged "all Member Governments, through the Ministers of Agriculture, to review the proposal and to consider making their own extrabudgetary contributions to make possible its successful implementation."

A complementary document (RIMSA2/9) entitled "Mechanisms for Obtaining Extrabudgetary Financing for the Pan American Foot-and-Mouth Disease and Zoonoses Centers," outlining the various ways by which additional funds could be sought to finance the regional technical cooperation activities offered by PANAFTOSA and CEPANZO to the Member Countries, was also presented and discussed during RIMSA II.

Three resolutions were approved during the RIMSA II, endorsing the mechanisms outlined to obtain the necessary extrabudgetary funds to maintain the operations of the Centers at an efficient level and to provide the incremental funds needed for the required expansion of technical cooperation activities as requested by the Member Countries.

The three following considerations should be pointed out in relation to the attached program proposal:

- a) That the financing being sought would be used to maintain the existing technical cooperation activities at an effective level, as well as to expand them in order to meet the additional technical cooperation activities required by the Member Countries;
- b) That the estimated costs reflected in the project proposal would be over and above the regular budget of the Centers and were roughly based on prevailing costs;
- c) That the present format would be modified to suit the requirements of the prospective funding agency or agencies.



PAN AMERICAN HEALTH ORGANIZATION

CE86/21 (Eng.)  
ANNEX I

# INTER-AMERICAN MEETING, AT THE MINISTERIAL LEVEL, ON ANIMAL HEALTH

WORLD HEALTH ORGANIZATION

*Washington, D.C., USA, 30-31 March 1981*

Provisional Agenda Item 4

RIMSA2/7 (Eng.)  
13 March 1981  
ORIGINAL: ENGLISH

PROPOSAL FOR A FIVE-YEAR COMPREHENSIVE PROGRAM FOR THE CONTROL AND ERADICATION OF ZOONOSSES AND FOOT-AND-MOUTH DISEASE IN LATIN AMERICA AND THE CARIBBEAN

In compliance with Resolution XVIII of the XXVII Meeting of the Directing Council of PAHO in 1980, this project proposal was drafted as an attempt to provide the basic framework to attract more dependable sources of financing, on a long-term basis, of the technical cooperation activities required in animal health and veterinary public health in the Hemisphere. The project proposal puts forward a comprehensive and integrated approach to the control and eradication of the major zoonoses and foot-and-mouth disease in Latin America and the Caribbean. The general objectives are, in addition to reducing the prevalence and expanding the disease-free areas, to support existing programs and to increase the supply and availability of proteins of animal origin to improve human nutrition. It will deal with rabies, brucellosis, tuberculosis, hydatidosis, leptospirosis, food-borne infections and intoxications, equine encephalitides and foot-and-mouth disease. It will also cover training and development of human resources, strengthening of laboratory support and diagnostic capabilities, strengthening field control activities, epidemiological surveillance, and research. The proposed project will be for a period of 5 years and will cost a total of US\$20,459,900.

This project proposal is being presented to this meeting for the consideration of the Ministers of Agriculture of the Hemisphere. Following approval and endorsement, it will be submitted to various agencies for possible funding.

PROPOSAL FOR A FIVE-YEAR COMPREHENSIVE PROGRAM FOR THE CONTROL AND  
ERADICATION OF ZOONOSSES AND FOOT-AND-MOUTH DISEASE  
IN LATIN AMERICA AND THE CARIBBEAN

I. SOCIOECONOMIC IMPORTANCE OF THE ZOONOSSES AND FOOT-AND-MOUTH DISEASE

1. Significance

1.1 The zoonoses and foot-and-mouth disease (FMD) represent a major human and animal health problem in the Americas. The zoonoses (or those diseases transmissible between animals and humans) constitute a medically important group of diseases causing human illness and death. Most human infections discovered in the last 20 years are shared with lower animals. The zoonoses are responsible for occupational illnesses in both urban and rural workers and their families.

1.2 Some 273 million people in Latin America and the Caribbean are at risk to more than 150 known zoonoses. At least 50 per cent of this population, or some 186 million persons, will be infected with one or more zoonoses in their lifetime.

1.3 The zoonoses and FMD undermine animal health and reduce productivity, resulting in reduced meat, milk, eggs, and wool production and impairment of the working capacity of draft animals. Consequently, they exacebate the scarcity of animal protein for human consumption.

1.4 The interrelationship between human nutrition and infection is one of the important health problems confronting the world today. Precipitated by nutritional deficiencies resulting from malnutrition, the human body defense system undergoes atrophy, becomes less able to produce antibodies, and succumbs to infection. The Inter-American Investigation of Mortality in Childhood, which studied the death of 35,095 children under five years of age in 24 widely separated areas in the Americas, shows that malnutrition was directly or indirectly responsible for 53.2 per cent of all deaths. The cases were chiefly of marasmus or kwashiorkor or a combination of the two.

1.5 According to the analysis of the Ten-Year Health Plan for the Americas, protein malnutrition affected 28 million children under five years of age, or about 61.5 per cent of all children in that age group. Approximately 18.9 per cent suffered from moderate or advanced malnutrition. The consumption of calories and proteins was estimated to be 10-20 per cent below the recommended level, especially among the poorer segment of the population.

1.6 Infants and children during their pre- and postnatal period are the most vulnerable to protein deprivation since, if they survive, they often fail to achieve their optimum size and weight. Their intellectual capacity and potential vigor are often seriously reduced.

1.7 It is a fact that protein of animal origin--that from meat, milk and eggs--is not only palatable and easily digestible, but is also rich in the types of aminoacids that are usually either absent or deficient in plant protein. Animal products also provide vitamin B-12 that is lacking in an all-plant diet. Milk, for instance, continues to be the foundation for normal infant growth and development and for the treatment of severe protein-calorie malnutrition. It is one of the easiest of human foods to digest.

1.8 In 1970 it was estimated by FAO that over 30 million tons of milk are lost annually to animal diseases, which include the zoonoses and FMD. This quantity of milk could provide almost 200 million children with two daily glasses of milk.

1.9 The impairment in animal health due to the zoonoses and FMD encompasses the spectrum of underproductivity, infertility, abortion, and death. It was estimated in a study conducted by FAO/WHO/OIE that a loss in productivity of up to 40 per cent is sustained by countries with limited animal health programs due to diseases which include the zoonoses and FMD.

## 2. Economic Losses

2.1 The socioeconomic losses from the zoonoses in terms of human lives and suffering and from FMD by exacerbating the problem of malnutrition, are indeed significant, but difficult to quantify since, despite breakthroughs in technology and the application of economic theories, no mathematical equation or theoretical model has yet been developed that could predict the value of human lives and suffering. For instance, some 175,000 persons, mostly children between the ages of 1-7 and 8-14 years, annually undergo medical treatment for rabies, resulting in millions of man/hours work loss, while at least 300 persons die of the disease each year. In endemic areas, as high as 84.3 per 100,000 population have hydatidosis. Losses attributable solely to hospitalization of humans in these countries where the disease is prevalent are estimated at more than US\$500,000 per year.

2.2 Losses related to animal diseases are easier to quantify than those due to human diseases, but there are many problems associated with the development of meaningful data on their social and economic impact for use as bases in policy decisions on resource allocation in development programs. The reasons for these are, inter alia, a dearth of accurate epidemiological data for many diseases, particularly in developing countries where the need for information is greatest; the limited experience in socioeconomic analysis for animal health programs; and the fact that most estimates assume a nonexistent perfect market.

2.3 Most meaningful data available on monetary losses from animal diseases relate to the developed countries. In developing countries, data are based on various rough estimates due to the lack of adequate data collection systems and inconsistencies in data reporting.

2.4 The estimated annual monetary losses from some zoonoses and FMD have been calculated at between several hundred thousands and millions of dollars. For instance:

Disease	Annual Monetary Losses	Geographic Area
1. Rabies (bovine)	US\$ 50,000,000 <sup>1/</sup>	Latin America
2. Brucellosis (bovine)	25,000,000 <sup>2/</sup>	U.S.A.
" "	230,000,000 <sup>3/</sup>	11 Latin American Countries
" "	600,000,000 <sup>4/</sup>	Latin America & Caribbean
3. Tuberculosis (bovine)	100,000,000 <sup>5/</sup>	Latin America & Caribbean
4. Hydatidosis (human)	500,000* <sup>6/</sup>	South America
5. Foot-and mouth disease	400,000,000 <sup>7/</sup>	South America
" " "	600,000,000 <sup>8/</sup>	Europe
" " "	25,000,000 <sup>9/</sup>	Brazil
" " "	25,000,000 <sup>10/</sup>	Philippines
" " "	339,622,641 <sup>11/</sup>	Great Britain
" " "	12,000,000,000** <sup>12/</sup>	U.S.A.
" " "	724,000,000*** <sup>13/</sup>	Canada
6. Cysticercosis (porcine)	67,787,250 <sup>14/</sup>	Latin America
7. Cysticercosis (bovine)	500,000 to 3,000,000 <sup>15/</sup>	U.S.A. and various countries
8. Fasciolasis (bovine)	98,076,923 <sup>16/</sup>	Netherlands
" "	112,359,550 <sup>17/</sup>	France
9. Mastitis (bovine)	600,000,000 <sup>18/</sup>	U.S.A.
" "	242,937 <sup>19/</sup>	Ceylon

\* Estimated annual cost of hospitalization alone in three countries where hydatidosis is prevalent.

\*\* Projected losses in case the disease is introduced.

