Côte d'Ivoire

Avian Influenza Vaccination and Surveillance Strategy

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OSRO/GLO/601/SWE (SFERA)
Executive summary

The mission to Côte d’Ivoire had the objective to set up the vaccination and surveillance strategies. The budget for these activities has been elaborated and the funding sources identified (OSRO/IVC/603/EC and OSRO/GLO/504/MUL). This strategic vaccination will carried out from February to July 2007. Considering the worldwide situation with regard to HPAI spread, the specific situation in the sub-region and the pressures from the poultry industry, a continued strategic vaccination in order to protect Côte d’Ivoire poultry flocks until the situation has improved needs to be evaluated. Therefore, once the present vaccination round will start discussions between DVS and stakeholders should envisage the following issues:

1- Recommendations

(i) Vaccination
- Link rapid/improved vaccine delivery mechanisms to effective monitoring of the vaccination strategy
- Evaluate further options for the vaccination strategy such as the introduction of Trovac vaccination at hatchery level for broiler and pullet day old chicks in order to reduce the logistical load of the vaccination program
- Consider the possibility of a field trial proposed by Merial for the use of Trovac in day old pullets followed by booster vaccination with the inactivated vaccine
- Improve the services for flock screening through improved coordination between the laboratory and the requesting farms and the timely communication of laboratory results
- Set up of standard operating procedures (SOP) and operational plans including cooperation and coordination of all involved services

(ii) Laboratory
- Improve the speed of information flow between laboratory and DVS e.g. through the use of email based notifications of results
- Enhance the capacity of the laboratory through additional skilled technicians to ensure the rapid processing of samples

(iii) Training
- Train field staff in outbreak containment measures (culling procedures, bio-safety, personal protection etc)
- Train veterinary border posts and field staff in correct use of rapid antigen detection kits

(iv) DVS funding strategy
- Establishment of an animal health fund within the DVS managed by the Director of veterinary services
- Identification of funding sources and mechanisms to feed the animal health fund
- Description of activities to be performed by the DVS
- Definition of the management procedures associated to the animal health fund
- Elaboration of annual draft budgets for the defined activities to be implemented yearly by the DVS
- Earmarking of funds for compensation within the animal health fund for rapid disbursement

(v) Awareness and communication
- Design, produce and broadcast short TV spots on improved bio-security at farm level

(vi) Other recommendations
• Carry out a census and mapping of poultry farms/poultry population

2 - FAO could provide further technical assistance to Côte d’Ivoire on the following areas:

• Implementation of the field trial with Merial
• Training activities for field staff and veterinary border posts staff
• Progressively adapt the vaccination strategy
• Setting up standard operational procedures and operational plans including cooperation and coordination of all involved services
• Establishment of draft budget lines setting and definition of activities to be performed by the DVS
• Animal health fund activities’ definition and financial management at DVS level
• Design and assist regarding technical content of short TV spots on improved bio-security at farm level
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### Acronyms

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<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADB</td>
<td>African Development Bank</td>
</tr>
<tr>
<td>AHF</td>
<td>Animal Health Fund</td>
</tr>
<tr>
<td>AVPPCI</td>
<td>Association des Vétérinaires Privés Praticiens de Côte d’Ivoire</td>
</tr>
<tr>
<td>CVO</td>
<td>Chief Veterinary Officer</td>
</tr>
<tr>
<td>DVS</td>
<td>Department of Veterinary Services</td>
</tr>
<tr>
<td>ECU</td>
<td>Emergency Coordination Unit of FAO</td>
</tr>
<tr>
<td>EC</td>
<td>European Commission</td>
</tr>
<tr>
<td>FAO</td>
<td>Food and Agriculture Organisation</td>
</tr>
<tr>
<td>HPAI</td>
<td>Highly Pathogenic Avian Influenza</td>
</tr>
<tr>
<td>IM</td>
<td>Intramuscular</td>
</tr>
<tr>
<td>IPRAVI</td>
<td>Interprofession Avicole Ivoirienne</td>
</tr>
<tr>
<td>MIPARH</td>
<td>Ministère de la Production Animale et des Ressources Halieutiques</td>
</tr>
<tr>
<td>MoEF</td>
<td>Ministère de l’Economie et des Finances</td>
</tr>
<tr>
<td>OIE</td>
<td>Office International des Epizooties</td>
</tr>
<tr>
<td>PACE</td>
<td>Pan African Control of Epizootics</td>
</tr>
<tr>
<td>PVS</td>
<td>“Performance, Vision, Strategy”</td>
</tr>
<tr>
<td>SC</td>
<td>Subcutaneous</td>
</tr>
<tr>
<td>ToT</td>
<td>Training of Trainers</td>
</tr>
</tbody>
</table>
1 Introduction

1.1 Background

In May 2006, several HPAI outbreaks were recorded in traditional poultry and wet markets in several communes within the district of Abidjan. At that time the whole district of Abidjan had been declared infected.

