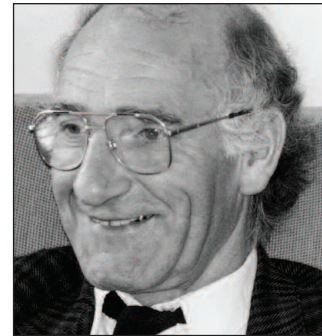




# apopo

Annual Report 2007



**Mic Billet**

## 1. Message of the President

APOPO's 10th year anniversary was marked with some major achievements and prospects.

In **Mozambique**, the APOPO Mine Action Program is now a full contributor to the National Demining Programme.

In **Tanzania**, the Tuberculosis detection rats are performing very well. They are finding, on a weekly basis, patients not detected with conventional methods, enabling follow-up for early treatment.

The **breeding and training programmes** were improved leading to higher efficiencies.

APOPO was given international recognition and exposure: its founder, Bart Weetjens, was awarded by **As-hoka and Schwab Foundation**.

APOPO was also endorsed by **11 Heads of States in the International Conference of the Great Lakes** to be a key player in the regional border security management.

Hereby, I would like to take this opportunity to express my thanks to all employees of APOPO, who have been working hard to realize the progress in 2007, as well as to all colleagues, donors, partners and everybody who has contributed to the success of the programme.

**Professor Mic Billet**  
**President APOPO**







## 2. Activities

### 2.1. Demining operations in Mozambique

#### **Continued progress has been achieved throughout 2007**

The APOPO Mine Action Programme has successfully introduced and deployed a fully integrated tri-part system for the clearance of Suspected Hazardous Areas. It involves the use of **Mine Detection Rats (MDRs)**, **Manual Deminers** and **Mechanical Bush Cutter Support**.

The tri-part system is now contributing, at current full capacity, to the *National Demining Programme*, in accordance with the *National Demining Institute (IND)* and the *Government of Mozambique*.

During the first half of the year, field operations were based in and around the villages of Macuane and Chimate, Gaza Province. On completion of those sites, the field operations were then redeployed to a newly selected area in the village of Tuane, also in Gaza Province.

#### **The following items were located, during the course of the year:**

- 182 x 7.62mm rounds of Small Arms Ammunition (SAA)
- 01 x AK47 assault rifle (non-functioning)
- 01 x F1 Hand Grenade
- 01 x Rocket Propelled Grenade (RPG) 7, High Explosive Anti Tank (HEAT), complete with warhead and rocket motor
- 02 x 60mm High Explosive (HE) Mortar rounds (fragmentation)
- 01 x PMN Anti-Personnel mine
- 01 x Warhead stand-off element of a PG2 High Explosive Anti Tank projectile (completely inert and retained for use as a training aid)
- 23 x 82mm High Explosive Mortar rounds
- 05 x PG2 High Explosive Anti Tank projectiles
- 16 x boxes of 7.62mm Small Arms Ammunition
- 01 x PMN Anti-Personnel blast mine
- 01 x 60mm High Explosive Mortar round
- 01 x 82mm High Explosive Mortar round

#### **All of the above items were inspected, removed and destroyed.**

The Demining team has now been re-designated as **APOPO Mine Action Team (AMAT)**. APOPO plans to train every member of the team (and subsequent teams) in all of the standard Humanitarian Mine Action skills such as Explosive Ordnance Disposal, Technical Survey, Mine Risk Education, Community Liaison, First Aid, etc.



There are currently 36 operational Mine Detection Rats in Mozambique. Of this number, 17 Rats need to undergo accreditation with *National Demining Institute*. This will be carried out early 2008.

The Rats are usually observed to be very active, alert and attentive in the conduct of their work. Many of the Rats are now accustomed to the new Pole method of handling, whereby one handler guides one rat leashed at the end of a fish rod. This will continue with the ultimate objective to adopt the Pole method as the standard operating procedure for Mine Detection Rats search.

Besides reducing the ratio of Handler to Rat to 1:1, this will also enhance other developments in manual and mechanical techniques, designed to make the overall operation more efficient and productive.