\*\*\* Includes direct and consequential losses due to one-year suspension of livestock trade. Actual administrative and compensation cost of eradication of the 1952 outbreak was US\$1,000,000.

### 3. Economic Benefits of Control and Eradication Programs

3.1 The economic benefits of investments in zoonoses and FMD control programs have been shown to be highly profitable from the stand-point of return on investment. Again, the most meaningful available data relate to developed countries. In general, cost-benefit analysis of alternative programs versus no program is the method applied in measuring the profitability of investing money to finance animal disease control activities. The C/B ratio gives the net benefit (or loss) per dollar invested. In addition, the Internal Rate of Return (IRR) and Net Present Value (NPV) are also used in ranking various alternative policies in terms of their economic profitability.

3.2 The following are C/B ratios obtained from selected zoonoses and FMD control programs:

Disease	C/B Ratio	Country
1. Brucellosis (bovine)	1:5 to 8 <sup>12</sup> / <sub>1</sub>	U.S.A.
"	1:6 to 140 <sup>5</sup> / <sub>1</sub>	Latin America
2. Bovine tuberculosis	1:4 <sup>12</sup> / <sub>1</sub>	U.S.A.
3. Mastitis (bovine)	1:4 <sup>12</sup> / <sub>1</sub>	U.S.A.
4. Foot-and-mouth disease	1:4 <sup>9</sup> / <sub>1</sub>	Philippines
" " "	1:20-121 <sup>12</sup> / <sub>1</sub>	U.S.A.
" " "	1:14 <sup>9</sup> / <sub>1</sub>	Chile

3.3 Studies in Paraguay demonstrated that brucellosis, tuberculosis and bovine rabies control programs showed IRR's of 71%, 52%, and 84%, respectively, and that the overall national animal health program netted an IRR of 70 per cent.

3.4 In order to obtain more precise information on economic losses from animal diseases, PAHO/WHO, through PANAFTOSA, is undertaking a 3-year study on losses in cattle production and productivity due to FMD. Funds have been provided by the Inter-American Development Bank and the Government of Brazil. The investigations are being carried out jointly by veterinarians, economists and statisticians in order to obtain more meaningful information on economic losses, especially in developing countries.



3.5 The zoonoses and foot-and-mouth disease stunt the economic growth of the countries and the generation of needed capital for investments. By undermining animal health, many countries that depend heavily on the export of meat and other animal products are unable to generate the foreign exchange to meet their balance of payments and embark on meaningful social development programs. The opportunity cost loss and the consequential losses sustained by the countries of the Americas from the zoonoses and FMD are inestimable. Import restrictions, export losses, and unfavorable trade relations are but a few of the economic barriers caused by FMD and several of the zoonoses.

## II. PAHO/WHO PROGRAM ON TECHNICAL COOPERATION

### 1. Special Program of Animal Health

1.1 A high priority of the PAHO/WHO program of technical cooperation is to respond to the needs of the countries in the Hemisphere regarding the problem of zoonoses and FMD.

1.2 Through its Special Program of Animal Health, PAHO/WHO provides the necessary technical cooperation in veterinary public health and animal health, which includes the prevention, control and eradication of major zoonoses and animal diseases of economic importance, such as rabies, brucellosis, tuberculosis, leptospirosis, cysticercosis, hydatidosis, the equine encephalitides, food-borne infections and intoxications, FMD, and vesicular diseases of animals.

1.3 Administratively, the Special Program is directly under the Director of PAHO/WHO, and has an expert human resource complement of some 105 professionals. It has in execution about 50 technical cooperation projects, of which 10 are regional and 40 are national.

### 2. International Centers for Animal Health

2.1 As part of its overall program of technical cooperation, PAHO/WHO has two international centers for animal health that provide support to the countries in the Hemisphere: the Pan American Zoonoses Center (CEPANZO), located in Argentina, and the Pan American Foot-and-Mouth Disease Center (PANAFTOSA), located in Brazil. The origin of these centers, like that of the other Pan American centers, stemmed from the basic recognition by the countries that a public health problem common to all of them could be addressed more effectively through a concentrated approach, with the centers serving as the focal point.

2.2 The primary goal of CEPANZO is to improve the control of diseases transmissible between animals and humans. PANAFTOSA, on the other hand, aims to eliminate FMD where it exists and to prevent its introduction into free areas.

2.3 It is through CEPANZO and PANAFTOSA that most field support to the technical cooperation program is carried out. Together, the two international animal health centers provide the link of activities in research, training, epidemiological surveillance and field control.

2.4 Since their inception, PANAFTOSA and CEPANZO have made an indelible contribution to the improvement of human health and socio-economic development in the Region. Among their significant contributions are the development of the new oil-adjuvanted vaccine against FMD, which provides better and longer periods of immunity and significantly reduces the cost of vaccination by more than 50 per cent; development of a highly effective and sensitive epidemiological surveillance system for FMD which enables the exact geographical pinpointing of any outbreak; development and improvement of the arc-5 method for more specific diagnosis of human hydatidosis, saving millions of dollars in unnecessary surgery; eradication of FMD in Chile, and successful control in many countries, thereby significantly reducing losses in meat and milk; the refinement and mass production of the suckling mouse brain rabies vaccine which altogether eliminates the irreversible vaccination accidents in humans following the use of the classical nervous tissue vaccine, and many others.

2.5 The technologies for all these new developments were effectively transferred to the countries through the extensive training programs conducted by the Centers, thus enabling each country to obtain the necessary technical capabilities to apply them to their respective national programs.

2.6 The significant contributions of CEPANZO and PANAFTOSA to both health and socioeconomic development of the countries of the Region have attracted worldwide attention, so much so that the World Health Organization is now attempting to establish similar centers in animal health in the other regions. Recently, the WHO Regional Office for the Eastern Mediterranean launched the Mediterranean Zoonoses Control Program in Athens, which was patterned after CEPANZO. Other similar programs are planned in the near future for the South-East Asian and Western Pacific Regions.

2.7 Effective control of zoonoses and foot-and-mouth disease require the full participation by all countries in the Region. For instance, the evaluation of the Ten-Year Health Plan for the Americas revealed that programs of varying effectiveness are carried out in only 15 countries and are planned in five others. Four countries lack control programs. The present situation requires a full-scale coordinated effort to overcome partial successes and to achieve significant permanent gains.

Many countries limit their efforts to certain zoonoses, e.g., rabies control, while the disease remains endemic in neighboring countries, posing a continuous threat of reintroduction. At present, coordination between the ministries of health and agriculture is considered satisfactory in only six of the 21 countries.

3. Need for Incremental Support

3.1 PAHO/WHO has established an infrastructure for technical cooperation in the control of zoonoses and FMD in the Hemisphere. PANAFTOSA and CEPANZO serve as the only reference laboratories in Latin America and the Caribbean for rabies, brucellosis, tuberculosis, hydatidosis, leptospirosis and FMD. In addition, CEPANZO serves as the only reference center in Latin America for BCG vaccine in humans, and is one of the few laboratories in the world working on human hydatidosis.

3.2 In order to achieve significant progress on a regional scale, maintain an effective level of implementation, and provide a sustained and continuing support to the program, additional resources are needed to supplement the contributions of the countries and PAHO/WHO.

III. PRIMARY HEALTH CARE (PHC) APPROACH

1. PHC and HFA/2000

1.1 Bearing in mind the concept of primary health care which will provide the fundamental basis for achieving the goal of health for all by the year 2000, this project aims to provide a unique opportunity of operationalizing its principles.

1.2 Intersectoral Collaboration. By the very nature of the zoonoses and the other animal diseases with human health and economic implications, their prevention and control require an intersectoral effort, especially between agriculture and health.

1.3 Use of Appropriate Technology. The technology needed to combat the zoonoses and FMD exist in most cases, and could be appropriately adapted to individual problems, depending on local epidemiologic patterns and available resources.

1.4 Technical Cooperation Among Countries. Some countries have successful control programs for zoonoses and FMD while others with similar problems and the same level of development have not. Technical cooperation among these countries will be promoted by drawing on their resources and successful experience.

1.5 Community Participation. Meaningful prevention of most of the zoonoses, such as rabies, leptospirosis, and food-borne diseases, could only be achieved by embarking on strong programs of community participation.

1.6 In primary health care recognition is given to the fact that health cannot be attained by the health sector alone. In developing countries in particular, economic development, anti-poverty measures, food production, water, sanitation, housing, environmental protection, and education all contribute to health, and have the same goal of human development. This project will attempt to operationalize the coordination at all levels between agriculture, health and the other sectors concerned in controlling the zoonoses and FMD.

#### IV. BACKGROUND INFORMATION AND PROJECT OBJECTIVES

1. It is envisioned that this project will provide an opportunity to build, on a modest scale, a successful program that will contribute directly to the socioeconomic development of the countries of Latin America and the Caribbean and to a significant improvement in human health.

##### 2. General Objectives

2.1 Reduction in the prevalence of the major zoonoses in the Region;

2.2 Expansion of areas now free of them;

2.3 Support of existing programs; and

2.4 Increase in the supply and availability of protein of animal origin to improve human nutrition.

3. The Governments of the countries of the Americas have requested PAHO/WHO assistance in dealing with the following:

3.1 Rabies

3.2 Brucellosis

3.3 Tuberculosis

3.4 Hydatidosis

3.5 Leptospirosis

3.6 Food-borne infections and intoxications

3.7 Equine encephalitides

3.8 Foot-and-mouth disease.

4. Rabies

4.1 Despite successful efforts in some countries, rabies remains a problem in the Region. In North America, the incidence is low and limited to sylvatic and rural areas, rarely affecting humans. In Latin America, however, dog rabies continues to be widespread due to lack of a comprehensive regional and national control program. Some progress has been made in controlling the disease in a few countries, but even these gains are in jeopardy due to the continuous threat of introduction and spread from infected areas.