Abidjan and its surroundings are high density areas for commercial poultry, thus increasing the risk of virus introduction into the commercial sector. Considering this situation, the Chief Veterinary Officer (CVO) and the Ministry of Animal Production (MIPARH) decided, in consultation with FAO and PACE (see mission reports of A.Tripodi and A.Riviere-Cinnamond from May 2006), to vaccinate the valuable breeding and laying stock and all poultry in Abidjan.

No exact numbers of poultry being available, the numbers of poultry in Abidjan district had been estimated at 5 millions. The number of doses was calculated on the basis of this estimation. Therefore, given 2 vaccinations per bird in 5 million birds plus an additional 2 millions as emergency stock for eventual outbreaks in other areas, the total number of doses amounted to around 12 millions. These doses were shipped at the beginning of June in two batches, one expiring in March and the other in May 2007. The Government has given import clearance for Gallimune (H5N9) and Trovac (recombinant fowl pox vectored) vaccines.

In June 2006, a “training for trainers” (ToT) session on vaccination skills was organised by Merial with assistance of FAO for 60 participants. Subsequently, 174 vaccinators were trained and logistics regarding the vaccination carefully planned with the DVS and Bingerville laboratory (see mission report of M. Carles, June 2006).

A first vaccination round started in July 2006 at the “km 17” in Adiopodoumé commune (Abidjan) covering 9011 birds. Vaccinators were paid by DVS given that during that period the DVS still had funds from the annual budget lines allocated to the service activities. However, funds were depleted and an advance payment was requested by the CVO to the “régie” budget holder (Ministry of Finance staff based at the MIPARH, further explanation in section 4.1). Since vaccination had not been foreseen in the annual budget lines of the national contingency plan, this request was refused and jeopardised the advancement of the whole campaign. Additionally, the toxic waste crisis in September 2007 led to a reallocation of emergency funds which were previously allocated to HPAI. As a consequence, there were no funds available neither at the DVS level nor at the Ministry of Economy and Finance to be allocated to the vaccination campaign.

Through June to November 2006 the HPAI epidemiological situation changed and no more outbreaks were recorded. However, in November 2006 one case was confirmed in Abatta village in Bingerville (Abidjan). Mortality in a small holder farms was linked to an uncontrolled introduction of turkeys from Burkina Faso some days before. This highlights the difficulties of the transport control in the containment of HPAI virus spread.

All sector 1 farms (i.e. parents stock) and their integrated farms have been vaccinated twice by the farm technicians. Until present, only SIPRA, the main integrated hatchery, has imported 500,000 doses of Trovac at their costs which will expire in July 2007. This stock has been ordered as an emergency stock in case of outbreaks.
1.2 Objectives of the mission

The objectives of the joint mission between AGAH and AGAL in Côte d’Ivoire were to:

- Technically assist the Government of Côte d’Ivoire in finalising the HPAI vaccination strategy and start implementing the first round of vaccination, and in this context technically assist the involved technical services in designing a pre and post-surveillance protocol and a consistent awareness campaign.
- Technically assist the Veterinary Services in designing an epidemiological surveillance protocol.
- Develop a budget in order to evaluate the costs of the proposed vaccination campaign. Management performance indicators will be defined and the necessary data collection will be designed in order to monitor and evaluate the efficiency of the proposed vaccination campaign\(^1\) and suggest funding sources.
- Present to the Ministry of Animal Production options and mechanisms to improve timeliness in the release of compensation funds to farmers.
- Assess the feasibility of establishing an animal health fund within and managed by the Department of Veterinary Services to improve effectiveness of animal disease control and prevention. Possible funding sources for the fund will be identified, administrative capacity determined and the most appropriate management procedures developed. The activities financed through this fund will include prevention and control of which compensation would be a part. The fund would be available for further HPAI outbreaks and control measures and ideally for other transboundary diseases. Previous experience of fund management within the Veterinary Services of Côte d’Ivoire will be gathered.
- Identification of training needs of government officials in the Ministry of Animal Production on technical, socio-economic and administration.

2. Vaccination campaign

2.1 Rationale

Several factors were taken into account when evaluating the reasons for the upcoming vaccination in Côte d’Ivoire:

- The epidemiological situation in the sub-region (especially Nigeria);
- The unclear situation in some neighbouring countries (which were previously infected);
- The unofficial trade of traditional poultry (which main flux ends in Abidjan); and
- The difficulties to enforce transport controls.

Côte d’Ivoire needs to ensure the protection of its flocks until this situation has improved.