The **Komatsu Mechanical Bush cutter** support machine arrived in Mozambique in the second half of the year and is now fully operational.

Recently acquired **Demining tool sets**, new style lightweight body armour and the introduction of new mine detectors, in conjunction with changes to operating procedures, will further enhance the ability of the individual Deminers and increase their productivity. This will result in more ground cleared at faster rates and so allow search boxes to be more quickly accessed and cleared by the Mine Detection Rats.

With the increase in personnel and Mine Detection Rats, the introduction of the bush cutter and other new equipments and the integrated system, being now operational, the programme can fully and confidently generate major increases in quality and productivity through 2008 and beyond.

APOPO Mozambique is looking forward to carrying out the implementation of its clearance activities. It will further develop a system that will be a unique and effective resource within the overall clearance plan for Mozambique and in other countries still affected by the Explosive Remnants of War.







## 2.2. Tuberculosis detection

Tanzania, as well as most other sub-Saharan African countries, faces an increasing tuberculosis (TB) problem. The diagnosis of TB primarily depends on sputum smear microscopy, which is slow and not always accurate. The successful fight against TB depends on the capacity of a faster, earlier and more accurate case finding.

APOPO reports a breakthrough in the development of this novel technology utilizing the African giant rats as a sensor of Mycobacterium Tuberculosis in the sputum of suspected persons.

**A rat analyzes 40 samples in 7 minutes**, while a skilled technician needs a day to analyse the 40 samples microscopically. Three sputum samples per patient are analyzed within one session by three rats (twice). Rats indicate positive samples by fixing their nose in a sniffer hole for 5 seconds. A double blinded test involving 67 positive and 752 negative samples yielded a sensitivity of 86.5% and a specificity of 89.1%.

Besides the research experiments involving the evaluation of TB in sputum cultures, the rats analysed 24,220 samples involving 8,073 patients. These samples are collected on a weekly basis from some of the TB treatment centres in Dar es Salaam, called DOTS-centres, serving a population of 500.000 inhabitants.

APOPO assisted the DOTS centres early 2007 to improve the storage, labelling and data processing of the samples. This led to higher quality of the samples, which form the basic training material for the rats, thus in turn resulting in much better performance of the animals.

Due to the relative high number of patients detected by the rats, which were missed by the conventional Microscopy in the centres, it was decided from September onwards to keep mobile phone numbers of all patients in order for them to be called back for treatment.



Since September, the **'Doctor-rats'** detected 101 TB patients which were missed and for which treatment has started. As a result, not only the patients themselves stand much higher chances for cure, but also potential transmission of the bacteria by those patients is strongly reduced.

The **SUA-APOPO team** received great co-operation from the National Institute for Medical Research (NIMR) and the National Tuberculosis and Leprosy Program (NTLP).

APOPO is looking forward to a further implementation of its diagnostic method, both as a pro active screening tool in potentially affected populations, as well as a support to the current DOTS strategy in Tanzania. In order to gain endorsement for a widespread use of the diagnostic tool, a validation project will be conducted in 2008, in co-operation with the *National Institute for Medical Research* and the *National Tuberculosis and Leprosy Program*. The project will compare Doctor-rats with the existing microscopic test, utilizing cultures as a reference standard.

Because of the speed, efficiency and accuracy of the system, supported by the convincing results of 2007, we expect that the validation process will accelerate implementation on a larger scale in the coming years.

### 2.3. Remote Explosive Scent Training (REST)



APOPO, in co-operation with the *Geneva International Centre for Humanitarian Demining (GICHD)* and the *Swedish Rescue Service Agency (SRSA)* is furthering the research on **Remote Explosive Scent Training**.

**REST** is a highly potential technology for area reduction of suspected mined roads. The system is based on collecting surface dust samples to be evaluated by the Rats on their explosive content, which, if positive, will mark the correlating segment of the road as highly suspected. Due to the vast mileage of mine suspected roads and the limited resources, REST could, in combination with survey and other information provide a key element for effective risk reduction and land release.

