



THE PROGRAMME AGAINST AFRICAN TRYPANOSOMIASIS

**REPORT OF THE SEVENTH
PAAT ADVISORY GROUP CO-ORDINATORS MEETING**

OUAGADOUGOU, BURKINA FASO

26-28 SEPTEMBER 2001

Food and Agriculture Organization of the United Nations
Inter-African Bureau for Animal Resources of the Organization of African Unity
International Atomic Energy Agency
World Health Organization of the United Nations

FOREWORD

The 7th PAAT Advisory Group Co-ordinators (PAG) meeting was held from 26 to 28 September 2001 jointly with the EU funded Integrated Control of Pathogenic Trypanosomes and their Vectors (ICPTV) workshop on Environmental monitoring approaches and methods including indicators of tsetse and trypanosomiasis control in the context of changes in land use. The joint PAG-ICPTV meeting was chaired by Prof. Peter Holmes.

Both the 7th PAG meeting and the ICPTV workshop were fully integrated with one another, and the ICPTV workshop's conclusions and recommendations form part of the current meeting report. The full ICPTV workshop presentations will be published in a separate ICPTV newsletter.

The joint meeting formed the venue for several other related meetings: (i) the FAO Liaison Officers meeting on African trypanosomiasis in central and west Africa held 25-26 September; (ii) the training workshop for Directors of animal resources and veterinary services on policy and strategy for tsetse eradication held 29-30 September. These meetings were officially opened by the Minister of Animal Resources and/or delegated authorities. Other related satellite events were the 27th ISCTRC Executive Committee meeting held 29 September, and two meetings of the PAAT Secretariat held on 28 September and 3 October.

Some of the main results and recommendations of the meetings mentioned above were pertinently reported at the 26th ISCTRC held 1-5 October which was officially opened by the Prime Minister of Burkina Faso who also officially launched the Pan-African Tsetse and Trypanosomiasis Eradication Campaign (PATTEC).

In this regard, during the PAG meeting a working group was constituted to formulate recommendations on the PATTEC plan of action. These recommendations are reported in the appendix 1 of the present report. Also, included in this report the adopted agenda of the PAG meeting (see appendix 2). The meeting was organised by FAO Rome with assistance from FAO Burkina Faso, and the Government and the Ministry of Animal Resources of Burkina Faso. Drs Keith Sones and Mark Eisler were responsible for the ICPTV workshop arrangements.

Report on the joint PAG-ICPTV meeting held 26-28 September 2001 in Ouagadougou, Burkina Faso

During the last year considerable progress has been achieved. Highlights reported at this joint PAG-ICPTV meeting included:

- **Greater political and public awareness of the impact of tsetse and trypanosomosis.**
- **Publication of the PATTEC concept note by the OAU Task Force and its endorsement by the OAU Heads of State.**
- **Public-private sector collaboration between WHO and major pharmaceutical companies to secure drug supplies and support for the control of HAT.**
- **Improvements in GIS data exploitation and management including their use for the selection of priority areas for tsetse and trypanosomosis control interventions.**
- **Donation by ESRI to FAO of GIS software that will make PAAT-IS accessible and usable by African countries.**
- **FAO supported work on quality control of veterinary trypanocidal drugs.**
- **Greater appreciation of the dynamic nature of the tsetse and trypanosomosis problem.**
- **Development of decision support matrixes that, with further refinement, could be useful tools for planners.**
- **The initially encouraging results achieved in the Botswana aerial spraying operation and the enhanced efficiency, accuracy and environmental safety made possible by the application of GPS-based monitoring technology.**
- **FAO/IAEA Workshop held in Ouagadougou in May 2001 on ‘Strategic planning of area-wide tsetse and trypanosomosis control in West Africa’.**

Report on the joint PAG-ICPTV meeting held 26-28 September 2001 in Ouagadougou, Burkina Faso

Conclusions, Recommendations and Actions

1. Conclusion: Whilst acknowledging and commending the considerable achievement by WHO and others in obtaining private sector support to secure supplies of drugs to treat HAT, to develop improved drugs and to fund surveillance activities, it is recognised that substantial additional resources will be needed to allow the continued control of the current epidemic.

Recommendation: PAAT should continue to give all possible support to WHO in its endeavours to identify and secure the necessary support.

Action: WHO and the PAAT community.

2. Conclusion: Dissemination of regularly updated information, including PAAT-IS and TTIQ, is a vital component of PAAT's activities.

Recommendation: Continued support is needed to ensure the dissemination of vital information.

Action: PAAT committee.

3. Conclusion: Progress has been made towards PAAT-PATTEC harmonisation and the identification of the respective responsibilities of the four lead agencies but further dialogue is still required.

Recommendation: PAAT/PATTEC should meet as soon as possible to take forward the harmonisation process.

Action: PAAT secretariat and PATTEC.

4. Conclusion: Communication of PATTEC's aims and objectives to all stakeholders, including donors, is an important activity that requires further attention.

Recommendation: PAAT wishes to assist PATTEC in effectively disseminating its aims and objectives to the scientific community, stakeholders including decision makers and donors and the wider public.

Action: PAAT secretariat and PAAT community.

5. Conclusion: The FAO/IAEA workshop 'Strategic planning of area-wide tsetse and trypanosomosis control in West Africa' held in Ouagadougou in May 2001 was extremely useful and PAG has endorsed the recommendations of the workshop.

Recommendation: Similar workshops should be held in East and Southern Africa to identify priority areas and appropriate strategies for tsetse and trypanosomosis control interventions.

Actions: FAO and IAEA.

6. Conclusion: There is an urgent need to standardise methodologies and formats for the collection and management of data related to tsetse and trypanosomosis control, including: socio-economic, environmental, epidemiological, entomological and GIS. The goal should be to develop standardised approaches that are transparent, practical, as simple as possible, and widely accepted so that they can be consistently applied.

Recommendation: Individuals should be identified by the PAAT committee to lead the drafting of guidelines for data collection and management in the various disciplines.

Action: PAAT committee and PAAT community.

7. Conclusion: No internationally agreed quality standards currently exist for veterinary trypanocidal drugs. This is a constraint to improving the quality control of these compounds.

Recommendation: FAO should initiate dialogue with appropriate representatives of the pharmaceutical industry and other stakeholders to develop internationally recognised standards for trypanocidal drugs.

Action: FAO.

8. Conclusion: Progress has been made in the development of decision support tools but further development and refinement is still needed to improve the accessibility and usefulness of these tools.

Recommendation: Applicability needs to be evaluated at the local level perhaps through the assistance of Directors of Veterinary Services and FAO Liaison Officers.

Action: PAAT community.

9. Conclusion: Greater recognition should be given to the effect of autonomous control in contributing to and consolidating the benefits of tsetse control.

Recommendation: The findings of the work reviewed in the DFID-funded study on autonomous control of tsetse should be brought to the attention of planners.

Action: PAAT committee and community and tsetse control planners.

10. Conclusion: PAAT has been in formal existence for 4 years and it would now be appropriate to review its achievements and consider its future role.

Recommendation: A review, preferably external, should be conducted to assess PAAT's achievements/failures, and present and future structures, linkages and role.

Action: Chairman and secretariat to identify resources and individuals to undertake the review.