2.2 Objectives

The objectives of the vaccination campaign are:

- To protect Côte d’Ivoire’s poultry population and thus to protect Côte d’Ivoire’s human population from the infection of the H5N1 virus.
- To avoid market shocks in the already fragile poultry sector.

\(^1\) Data generated will be used in the evaluation of the campaign in order to improve future vaccination campaigns. This would be a future activity and use models being developed by AGAL on vaccination costs and cost-effectiveness.
2.3 Strategy
The vaccination strategy for the next semester has been discussed with all stakeholders and takes into account the still available around 10 million doses of Gallimune vaccines for a rapid vaccination of the poultry flocks. This will give some time to adapt the vaccination strategy according to the epidemiological situation, and to strengthen the involvement of the private sector and the improved distribution of vaccines.

a) Vaccine used:
H5N9 inactivated vaccine, strain A/Turkey/Wisconsin/68
Commercial name: Gallimune Flu H5N9
Company: Merial
Packaging: 300 ml (1000 doses)

b) Sectors vaccinated
The vaccination will include sector 1, 2 and 3 and small holders with confined traditional poultry around vaccinating farms.

Sector 4 is not being included due to the following reasons:
- satisfactory vaccine coverage of 60-80% of the scavenging birds population cannot be ensured due to the steadily incoming new birds mainly from the North and Burkina Faso
- implementation capacity at field level jeopardises feasibility and effectiveness
- taking into account that the estimated amount of traditional poultry in Côte d’Ivoire is of 22 million and that these would need to be vaccinated at least 4 times a year to ensure a minimum level of coverage in these flocks, if we consider that for the period from February to July 2007 2 vaccination rounds will be needed. Since this sector falls under the “mandat sanitaire” the cost per bird vaccinated is of 30 FCFA excluding the vaccine cost. The total amount would then be of 2.93 million USD from February to July 2007 excluding vaccine cost.

c) Species:
- chicken including breeders and layers. Recommendation to vaccinate broilers
- in the confined smallholder sector: chicken, ducks, turkeys, guinea fowls

d) Vaccination protocol:
The vaccine dose for one shot is 0.3 ml
No sentinel birds are planned due to non acceptance by the producers.

<table>
<thead>
<tr>
<th>categories</th>
<th>age of vaccination</th>
<th>way of administration</th>
<th>comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>pullet - breeders from 7 days of age onwards</td>
<td>D1</td>
<td>SC</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>booster after four weeks</td>
<td>SC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>booster two weeks before the onset of laying period</td>
<td>IM</td>
<td></td>
</tr>
<tr>
<td>pullet - layers (from 7 days of age onwards)</td>
<td>D1</td>
<td>SC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>booster after four weeks</td>
<td>SC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>booster two weeks before the onset of laying period</td>
<td>IM</td>
<td></td>
</tr>
</tbody>
</table>
### Laying Period

<table>
<thead>
<tr>
<th>Adult Breeders/Layers until 50 weeks of age</th>
<th>D1</th>
<th>SC until 12 weeks IM after 12 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Booster after four weeks IM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Broilers between 7 and 30 days old
  - One single injection SC
  - A vaccination after 30 days is not recommended due to risk of bruises at the injection site and as the necessary immune level will not be reached before marketing

#### e) Withholding period before marketing: None

#### f) Areas of vaccination:
- Poultry farms in high density production areas and on the main transport roads nationwide (Abidjan, Moyen Comoé, Toumodi, Yakro, Daloa, Soubré, San Pedro, Bouaké, Korhogo)
g) Vaccinators
- Sector 1, 2 and 3: Vaccination will be carried out by farm-own technicians or technicians who are already following up the farms for other regular vaccination programs, debeaking and technical advise.
- For farms in sector 3 under 1000 birds/for smallholders with confined traditional poultry: Vaccination will be carried out by veterinarians or technicians under government contract ("mandat sante") with a payment of 30 FCFA (0.06 USD) per vaccinated bird.

h) Vaccine storage and distribution
The vaccines are stored and distributed through three veterinary drugs wholesalers (Proveto, Pharmavet, Codivet) under the overall control of the DVS.

i) Duration of the vaccination
The duration for the current vaccination campaign will be from February to July 2007. As vaccines stocks are expiring in May and some new replacements are planned until July, a new order of around 2.8 million doses of vaccine will be necessary in order to ensure the full vaccination of the layers. During this time period dialogue among stakeholders help to amend and adjust the vaccination strategy.

k) Monitoring
The DVS will receive weekly information from the wholesalers regarding the vaccine distribution. Monitoring through returning back empty vaccine bottles has not shown to be effective. Additionally, the local veterinary stations will randomly visit farms to assess if and how vaccination has been carried out and post-vaccination surveillance will be carried out following the protocol in section 3.1.
Vaccination records are available and will have to be filled out by the vaccinators and co-signed by the farmer before submitting them to the DVS.

l) Cost of the vaccine:
Following FAO’s suggestion of establishing a revolving fund for vaccines a special bank account has been set up at the MIPARH. The vaccine selling price was originally set at 20 FCFA/dose (= purchase price for FAO) for poultry farms of more than 1000 birds and vaccine available for free for small farms with sizes under 1000 birds.