The progress booked during this year was presented at an international workshop held at APOPO in October 2007, attended by both user and research groups. This resulted in further recommendations for key research questions to be answered in order to expedite the operational implementation of the REST system.

Closely related to REST, APOPO is also part of the research group of the **'Odour Signature Project'**. It aims at determining the chemical compounds and odour bouquet released by landmines for animal detection. This should result in soil spiking methods, which can mimic the odours released by landmines and give operational advantages for maintenance training, accreditation testing and quality control.

The research is carried out in a combined effort using controlled training experiments with Rats (APOPO), Dogs (SRSA) and analytical chemistry in APOPO's lab (APOPO/GICHD).





## 2.4. 'Camerats'

APOPO furthered the idea of using **rats back-packed with a miniature camera** and wireless transmitter to be used in rescue operations during man-made or natural disasters.

Their small size will allow them to penetrate places dogs cannot reach, in the search for victims. A newly developed communication device, by *Wollongong University, Australia*, will enable the operator to direct the rat using sound signals. While a prototype of the electronic package has been devised during 2007, the new training protocol will be tested in 2008.

## 2.5. Rat training and breeding

### 2.5.1. Field training

APOPO developed a new training protocol for Mine Detection Rats as a response to the demand for the clearance of road verges. The system consists of one trainer guiding the rat, which is tethered to a short leash at the end of a fishing rod. Several rats passed internal accreditation, and the system is ready for use in Mozambique. The advantages of the system are:

- Only one trainer per rat, resulting in double output of the same human capacity;
- Less downtime between the deployment of different animals;
- No need for creation of extra safe lanes in the minefield, allowing a single sided approach to a mine suspected area.

APOPO had a total of 67 field rats in training in 2007, of which 27 passed internal accreditation tests and of which 12 were sent to Mozambique, 19 are still in pre-training phase and 55 are currently in advanced field training.

### 2.5.2. REST training

APOPO designed and made a prototype of a semi automated training cage for *Remote Explosive Scent Training samples*. The aim is to increase the accuracy of the training and performance by eliminating the variability introduced by the trainer. The prototype has been in use during the second half of the year and preliminary results are promising.

In total, APOPO has five configurations running on a daily basis for REST training experiments, including a total of 25 rats.

### 2.5.3. TB training

Apart from the daily training on sputum samples from the DOTS centres in Dar es Salaam, APOPO conducted, among others, two major training experiments measuring respectively the sensitivity of the rats and the replicability of their performance. Both tests had positive outcome, with sensitivity at least as high as the conventional microscopic method and replicability of 95,6%. (Replicability is the measure to which extent animals consequently indicate the same samples in the same way. This provides useful feedback on the intra-animal reliability and has been integrated as a Standard Operational Procedure).

A total of 18 rats are fully trained on TB sputum and cultures, while an additional 7 rats are in pre-training phase.