11. Conclusion: A number of PAAT position papers are at various stages of completion.

Recommendation: These papers should be made available as penultimate drafts through PAAT-L for comment as soon as possible. The comments should then be evaluated by the authors in collaboration with the PAAT chairman and secretariat and the papers finalised and published.

Action: Authors, PAAT chairman and secretariat.

1. Minutes of the last meeting

The minutes of the previous meeting held in Addis Ababa in September 2000 were approved.

Matters arising:

It was noted that the PAAT log-frame had not been amended as intended. Lack of funding had prevented the necessary meeting taking place but this activity was still needed.

It was also noted that the PATTEC concept note had been produced and endorsed by the African Heads of State.

A workshop had been held in May 2001 in Ouagadougou, Burkina Faso to plan the West Africa regional tsetse control programme.

2. Human sleeping sickness - report from WHO, Jean Jeanin

Major progress was reported in the development of public-private sector partnerships that had resulted in securing supplies of essential drugs to treat HAT and also to provide funds to allow surveillance activities and the development of new and improved drugs. An agreement was signed between WHO and the pharmaceutical company Aventis Pharma under which \$25 million in cash and kind was provided. The agreement covered:

- Melarsoprol, pentamidine and eflornithine worth \$12.5 million to be supplied to WHO free of charge, for distribution through MSF, over the next 5 years
- \$8.75 million to support surveillance and control activities over the next 5 years
- \$3.75 million, through TDR of WHO, to develop an oral formulation of eflornithine and for other research and development, over the next 5 years.

Countries that require these drugs can request them from WHO. The recipient countries will be responsible only for the shipping costs. It is important that affected countries provide WHO with forecasts of their likely requirements.

Agreements are also being negotiated with other pharmaceutical companies to secure supplies of other drugs used to treat HAT and a number of bilateral funding agreements were being finalised.

Although not directly involving WHO, a grant of \$15.1 million has been obtained by a consortium of research institutes from the Gates Foundation for the development of oral diamidines for the treatment of HAT.

Although the public-private sector partnerships are a major achievement, it was noted that the Aventis agreement only runs for 5 years. It is not known what will happen when the agreement expires and it was stressed that although significant funds have been secured this was not sufficient to solve the current HAT problem. There was a need for continuing advocacy for HAT to secure additional funds to allow effective control of HAT in the future.

The Chairman observed that WHO had succeeded in raising the profile of HAT and that the public-private partnerships established were an important step forward.

3. PAAT – Raffaele Mattioli

Significant achievements of PAAT since the previous meeting were highlighted:

- Strategic planning workshop held in Ouagadougou in May 2001 for West African regional programme (see 9i) with similar workshops planned for 2002 for East and Southern Africa.
- PAAT-PATTEC harmonisation has been advanced through meetings of the secretariat and dissemination of ‘Most Frequently Asked Questions’ through PAAT-L.
- PAAT-IS updated and CD version now available. Responsibility for PAAT-IS, TTIQ and website transferred from NRI to FAO.
- Donation of GIS software by ESRI to FAO to facilitate use of PAAT-IS by African countries.
- Two PAAT position papers published (trypanocidal drugs and impacts of trypanosomiasis on agriculture), a third is in press (SIT as a component of integrated control) and three additional papers are in advanced preparation (trypanotolerance, economics and socio-cultural aspects).
- Study on quality control of diminazene products undertaken by Strathclyde University in collaboration with FAO with samples provided from the field by FAO Liaison Officers.
- Report of Genetics/SIT workshop held March 2001 now available.
- Three new members of the Panel of Advisory Group Co-ordinators have been appointed: Edith Authié, Kwaku Agyemang and Emmanuel Camus.

The Chairman of PAAT noted that although Raffaele Mattioli had been responsible for PAAT within FAO for less than a year he had made considerable progress in a short time.

4. OAU/IBAR- Solomon Haile Mariam

The importance of cooperation between OAU/IBAR and PAAT was stressed. Notable achievements included:

- The ‘Mombasa declaration’ made at the Golden Jubilee, 25th ISCTRC meeting which brought HAT and AAT to the attention of OAU Heads of State, thereby raising the possibility of a continent-wide programme.
- Proceedings of the 25th meeting printed and distributed.
- 26th meeting organised to the traditionally high standard, with 250 participants registered and 175 papers submitted.
- Six satellite meetings, including this one, organised to coincide with the 26th ISCTRC, demonstrating the will to work together.
- Directors of Veterinary Services meeting to be held in conjunction with 26th ISCTRC to foster ownership by Africa states.
- OAU/SIT Forum: task force appointed by OAU Secretary General, founded June 2000.

- PATTEC conceptual framework developed at workshop held in December 2000, now published.
- FITCA programme in East Africa began in March 1999 and now established in Kenya, Uganda, and Ethiopia. Project document for Tanzania has been accepted by EU. Rwanda project document currently being revised. Kenya programme is the most advanced and can serve as a model for the other countries. It includes components dealing with draft power, private animal health services, micro-finance, cash crops and poultry vaccination in addition to tsetse and trypanosomosis control.

Following the Mombasa declaration, in June 2000 the African Heads of State declared 'war on tsetse'. Kofi Annan appealed for support for the Head of States declaration at the UN ECOSOC meeting in June 2001.

A ministerial meeting will be held in November 2001 to agree the way forward.

It is now time to call on partners and collaborators to mobilise resources to enable the policy to be implemented. The PATTEC concept has sometimes been misinterpreted; it is based on a step-wise approach together with its partners. There is a need for able communicators to approach donors – many of the participants of the joint PAG-ICPTV meeting are well placed to do this and to also help to guide PATTEC in finding the way forward.

The Chairman noted that PATTEC represented a huge opportunity that he hoped could be grasped.

In the following discussion it was stressed that individual African countries have to be encouraged to develop a sense of ownership of PATTEC and that a planned, step-wise approach was essential. It was noted that the FAO Liaison Officers could provide the essential focal points in each country. A PATTEC board was required, composed of all the mandated organisations, to unite forces into one campaign. PAAT can play a valuable role by providing the information required by PATTEC to facilitate planning and selection of priority areas.

The lack of a clear strategy and timetable for the implementation of PATTEC was noted. It was proposed and unanimously accepted that addressing this pressing need should be a priority action for this meeting. As a result a working group was set up, convened by Reg Allsopp, to report back during the present meeting (see section 29).

5. 5. PAAT-PATTEC harmonisation

There is need for further progress in the harmonisation of PAAT and PATTEC. Specific issues that need to be addressed include:

- Improved understanding and communication of objectives
- Clarification of respective responsibilities and relationships of the lead agencies with PATTEC.

It had been hoped that a meeting would have been held during the last few months to discuss and facilitate closer harmonisation but this meeting did not take place. It is now planned for later this year.

In the ensuing discussion it was noted that the term 'eradication' and the emphasis on SIT provokes strong reactions in parts of the tsetse and tryps community, which is why we need more and better communication stressing that a step-wise approach utilising a range of control techniques, including SIT, is proposed.

Whilst some participants thought pan-African eradication was technically feasible others had doubts. The widespread goal of poverty elimination - which could never be achieved - by aid agencies and donors was cited as evidence that it was common practice to have an ambitious, very long-term goal. However, it was widely recognised that 'control and ultimate eradication' represented a more pragmatic approach.