In order to support poultry farmers who are still suffering from the economic losses of May 2006 outbreaks, the vaccine price has been reduced to 10 FCFA/dose.

The issue of giving vaccines for free has been raised several times from different sides, but the option has not been adopted by the DVS and the MIPARH as this would jeopardise any subsequent effort to have producers contributing financially to the vaccine and the vaccination campaign.

As the Government will not be able to bear the costs of a continuing vaccination effort, producers will have to carry the costs of the vaccines by themselves by integrating the HPAI vaccine into their regular vaccination program if the vaccination efforts are to be continued.

3. Surveillance
The surveillance protocols have been designed taking into account feasibility at field level and capacity at laboratory level.
3.1  **Pre and post vaccination surveillance**

3.1.1  **Objectives**
- To assess the effectiveness of vaccination through serologic testing using HI H5
- Flock screening on eventual virus circulation during the period covered by immunity conferred by the vaccination

3.1.2  **Methods**
Screening will be performed through continuous clinical monitoring combined with serological analysis conducted before vaccination, after the first booster vaccination and at the end of the production cycle. Parent flocks will undergo a tighter sampling protocol (see table below). Serologic analysis will be performed using H5 HI which will be combined with ELISA N1 (or immunefluorescence DIVA test in OFFLU laboratory) for samples taken at the end of the production cycle. As previously mentioned, sentinel birds are not planned as this approach has been refused by the producers.

3.1.3  **Sampling protocol**

<table>
<thead>
<tr>
<th>Type of farms and sectors</th>
<th>Number of farms</th>
<th>Number of samples/farm</th>
<th>Areas ¹</th>
<th>Timing of sampling</th>
</tr>
</thead>
</table>
| PARENTS Sector 1          | 5 (= all)       | 30 (done by technicians on the farm and sent to laboratory) | Abidjan and Agnibilékrou | • D0  
  • D30 (during 1st boost);  
  • D60,  
  • 2 weeks before laying period (at 2nd boost)  
  • spent hens |
| LAYERS Sector 2           | 35              | 30                     | Abidjan and surroundings (18)  
  Agnibilékrou (11)  
  Toumodi- Yakro-Daloa (3)  
  Soubré - San Pedro (2)  
  Bouaké –Korhogo (1) | for pullets:  
  • D0  
  • D60 (1 month after 1st boost)  
  • spent hens  
  for adults:  
  • D0  
  • spent hens |
| LAYERS Sector 3           | 35              | 30                     | Abidjan and surroundings (18)  
  Agnibilékrou (10)  
  Toumodi- Yakro-Daloa (3)  
  Soubré - San Pedro (2)  
  Bouaké –Korhogo (2) | for pullets:  
  • D0  
  • D60 (1 month after 1st boost)  
  • spent hens  
  for adults:  
  • D0  
  • spent hens |

¹  Note: As Abidjan and Agnibilékrou are the main producing centres a big proportion of the samples will be taken in these two areas compared to the other regions with less density.
3.2 **Epidemiosurveillance**

3.2.1 Objectives

- To check for occult or overt virus circulation in traditional poultry in sector 4 at the time of the vaccination program*
- To check for virus circulation in bird markets

* Virus search will also be carried out on traditional chickens without or mild clinical signs since it has been suggested in other countries of the continent that traditional breeds might be more resistant to H5N1 than industrial breeds

3.2.2 Sampling protocol

- **For virus circulation in Sector 4**

  Sampling on scavenging poultry will take place in the locations where vaccination has been carried out in sectors 1, 2 and 3

<table>
<thead>
<tr>
<th>Number of swabs / village</th>
<th>Number of villages/location</th>
<th>Areas</th>
<th>Timing</th>
</tr>
</thead>
</table>
| 20-30                     | 2-3                        | • Abidjan and surroundings  
                            |                             | • Agnibilékrou  
                            |                             | • Toumodi- Yakro-Daloa  
                            |                             | • Soubré - San Pedro  
                            |                             | • Bouaké –Korhogo  
                            | Same day after having sampled the farms for the pre/post vaccination surveillance |

> Depending on the consensus of the population

- **For market surveillance**

  Weekly clinical surveillance will be carried out by district or municipal veterinary staff all over the national territory. In case of suspicion, swabs (or whole animals) will be taken and sent to the Bingerville laboratory for analysis.

