

PARTNERSHIPS FOR FIGHTING RURAL POVERTY

AFRICA STEPS UP CAMPAIGN AGAINST THE TSETSE FLY

BY JOHN P. KABAYO AND ALI BOUSSAHA

Programmes to cut poverty are at the centre of national and international policy agendas. In its 24th special session in Geneva in 2000, the UN General Assembly expressed the world commitment to “reduce the proportion of people living in extreme poverty by one half by the year 2015 with a view to eradicating poverty”. Several mechanisms and frameworks are being utilized and new initiatives explored with a view to promote and implement pro-poor policies and strategies, with emphasis on the Least Developed Countries (LDCs), particularly the Heavily Indebted Poor Countries (HIPC).

While it is widely admitted that poverty is a multi-dimensional phenomenon and its eradication is a complex task, there is general agreement that macro-economic growth does not necessarily contribute to poverty reduction in developing countries. The most challenging problem remains rural poverty which is intrinsically linked to food insecurity, with its corollaries in terms of hunger, malnutrition, vulnerability to diseases and low productivity.

Photo: Boys washing milk containers in Sokoine Village, Tanzania. Tsetse eradication would allow farmers to raise and own more productive livestock.

(Credit: P. Pavlicek/IAEA)



In sub-Saharan Africa where agriculture, mainly based on subsistence farming, employs about 70% of the labour force, the prevalence of under-nourishment is as high as 34%. Furthermore, Africa is the only region of the developing world where food production *per capita* has been declining over the past 40 years.

A cursory review of government policy documents, country and regional development analytical reports and international assistance strategy frame-

works of relevant multilateral organizations reveals the growing awareness of the situation. They further record the wide recognition of the central role

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that agriculture and rural development must play in achieving poverty alleviation and food security goals.

An overall assessment of the situation also underlines the lack of productive livestock as an impediment to attaining household food security and a persisting factor contributing

to rural poverty. Limited livestock rearing constrains severely smallholder production, the backbone of national agricultural throughput and the main economic activity in rural communities. In various parts in sub-Saharan Africa, the inadequate contribution of the livestock component to the

small holding agricultural output, mainly as a consequence of the absence of mixed farming practices, is caused by the prevalence of devastating diseases among which the tsetse-transmitted animal trypanosomosis, called nagana.

The tsetse infests 37 sub-Saharan African countries —

PATTEC'S PLAN OF ACTION

A Plan of Action to guide the process of implementing the decision by the African Heads of State on tsetse eradication was designed by an OAU's Task Force of 22 experts drawn from different African countries. The Plan proposes the initiation and co-ordination of a Pan African Tsetse and Trypanosomosis Eradication Campaign (PATTEC) and describes the key activities along with recommendations regarding the effective methods of work in the execution of the campaign. It recognizes the trans-boundary nature of the tsetse and trypanosomosis problem and advocates an area-wide approach, involving the identification and targeting of individual zones of tsetse infestations and the application of cost-effective tsetse suppression methods integrated with the Sterile Insect Technique.

While the African tsetse belt covers an area of about 10 million km², stretching from Senegal in the north to South Africa in the south, tsetse infestation is not continuous and uniform over the entire expanse of the tsetse belt. The tsetse belt is in the form of pockets, "islands" or discrete zones of infestation under the influence of ecological, geographical, physical or biological factors. The application of the area-wide principle to systematically eliminate tsetse infestations in each individual area at a time will create an ever-expanding tsetse-free zone, with minimal risks of re-invasion from neighbouring areas or re-infestation from relic populations in the treated areas.

This systematic elimination of tsetse populations from these areas, one at a time, will ultimately cover Africa's entire tsetse belt. The tsetse eradication activities in each identified area will be managed as an independent project, with emphasis on setting clear targets, involving clear goals and deadlines, designed to ensure short-

term success while maintaining focus on the long-term objective.

The Plan of Action recognizes the need for one coordinated campaign whose operational unit will be at the level of project management, where the project will be defined by the work done, from start to finish, to render an identified area of isolated tsetse infestation tsetse-free.

The Plan recommends the establishment of a PATTEC Coordination Office to bring together all the necessary political, financial and technical components of the campaign, which are necessary to create synergy and enhance the principle of the area-wide approach to solve a trans-boundary problem.