It is expected that the problem of rabies will be further compounded by the projected increase in urbanization.

4.2 Between 1977 and 1979, the reported incidence ranged between 0 and 793 cases per 100,000 dogs in the major cities. Annual averages in Latin America and the Caribbean in the decade of the '70s include more than 15,000 cases of dog rabies, more than 120,000 persons bitten by dogs and cats, and almost 175,000 post-exposure treatments resulting in millions of man/hours work loss. A total of more than 40,000 cases of bovine rabies were reported between 1970 and 1978, or an annual average of some 4,500 cases. In the 4-year period 1973-1976, 1,093 cases of human rabies were reported, or an average of 273 cases per year. This figure is just 10 cases fewer than the average for the previous 4-year period. The average annual number of human rabies cases for the decade in the Region was 300.

4.3 The number of dogs vaccinated against rabies in each of the country's large cities failed to reach the goal of 80 per cent, although three countries (Argentina, Brazil, and Colombia) came fairly close. The level of vaccination ranged from 1 to 75 per cent, with a median of 35 per cent, which is not sufficient to interrupt disease transmission. Control of stray dogs in large cities has not been successful. Figures from 10 countries reported between 7 and 60 per cent, or a median of 20 per cent.

4.4 Although wildlife populations, e.g., mongoose and vampire bats, serve as reservoirs of infection in some countries, human exposure almost always results from dog bites.

4.5 Rabies is a disease of antiquity. It is one of the most dreadful illnesses, causing immeasurable human anguish, anxiety, and suffering. The technology to prevent, control, and even eradicate this zoonoses exists. What is needed is additional and sustained support to carry out the program to completion.

#### 4.6 Specific Objectives

4.6.1 Control and eventual eradication in the principal cities and communities of the Region;

4.6.2 Vaccination of at least 80 per cent of the dog population;

4.6.3 Control and/or elimination of stray dogs; and

4.6.4 Reduction of the sylvatic animal population in countries where it acts as a reservoir of infection.

#### 5. Brucellosis

5.1 Brucellosis is widespread in animals and humans throughout Latin America and the Caribbean. It is conservatively estimated that in the Latin American countries brucellosis causes an annual economic loss of millions of dollars, with more than 3,000 human cases reported for 1977 alone. The actual number of human cases is perhaps 5-10 times more, due to inadequate reporting and lack of adequate laboratories for diagnostic confirmation of cases.

5.2 The economic benefits of investment directed at brucellosis prevention and control have been shown to be high. Cost-benefit ratios derived from such investments range between 1:6 and 1:140, depending upon conditions prevailing in a particular country. This means that for every dollar spent for control, a net benefit of \$6-140 can be expected.

5.3 As reported in the initial evaluation of the Ten-Year Health Plan, 11 of the 15 countries that responded had patterned their national goals on the regional goals. A general downward trend is evident in the rates of prevalence, but not to the extent projected. Only 2 of 16 countries came close to or achieved the regional goals.

5.4 Brucellosis causes abortion, infertility, and underproductivity in animals, and at the same time is an important occupational human illness.

5.5 The technology exists to control and eradicate bovine brucellosis, a disease that not only causes human illness but undermines meat and milk production, vital for correcting the problem of malnutrition in the Region. Some countries, Jamaica for instance, are now in the final stages of eradicating brucellosis. Given adequate support and momentum, the objective of brucellosis eradication in the Region remains feasible and achievable.

### 5.6 Specific Objectives

5.6.1 Eradication in countries where national prevalence is 1 per cent or less; and

5.6.2 Control and reduction of prevalence to below 2 per cent in countries where brucellosis is a problem.

## 6. Tuberculosis

6.1 Bovine tuberculosis continues to be widespread in Latin America and the Caribbean. In certain areas, about 5 per cent of cattle show lesions on slaughter, resulting in the condemnation of hundreds of tons of meat each year. Some 3 per cent of human tuberculosis in one area surveyed revealed it to be caused by the bovine type of tuberculosis bacillus. It is estimated that the total direct economic losses from bovine tuberculosis in the Americas, excluding the cost of control programs, amount to some US\$100 million per year.

6.2 In the first evaluation of the Ten-Year Health Plan, 15 of the 22 countries expressed concern over the problem of bovine tuberculosis; the reported prevalence ranged from 0.1 to 14.6 per cent. Judging from the response of the 16 countries that recognized the existence of this problem, the goals set forth were not met, except in one country. Bovine tuberculosis remains prevalent in most of these countries, albeit to a lesser extent. In six of the countries that reported its presence the prevalence exceeded 1 per cent; in the remaining 10, it was below 1 per cent.

6.3 The technology exists to control and eradicate bovine tuberculosis. Eradication is the economically feasible option for countries with a prevalence rate of 1 per cent or less. Some countries, like Jamaica, are now in the final stages of eradication after less than five years of sustained efforts. With technical cooperation from PAHO/WHO, and UNDP funding, the overall incidence has been reduced by more than 80 per cent to a level of 0.01 per cent, with only one infected herd remaining in the whole country.

6.4 Aside from causing human illness, bovine tuberculosis undermines meat and milk production, essential in correcting the problem of malnutrition in the Region.

### 6.5 Specific Objectives

6.5.1 Eradication in countries where the national prevalence is 1 per cent or less; and

6.5.2 Control and reduction of prevalence to below 1 per cent in countries where bovine tuberculosis is a problem.

## 7. Hydatidosis

7.1 Hydatidosis is a serious human illness in southern Latin America. Surgery remains the only recourse for the hundreds of human cases which occur each year. Hundreds of tons of liver from infected animals are condemned annually. In 1977 alone, some 1,000 human cases were diagnosed.

7.2 There has been little response from the countries concerning the problem of hydatidosis. Nevertheless, it is known to exist to a marked degree in South America, where an annual average of some 1,316 human cases was reported over the 4-year period 1973-1976. These cases were diagnosed primarily in Argentina, Uruguay, Chile and Peru. Only five countries reported the prevalence of this parasite in animals in 1977. In only one of these countries was there an appreciable decline in the level of infection from that at the start of the decade.

7.3 CEPANZO, in Argentina, is one of only a handful of reference laboratories throughout the world, and the only center of PAHO/WHO working on this serious human illness. There is need to continue working on hydatidosis, in the provision of diagnostic services, training, and research activities dealing with control programs and immunodiagnosis.

### 7.4 Specific Objectives

7.4.1 Reduction in the prevalence of infection; and

7.4.2 Control and supervision of all slaughterhouses and places, both public and private, where food animals are slaughtered.

## 8. Leptospirosis

8.1 Leptospirosis is a zoonoses whose importance is underestimated due to the nature of the illness it causes and the lack of diagnostic capabilities in many countries. In most instances, leptospirosis is diagnosed as some kind of febrile illness of unknown etiology. Work on this disease has been confined to the laboratory, and no field operations of any significance are being pursued.

8.2 Leptospirosis appears to be a significant health problem in the Americas, in particular in the Caribbean, for both humans and animals. It has almost always been shown to be an underlying zoonotic problem whenever and wherever attempts have been made to diagnose the disease. It is an important occupational health hazard among those whose occupation brings them in close contact with water contaminated with animal urine, such as the sugarcane farmers in Jamaica.



8.3 Human leptospirosis averages 122 cases per year, as reported between 1971-1976. Fifty-four per cent of these cases were reported from North America, and 46 per cent from the islands of and around the Caribbean. Some of these countries also reported the infection in animals. Rodents, such as the mongoose, serve as a reservoir of infection in some of the islands of the Caribbean.

8.4 Little progress has been made in obtaining better information about the problem of leptospirosis and thus in evaluating its scope and magnitude.

#### 8.5 Specific Objectives

8.5.1 Evaluation of the nature, scope and magnitude of the problem; and

8.5.2 Prevention and control of infection in humans and in economically important animals.

### 9. Food-borne Infections and Intoxications

9.1 Thousands of cases of food-borne infections occur in Latin America and the Caribbean annually. The diarrheas, largely caused by this group of infections, are the major cause of morbidity and mortality in infants and children.

9.2 Foods of animal origin constitute a significant proportion of the cause of food-borne illnesses. Awareness of the microbiological hazards arising from the consumption of contaminated and infected food has grown in recent years, resulting in the intensification of national and international food hygiene programs.

9.3 Food protection serves a dual purpose: to protect the health of the consumer and to prevent food losses due to mishandling. Most countries have no national policy for food protection, especially programs for inspection of meat and other foods of animal origin. These foods serve as important vehicles for such zoonoses as salmonellosis, Clostridium infection and intoxication, and staphylococcal food poisoning.

#### 9.4 Specific Objectives

9.4.1 Reduction of human illness and economic losses caused by infected and contaminated foods of animal origin; and

9.4.2 Development of national intersectoral food protection programs that encompass all critical points from production to distribution, with special reference to foods of animal origin.