### 2.5.4. Breeding

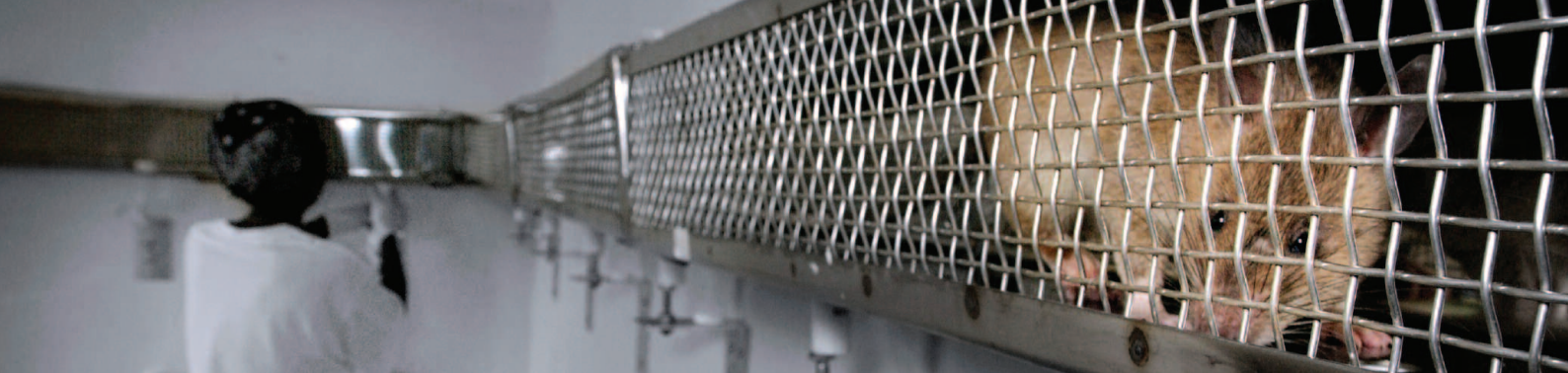
APOPO saw a downfall in its breeding output in 2006 and therefore constructed special breeding kennels simulating the natural environment of the rats in the latter part of 2006. This has resulted in an increased breeding output from 45 rats in 2006 to 98 rats in 2007, or an increase of more than 100%.

Further optimization of the breeding will give APOPO sufficient supply to meet the demands for 2008.

In total APOPO has a stock of 207 rats in Tanzania and 36 in Mozambique, totalling to 243.







## 3. Management

### 3.1. Strategic

APOPO is developing a new business model, in order to create a sustainable social enterprise. APOPO envisages a hybrid organizational structure, incorporating profitable detection services and leveraged social profit activities. This strategy entails drafting of business plans for the respective activities including TB, demining, the training and research centre in Tanzania, expansion of the board and development of the required HR structure, as well as a parallel legal structure to support APOPO's social profit activities.

APOPO will be assisted by the US based *Virtue Ventures*, to implement the new structural changes during the coming years.

### 3.2. Human resources

#### a. Management team

APOPO's management has been on its toes to keep up with the workload and challenges during 2007, due to constraint financial resources.

As part of the new strategic plan, APOPO is working out a new organizational management structure, adding several managerial positions, to cope with the additional demands posed by adding at least one demining operation in the great Lakes Region in 2008, expanding the TB diagnostic work, developing a regional centre of expertise in Tanzania, as well as exploring for-profit activities.

APOPO is confident that the financial support specifically for this goal will be obtained early 2008.

#### b. Staff

APOPO currently employs 48 Tanzanian staff, 41 Mozambican staff and 6 International staff on contractual basis.

#### c. Staff Training

The Tanzanian rat trainers have been enrolled in a 4-week 'certified professional rat trainers course' by Dr. Roger Abrantes from the *Danish Etologisk Institute*. 5 trainers and supervisors were sent to a further training camp in Lisbon Portugal during the course of 2007.

In Mozambique, extensive on-the-job training for the Team Leaders and Assistant Team Leader has taken place in areas such as Minefield / Operations Management, Demolitions and Ammunition Recognition. Refresher training has been conducted for the newly recruited Deminers, all of whom are experienced Deminers, recruited from other Demining Organisations. Training of Mine Detection Rat Handlers has also been conducted. The majority of the Handlers respond very well and are on the way to becoming accredited as fully qualified Mine Detection Rats Handlers. Personnel accreditation by the *National Demining Institute* is expected to be carried out early 2008, together with the accreditation of the new Mine Detection Rats.

APOPO will make staff training a priority in 2008, and is working on further curriculum development on different levels and skills, in order to enlarge its human resource base.





### 3.3. Public Relations

APOPO surely benefited from good visibility in the year 2007. There have been **numerous media visits** by local and international media covering all aspects of the project. The APOPO project has been televised and appeared in the written press throughout Europe, the US and Africa.

Top of the bill was the election of Bart Weetjens, APOPO's Founder and Director, as **'Global Social Entrepreneur of the Year'**, on the Schwab Social Entrepreneurs summit in Zurich, preceding the World Economic Forum in Davos.