  Sampling will take place in selected markets by laboratory staff/veterinary staff in the following areas on a monthly basis:

  - Abidjan as main end user market
  - Korhogo, Bouaké, Ouangolo, Ferké (North): markets where traditional poultry from the North and neighbouring countries are gathered before being sent to Abidjan and other markets.

<table>
<thead>
<tr>
<th>Location</th>
<th>number of markets</th>
<th>number of swabs</th>
</tr>
</thead>
</table>
| Abidjan  | total of 6 markets:  
            4 main markets (Treichville, Yopougon, Adjamé, Abobo)  
            + random two other markets | 20 to 30 swabs/market to be pooled by 5 |
| Korhogo  | 1 main market      | 30 to 50 swabs to be pooled by 5 |
• **Border surveillance**

Border surveillance will be carried out through 7 border inspection posts. The capacity of these posts (2 staff/post) will need to be strengthened through training and basic material such as rapid antigen detection kits, PPE, transport boxes. The posts will report monthly to the DVS and alert in case of suspicions. Sick poultry will be quarantined and samples taken for rapid screening and analysis at Bingerville laboratory.

### 3.3 Awareness raising and communication

Awareness raising for the vaccination will be carried out by IPRAVI in collaboration with the DVS through awareness meetings with farmers in the areas of poultry production. During these meetings the modalities of vaccination and surveillance will be explained. The meetings will start beginning of February 2007 and will be carried out in the different production zones. During the awareness meetings leaflets with explanations on modalities of vaccination and on the post-vaccination surveillance will be distributed to the farmers. Local journalists will be invited to the meetings to support the effort and inform the public of the efforts made.

### 3.4 Costs of vaccination, surveillance and awareness strategies

<table>
<thead>
<tr>
<th></th>
<th>FCFA</th>
<th>USD</th>
<th>Funding source</th>
</tr>
</thead>
<tbody>
<tr>
<td>vaccination (material and vaccine*)</td>
<td>93,959,000.00</td>
<td>208,797.78</td>
<td>OSRO/IVC/603/EC and OSRO/GLO/504/MUL¹</td>
</tr>
<tr>
<td>surveillance</td>
<td>37,804,590.00</td>
<td>84,010.20</td>
<td>OSRO/IVC/603/EC and OSRO/GLO/504 MUL¹</td>
</tr>
<tr>
<td>total cost of « mandat sanitaire »</td>
<td>30,000,000.00</td>
<td>66,666.67</td>
<td>OSRO/GLO/504 SWE²</td>
</tr>
<tr>
<td>awareness campaing</td>
<td>14,875,000.00</td>
<td>33,055.56</td>
<td>OSRO/IVC/603/EC</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>176,638,590.00</td>
<td>392,530.20</td>
<td></td>
</tr>
<tr>
<td>Cost recovered from vaccine selling</td>
<td>84,000,000.00</td>
<td>186,666.67</td>
<td></td>
</tr>
<tr>
<td>Cost per “ mandat sanitaire”</td>
<td>900,000.00</td>
<td>2,000.00</td>
<td></td>
</tr>
</tbody>
</table>

The cost of vaccination campaign, surveillance (pre-, post- and epidemiological) strategy and awareness campaign were calculated for the period February-July 2007. The summary cost table is the following:

¹ already shipped items
² earmarked funds

A detailed explanation of the costs for each activity may be found in the following file:
Cost calculations per bird are the following:

- Cost per bird vaccinated = 0.036 USD/bird
  (including cost of vaccine, material e.g. syringes etc, cold chain, government supervision, EXCLUDING technician costs)

- in Commercial farm:
  0.036 USD/bird + 0.02 USD (estim. cost of technician / bird)
  = 0.056 USD/bird

- in Semi-commercial farm:
  0.036 USD/bird + 0.06 USD ("mandat sanitaire" per bird)
  = 0.096 USD/bird

(Calculations for period Feb-July 2007)

- Cost per bird vaccinated including costs of pre/post vaccination (i.e. sero-surveillance) and epidemiological monitoring (including cost of vaccine, material for vaccination and lab/epid. e.g. syringes, vials, reagents, diagnostic kits etc, cold chain, government supervision of vaccination and pre/post vaccination and epidemiological monitoring, EXCLUDING technician costs):
  = 0.051 USD/bird

- in Commercial farm:
  0.051 USD/bird + 0.02 USD (estim. cost of technician/bird)
  = 0.071 USD/bird

- in Semi-commercial farm:
  0.051 USD/bird + 0.06 USD ("mandat sanitaire" per bird)
  = 0.111 USD/bird

(Calculations for period Feb-July 2007)

4. Fund management at DVS level

Until the year 2000 there was an animal health fund (AHF) directly managed and administered at the DVS level. Funds allocated to the animal health fund came not only from budget lines allocated yearly through draft budgets for the year to come, but also from taxes and fees associated to animal health (i.e. certificates, movement controls, slaughterhouse etc.). The amount collected into this animal health fund was used to perform animal health

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2 It was not possible to obtain an estimation of the quantity the animal health fund used to have.
routine activities as well as allowed the DVS to cope with (small) emergency situations. Funds were allocated to activities and disbursed following the Director of Veterinary Services’ and the financial manager’s signatures.