The Plan of Action was endorsed by the OAU Summit of July 2001 in Lusaka, Zambia and referred for implementation to the relevant offices in affected Member States. It has now been translated into a definitive work plan, involving the determination of the scope of work and the evaluation of the inputs and methods of work necessary to achieve the objectives of the campaign. The principal objective of the PATTEC initiative is to translate the Plan of Action into definitive and tangible activities as may be required in the implementation of the PATTEC objectives, including:

■ Zoning of Africa's tsetse belt into individual areas of isolated tsetse infestations and identifying and evaluating the inputs and methods of work required to render each area tsetse-free. This includes the commissioning and deployment of task forces to identify individual isolated tsetse infestations and prepare project documents describing the phasing and work plan as well as the methods and scope of work involved in each project.

32 of which are among the 42 HIPC's in the world. The Food and Agriculture Organization of the United Nations (FAO) has estimated that, every year, over 3 million cattle and other domestic livestock are lost in Africa through deaths caused by nagana. The disease reduces calving rates, calf survival, meat

and milk offtake and the draught efficiency of oxen used for cultivation of land. Losses attributable to nagana in potential crop and livestock production amount to over US \$ 4 billion annually.

Furthermore, the human disease, the African sleeping sickness, affects as many as 500,000

people with more than 40,000 new cases being registered every year. According to the World Health Organization (WHO), over 60 million people in Africa live at risk of becoming infected with the disease.

Limits & Problems. There is no vaccine available and no new drugs are being developed



■ Establishment and management of a framework to coordinate the mobilization and organization of efforts to initiate action and secure support for the execution of the campaign. This includes establishment of the PATTEC Coordination Office and involves the development of a network of contacts with essential offices of Member States, as well as partner governments and organizations to harmonize views and information.

■ Preparation of the human, material and infrastructure resources necessary for the implementation of the PATTEC initiative, including the standardization of methods, training and operational research functions, establishment of regional centres of excellence to carry out research and capacity building activities.

■ Other activities include raising awareness, reminding Member States of their obligations in the execution of the PATTEC objectives, implementation, monitoring and evaluation of PATTEC projects, and collecting, organizing and providing coordination information.

Within the framework of the Decision by the African Heads of State and Government, the OAU Secretary General was tasked with the responsibility to initiate and coordinate the eradication campaign. In the context of this assignment, the OAU Secretary General established the PATTEC Coordination Office to help in the organization and coordination of the activities of the campaign. In addition to the coordination function, this office plays a critical role in sensitizing further Member States about their obligations in the campaign as well as in mobilizing efforts and support for the activities of the campaign among the affected countries, donor community and mandated international organizations.

The PATTEC initiative is under the charge of the Policy and Mobilization Committee, which was inaugurated on 2 March 2002. The members of the Policy and Mobilization Committee include relevant experts and members of the Diplomatic Corps representing the different regions of Africa as well as representatives of the mandated international organizations, including FAO, the IAEA, and the WHO. The Committee is in charge of the policy and management of the PATTEC initiative and is responsible for mobilizing support for the campaign.

Photo: Technicians in Ethiopia's first tsetse fly breeding centre for the sterile insect technique, a key tool in the eradication campaign.

(Credit: P. Pavlicek/IAEA)

to fight trypanosomosis. The few drugs in use are fraught with problems of efficacy, toxicity, and drug resistance. There are also difficulties in administering the drugs (since their success in treating the disease depends on early diagnosis and requires long hospitalization) and constraints related to affordability and availability.

Further, the future availability of these drugs is uncertain, since their production is threatened with discontinuation for commercial reasons, the only market being in Africa where the purchasing power of the affected consumers is poor and rapidly deteriorating.

Within the limited range of trypanocidal drugs for domestic livestock, isometamidium choride (Samorin), which is available for prophylactic use and diminazine aceturate (Berenil), which is used for chemotherapeutic purposes, are the two most widely used. While drug use may keep the animals alive, the productivity of the treated animals generally does not improve. Recent reports have shown that the problem of drug resistance has been increasing, with over 40% of the animals treated with trypanocidal drugs succumbing to the disease. Therefore use of trypanocidal drugs does not offer a sustainable solution to the problem either.

Earlier methods of tsetse control included bush clearing to destroy the fly's habitat and shooting wild game to eliminate the source of the fly's blood meal. Trapping of flies was also practiced. After the Second World War when insecticides became available, insecticides were applied in ground

spraying operations, or were applied from fixed wing aircraft or helicopter. Various devices designed to attract tsetse flies by olfactory or visual enhancement to trap or kill them were also used.

Over the years many different techniques, practices and strategies were developed and applied in an effort to eliminate or contain the effects and infestation of tsetse flies and other insect pests. These tools collectively form part of the widening spectre of what is known as Integrated Pest Management.