APOPO was represented in the jury of the *World Bank's Development Marketplace, Global Competition*, as well as on technical workshops on *Remote Explosive Scent Training* (Tanzania) and *Tuberculosis* (Tanzania and South Africa).

The successful **'Poppy'** – fundraising campaign attracted a lot of attention from its numerous exhibitions among the Belgian public, celebrities and politicians.

### 3.4. Finances

#### 3.4.1. Introduction

APOPO thanks all governments, institutions, foundations, corporations and individuals who have made it possible for the project to carry forward its operations, training and Research and Development.

Special thanks goes to the *Belgian Ministry of Foreign affairs*, who so far have been, and still constitute, APOPO's major support; to the *Flemish Government* for their multi-year support for the demining operations in Mozambique; to the *GICHD* for their continued research and operational support; to the *Province of Antwerp* for their yearly recurrent support; to the *UBS Optimus Foundation* and the *National Institute of Health* for furthering the TB diagnostic work; to the *Canadian Government* for their operational support for REST; to *Imperial* for their support to our Tanzanian employees; to the *Charities in Defence of Nature Trust Fund* for their support to both TB and Demining; to the *Philippson Foundation* for their commitment to assist APOPO in sustainable organizational capacity growth in 2008; to the *King Baudouin Foundation* for providing their channels to the many individuals, groups and foundations which have supported APOPO.







Special thanks go to **Anita Huybens** and her group of volunteers who have made the *'Poppy' campaign* a big success, both in terms of financial support as well as visibility.

Despite the numerous contributors, the APOPO treasury was in jeopardy when two major foundations completely cancelled their support unexpectedly in June 2007, based on the non-commercial character of the organization, and therefore had to postpone its operational expansion for demining in the Great Lakes Region.

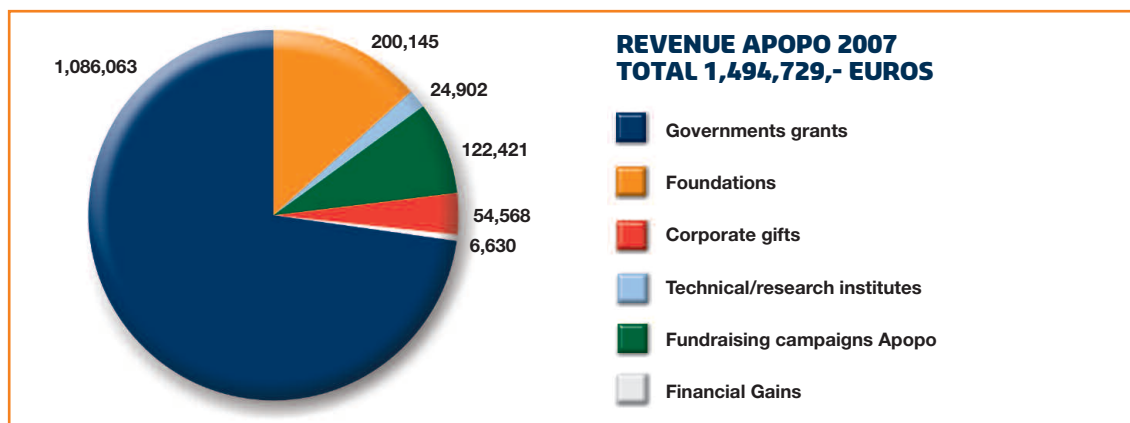
Major fundraising and networking efforts however, in the second half of the year, especially in the US, have opened new prospects for APOPO to break through the long awaited expansion from a small social profit to a sustainable social enterprise. A special thanks here goes to the *Ashoka, Schwab and Philippson foundations*, for opening so many doors to the future of APOPO.