### 4.1 Current budget management procedures

Following international institutions guidelines, all budgets held in Côte d’Ivoire’s Ministries were centralised at the Ministry of Economy and Finance (MoEF) level. Thus, currently all funds allocated to animal health activities are centralised and managed at the MoEF. The procedures needed to allocate funds for animal health activities are two: (i) “Ligne de prestation de services à travers la Régie” and (ii) annual budget lines.

#### 4.1.1 « Ligne de prestation de services à travers la Régie »

The « régie » system is based on establishing a direct link between the MIPARH and the Treasury. It aims at speeding up the fund disbursement process. It consists on a person designated from the MoEF being based at the MIPARH overseeing the financial activities of the later. The maximum amount of the “régie” is 10 million FCFA annually (~ 20,000 USD). However the “régie” is generally divided into smaller quantities called “lignes de prestation de services” (allowance lines) at 2.5 million FCFA each allowance line (~ 5,555 USD).

A “ligne de prestation de services” may be created for an item needed at the DVS level, as it was the case during the HPAI outbreak. However, for the creation of such line the designated person from the Treasury needs to be in accordance, which is not often the case as experience has shown to the DVS. If accepted, funds are only requested to the MoEF after of the animal production minister’s cabinet and the Treasury designated person’s signatures.

#### 4.2.2 Annually allocated budget lines

Annual budget lines are allocated to the DVS after presentation to the MoEF the draft budget of the activities that need to be performed by the DVS during the following year.

As an example, the amount per activities allocated to the DVS for the activities in 2006 (expected to be the same in 2007) was the following (financial year ends on December 31st):

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>AMOUNT FCFA</th>
<th>AMOUNT USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material and technical tools other than office</td>
<td>1,500,000.00</td>
<td>3,333.33</td>
</tr>
<tr>
<td>Biomedical material</td>
<td>10,000,000.00</td>
<td>22,222.22</td>
</tr>
<tr>
<td>Staff remuneration</td>
<td>17,150,000.00</td>
<td>38,111.11</td>
</tr>
<tr>
<td>Other top ups</td>
<td>2,550,000.00</td>
<td>5,666.67</td>
</tr>
<tr>
<td>Purchase of small material, office furniture and documents</td>
<td>2,000,000.00</td>
<td>4,444.44</td>
</tr>
<tr>
<td>Staff contribution</td>
<td>2,400,000.00</td>
<td>5,333.33</td>
</tr>
<tr>
<td>Fuel purchase</td>
<td>5,000,000.00</td>
<td>11,111.11</td>
</tr>
<tr>
<td>Purchase of small material and technical furniture</td>
<td>3,000,000.00</td>
<td>6,666.67</td>
</tr>
<tr>
<td>Purchase of pharmaceutical products and veterinary drugs</td>
<td>11,800,000.00</td>
<td>26,222.22</td>
</tr>
<tr>
<td>Remuneration of external allowance</td>
<td>1,700,000.00</td>
<td>3,777.78</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>--------------</td>
<td>---------</td>
</tr>
<tr>
<td>Radio-communication consumption subscription</td>
<td>1,500,000.00</td>
<td>3,333.33</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>57,100,000.00</strong></td>
<td><strong>126,888.89</strong></td>
</tr>
</tbody>
</table>

Each of these budget lines specifies in what items the funds are to be spent. The case of HPAI in May 2006 and the need to rapidly respond to the crisis pointed out the fact that yearly allocated budget lines are not suitable to deal with unexpected events.

If eventually the DVS needs to make a request which is out of the yearly allocated budget lines, it needs to address the Treasury. The procedure to undertake is the following:

1- Director of veterinary services writes the invoice ("proforma")
2- The invoice is sent to the "Direction des Affaires Administratives et Financières" (DAAF) within the MIPARH
3- The DAAF evaluates the request. If validated, DAAF issues the purchase order ("bon de commande") and the payment order
4- The payment order is directed to the Treasury at the MoEF
5- The MoEF evaluates the payment order and in relation of funds availability accepts or rejects the request.

However, the path to follow for such a request has to be executed ex-ante since the procedure takes between 2.5 and 3 months, something which in the case of emergencies such as HPAI is not suitable.