Steadily active alongside the technology of pest management, some stakeholders have greatly influenced pest control over the years. These groups are not primarily concerned with the economic or human health dimension of the pest problem, but also with the environmental consequences of pest control activities. They characterize a social and political dimension of pest management, bearing a strong influence on the choice of intervention methodologies. The choice of environmentally acceptable insecticides available and affordable to use against tsetse flies has consequently become limited. The use of residual insecticides such as DDT and dieldrin has been banned on environmental grounds. For reasons of environmental concerns or effective sustainability, chemicals alone are not considered a viable disease management option.

Demonstrated Success in Zanzibar Points the Way Ahead. One activity, in which the IAEA became involved jointly with the Government of Tanzania and other partners, was the application of the Sterile Insect Technique (SIT)

to eradicate tsetse flies from the Zanzibar Island of Unguja. The successful eradication of tsetse flies from Zanzibar, which was achieved in 1996 and declared in 1997, was an important historical accomplishment that demonstrated the efficacy and viability of the SIT technique as an effective intervention measure against trypanosomosis.

This achievement was made all the more significant because it came at a time when the most promoted idea was to accept the resigned and pessimistic view that tsetse eradication is not achievable. It came at a time when infested countries were being urged to accept the controversial option of living with the disease.

The actual significance of the success in Zanzibar was that the approach and methodology employed in achieving tsetse eradication in Unguja became rapidly recognized as a novel set of tools, appropriate and available to be used elsewhere. The real breakthrough was especially felt when several African countries came forward seeking the IAEA's technical assistance to acquire this set of tools.

The Zanzibar example had become a source of new hope which inspired new thinking and opened a new chapter in the history of Africa's war against this disease. Soon the spark of the new possibilities of using a combination of a nuclear-based technique and other insect population suppression methods was seriously contemplated. Political will was expressed and demonstrated by the subsequent decision to launch a major initiative to eradicate the tsetse fly from the continent.

Launching the Pan African Tsetse & Trypanosomiasis Eradication Campaign (PATTEC). Representing one of Africa's greatest constraints to socio-economic development, the tsetse and trypanosomiasis problem has, in recent times reached unprecedented levels of widespread disease incidences and increased tsetse infestation, against a background of ineffective drugs to treat the disease. At the Summit of the Organisation of African Unity (OAU) held in Lome, Togo in July 2000, the African Heads of State and Government passed Decision AHG/Dec.156 (XXXVI) urging Member States to act collectively and rise to the challenge of eradicating tsetse flies from the continent of Africa.

The elimination the tsetse fly vector remains the most effective option for the control of human and animal trypanosomiasis, compared to other approaches, such as treatment of the disease. The decision by the African Heads of State and Government to adopt tsetse eradication as the operational strategy for effective trypanosomiasis control is based on the consideration that tsetse eradication is a time-tested, time-limited investment that has a guaranteed return. (*See box on the Plan of Action, page 12*).

Generating Consensus. Ever since the African Heads of State and Government made their declaration in Lome, considerable consensus has been achieved:

The OAU Summit Decision on tsetse eradication was a strong expression of the recognition of the importance with which African countries view the problem of trypanosomiasis and the willingness of the

African leaders to own the problem and ensure that something is done about it. The fact that the Heads of State and Government insist on receiving a report from the OAU Secretariat on the progress made, every year, is an indication that they will be the actual drivers of this campaign. They will be cracking the whip and ensuring that the job is done, in their terms, "in the shortest time possible."

The UN Economic and Social Council (ECOSOC) meeting in Geneva in July 2001 approved a resolution to support the PATTEC initiative and the UN Secretary General listed trypanosomiasis among Africa's development problems that need special attention

The IAEA General Conference in September 2001 approved a resolution that sought to support the process of implementing the objectives of the PATTEC initiative. This was followed by a similar resolution of the General Assembly of the FAO, meeting in Rome in December 2001.

The Executive Board of the WHO has also advocated PATTEC support to its Assembly. In response to the PATTEC initiative, WHO has already mobilized the support of the Pharmaceutical Company, Avantis. It has committed US \$25 million to provide free drugs to patients of sleeping sickness during the next five years and fund diagnostic surveys and various research activities.