6. ICPTV - Keith Sones

A brief background and history of the ICPTV was outlined. The EU Concerted Action on Integrated Control of Pathogenic Trypanosomes and their Vectors (ICPTV) operates in close association with PAAT and makes a major contribution to its research and development module. The major activity of the ICPTV is to fund a series of workshops dealing with topics relevant to the control of trypanosomiasis. Since 1999 workshops have been held dealing with:

- Diagnosis
- Drugs and drug resistance
- Mechanisms of acquired and genetic resistance
- Socio-economic and policy analysis
- Planning for trypanosomiasis control.

The topic of the current workshop is 'Environmental monitoring approaches in the context of changes in land use associated with tsetse and trypanosomiasis control'.

Newsletters are produced and distributed which serve as proceedings of the workshops. The third issue has just been distributed and it is planned to produce two more issues by the end of 2001, which will cover all the workshops held to date including the present one. Letters, comments and articles are welcomed for inclusion in future newsletters.

A final workshop is scheduled for April 2002, most probably in Europe. This will be jointly organised by ICPTV and the EU Concerted Action: International Consortium on Ticks and Tick Borne Diseases and will consider 'Integrated vector control including synergistic use of drugs and bait technologies for the control of trypanosomiasis and tick borne diseases'.

Negotiations are currently underway with the EU to allow the ICPTV programme to be extended beyond April 2002.

7. ITC – Kwaku Agyemang

A brief history of the ITC was presented. The new Director General, Kwaku Agyemang, was appointed in October 2000 and the Centre's research and development agenda has been reorganised. The new agenda, described in the Medium Term Plan (2001-2004), has three programmes and 11 projects:

- Low input systems improvement project (traditional, extensive).
- Market orientated systems improvement project (urban and peri-urban).
- Systems overlaps and linkages improvement project (public health issues; socio-economics and policy; training information exchange and capacity building).

8. GFAR – Emmanuel Camus

GFAR, the Global Forum on Agricultural Research, aims to achieve better links between researchers in the north and south and to promote global initiatives. It is currently promoting a proposal 'A global initiative to exploit biotechnology and animal genetic resources for the improvement of livestock productivity through control of trypanosomosis'. This will:

- Undertake strategic research that exploits the most modern tools of biotechnology and genetics for improving livestock and farm productivity in areas where trypanosomosis is a constraint to development.
- Develop sustainable decision-support tools for control of trypanosomosis integrating best use of currently available control methods with new methods that also protect the environment.
- Develop and apply decision support tools based on risk assessment informed by GIS.

More discussions are needed to see how the proposal can be progressed including contacting potential donors.

9. FAO Workshop on “Strategic planning of area-wide tsetse and trypanosomosis control in West Africa”, in collaboration with IAEA held in Ouagadougou, 21-24 May 2001

i) Albert Ilemobade

This workshop brought together the key stakeholders to consider the West African regional tsetse and trypanosomosis control programme. Key general recommendations included:

- Interventions against tsetse and trypanosomosis must be seen and considered in the broader context of poverty alleviation and food security, attained through livestock-agricultural development. In planning intervention programmes aspects dealing with land use, natural resources, environment concerns and socio-economic development should be included as integral components of the programmes
- The river basin concept needs to be further investigated and validated, with particular reference to the possibility of tsetse flies crossing from one basin to another
- To facilitate exchange of technical data and information between countries at sub-regional level and to harmonise methods of collecting data to inform decision making, standardised approaches were needed

- To allow the efficient use of GIS, major effort was required in the initial phase to increase GIS capacity and capability
- Need to sensitise communities before any projects commence
- Relative cost-effectiveness of the different methods for initially suppressing the flies and for achieving eradication should be investigated during the project design stage
- African governments should include action against tsetse and trypanosomosis in their national poverty reduction strategic plans
- The workshop noted with appreciation the joint project between Mali and Burkina Faso as an example of regional cooperation in furtherance of the goal of eradicating tsetse and trypanosomosis and endorses this as a model of a cooperative eradication initiative between neighbouring countries.

A full report of the workshop is being finalised.

ii) Guy Henrickx

It was noted that the decision making tree was different if the political decision has been made to eradicate rather than control tsetse and trypanosomosis. Control deals with peoples' wishes whilst eradication is more technologically driven.

The impact of climate, human population density and farming systems combine to determine tsetse vulnerability to help select priority areas for control and where eradication can be sustainable.

The actual distribution of tsetse is far patchier than the potential distribution. In West Africa there is a band-like distribution in a north-south plane. From the north, on the fringes of tsetse distribution, tsetse populations are fragmented. Proceeding southwards tsetse habitat is more linear following rivers. Eventually further south tsetse distribution is ubiquitous. So, in the north eradication will be easier and become progressively harder to the south.

In Nigeria, at the northern limit of their distribution, tsetse were eliminated in some areas and although there were no barriers to reinvasion from the south, tsetse have not invaded due to pressure of people and agriculture. Analysis of climate, human population and farming systems can show where reinvasion is less likely to occur, ie at the northern limit of distribution with high population and farming pressure.

Selection of the Mali-Burkina Faso project area is based on these principles. The next step is to refine the methodology to an operational level to allow identification of fly fragmentation indicators.

Topics raised in the following discussion included:

- The consideration of what disease prevalence adds to the tsetse population data. It was suggested that vector and disease information together are useful but that simple assessment of PCV may be enough without the need for extensive parasitological data.
- The risk that tsetse flies may change their behaviour pattern and thereby increase risk of reinvasion occurring

- The fragmentation approach outlined supports selection of the Mali-Burkina Faso cotton belt as site for the West African regional programme.

10. Trypanotolerant livestock in the context of the methodological approach for tsetse interventions – Kwaku Agyemang

Although integrated approaches to tsetse and trypanosomosis control are increasingly advocated, exploitation of trypanotolerance is not always given the recognition it deserves, including both cattle and small ruminants. A series of matrixes was provided outlining suggested control and management responses to different intensities of ATT in The Gambia: possible role of trypanotolerant livestock in the control of trypanosomosis in a range of agro-ecological zones and over time from before 1970, from 1970-2005 and from 2005-2030.

11. Economic considerations in strategic planning for area-wide tsetse and trypanosomosis interventions in West Africa – Alex Shaw

In the past economists have shown the impact of the disease on agriculture in Africa. Now economists need to provide decision makers with a methodology that is transparent, generally accepted and that can be consistently applied so that it can be used to filter projects to eliminate unprofitable options and identify situations where tsetse control is likely to be highly profitable. In this respect it is another tool that should be used alongside, for example, GIS. In this way economists can assist decision makers in choice of area and technology to be used and long-term strategy.

The implications of discounting are important especially in evaluating the economics of long-term programmes such as tsetse eradication. Simply put, the value of money received or spent in the future is lower relative to money received or spent now. Discounting is the technique used to accommodate this fact.

In conclusion, we need standardised economic methodologies that are transparent, facilitate comparisons and that non-social scientists can understand. We then need to put together credible programmes with clear, achievable and demonstrably profitable interventions.

The Chairman observed that the same considerations applied to the contributions from the natural sciences.

Clarification was sought as to what constituted an acceptable benefit-cost ratio – 3 to 5 at a 10% discount rate.