### 4.2 Budget management procedures associated to HPAI

HPAI in Côte d'Ivoire has received attention from (i) the European Commission with FAO as implementing partner (OSRO/IVC/603/EC) and (ii) the African Development Bank. In addition, (iii) a revolving fund has been created which will be fed with the funds collected through the selling of HPAI vaccines. The following are the procedures that will be put in place to manage the up coming funds.

#### 4.2.1 EC- FAO fund management

The EC funded FAO project amounts 734,533 USD. This project mainly focuses on HPAI surveillance and communication. The funds will not be directly disbursed to and managed by the DVS but these activities will be performed by the FAO in Côte d'Ivoire. Reasons for that decision by the EC lie in the current lack of financial management capacity at the DVS level (however this should be overcome shortly through the ADB funds experience, as explained next). This project had been prepared before the outbreaks in May 2006 and needed to be readapted to the changes of the situation in Côte d'Ivoire. An amended version has been prepared based on the findings of this mission and will have to be submitted to the EC delegation.

#### 4.2.2 African Development Bank fund management

The agreement between Côte d’Ivoire and the African Development Bank is in the final stage of signature. The amount expected to be provided by the ADB is of 300,000 USD. These funds are earmarked to the DVS and will be managed and allocated directly by the Director of Veterinary Services (following specific request from the ADB). Management of the ADB funds will be similar to the one used before centralisation of all financial activities in the Ministry of Economy and Finance in 2000.
4.2.3 Revolving fund

As previously mentioned in the vaccination strategy section 2.3, it is expected that although subsidised the vaccine will cost to farmers 10 FCFA per unit until July. The funds collected from the vaccine payment until May are expected to be around 187,000 USD. These funds are expected to be used to buy more vaccine doses for the vaccination campaign to go until end July 2007. The revolving fund will be held at the DVS level and directly managed by the Director of the Veterinary Services, thus adding to the financial management capacity generation of the ADB funds.

4.3 Future strategy for funding animal health activities

The DVS is currently undergoing a review of the Service through the OIE PVS evaluation (“Performance, Vision, Strategy”). The aim of the evaluation is to assess the strengths and weaknesses of the current DVS and reorganise the management of the department in a way which will lead to more efficient and cost-effective outputs. Effectiveness of veterinary services is closely linked to fund management and fund disbursement. Indeed, a key element in the new strategy planned by the DVS is the funding mechanism. The new strategy points out the following sources:

- **Budget lines**: these lines will be associated to yearly activities which will be planned and presented through a draft budget to the MoEF for evaluation of the amount requested. This budget lines will be associated to the activities in which funds will be disbursed. These activities will be defined after the PVS evaluation exercise. (As a reference, before 2000 when a fund existed at the DVS level, there were at least 6 budget lines associated to an amount of 20 to 30 million FCFA each (~45,000-67,000 USD)).

- **Earmarked taxes**: currently taxes associated to livestock exist, but they are allocated in their totality to the Treasury. As an example, taxes exist in poultry imports at 1000 FCFA/kg. This tax used to be lower (500 FCFA/kg) but after the start of the HPAI crisis in May 2006, in order to protect the poultry market from imports the tax was raised. Currently 10 million FCFA (~23,000 USD) have been raised through that method. Nonetheless other taxes exist in poultry (e.g. tax over offal etc.) and also in other livestock sectors. These taxes (or at least a percentage of the total raised) could be earmarked towards the animal health fund at the DVS. This source of funds will have the advantage of not expiring at the end of each financial year. Thus maintaining a certain level of funds within the DVS to enable rapid reaction in case of emergency. The set of funds collected through this mechanism will represent the “Fond de Développement de l'Elevage” (Livestock Development Fund) and will be used within the livestock sector. However, currently discrepancies exist with the MoEF over earmarked taxes.

- **Donor funding**: as previously mentioned ADB funds are going to be allocated to the DVS. Other funding sources could use the same pattern. The management of the ADB funds exposed in section 4.2.2 will represent a trial of what would be the management of the animal health fund at the DVS level in the future.

Although at this stage it was not possible to obtain data or an estimation of the expected capacity of the animal health fund at DVS level in monetary terms (given that activities need to be defined) the arguments for its creation are being elaborated by the DVS in order to be presented at MoEF level.

The following chart presents the organisation of the animal health fund.
4.4 Compensation

The first compensation strategy was implemented on the first mission to Côte d’Ivoire during the first outbreak of HPAI (see mission report May 2006, Riviere-Cinnamon). At the period of the outbreak compensation was provided to traders whose poultry was culled one week after the culling. From June until November there were no outbreaks thus no culling and compensation were required. In November however there was one outbreak in Abatta where 19 poultry were culled. Unlike the first compensation episode, the second took one month. The stated reason for the delay in payment was the lack of commitment of financial resources to compensation and the lack of adequate mechanisms to increase the speed for fund disbursement at Treasury level.