10. Equine Encephalitides

10.1 The sporadic outbreaks of equine encephalitides pose serious problems to both humans and animals in the Region. Little is known of the precise extent and magnitude of the problem. In 1977, only three countries submitted information on the prevalence of equine encephalitides. Venezuela, Cuba, and the Dominican Republic reported 45, 23, and 1 cases per 1,000 horses, respectively. These figures signify a decrease from 1971, but there is no way of assessing the actual trends in the other countries because of lack of information.

10.2 None of the countries where equine encephalitides is endemic achieved the recommended goal of vaccinating 80 per cent of the equine population.

10.3 Specific Objectives

10.3.1 Evaluation of the scope, nature and magnitude of the problem; and

10.3.2 Periodic vaccination of at least 80 per cent of the equine population in known endemic areas.

11. Foot-and-Mouth Disease and Other Vesicular Animal Diseases

11.1 PAHO/WHO assistance has been requested by all the countries of the Region in dealing with FMD, an important animal disease (which may occasionally cause human infection) that causes severe economic losses and livestock underproductivity. Livestock plays a central role in the economy of several countries of the Americas. Foot-and-mouth disease is a continuous deterrent to the development of the livestock industry and trade, both regional and international, and contributes significantly to the level of availability of animal protein for human nutrition.

11.2 Despite efforts to confront this disease, FMD remains endemic in most of South America.

11.3 Due to measures instituted by the countries, in cooperation with PAHO/WHO, North America, Central America and the Caribbean continues to be free of FMD, but the threat of introduction persists. For instance, FMD was introduced into Canada in 1952 and Mexico in 1954, causing tragic economic consequences. The Government of Canada spent US\$1 million in administrative and compensation costs to eradicate the outbreak. But the overall loss, including a one-year suspension of livestock trade following the outbreak, was estimated at US\$724 million.

11.4 The United States of America has been free of FMD since 1929. It has been estimated by the United States Department of Agriculture that a projected loss of US\$12 billion would be incurred should FMD accidentally enter the continental U.S.A.

11.5 Chile, with PAHO/WHO technical cooperation, successfully eradicated FMD and was officially declared free of the disease on 16 January 1981. Paraguay has reported that 85 per cent of its territory is now free of FMD.

11.6 Through PANAFTOSA, PAHO/WHO provides support to national control programs in South America, where a large percentage of the cattle population has been systematically vaccinated against foot-and-mouth disease during the past few years.

11.7 The problems of vaccine potency and duration of immunity have caused some setbacks to what otherwise would have been a successful program. PANAFTOSA recently developed a new oil-adjuvanted vaccine which provides a better and longer-lasting immunity. Cost-wise, FMD oil-adjuvanted vaccine cuts the cost of administration alone by more than 50 per cent.

11.8 The effective transfer of technology for the production of the new FMD oil-adjuvanted vaccine is now being provided to the countries of the Region for use in their national programs. The new FMD oil-adjuvanted vaccine will greatly enhance the effectiveness of national field control and eradication programs, while at the same time reducing their cost. So far, the new vaccine has had wide acceptance among the countries of the Region. In order to expand its production and application, and thus ensure eventual eradication of FMD in the Region, additional support is needed to set-up and carry out a comprehensive eradication program to its successful completion.

11.9 At present, the FMD virus poses a continuous threat of introduction and spread into FMD-free areas of the Region due to contiguity and large-scale movements of humans and animals. Countries free of FMD have to spend millions of dollars to keep it out, while animal health restrictions limit the trade of animal products and cause losses in the millions of dollars.

#### 11.10 Specific Objectives

11.10.1 Reduction in the prevalence to 1 per cent or less, and eradication in countries where the incidence is sporadic; and

11.10.2 Prevention of introduction into FMD-free areas.

V. PROPOSED PROJECT APPROACH

1. This project will attempt to address the problem of the zoonoses and FMD in the Region in a comprehensive, coordinated, and sustained fashion. It will be built upon the infrastructure of the PAHO/WHO program for technical cooperation in animal health and veterinary public health and the infrastructure for animal health services of the countries.

2. Where there are existing programs for zoonoses and FMD control, coverage will be expanded and support activities will be fortified. When there are none, programs will be developed and implemented. The general approach will be to mount well-planned, tightly coordinated, integrated national programs aimed at all the major zoonoses and FMD. Activities will be stimulated at all levels, from program planning to field implementation and program evaluation. Given the necessary incremental support, the activities will be maintained at an efficient and effective level.

3. Programs for the prevention, control and eradication of FMD will be consolidated. At the same time, studies on the characterization of vesicular disease will be intensified. Prevention activities will be expanded to include other exotic animal diseases in the Continent. The FMD control program for South America will be restructured. Programs in the control phase will be accelerated to achieve complete eradication in countries such as Peru and Uruguay and in areas of some other countries, such as the eastern part of Argentina, southern Brazil, northern Paraguay, and the northwestern region of Colombia. It will be necessary to strengthen and expand integrated programs in countries that share common epidemiologic profiles, within the process of national characterization of FMD initiated earlier.

4. The element of time is central to any strategic financial gains that would accrue from disease control and/or eradication programs. Aggregate financial gains realized from prolonged programs are generally discounted away. Long drawn-out programs usually end up in complacency, and a waning of government and public support and interest. Furthermore, capital tied up in short programs is quickly released, freeing it for investment in other programs. This project will have a time frame of five years. Previous experiences have shown that disease control and/or eradication programs planned within this time period provide the necessary sustained momentum, interject a sense of urgency, and maximize economic benefit.

5. In order to meet the needs of the underserved population and thus extend program coverage, this project will be developed along the following lines:

5.1 Improvement of existing systems rather than development of an entirely new infrastructure and facilities;

5.2 More realistic assessment of the human, technical and material resources available in the country and the community; and

5.3 Research efforts directed towards development of appropriate technology for each situation based on already existing methodology.

6. This project will provide the incremental support necessary to maintain the PAHO/WHO technical cooperation program in animal health and veterinary public health at an efficient level and to carry out the activities needed by the countries of the Region to control, and ultimately eradicate, the major zoonoses and FMD. This project will include:

6.1 Training and development of human resources;

6.2 Strengthening of laboratory support and diagnostic capabilities;

6.3 Strengthening of field control activities;

6.4 Epidemiological surveillance; and

6.5 Research.

7. The institutional development and infrastructure strengthening approach will be utilized as the basis for elaborating the project activities, which will include:

7.1 Development and improvement of laboratory diagnostic capabilities;

7.2 Production and control of vaccines and biologicals;

7.3 Planning, organization and evaluation of field control programs;

7.4 Strengthening of programs to prevent introduction of exotic animal diseases and development of a contingency plan of emergency mobilization for their containment and eradication; and

7.5 Development of national programs for protection of meat and other foods of animal origin.

8. The project activities will be planned and executed to support the following specific areas of action:

- 8.1 Rabies prevention/control;
- 8.2 Brucellosis control/eradication;
- 8.3 Tuberculosis control/eradication;
- 8.4 Hydatidosis prevention and control/eradication;
- 8.5 Leptospirosis epidemiological surveillance, prevention and control;
- 8.6 Prevention and control of food-borne infections and intoxications;
- 8.7 Equine encephalitides surveillance and control; and
- 8.8 Surveillance and control of FMD and other vesicular diseases.

A uniform, comprehensive strategy with an accompanying plan of action based on the above framework will be developed with each of the countries in order to deal with individual national priorities. Accordingly, this will be developed around the existing national infrastructure for animal health and veterinary public health, bearing in mind the principles laid out earlier in the concept of primary health care.

9. In the past, the tendency has been to support projects or activities which dealt with specific zoonoses problems and had short-term objectives. While some benefits were derived using this approach, the problems reverted back to their original level once support was withdrawn. It has been shown that in order to achieve significant gains in any disease control program it is necessary to provide sustained financial and technical support over a period of years.

10. The strategies for the control of the different zoonoses and FMD are inextricably interrelated and complementary. The infrastructure corresponds to the animal health services that exist in the countries. Common laboratory equipment and facilities could be strengthened and developed to support the different specific areas of action. For instance, a rabies or FMD diagnostic laboratory could be expanded to cover the diagnosis of other viral animal diseases, at present inadequate in most countries in Latin America and the Caribbean. The same human resources base that has been trained in the concepts of preventive medicine and the principles of disease control could be utilized in different program areas. With proper coordination and planning, field control

programs could be addressed simultaneously to different problems, for instance, tuberculosis and brucellosis testing, leptospirosis surveillance, and vaccination against major diseases could be achieved in a single field operation using the same personnel and physical resources.

11. Well-planned and efficiently executed medium-term programs envisioned to provide sustained support for the solution of problems associated with a group of diseases with broad social and economic implications will normally have a greater impact on development. While the initial investment may seem sizeable, the long-term social and economic benefits are greater due to more significant gains, in this case improved livestock productivity, increased production of foods of animal origin, an increase in exports and a corollary decrease in food imports, expansion of the animal industry, and a concomitant increase in employment opportunities in this sector.

12. Human resources development and strengthening of the institutional infrastructure in animal health and veterinary public health, in addition to the control and eradication of the major zoonoses and FMD, will be the ultimate result of this project. Consequently, the financial investments will be significantly translated into meaningful national development, which would be effectively absorbed by the countries towards the end of the project. On the one hand, the social and economic losses from the zoonoses will be significantly reduced, barring unforeseen circumstances; on the other, each of the countries will have improved animal programs and an adequately trained pool of human resources.