12. The role and importance of socio-economic and cultural factors in the research and control of trypanosomosis – Mulumba Kamuanga

The justification for incorporating socio-cultural factors in the control of trypanosomosis is the failure of many past projects due to the fact that the communities concerned were

left out of all the processes related to design, formulation of policy and implementation. With the recent debate about public, private and communal roles there is now greater appreciation as to the desirability of community approaches that recognise that the needs and perspectives of local people have to be understood and their aspirations taken into account. Several case studies of tsetse and trypanosomosis control were reviewed but it was also stressed that lessons could be learnt from experiences gained with the control of other diseases, eg HAT, tuberculosis (TB), malaria and schistosomiasis.

Data needed on 'People affected by African Trypanosomosis' includes both qualitative demographic profiles, social organisation, local modes of adaptation, production systems and spatial information, eg location of homesteads, and indigenous knowledge, and quantitative, eg willingness to pay.

Important factors that can influence when and how it might be appropriate to involve communities and individual farmers in control operations include: presence of sleeping sickness, ownership of cattle, experience of externally initiated development action, knowledge of symptoms of trypanosomosis, amount of time currently spent on community tasks, ethnic composition, status and purpose of keeping livestock and management practices.

Equity and gender issues need to be anticipated. Plans need to be worked out for a fair sharing of expected benefits from the start of the operation. Monitoring and evaluation to assess community participation in the programme should be incorporated at an early stage.

13. PAAT-IS – Willie Wint

A practical demonstration was given of PAAT-IS.

PAAT-IS has been in development since 1999, through the collaboration of NRI, Oxford University, FAO Rome and stakeholders from African countries. It has been funded by DFID and FAO Rome and is comprised of the Information System (GIS with 120Mb data, the Resource Inventory and TTIQ Bibliographic Knowledge Base with over 10,000 references), the Website (www.fao.org/paat/html/home.htm), the PAAT-L email list, and the PAAT Newsletter. All these components are now housed in FAO Rome, and will be operated and periodically updated by Ms Roopa Rajah. The Information System can be downloaded from the web (<http://ergodd.zoo.ox.ac.uk/paatdown/index.htm>) and is available on CD from Raffaele Mattioli at FAO Rome (Raffaele.Mattioli@fao.org). The CD also contains distribution maps for twenty three tsetse species in browser and ArcView format, tsetse and trypanosomosis posters in six languages, the PAAT website, and various PAAT promotion documents.

ESRI has generously agreed to donate copies of ArcView 3.2 and Spatial Analyst 2.0 - the software necessary to operate the GIS component of PAAT Information System. These will be distributed to FAO-PAAT African partners (e.g. NARS, Extension Services) in order to enhance their capabilities and provide them with tools which assist

in GIS data management. Negotiations with ESRI are on going for developing and providing training on the use of ArcView and Spatial Analyst.

14. IAEA – Udo Feldmann

A resolution was passed by IAEA member states calling for IAEA to provide continuing support to PATTEC in its fight against tsetse and trypanosomosis. The DG of the IAEA will report back to members each year on progress.

There is widespread misunderstanding about the role of IAEA and SIT in PATTEC, especially that it is technology rather than demand driven. In fact IAEA often dissuade member states from the use of SIT and emphasises that it is just one of many available tools. The Ethiopian project is a good example of how it should be done: it is run by Ethiopians with IAEA's contribution being relatively small and SIT being just one part of a range of activities. Addis University is working on land-use plans for when the area is free of tsetse.

A thematic planning workshop was held in early 2001 to advise IAEA as to what its role should be – the executive summary of this report is available. SIT is one amongst many tools, but it is a very promising tool that needs to be applied area-wide. SIT has been developed to the stage where it can be applied – it now requires the investment to be made in fly factories and discussions are underway to set up regional factories in west, east and southern Africa.

Other components are also needed including GIS to contribute towards proper planning. Regional training programmes will be held in 2002 in both east and West Africa to provide GIS training for tsetse control workers.

Information and training is also needed to obtain gene flow information to determine if tsetse populations are isolated, in which case they are amenable to eradication, or joined to neighbouring populations, in which case reinvasion is a real risk.

IAEA is the only agency other than OAU/IBAR that is currently supporting PATTEC. Other agencies and groups are urged to join IAEA in financial support for PATTEC. IAEA also continues to support PAAT.

15. Integrated control of animal trypanosomosis through creation of tsetse free zone in Mali and Burkina Faso

i) Mali - Sadou Maiga

Mali and Burkina Faso are neighbouring countries with the same problem. Burkina Faso already has a sterile male rearing facility. In September 2000 the respective governments decided to go ahead with a control programme based on SIT. The first phase in Mali starts this year and runs until 2005 and involves 1500 km² selected because of its good potential for animal production, especially milk. Currently cattle in this area typically receive 4 to 5 annual trypanocidal drug treatments. The objective is to eradicate tsetse

flies from the area and the programme involves three stages: collection of baseline data, suppression and eradication. Suppression will be achieved using traps, targets and application of deltamethrin. Operational releases of sterile males will begin in 2003. The budget is \$4 million of which the Malian Government will contribute 10%.

ii) Burkina Faso - Abou Bado

Burkina Faso will assist Mali by providing sterile male tsetse flies. Investments are being made in new rearing, irradiation and blood meal processing facilities.

The operation in Burkina Faso is scheduled to last six years, starting in 2001, and will cover 5,000 km² to the west of the country.

A PR campaign will be run involving mass media, schools and market places to ensure that everyone is involved. Funding is coming from national resources, ie a livestock export tax and from international donors: IAEA, World Bank, Arab Development Bank and EU.

Although starting within the Mali-Burkina Faso cotton belt, eventually it is hoped to include other countries to the south such as Togo and Benin.

In the discussion that followed it was asked whether a benefit-cost study had been done. Answer: It is planned to do such a study but the necessary data is not yet available. Whether the fly belt was isolated was also queried and whether there was a case for an extended control area. It was explained that it was necessary to start somewhere and, if necessary, barriers will be deployed to prevent reinvasion.

16. Environmental change and the autonomous control of tsetse and trypanosomosis in sub-Saharan Africa – David Bourn

This study, funded by DFID, consisted of a review and synthesis of 18 case studies in five countries: Ethiopia, Kenya, The Gambia, Nigeria and Zimbabwe. The study identified prevailing trends which impact on tsetse populations, including:

- Increasing human population density
- Expanding settlements and road networks
- Expanding cultivation
- Transformation of natural habitats
- Decline of wildlife populations
- Expansion of cattle distribution
- Changing balance of disease transmission – wildlife reservoir disappearing
- Changing landscape and land-use.

The study concludes that land clearance and hunting have greatly reduced the extent of natural habitats and abundance of wildlife hosts of tsetse over much of the continent and that the general epizootiological balance has moved progressively away from the sylvatic, wildlife-oriented cycle of transmission towards one increasingly dominated by domestic livestock.

With widespread and continuing anthropogenic change and autonomous control of trypanosomosis a major policy shift towards farmer-centred control measures in smallholder production systems should be considered. How significant trypanosomosis is, compared with other disease and livelihood constraints, depends on specific local circumstances and needs to be investigated thoroughly with farmers before advocating or implementing any particular remedy. Environmental information and monitoring requirements, and possible sources of this information, under such circumstances are outlined below:

- Distribution and abundance of people/human settlements – human census
- Distribution and abundance of livestock species – agricultural census
- Land cover: vegetation and land use–agricultural census and/or remote sensing (aerial photography and satellite imagery)
- Accessibility: extent of road networks
- Topography, rivers, drainage lines, lakes and wetlands – maps and /or remote sensing (RS)
- Location of protected areas and biodiversity “hot-spots” – Wildlife and Forestry Departments
- Climate: rainfall, temperatures, seasonality – meteorology station and/or RS
- Historical trends of population growth, agricultural expansion and environmental change.