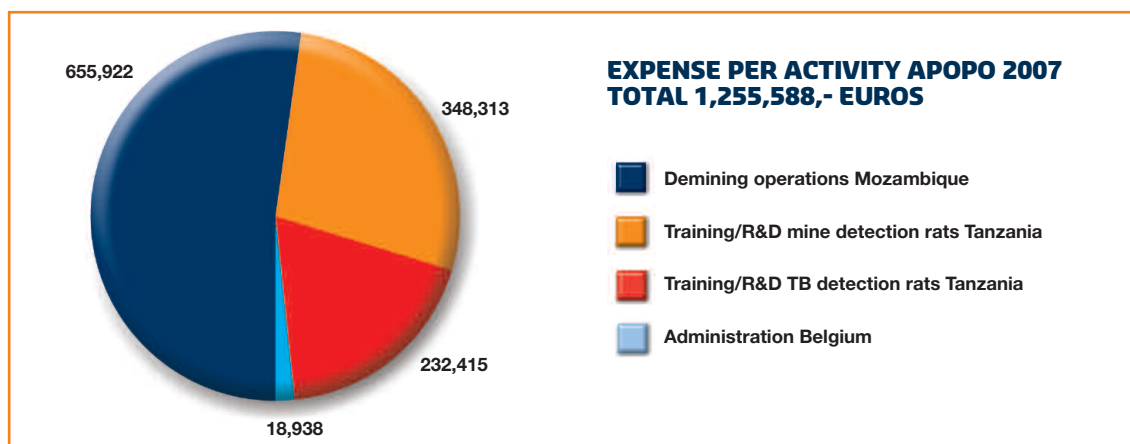
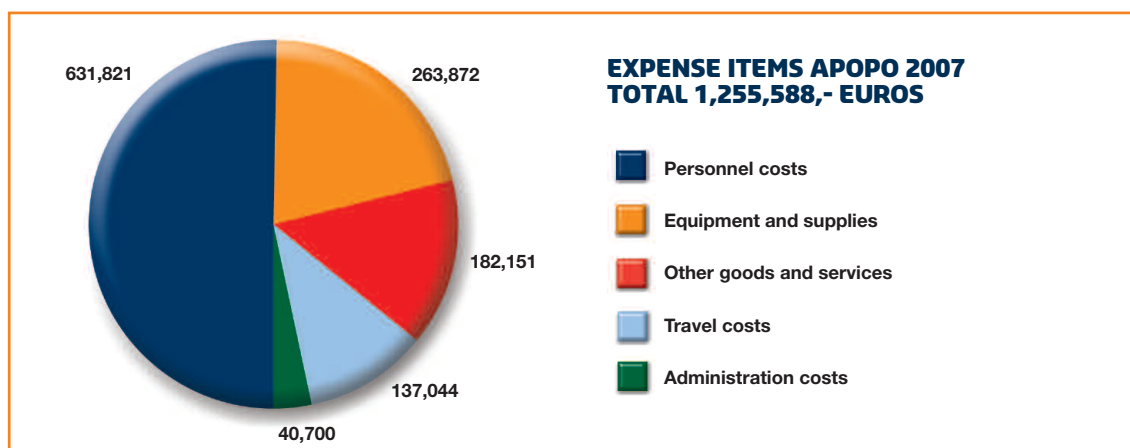
### 3.4.2. Revenue

The graph below presents the total revenue of APOPO for the year 2007.



### 3.4.3. Expenditures

The graphs below present the expenditures of APOPO in 2007, respectively per expense category and per activity / geographical spending.



### 3.4.2. Assets and liabilities

ASSETS AND LIABILITIES	31-12-2007
Fixed assets	0,00
Payment in advance	0,00
Cash	778.182,70
Other receivables	4.581,48
Deferred Charges and accrued income	18.765,98
<b>Total Assets</b>	<b>801.530,16</b>
Fnds	328.046,34
Loss carried forward	-28.963,75
Long Term Debts	0,00
Other payables	0,00
Current Liabilities	1.738,15
Accrued Charges & deferred income	500.709,42
<b>Total Liabilities</b>	<b>801.530,16</b>

## 3.5 CONTACTS

### APOPO Board members

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Prof. Dr. Josse Van Steenberge, Vice-President  
Prof. Dr. Ron Verhagen, Chief-Scientist

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