13. One of the direct benefits of this project will be the reduction of losses in food animal productivity and the consequent availability of animal protein such as meat, milk and eggs. Assuming that there will be an effective program of social intervention that will ensure a more equitable distribution of animal protein among the highly vulnerable, socially and economically disadvantaged segment of the population, an immediate human health benefit of this project will be the amelioration of human malnutrition, which is one of the most important problems confronting the world today.

## VI. PROJECT ACTIVITIES

### 1. Training and Human Resources Development

Conduct local, national and regional training courses, seminars and workshops; provide individual fellowships

#### 1.1 Training in laboratory diagnostic methods:

##### 1.1.1 Rabies

##### 1.1.2 Tuberculosis

1.1.3 Leptospirosis

1.1.4 Food-borne infections and intoxications

1.1.5 Equine encephalitides

1.1.6 Foot-and-mouth disease

1.1.7 Other viral diseases

1.2 Training in the production and control of vaccines:

1.2.1 Rabies

1.2.2 Brucellosis

1.2.3 Equine encephalitides

1.2.4 Foot-and-mouth disease

1.2.5 Other diseases

1.3 Training in the production and standardization of diagnostic reagents:

1.3.1 Rabies

1.3.2 Brucellosis

1.3.3 Tuberculosis

1.3.4 Leptospirosis

1.3.5 Hydatidosis

1.3.6 Other diseases

1.4 Training in the planning, organization, execution, management and evaluation of field control programs:

1.4.1 Urban and sylvatic rabies

1.4.2 Brucellosis

1.4.3 Tuberculosis

1.4.4 Hydatidosis



1.4.5 Foot-and-mouth disease

1.4.6 Leptospirosis

1.4.7 Equine encephalitides

1.4.8 Other diseases

1.5 Training in the methods of prevention of entry of exotic animal diseases, and eradication procedures (in case of introduction)

1.6 Training in the control of rodents, dogs, and other stray animals

1.7 Training in epidemiological surveillance

1.8 Training in food protection and food control

1.8.1 Meat inspection

1.8.2 Slaughterhouse management and operation

1.8.3 Food microbiology

2. Strengthening of Laboratory Diagnostic and Support Services

2.1 Provide technical cooperation in the establishment and strengthening of laboratory diagnostic capabilities:

2.1.1 Rabies

2.1.2 Brucellosis

2.1.3 Tuberculosis

2.1.4 Leptospirosis

2.1.5 Hydatidosis

2.1.6 Food-borne infections and intoxications

2.1.7 Equine encephalitides

2.1.8 Foot-and-mouth disease

2.2 Provide technical cooperation in the establishment and development of laboratories for vaccine production and control:

- 2.2.1 Rabies
- 2.2.2 Brucellosis
- 2.2.3 Equine encephalitides
- 2.2.4 Foot-and-mouth disease
- 2.2.5 Other diseases

2.3 Provide technical cooperation in the establishment and development of laboratories for production and standardization of diagnostic reagents:

- 2.3.1 Rabies
- 2.3.2 Brucellosis
- 2.3.3 Tuberculosis
- 2.3.4 Leptospirosis
- 2.3.5 Hydatidosis
- 2.3.6 Other diseases

2.4 Provide technical cooperation in the development and strengthening of laboratory support services for food protection programs:

- 2.4.1 Laboratory control of quality
- 2.4.2 Food microbiology
- 2.4.3 Monitoring of toxic chemical and antibiotic residues

2.4.4 Establishment of baseline laboratory standards for foods of animal origin

### 3. Strengthening of Field Control Services

3.1 Provide technical cooperation in the planning, organization, execution, management, and evaluation of field control/eradication programs:

3.1.1 Rabies

3.1.2 Brucellosis

3.1.3 Tuberculosis

3.1.4 Leptospirosis

3.1.5 Hydatidosis

3.1.6 Equine encephalitides

3.2 Provide technical cooperation in generating community participation and mobilizing local resources to support field control activities:

3.2.1 Organization of community-based rodent control programs

3.2.2 Organization of community-based stray dog control and mass antirabies vaccination programs

3.3 Provide technical cooperation in the development of national and regional emergency animal disease preparedness plans:

3.3.1 Strengthening of programs to prevent introduction of exotic animal diseases

3.3.2 Development of a contingency plan for emergency mobilization in the containment and eradication of exotic animal diseases, in case of introduction

3.4 Provide technical cooperation for development of food protection and control programs, with emphasis on foods of animal origin:

3.4.1 Jointly with other sectors catalyze the organization of national intersectoral committees or commissions for food protection

3.4.2 Develop policies and enactment of legislation for food protection and control

3.4.3 Develop uniform guidelines for meat inspection and protection and the processing of foods of animal origin, using appropriate technology

3.4.4 Develop facilities for the hygienic slaughtering of food animals and processing of foods of animal origin

3.4.5 Extend the coverage of food protection programs for the highly vulnerable and socially disadvantaged segments of urban and rural populations through development of small-scale cooperative and integrated programs, e.g., cooperative production, slaughtering and processing of small food animal species, and cooperative production, processing and handling of milk.

#### 4. Epidemiological Surveillance

4.1 Provide technical cooperation in the development and strengthening of the national and regional infrastructure for zoonoses and FMD reporting and monitoring:

4.1.1 Develop a network of information systems

4.1.2 Promote effective use of valid information for planning and evaluation of field control programs

4.1.3 Develop farmer and community-based systems of disease notification and reporting

#### 5. Research

5.1 Provide technical cooperation in the conduct of field investigations:

5.1.1 Studies on economic losses from zoonoses and FMD

5.1.2 Development of appropriate technology for control and eradication

5.1.3 Sociocultural determinants for effective community participation in zoonoses and FMD control programs

5.1.4 Investigation in alternative control strategies, e.g., production of ovicidal drugs for hydatidosis, ecological studies and behavior of urban dogs, relationship between urban and wildlife rabies, etc.

# VII. PROPOSED BUDGET\*

## P R O G R A M S

PROJECT ACTIVITIES	RABIES	BRUCELLOSIS	TUBER- CULOSIS	LEPTOS- PIROSIS	HYDATI- DOSIS	FOOD-BORNE INF. & INTOX	EQUINE ENCE- PHALITIDES	FMD	TOTAL
1. Training and Human Resources Development.									
1.1 Individual fellowships.	107,700	107,700	107,700	107,700	107,700	107,700	107,700	107,700	861,600
1.2 National and Regional Training Courses, Seminars, Workshops.	107,700	107,700	107,700	107,700	107,700	107,700	107,700	107,700	861,600
2. Strengthening of Laboratory Support and Diagnostic Services.									
2.1 Equipment	100,000	60,000	60,000	60,000	50,000	100,000	50,000	100,000	580,000
2.2 Supplies and Materials	100,000	30,000	30,000	60,000	100,000	50,000	60,000	60,000	490,000
2.3 Personnel									
2.3.1 Experts	666,000	668,100	-	339,300	668,100	-	-	-	2,341,500
2.3.2 Support Staff	679,500	679,500	226,500	679,500	1,132,500	679,500	453,000	679,500	5,209,500
2.3.3 Short-Term Consultants	-	-	293,800	-	-	-	-	-	293,800
3. Strengthening of Field Control Services.									
3.1 Equipment	50,000	20,000	25,000	25,000	25,000	25,000	25,000	25,000	220,000
3.2 Supplies and Materials	70,000	10,000	10,000	20,000	25,000	25,000	20,000	20,000	200,000
3.3 Travel	61,050	40,000	25,000	40,000	40,000	70,000	30,000	70,000	376,050
3.4 Experts	1,846,600	352,500	668,200	339,300	330,600	1,688,600	447,200	2,407,100	8,080,200
4. Epidemiologic Surveillance									
4.1 Equipment	50,000	20,000	25,000	25,000	25,000	25,000	25,000	25,000	220,000
4.2 Supplies and Materials	80,000	10,000	10,000	20,000	25,000	25,000	20,000	20,000	210,000
4.3 Publications	25,000	7,500	7,500	10,000	10,000	10,000	10,000	10,000	90,000
4.4 Travel	61,050	33,100	25,000	33,300	33,300	80,000	30,000	80,000	375,750
TOTAL	\$4,004,600	\$2,146,100	\$1,621,400	\$1,866,800	\$2,679,900	\$2,993,500	\$1,435,600	\$3,712,000	\$20,459,900

\* Rough estimates of total costs only covering a period of 5 years. Does not include project support cost. Break-down of budget by program, by year and by elements is reflected in specific program cost estimates.

PROGRAM: RABIES

PROPOSED BUDGET

(By year, excluding Program Support Cost).

ELEMENT	1982	1983	1984	1985	1986	5-YEAR TOTAL
1. Personnel						
1.1 Expert *	426,400	464,300	500,600	541,000	580,300	2,512,600
1.2 Support Staff **	110,700	123,300	135,900	148,500	161,100	679,500
2. Training						
2.1 Individual Fellowship	-	22,500	25,200	28,500	31,500	107,700
2.2 Group Training (Courses, Seminars, Workshops).	-	35,000	35,900	36,800	-	107,700
3. Travel	20,000	22,000	24,200	26,600	29,300	122,100
4. Equipment ***	-	100,000	50,000	50,000	0	200,000
5. Supplies and Materials****	50,000	50,000	50,000	50,000	50,000	250,000
6. Miscellaneous	5,000	5,000	5,000	5,000	5,000	25,000
TOTAL	612,100	822,100	826,800	886,400	857,200	\$4,004,600

\* Include 6 experts (P.4), one in each of the 5 areas to coordinate field activities and one in CEPANZO to coordinate the laboratory activities.