The findings of the study are published in a book: D. Bourn (ed) Environmental change and the autonomous control of tsetse and trypanosomosis in sub-Saharan Africa. (2001). ERGO, Oxford, UK.

In the following discussion several points were raised:

Assessment of environmental degradation is subjective: change from woodland to farmland is not necessarily degradation but depends, for example, on whether the resulting agricultural production is sustainable. Also we know little about recovery and resilience of habitats.

Costs and impacts of aerial spraying were queried. In Botswana aerial spraying is cheaper than deploying traps and targets. Much of the work quoted in relation to the environmental impact of insecticides used to control tsetse is 20-30 years old, when more persistent insecticides were used. With the new insecticides, no impact on, for example, birds' eggshells have been shown. Even the persistent insecticides, such as DDT, are much less persistent in the tropics than in temperate countries.

The indirect consequences of tsetse control, eg increased human settlement, are likely to have far more impact than the direct consequences of using insecticide.

Riverine tsetse species can increase with increasing human population and related activities, in contrast to the savannah species.

Tsetse fly populations are moving further up escarpments and thereby exposing new populations of farmers and livestock keepers to the tsetse/tryps problem.

Relative cost of control in Mali utilising SIT (budget \$4 million for 1500 km²) compared to aerial spraying in Botswana (\$2 million for 7,000 km²).

17. Environmental and land-use studies in trypanosomosis control in Kenya – Grace Muriuki

KETRI's approach to environmental aspects of trypanosomosis control has consisted of firstly mapping tsetse distribution, followed by conducting a series of case studies in contrasting areas, and finally developing an environmental policy. The latter encompasses principles of environmental awareness, environmental audits, choice of projects, impact on communities and expert advice to clients. Problems encountered include:

- Inadequacy of existing legislation and its enforcement
- Lack of standard procedures and guidelines
- The ad hoc nature of tsetse control in Kenya.

Case studies were carried out in Busia, Nguruman, Galana and Lambwe Valley. The conclusions of the study were:

- Environmental trends vary from site to site and are dynamic
- Tsetse control has contributed to agricultural expansion
- Areas bordering protected areas face particular problems
- Enforcement of land-use plans is needed to contain undesirable land-use options.

In the ensuing discussions it was observed that tsetse control had contributed to agricultural expansion but the donors may have lost sight of this goal.

18. Environmental indicators on the distribution and the evolution of tsetse population – Stephane de la Rocque

High resolution remote sensing data was used to examine land cover change and this was related to the entomological situation today and 20 years ago. The differences are largely a result of changes in land use. In West Africa the pattern is of fragmented fly populations in the north, then becoming linear and associated with river systems and further south ubiquitous distribution. The impact of land use is more important in the north.

Fly populations have changed with time – *Glossina tachinoides* is spreading further to the south.

In some areas just 20 km apart, some riverine tsetse populations have increased while others have decreased. The explanation was found to be in the soils. Where soil types favoured cultivation of crops, the integrity of gallery forest was disrupted and this impacted on tsetse populations. In contrast, where soil types were unsuited to cultivation, the gallery forest – and hence the tsetse habitat – survived. Cultivated plots in the valleys can be used as indicators of tsetse habitat fragmentation. Availability of cattle as hosts

also impacts on fly densities. Where cultivation density is high then livestock populations tend to be high. Cultivated areas can easily be seen on satellite imagery.

In the following discussion it was noted that forecasting of trends in cultivation and the affect it will have on autonomous control of tsetse could be important. Now it is necessary to find ways to generalise the approach to other areas. Work is beginning in other West African countries to see if the indicators are relevant elsewhere.

19. Devolution of environmental monitoring to local institutions: realistic or not? – Ian Grant

National Environmental Action Plans have been slow to be implemented due to overstretched public programmes and insufficient capability and capacity. In the case of the RTTCP, under pressure from the donor, the EU, huge efforts were made to produce plans for tsetse control and land planning but they were not implemented.

There has been a trend towards responsibility for environmental monitoring falling to local institutions but this has been spectacularly unsuccessful. In a survey of environmental monitoring capacity undertaken for the RTTCP the main constraints identified were fiscal, eg lack of money to pay per diems to allow field work to be undertaken; remote sensing/GIS specialists dependent on soft money; and poor sharing of information, which in any case was in many different formats.

Appropriate tools for environmental monitoring include:

- Land use survey: foot patrols, ground truthing
- Soil erosion: models using slope and rainfall
- Grazing: compaction, cover and invasive species
- Biodiversity inventory mapping
- Pesticide impact
- Socio-economic: benefit-cost, farming systems.

The information revolution will make GIS much more widely available soon.

High tech approaches can generate lots of information. It is important to know what questions need to be answered, otherwise can easily get too much of the wrong information.

It was concluded that there are considerable constraints to devolution of environmental monitoring to local institutions. PATTEC faces a real challenge in terms of how to tackle its environmental monitoring component.

In the discussion it was observed that the most successful tsetse control operations took place in the 1960s and 70s and, perhaps, since then concern for the environment had been over-emphasised with the result that the area under tsetse control is decreasing. Emphasis on the environment is donor driven and the European green lobby is very strong.

20. Environmental determinants of tsetse distribution – William Wint

Starting from known areas of tsetse distribution, predictions can be made for areas where information is not available using regression equations where input variables are statistically significant with the presence of tsetse. The variables used do not necessarily constitute cause and effect and include:

- Geographic coordinates
- Anthropogenic: population, agriculture
- Topography
- Vegetation
- Moisture
- Temperature.

To this seasonality and value need to be added. Of the different predictors used, relative humidity (evaporation) and temperature were by far the most important. But seasonality is more important than absolute levels of the variables.

21. ICIPE's approach to tsetse control – Rajinder Saini

A plea was made for a more pragmatic approach to tsetse and trypanosomosis control. Two questions were posed: Is eradication feasible and is SIT the silver bullet to do this ?

Using data from Zanzibar, where it costed \$5.8 to eradicate one species of tsetse from 1600 km², extrapolations were made for the whole continent. It was suggested that \$36 billion would be needed to eradicate just one species continent-wide and that there were in fact 22 species. Enormous numbers of flies would have to be reared to achieve this using SIT, in turn requiring many tons of bloodmeals.

Participants were reminded that there were many other good causes demanding funds including AIDS, malaria and TB. And in the meantime, while we were waiting for the very significant funds needed, what was to be done?

The example of maize stem borers was given to illustrate how an integrated approach could succeed without the objective of eradication.

The paper stimulated considerable discussion. Some regarded it as 'scary but too generalised'. It was emphasised that, in fact, SIT had not been proposed as the silver bullet, but rather an integrated approach including, where appropriate, SIT. Others cautioned that the farmers should not be forgotten while the area-wide approach was being developed and the necessary funding sought.