Challenges of the PATTEC Initiative. In order to provide targeted support to PATTEC, the relevant international organizations and other prospective development partners, includ-

ing the IAEA, should assist in the implementation of the PATTEC Action Plan within the framework of a coordinated approach under the auspices of the OAU. It is essential that external inputs are directed in a coherent manner to support effectively PATTEC-planned programmes and activities, taking account of the specificities of mandates, core competencies, complementarities and synergies of various stakeholders. It is expected that the Policy and Mobilization Committee will assist the OAU and the PATTEC Coordination Office to this effect.

In supporting tsetse and trypanosomiasis intervention programmes, special attention will also be given by PATTEC to technology assessment in the context of cost-effectiveness and economic viability of field projects. For example, tsetse intervention programmes based on area-wide implementation of SIT will consider integrating other techniques when it can be demonstrated that such integration is relevant to the objective of accomplishing the task at hand. Thus the application of insecticides using the Sequential Aerosol Technique (SAT) to suppress the local fly population to very low numbers, and reduce the number of sterile flies required for release in the target area to achieve eradication, should be promoted where applicable prior to implementing SIT. Secondly, the process of technology transfer should be mindful about the recipients of the technology and long-term sustainability and self-reliance should be promoted.

Unless the beneficiaries of technology transfer are directly involved in the selection, acqui-

sition and application of the technology in question, technology transfer can become technology imposition. Technology should be acquired and applied by the beneficiaries of technology transfer rather than for them.

It is widely appreciated that the strongest force that has propelled and shaped human progress has been the advance and diffusion of technology. The importance of technological advances to modern man is as obvious as it is widely appreciated. What is less understood are the forces that govern the diffusion or dispersal of technology. The difference between developed and developing countries can be examined under the rubric of technological use and capabilities.

Many experts believe that developing countries must mobilize global science and technology in their efforts to address real problems, including poverty and other development issues. There is a complex array of barriers and constraints, which inhibit the process of technology-induced change in the poorer countries, especially those in Sub-Saharan Africa. The barriers against technological application and the forces, which influence development initiatives, range from political and economic to ecological and historical circumstances and include aspects of technological bias.

Some observers claim that Africa's chronic socio-economic debility has been aggravated by her prostrate state as a perpetual object of study and diagnosis by experts from overseas, an experience which has unwittingly infected the continent with a syndrome of dependence on

subscriptions from abroad. The systematic erosion of Africa's confidence in her ability to solve her problems has tended to heighten her expectations for salvation from abroad. As a result, various past development programmes in Africa have been largely donor-driven and donor-inspired, with both the problems and solutions being defined from abroad.

Many developing countries tend to echo the same emphases in development initiatives and strategies as are being highlighted in developed countries, making it perpetually difficult to identify the correct priorities that need attention or nearly impossible to believe in the possibility and viability of local solutions. It is therefore very encouraging to observe that African countries themselves designed and launched the PATTEC initiative in response to the seriousness of the tsetse and trypanosomosis problem confronting them.

Inspiring Confidence. The activities connected to PATTEC that are being implemented in Botswana, Ethiopia, Mali, Burkina Faso, Tanzania, Kenya and Uganda, all involving national experts and some technical assistance from the IAEA, inspire confidence in the success of the campaign.

The national collaborative programme between Burkina Faso and Mali is worth highlighting in this regard. In connection with PATTEC and as part of their efforts to reduce poverty, the Governments of both countries, with IAEA assistance, have begun an effort to eliminate trypanosomosis from their territories through the creation of tsetse fly-free zones using the SIT and other interventions techniques.

To reflect and record their commitment, national authorities prepared a Programme Development Document which was signed in October 2001, the same day PATTEC was launched. Burkina Faso will support this sub-regional undertaking by supplying the sterile male flies for the eradication programme in the peri-urban area of Bamako, and Mali is allocating funds for personnel, field allowances, and operational expenses.

IAEA programme support is under a national technical cooperation project entitled "Integrated Control of Animal Trypanosomosis through Creation of a Tsetse Fly Free Zone", and a regional project called the "Sterile Insect Technique for Area-wide Tsetse and Trypanosomosis Management". The regional project was designed and approved to lend support to the PATTEC initiative and to serve as the regional operational framework in building the technical capacity of Member States in the application of the SIT and its integration in intervention programmes aimed at tsetse eradication.

The momentum of these projects and previous tsetse control successes has garnered extrabudgetary support, such as that from Norway to conduct training in molecular genetics, provide equipment, and operate aerial test releases of sterile male flies. The IAEA is committed to continue supporting the PATTEC initiative over the next years in research, development and technical cooperation activities, in the framework of the strategic cooperation with the OAU, taking account of the specific needs expressed by Member States in the region. □