\*\* Include 3 laboratory technicians (G.6) to work in vaccine production/quality control and diagnosis.

\*\*\* Include FA microscope, laminar flow hoods, ultra-centrifuge, REVCO Deep Freeze, etc.

\*\*\*\* Include supplies for vaccine production and quality control, diagnosis, etc.

PROGRAM: BRUCELLOSIS

PROPOSED BUDGET

(By year, excluding Program Support Cost).

ELEMENT	1982	1983	1984	1985	1986	5-YEAR TOTAL
1. Personnel						
1.1 Expert *	169,200	186,600	204,000	221,400	239,400	1,020,600
1.2 Support Staff **	110,700	123,300	135,900	148,500	161,100	679,500
2. Training						
2.1 Individual Fellowship	-	22,500	25,200	28,500	31,500	107,700
2.2 Group Training (Courses, Seminars, Workshops).	-	35,000	35,900	36,800	-	107,700
3. Travel	12,000	13,000	14,500	16,000	17,600	73,100
4. Equipment ***	-	50,000	25,500	25,000	-	100,000
5. Supplies and Materials****	-	25,000	20,000	10,000	5,000	50,000
6. Miscellaneous	1,500	1,500	1,500	1,500	1,500	7,500
TOTAL	293,400	456,900	452,000	487,700	456,100	2,146,100

\* Include 2 experts (P.4), 1 to coordinate field activities and 1 in CEPANZO to coordinate laboratory activities.

\*\* Include 3 Laboratory Technicians (G.6) to work in the production/control of antigen, control vaccine and laboratory diagnostic.

\*\*\* Include CO<sub>2</sub> incubators, ultra-centrifuge, laminar flow hoods, Revco deep freeze, microscope, continuous flow culture tanks.

\*\*\*\* Syringes, test tubes, CO<sub>2</sub> vials, glass plates, culture media, etc.

PROJECT: TUBERCULOSIS

PROPOSED BUDGET

(By year, excluding Program Support Cost).

ELEMENT	1982	1983	1984	1985	1986	5-YEAR TOTAL
1. Personnel						
1.1 Expert *	108,400	121,000	133,500	146,100	159,200	668,200
1.2 Support Staff **	36,900	41,100	45,300	49,500	53,700	226,500
1.3 STC	-	54,700	65,700	78,800	94,600	293,800
2. Training						
2.1 Individual Fellowship	-	22,500	25,200	28,500	31,500	107,700
2.2 Group Training (Courses, Seminars, Workshops).	-	35,000	35,900	36,800		107,700
3. Travel	8,000	9,000	10,000	11,000	12,000	50,000
4. Equipment ***	-	38,000	37,000	35,000	-	110,000
5. Supplies and Materials ****	-	25,000	10,000	10,000	5,000	50,000
6. Miscellaneous	1,500	1,500	1,500	1,500	1,500	7,500
TOTAL	154,800	347,800	364,100	297,200	357,500	\$1,621,400

\* Include 1 full-time expert (P.4) to coordinate field programs, and 24 m/m STC to assist in development and strengthening of national programs.

\*\* Include 1 Laboratory Technician (G.6) to assist in tuberculosis control and standarization, and isolation and typing of strains.

\*\*\* Microscopes, incubators, laminar flow-hoods, centrifuge refrigerators, etc.

\*\*\*\* Tuberculin syringes, media, laboratory supplies.



PROGRAM: HYDATIDOSIS

PROPOSED BUDGET

(By year, excluding Program Support Cost).

ELEMENT	1982	1983	1984	1985	1986	5-YEAR TOTAL
1. Personnel						
1.1 Expert *	166,400	183,000	199,600	216,200	233,500	998,700
1.2 Support Staff **	184,500	205,500	226,500	247,500	268,500	1,132,500
2. Training						
2.1 Individual Fellowship	-	22,500	25,200	28,500	31,500	107,700
2.2 Group Training (Courses, Seminars, Workshops).	-	24,600	26,100	27,700	29,300	107,700
3. Travel	12,000	13,200	14,500	16,000	17,600	73,300
4. Equipment ***	-	50,000	25,000	25,000	-	100,000
5. Supplies and Materials ****	50,000	25,000	25,000	25,000	25,000	150,000
6. Miscellaneous	2,000	2,000	2,000	2,000	2,000	10,000
TOTAL	414,900	525,800	543,900	587,900	607,400	\$ 2,679,900

\* Include 2 full-time experts (P.4) to coordinate field programs.

\*\* Include 5 Laboratory Technicians (G.6) to produce antigens, perform tests, standarize control serum, and collaborate with field activities.

\*\*\* Microscopes, stereoscopes, centrifuges, refrigerators, vehicles, autoclaves, etc.

\*\*\*\* Centrifuge tubes, taeniciades, wire sieves, rabbits, etc.

ROGRAM: LEPTOSPIROSIS

PROPOSED BUDGET

(By year, excluding Program Support Cost).

ELEMENT	1982	1983	1984	1985	1986	5-YEAR TOTAL
1. Personnel						
1.1 Expert *	119,400	127,300	135,500	143,900	152,500	678,600
1.2 Support Staff **	110,700	123,300	135,900	148,500	161,100	679,500
2. Training						
2.1 Individual Fellowship	-	22,500	25,200	28,500	31,500	107,700
2.2 Group Training (Courses, Seminars, Workshops).	-	24,600	26,100	27,700	29,300	107,700
3. Travel	12,000	13,200	14,500	16,000	17,600	73,300
4. Equipment ***	50,000	15,000	15,000	15,000	15,000	110,000
5. Supplies and Materials****	30,000	20,000	20,000	20,000	20,000	100,000
6. Miscellaneous	2,000	2,000	2,000	2,000	2,000	10,000
TOTAL	314,100	347,900	374,200	401,600	429,000	\$ 1,866,800

\* Include 2 experts (P.4) to coordinate field activities and 1 to coordinate laboratory activities.

\*\* Include 3 Laboratory Technicians (G.6) to maintain serovars, do diagnostic tests, prepare reference serums and store cultures, etc.

\*\*\* Dark field microscope, CO<sub>2</sub> incubators, laminar flow hoods, Revco deep freeze nitrogen bank, etc.

\*\*\*\* Culture media, tubes, laboratory supplies, hamsters, etc.

PROGRAM: FOOD-BORNE INFECTIONS AND INTOXICATIONS

PROPOSED BUDGET

(By year, excluding Program Support Cost).

ELEMENT	1982	1983	1984	1985	1986	5-YEAR TOTAL
1. Personnel						
1.1 Expert *	295,400	316,100	337,500	358,900	380,700	1,688,600
1.2 Support Staff **	110,700	123,300	135,900	148,500	161,100	679,500
2. Training						
2.1 Individual Fellowship	-	22,500	25,200	28,500	31,500	107,700
2.2 Group Training (Courses, Seminars, Workshops).	-	24,600	26,100	27,700	29,300	107,700
3. Travel	20,000	25,000	30,000	35,000	40,000	150,000
4. Equipment ***	50,000	30,000	30,000	20,000	20,000	150,000
5. Supplies and Materials ****	20,000	20,000	20,000	20,000	20,000	100,000
6. Miscellaneous	2,000	2,000	2,000	2,000	2,000	10,000
TOTAL	498,100	563,500	606,700	640,600	684,600	\$ 2,993,500

\* Include 5 experts (P.4), 1 for each area to coordinate field activities.

\*\* Include 3 Laboratory Technicians (G.6) to assist in providing laboratory support, including isolation of food-borne microorganisms, development of standards, and preparing test antisera.

\*\*\* Microscopes, refrigerators, audio-visual equipment, homogenizers, etc.

\*\*\*\* Sample containers, culture media, teaching supplies, petri dishes, mortar and pestles, etc.

# TITLE: EQUINE ENCEPHALITIDES

## PROPOSED BUDGET

(By year, excluding Program Support Cost).

ELEMENT	1982	1983	1984	1985	1986	5-YEAR TOTAL
1. Personnel						
1.1 Expert *	82,300	90,900	99,400	108,000	116,600	497,200
1.2 Support Staff **	73,800	82,200	90,600	99,000	107,400	453,000
2. Training						
2.1 Individual Fellowship	-	22,500	25,200	28,500	31,500	107,700
2.2 Group Training (Courses, Seminars, Workshops).	-	24,600	26,100	27,700	29,300	107,700
3. Travel	10,000	11,000	12,000	13,000	14,000	60,000
4. Equipment ***	30,000	20,000	20,000	15,000	15,000	100,000
5. Supplies and Materials	20,000	20,000	20,000	20,000	20,000	100,000
6. Miscellaneous	2,000	2,000	2,000	2,000	2,000	10,000
TOTAL	218,100	273,200	295,300	313,200	335,800	\$ 1,435,600

\* Include 1 full-time expert (P.4) to coordinate field surveillance and control activities.

\*\* Include 2 Laboratory Technicians (G.6) to assist in laboratory diagnosis and isolation to support surveillance program.

\*\*\* Microscopes, ultra-centrifuge, revco deep freeze, laminar flow hoods, autoclave, etc.

\*\*\*\* Tissue culture supplies and materials, mice and rabbits, culture media, etc.

PROGRAM: FOOT-AND-MOUTH DISEASE

PROPOSED BUDGET

(By year, excluding Program Support Cost).