22. Tsetse control in Ghana – Charles Mahama

Pre- and post-independence tsetse control operations were compared and contrasted. Pre-independence (1957) control depended on bush clearing and game destruction, which resulted in 600 square miles of land being cleared of tsetse as well as along the cattle

routes. Land was opened up for livestock production and no sleeping sickness has been reported in Ghana for 50 years. The lesson was that with clear objectives and the will to succeed, benefits could be achieved which can be sustained for many years.

Post-independence there has been widespread adoption of inappropriate agricultural practices and felling of trees, which has resulted in soil erosion. It was concluded that comprehensive land use plans are needed. But it was stressed that policies are of no consequence if they are not backed by legislation that is enforced.

23. Aerial spraying and environmental monitoring in Botswana – Reg Allsopp

Aerial spraying took place in the Okavango Delta of Botswana between 1972-91 and was reported to be very successful in reducing the incidence of HAT and animal trypanosomosis. Spraying was stopped in 1991 when a target operation was introduced involving the deployment of 25,000 targets. The target operation was not a success with many being damaged by wild animals. Following a period of drought, heavy rains returned in 1999 making it impossible to service many of the targets and the tsetse population increased and spread. In the face of increasing cattle deaths the Government decided in 1999 to proceed with a tsetse eradication campaign. This had three phases:

- Treatment of cattle with diminazene and isometamidium: 30,000 cattle treated every 4 months
- Reintroduce aerial spraying for 2-3 years
- SIT if eradication not achieved by spraying.

Spraying programme began in 2001 covering 7,180 km² and using deltamethrin due to environmental concerns about the use of endosulphan. Each year was planned to involve 5 cycles of deltamethrin applications at 0.26 g per hectare.

‘SATLOC’, a GPS based guidance and data logging system, has markedly changed the accuracy of the spraying operation. The system helps to refine applications and it is now exactly known where the aircraft has sprayed. The system automatically cuts-off if the pilots stray to the wrong area.

Monitoring included fixed man-fly rounds and traps placed in the epicentre of the fly belt. Traps catches were initially 7-800 flies/trap/day. Some teneral (emerging as opposite to surviving) flies were caught up to the 5th cycle so a 6th cycle was necessary.

Environmental monitoring was undertaken by the Okavango Research Centre using a system known as BIOTRACK. This was described as being the biological equivalent of rapid rural appraisal. There is no evidence to date of any impact on non-target species.

It was concluded that:

- The operation achieved in 3 months what couldn’t be achieved in the last 10 years with targets
- We have to use the most appropriate method in each area
- We shouldn’t be timid

- There will be areas where SIT is appropriate
- This is proof that area-wide control can work and that it doesn't have to be expensive.

In the discussion it was observed that it was good to hear a success story. It was noted that the Botswana Government had been courageous – recently dealing with CBPP in the same area by a slaughter programme and now reintroducing aerial spraying. In terms of biodiversity indicators as a component of environmental monitoring it was suggested that it is not necessary to go down to species level of identification.

24. Quality control of trypanocidal drugs – Justice Tettey

Control of AAT relies on three principal compounds: diminazene, homidium and isometamidium.

Drug resistance, the high cost of development of new compounds and the presence of substandard and counterfeit products are all causes for concern.

Counterfeit drugs can have same quality or be better or worse than the original product. Their production is favoured by lax drug registration, situations where demand exceeds supply, low per capita income, high mark-up, extended patent protection and low-tech packaging. In Africa, for trypanocidal drugs the situation is that:

- Don't have elaborate drug regulation procedures
- Do have low per capita income
- Patent protection on trypanocidal drugs has expired
- Packaging is quite elaborate.

In Africa sub-standard products are the main problem, not counterfeit ones.

To ensure quality of medicines, manufacturers liaise with drug control agencies to obtain marketing approval. This allows importers and licensed distribution outlets to supply to the end users. It is desirable from a quality control point of view to keep supply chain as short as possible.

Specifications are required to define quality standards. The last time any specifications were published for trypanocidal drugs was in 1985 for homidium bromide; this defines the product and variation allowed, ie a tolerance of 90-110% of the stated amount of active ingredient.

Isometamidium: not until 40 years after the first published description did FAO/WHO defined what isometamidium is, ie a mix of 4 compounds. Synthesis of isometamidium is difficult and can give rise to varying proportions of these compounds, with the composition of the final products affected by, for example, pH. Two years ago methods were developed to assess the amount of the main active ingredient in isometamidium products. Variation in isometamidium content of marketed products was observed, but there are no recognised specifications for isometamidium products.

More recently samples of diminazene products have been obtained, through FAO Liaison Officers, from across Africa. Diminazene is a simpler product to make than isometamidium. From 11 countries, 19 different brands were identified with the market leaders being Berenil and Veriben. Methods for analysis were developed to cope with the three ingredients found in diminazene products: diminazene aceturate, pyrazole and, in one product only, vitamin B12.

No specifications exist for diminazene, so the one published for homidium, ie 90-110% tolerance limit was used. Only 64% of products tested passed and 75% of those that failed were below the 90% limit.

The physical appearance of the products varied: powders, lumps and granules. Granules flow better to facilitate accurate packing. Lumps demonstrate the presence of moisture - diminazene degrades with moisture thereby limiting shelf life. Intra batch variation of up to 5% was noted within batches of the same product and is indicative of poor mixing.

Conclusions:

- Need to establish specifications for diminazene formulations
- Establishment/improvement of regulatory control of importation, distribution and supply of veterinary medicines
- Provision of post-market surveillance initiatives to assure product quality.

In the discussion it emerged there was confusion as to the status of a laboratory established in Dakar apparently with the support of the pharmaceutical industry. There was also a call to harmonise protocols for analyses of trypanocidal drugs between laboratories. Doubts were expressed as to the wisdom of publishing the results of the diminazene study and naming the products that passed or failed – probably best to regard this study as a pilot.

25. A review of the approaches for monitoring environmental effects and land use changes in southern Africa with particular reference to Zimbabwe – William Shereni

Environmental concerns over tsetse control include both direct and indirect impacts. Direct impact could be caused, for example, by chemicals that might impact on biodiversity and hence affect wildlife based tourism or cattle dipping and effect of deltamethrin on dung beetles. It was considered that direct impacts have been adequately addressed and documented.

Indirect impacts are more complex and less well understood. Caution was urged in the making of categorical statements about indirect impacts of tsetse control – eg human migration may not be related to tsetse control. There are however concerns over human settlement, wildlife impacts and overgrazing.

New control technologies were developed with greater consideration given to environmental impacts. Less environmentally friendly technologies have been phased out.

Environmental monitoring of specific projects and on previously treated areas: SEMG report monitored aerial spraying and use of targets. DFID- supported group looked at DDT in ground spraying operation. Effects of DDT were not as bad as may have been thought but still public concern forced Zimbabwe to drop DDT in favour of deltamethrin for ground spraying operations.

Planning is done in the context of National Environmental Policies. EIAs are required for tsetse control operations that will result in changes in land-use. The environmental lobby is strong and has prevented tsetse control in the northeast of the country – a world heritage area.

In the former RTTCP countries, a standard approach was adopted in planning including socio-economic, institutional, technology and environmental (SITE analysis). This process is still in place.

26. Environmental concerns in the control of trypanosomosis in Uganda – Martin Odiit

The FITCA project is about to start in SE Uganda in which use of insecticide will be minimal. A land use component is included together with tsetse control interventions. The EU is also funding an environmental monitoring component.