ELEMENT	1982	1983	1984	1985	1986	5-YEAR TOTAL
1. Personnel						
1.1 Expert *	370,300	403,200	437,300	540,800	656,500	2,407,100
1.2 Support Staff **	110,700	123,300	135,900	148,500	161,100	679,500
2. Training						
2.1 Individual Fellowship	-	22,500	25,200	28,500	31,500	107,700
2.2 Group Training (Courses, Seminars, Workshops).	-	24,600	26,100	27,700	29,300	107,700
3. Travel	20,000	25,000	30,000	35,000	40,000	150,000
4. Equipment ***	50,000	30,000	30,000	20,000	20,000	150,000
5. Supplies and Materials ****	20,000	20,000	20,000	20,000	20,000	100,000
6. Miscellaneous	2,000	2,000	2,000	2,000	2,000	10,000
TOTAL	572,000	650,600	706,500	822,500	960,400	\$3,712,000

- \* Include 5 experts (P.4) to coordinate field control activities, to be stationed at CPC, Guatemala, Peru and Argentina.
- \*\* Include 3 Laboratory Technicians (G-6) to assist in providing the necessary laboratory support.
- \*\*\* Microscopes, autoclaves, refrigerators, audio-visual equipment, Revco deep freeze, ultra-centrifuge, etc.
- \*\*\*\* Tissue culture supplies and materials, culture media, other laboratory supplies.

## REFERENCES

- 1,6 Acha, P., and B. Szyfres: Zoonoses and Communicable Diseases Common to Man and Animals. PAHO Scientific Publication No. 354. 666 pp., illus: Washington, D.C. (1980).
- 10 Arambulo, P. V. III: Estimation of Economic Losses from Foot-and-Mouth Disease and Cost-Benefit Analysis of Alternative Policies for Eradication in a Developing Country. Doctoral Dissertation. University of Texas School of Public Health, Houston (1977).
- 12 Beal, V. C. Jr.: Cost-Benefit Analysis in National Animal Disease Control and Eradication Programs: A Historical Review with Emphasis on Requirements for Good Analysis. Proceedings Vet. Prev. Med. and Epid. Work Conference, Forth Worth, Texas, pp. 95-119 (1980).
- 3 Escobar-Cifuentes, E.: Animals and Zoonoses, General Bases for Zoonoses Control. Proceedings RIMSA I, PAHO/WHO, Washington, D.C. (1980).
- 9 Freire de Faria, J.: Foot-and-Mouth Disease in Brazil: Results and Benefits. PAHO/WHO Scientific Publication No. 196, pp.68-71, Washington, D.C. (1970).
- 4, 7, 8 Horwitz, A.: Worldwide Perspective on Animal Disease Losses and Their Impact on Nutrition, Health and Development. PAHO Scientific Publication No. 380, pp. 1-8 (1979).
- 5 Kaplan, M.: Economic and Social Aspects of Animal Disease in Developing Countries. Biotech. & Bioeng. Symposium, University of Minnesota, pp. 211-234 (1969).
- 15 Pawlowski, Z., and M. G. Schultz: Taeniasis and Cysticercosis (*Taenia saginata*) Advances in Parasitology. 10: 269-343 (1972).
- 11 Powers, A. P., and S. A. Harris: A Cost-Benefit Evaluation of Alternative Control Policies for Foot-and-Mouth Disease in Great Britain. J. Agric. Econ. 24: 683-735 (1965).
- 14 Schenome H.: Cysticercosis as a Public Health and Animal Health Problem. PAHO/WHO Scientific Publication No. 295, pp. 122-126, Washington, D.C. (1975).
- 11 Wells, K. F.: Foot-and-Mouth Disease: Eradication and Preventive Measures Adopted in Canada. PAHO/WHO Scientific Publication No. 196, pp. 80-86, Washington, D.C. (1970).
- 2, 16, 17, 18, 19 World Food and Nutrition Study. National Research Council, U.S. National Academy of Sciences (1977).



PAN AMERICAN HEALTH ORGANIZATION

CE86/21 (Eng.)  
ANNEX II

# INTER-AMERICAN MEETING, AT THE MINISTERIAL LEVEL, ON ANIMAL HEALTH

WORLD HEALTH ORGANIZATION

*Washington, D.C., USA, 30-31 March 1981*

Provisional Agenda Item 5

RIMSA2/9 (Eng.)  
17 March 1981  
ORIGINAL: SPANISH

MECHANISMS FOR OBTAINING EXTRABUDGETARY FINANCING FOR THE PAN AMERICAN  
FOOT-AND-MOUTH DISEASE AND ZOONOSIS CENTERS

In compliance with Resolution XVIII of the XXVII Meeting of the Directing Council of PAHO (1980), in particular with operative paragraph 9 in which the Director of PAHO was directed "To request the Ministers of Agriculture of the Hemisphere, in the next RIMSA meeting, to develop for the consideration of the Directing Council a proposed plan of action to establish dependable sources of financing for the Pan American Zoonosis Center and the Pan American Foot-and-Mouth Disease Center outside the regular PAHO budget," alternative mechanisms are presented to obtain the extrabudgetary funds needed to satisfy the additional technical cooperation requested by the countries.

MECHANISMS FOR OBTAINING EXTRABUDGETARY FINANCING FOR THE  
PAN AMERICAN FOOT-AND-MOUTH DISEASE AND ZOONOSIS CENTERS

The Pan American Foot-and-Mouth Disease and Zoonoses Centers of the Pan American Health Organization have been providing technical cooperation to the countries since 1951 and 1956, respectively. The two institutions do important work for the prevention, control and eradication of foot-and-mouth disease and the zoonoses of greatest socioeconomic significance in the Region.

With their help, the countries have made substantial progress in developing the infrastructure of their animal health and veterinary public health services, including manpower training, the construction of laboratories and quarantine stations, the production of biologicals, the establishment of reporting and epidemiological surveillance systems, and the planning, execution and evaluation of programs for the control of animal diseases, all of which is fully known to you and has been matter for discussion in the ministerial-level meetings held since 1968.

The work of the Centers is made possible largely by the general support of the Governments of the host countries, Brazil and Argentina. The widespread inflation--an acute phenomenon in these two countries--has been greatly sapping the operating capacity of the Centers through the spiraling growth of their operating costs. Authorized increases in the regular budget of PAHO have not been sufficient to counteract this situation entirely, and the Organization has been obliged to curtail the technical cooperation provided through them.

The amounts provided for 1981 in the regular budget of PAHO--US\$1,924,000 for the Pan American Zoonoses Center and US\$3,093,800 for the Pan American Foot-and-Mouth Disease Center--are not enough to respond to the demands of the countries. In consequence, last year the XXVII Meeting of the Directing Council of PAHO, along with approving the regular budgets for the Centers, recommended in Resolution XVIII a review of their programs and a request for extrabudgetary contributions from Governments, particularly through their Ministries of Agriculture, and from multilateral, bilateral and private agencies. It also requested "the Ministers of Agriculture of the Hemisphere, in the next RIMSA meeting, to develop for the consideration of the Directing Council a proposed plan of action to establish dependable sources of financing for the Pan American Zoonoses Center and the Pan American Foot-and-Mouth Disease Center outside the regular PAHO budget."

Over the years PAHO has established relations with and participated in the utilization of the following sources of financing for technical cooperation programs in the agricultural sector, which includes animal health:



1. Multilateral Agencies
  - 1.1 The United Nations system: UNDP, UNEP, UNICEF;
  - 1.2 The Inter-American System: OAS, IICA;
  - 1.3 Regional integration organizations: EEC, Cartagena Agreement, CARICOM;
  - 1.4 Banks and financial institutions: World Bank, IDB, Caribbean Development Bank, Central American Bank for Economic Integration.
2. Bilateral Agencies: AID (USA), CIDA (Canada), other countries.
3. Private Institutions: the Kellogg, Rockefeller, Ford and Macy Foundations.

Each of these sources marks out its own area of interest in the agricultural sector and operates through its own machinery. The initiative in mobilizing resources from them rests with the Governments of the countries, with the intervention of PAHO as an international agency for promotion, cooperation, and technical support.

Apart from evaluating these sources so as to optimize the use of available funds, other funds and financing mechanisms should be identified. It is particularly in the interest of the Ministries of Agriculture to make surveys, both at home and on the regional and world levels, to determine what resources could be mobilized for dealing with the specific problems of animal health and veterinary public health.

Utilization of possible sources of extrabudgetary funds should be envisaged with a view to financing for the short term and the middle and long terms.

In the short term, that is, for the current fiscal year and the biennium 1982-1983, according to the recommendation of CEPANZO's Scientific Advisory Committee in 1980, the Ministries of Agriculture should endeavor themselves to finance the technical cooperation they need from the Centers and which the latter cannot provide out of their regular budgets. Good examples of this approach are the agreements entered into by Brazil and Venezuela with PAHO for the production within their borders of oil-adjuvanted foot-and-mouth disease vaccine.

In the middle and long term, a combined effort will be needed from the Ministries of Agriculture, PAHO, and other national and international agencies to set up an arrangement and more reliable and enduring mechanisms for the complete financing of the technical cooperation provided by these Centers.

To this end, in this very meeting a project for a "Five-Year Comprehensive Program for the Control and Eradication of Zoonoses and Foot-and-Mouth Disease in Latin America and the Caribbean" is being presented to you for consideration.

The document provides a frame for unified cooperative action that can attract stable sources of financing in animal health and veterinary public health on the basis of technical cooperation requirements identified by the countries.

It is intended that this project shall be presented to possible lending agencies with the approval and backing of the Ministries of Agriculture. Because of the different characteristics and interests of the countries, the multiplicity of components, and the variability of the priorities, the project could have different sources of external financing.

We must emphasize the advisability of seeking a mechanism that can assure continuous financing over several years, like, for example, the consortium set up in 1975 by the World Bank to finance "Onchocerciasis Control in the Volta River Basin" in Western Africa and the "Tropical Disease Research Program" of WHO in 1978, both for an initial period of five years.

The procedure in this kind of aid consists in the signing of an agreement between the government and the financing agency, such as the IBRD, IDB or UNDP, to set up a special fund. The agency puts up part of that fund from its own resources and serves as an agent for attracting grants and contributions from other organizations interested in the programs. By mutual consent, the basic agreement vests in the executing agency complete freedom in, and all responsibility for, carrying out the administrative and technical aspects.

As an aid to assessment of the problem, a table is appended enumerating the activities carried on by the Centers as technical cooperation in animal health and veterinary public health, on the basis of direct requests from the countries to PAHO and the express mandates for them in resolutions and recommendations of the meetings of the Ministers of Agriculture.

TABLE OF TECHNICAL COOPERATION ACTIVITIES OF THE CENTERS IN ANIMAL HEALTH  
AND VETERINARY PUBLIC HEALTH BASED ON DIRECT REQUESTS FROM THE  
COUNTRIES TO PAHO AND WHICH REQUIRE EXTRABUDGETARY FINANCING

TECHNICAL COOPERATION REQUIRING EXTRABUDGETARY FINANCING	Argentina	Fr. Antill	Neth. Ant	Bahamas	Barbados	Belize	Bolivia	Brazil	Canada	Colombia	Costa Rica	Cuba	Chile	Ecuador	El Salvador	USA	Grenada	Guatemala	Guyana	Haiti	Honduras	Jamaica	Mexico	Nicaragua	Panama	Paraguay	Peru	U. Kingdom	Dom. Rep.	Suriname	Trinidad	Uruguay	Venezuela
I. PANAFITSA																																	
1. Establishment of a foot-and mouth disease vaccine bank for emergencies (Mandate: Res. III, COSALFA/7 and SAC recommendations, 1979).	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
2. Production and delivery of oil-adjuvanted vaccines for demonstration plans and special strategic situations (Mandate: Res. IV, COSALFA/7 and SAC recommendations, 1979).	X						X	X		X				X											X	X					X	X	
3. Intensification of cooperation and the prevention and control of exotic diseases (Mandate: SAC recommendations, 1979).	X	X	X	X	X	X					X	X	X		X		X	X	X	X	X	X	X	X				X	X	X	X		
4. Development of cost-benefit models for animal health programs (Mandate: Recommendations of SAC and External Evaluation Committee).								X				X	X									X									X		
5. Assistance in social communication & sanitary education (Mandate: Res. IV, COSALFA/7 and SAC recommendations, 1979).	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
6. Expansion of diagnostic services to include other viral diseases (Mandate: Recommendations of SAC, 1979, and the External Evaluation Committee).	X	X	X	X	X	X	X	X		X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
7. Additional supplies of teaching materials and technical manuals (Mandate: SAC recommendations, 1979).	X	X	X	X	X	X	X	X		X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
8. Implementation of information systems for other zoonoses and other diseases in general (Mandate: PAHO Directing Council, 1980, through Executive Committee's Working Group for consolidation of programs and budgets of PANAFITSA and CEPANZO).	X	X	X	X	X	X	X	X		X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

TECHNICAL COOPERATION REQUIRING  
EXTRABUDGETARY FINANCING (cont.)

TECHNICAL COOPERATION REQUIRING EXTRABUDGETARY FINANCING (cont.)	Argentina	Fr Antill.	Neth. Ant.	Bahamas	Barbados	Belize	Bolivia	Brazil	Canada	Colombia	Costa Rica	Cuba	Chile	Ecuador	El Salvador	USA	Grenada	Guatemala	Guyana	Haiti	Honduras	Jamaica	Mexico	Nicaragua	Panamá	Paraguav	Peru	U. Kingdom	Dom. Rep.	Suriname	Trinidad	Uruguay	Venezuela
9. In-service and nonconventional training for needs of national programs for prevention, control and eradication of foot-and-mouth disease and exotic diseases.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<u>The following technical cooperation services could be provided, particularly to the indicated Member Countries:</u>																																	
10. Eradication of foot-and-mouth disease.	X							X		X																X					X		
11. Regional programs for eradication of foot-and-mouth disease in the Plate Basin.	X							X																							X		
12. Evaluation of oil-adjuvanted vaccine programs.	X						X	X																	X	X					X		
13. Regional characterization of foot-and-mouth disease, including surveys of virus carriers.	X						X	X						X											X	X				X	X		
14. Management and rearing of small laboratory animals.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
15. Control of foot-and-mouth disease vaccine.	X							X		X				X											X	X					X	X	
16. Production of oil-adjuvanted FMD disease vaccine.*	X						X		X					X											X	X					X	X	

\*Special Brazil/PAHO and Venezuela/PAHO agreements signed for establishment of vaccine production laboratories at Campinas, Brazil, and Maracay, Venezuela.

TECHNICAL COOPERATION REQUIRING  
EXTRABUDGETARY FINANCING (cont.)

	Argentina	Fr. Antill.	Neth. Ant.	Bahamas	Barbado,	Belize	Bolivia	Brazil	Canada	Colombia	Costa Rica	Cuba	Chile	Ecuador	El Salvador	USA	Grenada	Guatemala	Guyana	Haiti	Honduras	Jamaica	Mexico	Nicaragua	Panamá	Paraguay	Peru	U. Kingdom	Dom. Rep.	Suriname	Trinidad	Uruguay	Venezuela
17. Establishment of animal quarantine stations and related laboratory services.													X	X												X						X	
18. Holding of seminars on prevention and eradication of exotic diseases.		X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X		
19. On-site demonstrations of foot-and-mouth disease for professional personnel in disease-free countries.			X	X	X	X							X	X	X		X	X	X	X	X	X	X	X						X	X		
20. Supply of teaching materials and manuals in English.				X	X	X											X		X														

TECHNICAL COOPERATION REQUIREMENTS  
EXTRABUDGETARY FINANCING

TECHNICAL COOPERATION REQUIREING EXTRABUDGETARY FINANCING		Argentina	Fr. Antill.	Neth. Ant.	Bahamas	Barbados	Belize	Bolivia	Brazil	Canada	Colombia	Costa Rica	Cuba	Chile	Ecuador	El Salvador	USA	Grenada	Guatemala	Guyana	Haiti	Honduras	Jamaica	Mexico	Nicaragua	Panama	Paraguay	Peru	U. Kingdom	Dom. Rep.	Suriname	Trinidad	Uruguay	Venezuela
II. CEPANZO																																		
1. Epidemiology and surveillance of zoonoses. (Personnel: P.4 and G.5, Statistics Employee, Travel; Supplies and Equipment).		X						X	X		X			X												X	X						X	
2. Course in epidemiology and control of zoonoses (Duration : 8 weeks; STC - 12 weeks, fellowships).			X	X	X	X	X											X	X	X	X	X	X								X	X		
3. Conduct a field program for control of zoonoses (personnel, travel and subsistence, equipment and materials).											X				X	X		X	X	X				X	X							X	X	
3.1 Control of rabies.								X			X				X	X		X	X	X				X	X								X	
3.2 Control of hydatidosis.		X							X					X						X								X						X
3.3 Eradication of tuberculosis.									X		X	X	X	X		X			X	X	X	X	X			X	X	X		X		X	X	
3.4 Eradication of brucellosis.						X			X		X	X	X	X	X	X						X	X							X			X	X
3.5 Control of leptospirosis.						X	X		X				X	X			X		X	X					X					X			X	X
3.6 Control of equine encephalitis.													X							X			X							X				X
4. Conduct of programs for protection of food of animal origin and food microbiology.						X					X					X			X	X				X	X	X							X	X
5. Production of biologicals and reagents for reference purposes and to meet requests from and emergencies in the countries.		X				X		X	X		X	X		X		X		X	X	X			X		X	X	X	X				X	X	X

TECHNICAL COOPERATION REQUIRING  
EXTRABUDGETARY FINANCING (cont )

	Argentina	Fr. Antill.	Neth. Ant.	Bahamas	Barbados	Belize	Bolivia	Brazil	Canada	Colombia	Costa Rica	Cuba	Chile	Ecuador	El Salvador	USA	Grenada	Guatemala	Guyana	Haiti	Honduras	Jamaica	Mexico	Nicaragua	Panama	Paraguay	Peru	U. Kingdom	Dom. Rep.	Suriname	Trinidad	Uruguay	Venezuela
6. Increase in production of laboratory animals to meet requests of countries.	X						X	X		X																X			X	X		X	
7. Design of models for measuring production losses from zoonoses (Components. STC - 12 weeks).	X						X	X			X	X										X										X	X
8. Field study to establish effectiveness of immunodiagnosis in <u>in vivo</u> detection of hydatidosis in sheep (Components: STC - 8 weeks, laboratory assistant; travel and subsistence; equipment and materials).	X							X					X						X							X							X
9. Identification of specific antigens for immunological diagnosis of parasitic zoonoses, with emphasis on cysticercosis, trichinosis and distomiasis (Components: STC - 8 weeks; laboratory assistant; travel and subsistence; equipment and materials).	X							X		X	X	X	X	X	X			X					X				X		X			X	X