Trypanosomosis is an ecological disease and land-use/cover changes affects distribution and incidence of HAT. The major vector in S.E. Uganda is *G.f. fuscipes* and the disease is associated with wetlands.

In Uganda, no land use plans exist in rural areas.

The National Environmental Management Authority is responsible for coordination, supervision and monitoring. There are also local structures that linkup with national structure. There is in general a decentralised approach to encourage the public to manage their resources.

Although the FITCA study has started, the environmental monitoring group is not yet on the ground.

It was concluded that the most immediate concern is of further destruction of land and natural resources rather than use of chemicals, although the latter should also be monitored.

27. FAO Liaison Officer's Recommendations - George Chizyuka

The Liaison Officers' recommendations fell under three headings and included:

- i) PATTEC: the Liaison Officers called on members states to take immediate action in the implementation of the Lusaka Declaration and also on the international community to render their full support to the PATTEC initiative.
- ii) Quality assurance of trypanocides: definition of a specification for diminazene and continuation of periodic sampling and testing of products from the market were requested.
- iii) Training: national governments should take the necessary steps in training personnel for the control/eradication programmes.

28. Tsetse fly distribution posters - David Bourn

Multi-lingual versions of the DFID-AHP/LPP tsetse distribution poster are available, produced as a result of comments on original English version. The languages chosen were Ffulde, Hausa, Orominga, Swahili, Chichewa and Shona, and these were selected on the basis that tsetse are present in areas where these languages are spoken. Partners are sought who would like to distribute the posters in the respective local language areas.

29. Recommendations on the PATTEC Plan of Action by PAAT advisory group working party - Reg Allsopp (see appendix 1).

The group made recommendations based on:

- PATTEC's declared criteria for identifying suitable areas for area-wide control locations
- Areas which would have immediate impact in terms of productivity and achievability
- Areas identified by PAG meetings for targeting; and
- Recent GIS and remote sensing outputs.

It was recommended that PATTEC focus its attention on 'current areas', ie those that have on-going operations, and 'pipeline areas', those with sound reasons for expecting early implementation of control operations.

It was proposed that PATTEC establish task forces to address control issues in:

- West Africa
- East Africa
- Southern Africa
- Central Africa.

The task forces would identify priority areas, recommend appropriate integrated control methods and define projects, and should have socio-economic and environmental inputs as required. It should be ensured that the programme is part of the continental poverty alleviation effort.

On funding, it was recommended that:

- Publicity materials be produced

- PATTEC with PAAT appoint appropriate personnel to sensitise donors
- A high-profile patron be identified to assist in securing major funding.

It was also recommended that PATTEC promotes its programme to key environmental organisation and if possible obtains their endorsement.

30. Closing remarks – Peter Holmes

The chairman closed the meeting by thanking all those who contributed, especially Raffaele Mattioli and Keith Sones who worked hard over many months to get everyone here. He also thanked the local participants, especially Issa Sidibe. He commended the hotel for its friendly atmosphere, staff and excellent facilities. Raffaele Mattioli thanked everyone for their support. Since this was his first PAG meeting, he was particularly pleased with the quality of the discussions and the atmosphere of cooperation which had prevailed. Solomon Haile Mariam expressed his satisfaction and that of OAU/IBAR with the harmonious way in which the meeting had succeeded in dealing with the many important issues. Victorin Codjia said it would be inappropriate to close this meeting without expressing thanks for the tremendous role played throughout by the Chairman.

JOINT PAG-ICPTV meeting

Ouagadougou, Burkina Faso

26-28 September 2001

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APPENDIX 1

RECOMMENDATIONS ON THE PATTEC PLAN OF ACTION BY PAAT ADVISORY GROUP WORKING PARTY OUAGADOUGU, 27/28 SEPTEMBER, 2001

Membership

R. Allsopp (Convenor), V. Codjia, G. Hendricks, A. Ilemobade, J. Kabayo, A. Mebrate, D. Richard, S. de la Roque, W. Shereni, W. Wint

A. Shaw (Rapporteur)

The group confined its recommendations to technical and scheduling Plan of Action – with some consideration of the funding implications. It did not attempt to advise on PATTEC ‘housekeeping’ issues.

It proposed a number of activities which have been identified in broad terms in the Plan of Action but which the group feel should be promoted urgently and presented to guide the OAU Ministers in their November meeting.

The recommendations were based on:

- PATTEC’s declared criteria (current activities, discrete areas etc.) for identifying suitable area-wide control locations;
- Areas which would have immediate impact in terms of productivity and achievability;
- Areas identified by previous PAAT PAG meetings for targeting; and
- Recent GIS and remote sensing outputs.

It is recommended that PATTEC focus its attention on ‘*current*’ areas (with on-going operational control activities) and ‘*pipeline*’ areas (sub-regional or regional areas with sound reason for expecting early implementation of control activities).

It is stressed that the following list is **not** exhaustive since PATTEC will, in due course, address the continental distribution of tsetse and trypanosomiasis. It is designed to expedite PATTEC’s move into an implementation phase.

Locations

Current

- West African northern fly-belt – incorporating the cotton belt
- Ethiopian valley system
- Botswana Okavango Delta and its environs.

Pipeline

- RTTCP common fly-belt
- Lake Victoria Basin (*G. fuscipes fuscipes* belt)
- Moist savannah zone of Nigeria.

Activities

It is proposed that PATTEC establish a number of Task Forces (TF) to address and define the control issues in the above locations. Four Task Forces are suggested:

- West Africa TF (initially Mali/Burkina Faso)
- East Africa TF (to integrate and build on current SIT and FITCA activities)
- Southern Africa TF (to take forward Botswana's current programme into a regional context); and
- Central Africa TF (to focus primarily on sleeping sickness and support the activities of WHO).

Task Force Terms of Reference

In broad terms, the TFs should:

- Identify priority areas
- Recommend appropriate 'integrated' control methods; and
- Define projects.

Composition of Task Forces

- Experts with relevant experience and knowledge (e.g. PAAT Advisory Group members); and
- Local experts (e.g. liaison officers, local health officers).

Each TF should also have socio-economic and environmental inputs as required, should be guided on sleeping sickness issues by WHO, and should ensure that the programme is part of the Continental poverty alleviation effort.

Each TF should be dynamic and on-going i.e. addressing 'current' operational issues in the first instance, then moving on to pipeline areas and, in the course of these deliberations, identifying how these areas should be expanded to incorporate neighbouring ones to progressively reduce tsetse and trypanosome distributions with a view to area, sub-regional, regional and eventually continental eradication.

Specific, detailed terms of reference and the identification of appropriate personnel will be the responsibility of PATTEC, based on advice from its Technical Advisory Forum (TAF) acting as a technical steering committee. To this end, the TAF should be constituted with immediate effect and with members as identified in the PATTEC Plan of Action (drawn from, for example, the SIT Forum, PAAT committee, liaison officers and others).

Timing

1. Endorsement of these recommendations by the Directors should be sought at the earliest opportunity.
2. The endorsed proposal should be presented to the OAU Ministers before their November meeting with a view to obtaining Governmental approval for interventions and agreement at the Ministerial level on collaboration and resource allocation.
3. TFs to be identified and ToR to be defined by 31 December 2001.
4. TFs to be deployed to 'current' locations by 31 March 2002 and to present their preliminary reports to PATTEC by 30 June 2002.
5. PATTEC to prepare Project Memoranda for each 'current' location by 31 December 2002 with a view to implementation in January 2003.
6. TFs to present their preliminary reports to PATTEC on 'pipeline' locations by 31 December 2002.
7. PATTEC to produce project memoranda on 'pipeline' locations by 30 June 2003 with a view to project implementation by January 2004.
8. TFs to present their proposals for expansion areas by 30 June 2003.

Funding

Project funding

PATTEC to produce explanatory leaflets and publicity material (glossy fliers, posters, videos) by the end of 2001.

PATTEC, in collaboration with PAAT, to appoint appropriate personnel to sensitise donors and seek project funding from historical sources (DFID, EU, IFAD, UNDP etc), other known sources (e.g. World Bank) and novel sources (e.g. Gates Foundation) – and to maintain a continuous, high-profile presence with these various donor organisations.

Programme funding

PATTEC 'Patron' to be:

- Solicit the services of, and brief by the end of 2001
- Fully aware and regularly informed on all project-level funding activities
- Involved and consulted, where appropriate, in TAF meetings and the assignment of TFs; and
- Assist with securing major funding (at Ministry of Finance level within OAU from the World Bank, etc.) possibly from debt re-scheduling etc..

Environmental considerations

It is recommended that PATTEC promotes its Programme and obtains endorsement from major environmental organisations such as WWF, CI, IUCN.

APPENDIX 2

JOINT PAG/ICPTV MEETING AGENDA

Ouagadougou, Burkina Faso

26-28 September 2001

AGENDA

1. Opening address and introduction
2. Minutes of the last PAG and Programme Committee meetings
3. Current status of PAAT activities: Report from the Chairman and FAO Rome (PAAT-IS and PAAT web site)
4. Report of FAO Liaison Officers' meeting (West and Central Africa)
5. Sleeping Sickness situation: brief by WHO and report on Sleeping Sickness Working Group
6. Report on IAEA (workshop on tsetse genetics) and SIT forum
7. Report on OAU-IBAR (i.e. PATTEC and FITCA)
9. Report on Ouaga workshop
10. Report of the draft proposal on Integrated Control of Animal Trypanosomosis (jointly) in Mali and Burkina
11. Report on PATTEC
12. Presentation of selected papers on strategic planning of areawide tsetse-agriculture programmes
 - 12.1. Use of GIS to appraise factors susceptible to influence identification/selection of tsetse-trypanosomosis intervention areas
 - 12.2. Trypanotolerant livestock: role in the context of the methodological approach for tsetse intervention strategies
 - 12.3. Economic considerations in strategic planning for area-wide tsetse and trypanosomosis intervention(s) in West Africa
 - 12.4. The livestock-agricultural systems of tsetse infested areas in West Africa: socio-cultural environments
13. Report on Quality Control of trypanocides

14. Presentation of ICPTV

15. Any other business

16. Date and venue of the next meeting

17. Closing

JOINT PAG/ICPTV MEETING

Ouagadougou, Burkina Faso

26-28 September 2001

TIMETABLE

Wednesday, 26 September 2001

08.30 – 09.30	Registration
09.30 – 09.45	Opening address and Welcome
09.45 – 10.00	Introduction by Chairman, adoption of agenda and appointment of Rapporteurs
10.00 – 10.15	Adoption of minutes of last meeting
10.15 – 10.30	Break
10.30 – 10.45	Report of PAAT Secretariat and FAO/PAAT activities (R.C. Mattioli)
10.45 – 11.00	Report on PATTEC and FITCA (H.M. Solomon)
11.00 – 11.15	PAAT-PATTEC harmonization: report on developments (P. Holmes)
11.15 – 11.30	OUA-IBAR: report of activities on tsetse-trypanosomosis (H.M. Solomon)
11.30 – 11.45	WHO: report of activities on sleeping sickness (J. Jannin)
11.45 – 12.00	IAEA: report of activities on tsetse-trypanosomosis (U. Feldmann)
12.00 – 12.15	ICPTV: report of activities (K. Sones)
12.15 – 12.30	CIRDES: tsetse and trypanosomosis activities in West Africa (D. Richard)
12.30 – 12.45	ITC: tsetse and trypanosomosis activities in West Africa (K. Agyemang)
12.45 – 14.00	Lunch
14.00 – 14.15	Report of Ouagadougou workshop “Strategic planning of area-wide tsetse and trypanosomosis control in West Africa” (A. Ilemobade)
14.15 – 14.45	Use of GIS to appraise factors susceptible to influence identification/selection of tsetse-trypanosomosis intervention areas (G. Hendrickx)

- 14.45 – 15.15 Trypanotolerant livestock: role in the context of the methodological approach for tsetse intervention strategies (K. Agyemang)
- 15.15 – 15.30 Break**
- 15.30 – 16.00 Economic considerations in strategic planning for area-wide tsetse and trypanosomosis interventions(s) in West Africa (A. Shaw)
- 16.00 – 16.30 The livestock-agricultural systems of tsetse infested areas in West Africa: socio-cultural environments (M. Kamuanga)
- 16.30 – 17.00 Preliminary Conclusions and Recommendations of day 1
- 18.30 – 20.00 Reception

Thursday, 27 September 2001

- 09.00 – 09.30 Report of the draft proposal on Integrated Control of Animal Trypanosomosis (jointly) in Mali and Burkina (A. Bado and S. Maiga)
- 09.30 – 10.45 ICPTV Presentations
- Environmental change and the autonomous control of tsetse and trypanosomosis in sub-Saharan Africa (D. Bourn)
- Environmental and land use studies in trypanosomosis control in Kenya: the Kenya Trypanosomiasis Research Institute (KETRI) experience (G. Muriuki)
- 10.45 – 11.00 Break**
- 11.00 – 12.30 ICPTV Presentations
- Environmental indicators on the distribution and the evolution of tsetse populations to identify the priority areas and means of control (S. de la Rocque)
- Devolution of environmental monitoring to local institutions: realistic or not? (I. Grant)
- Environmental determinants of tsetse distribution (W. Wint)
- 12.30 – 14.00 Lunch**
- 14.00 – 15.30 ICPTV Presentations
- ICIPE's approach for tsetse control (R. Saini)
- Tsetse control in Ghana: the environment in perspective (C. Mahama)
- Aerial spraying and environmental monitoring in Botswana (R. Allsop)

- 15.30 – 15.45** **Break**
- 15.45 – 16.45 ICPTV Presentations
- Environmental concerns in the control of trypanosomiasis in Uganda (M. Odiit)
- Presentation from Zimbabwe/RTTCP (W. Shereni)
- 16.45 – 17.15 Report of the FAO Liaison Officers Meeting
- 17.15 – 17.45 Preliminary Recommendations and Conclusions of day 2

Friday, 28 September 2001

- 09.00 – 09.30 Report on Quality Control of trypanocides (J. Tettey)
- 09.30 – 10.30 Summary of presentations: reports of rapporteurs; main priorities for action; findings and recommendations of day 1 and 2
- 10.30 – 10.45** **Break**
- 10.45 – 11.15 Identification of and agreement on main issues for follow up
- 11.15 – 12.15 Discussion in small working groups to define issue specific action proposals
- 12.15 – 12.45 Agreement on time bound follow-up and targets to be achieved
- 12.45 – 13.00 Any other business; Next meeting; Closing