Currently compensation is not considered within the budget lines allocated to the DVS. However, compensation is seen as a crucial tool for farmers to collaborate with the containment of HPAI outbreaks. Thus, as seen in the chart above, it is recommended to establish within the animal health fund a line of activity dedicated to compensation so as to enable the DVS to promptly react and compensate farmers when culling occurs in case of HPAI.

5. Recommendations

Considering the worldwide situation with regard to HPAI spread, the specific situation in the sub-region and the pressures from the poultry industry, a continued focussed vaccination in order to protect Côte d’Ivoire poultry flocks until the situation has improved needs to be evaluated.

Therefore, once the present vaccination round will start discussions between DVS and stakeholders should envisage the following issues:

(i) Vaccination
• Link rapid/improved vaccine delivery mechanisms to effective monitoring of the vaccination strategy
• Evaluate further options for the vaccination strategy such as the introduction of Trovac vaccination at hatchery level for broiler and pullets day old chicks in order to reduce the logistical load of the vaccination program
• Consider the possibility of a field trial proposed by Merial for the use of Trovac in day old pullets followed by booster vaccination with the inactivated vaccine
• Improve the services for flock screening through improved coordination between the laboratory and the requesting farms and the timely communication of laboratory results
• Set up of standard operating procedures (SOP) and operational plans including cooperation and coordination of all involved services

(ii) Laboratory
• Improve the speed information flow between laboratory and DVS e.g. through the use of email based notifications of results
• Enhance the capacity of the laboratory though additional skilled technicians to be ensure the rapid processing of samples

(iii) Training
• Train field staff in outbreak containment measures (culling procedures, bio-safety, personal protection etc)
• Train veterinary border posts and field staff in correct use of rapid antigen detection kits

(iv) DVS funding strategy
• Establishment of an animal health fund within the DVS managed by the Director of veterinary services
• Identification of funding sources and mechanisms to feed the animal health fund
• Description of activities to be performed by the DVS
• Definition of the management procedures associated to the animal health fund
• Elaboration of annual draft budgets for the defined activities to be implemented yearly by the DVS
• Earmarking of funds for compensation within the animal health fund for rapid disbursement

(v) Awareness and communication
• Design, produce and broadcast short TV spots on improved bio-security at farm level

(vi) Other recommendations
• Carry out a census and mapping of poultry farms/poultry population

FAO could provide further technical assistance to Côte d'Ivoire on the following areas:
• Implementation of the field trial with Merial
• Progressively adapt the vaccination strategy
• Training activities for field staff and veterinary border posts staff
• Setting up standard operational procedures and operational plans including cooperation and coordination of all involved services
• Establishment of draft budget lines setting and definition of activities to be performed by the DVS
• Animal health fund activities’ definition and financial management at DVS level
• Design and technical content of short TV on improved bio-security at farm level
# Annex 1 - Timetable

<table>
<thead>
<tr>
<th>Date</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>14/01/07</td>
<td>arrival in Abidjan</td>
</tr>
<tr>
<td>15/01/07</td>
<td>briefing with Emergency Coordination Unit</td>
</tr>
<tr>
<td></td>
<td>meeting with the DVS</td>
</tr>
<tr>
<td>16/01/07</td>
<td>meeting with DVS and LANADA</td>
</tr>
<tr>
<td></td>
<td>meeting with the private veterinarians and their association (AVPPCI)</td>
</tr>
<tr>
<td>17/01/07</td>
<td>meeting with the AI sub-committee for communication</td>
</tr>
<tr>
<td>18/01/07</td>
<td>meeting with the LANADA</td>
</tr>
<tr>
<td>19/01/07</td>
<td>meeting with ALCI (poultry producer)</td>
</tr>
<tr>
<td></td>
<td>meeting at the MIPARH</td>
</tr>
<tr>
<td>20/01/07</td>
<td>work at ECU</td>
</tr>
<tr>
<td>21/01/07</td>
<td>document writing</td>
</tr>
<tr>
<td>22/01/07</td>
<td>work at ECU</td>
</tr>
<tr>
<td></td>
<td>meeting at the DVS with IPRAVI</td>
</tr>
<tr>
<td>23/01/07</td>
<td>meeting at the virology laboratory in Bingerville</td>
</tr>
<tr>
<td></td>
<td>meeting with SIPRA</td>
</tr>
<tr>
<td></td>
<td>meeting with EC evaluator</td>
</tr>
<tr>
<td>24/01/07</td>
<td>meeting with Proveto</td>
</tr>
<tr>
<td></td>
<td>meeting at DVS with EC evaluator</td>
</tr>
<tr>
<td></td>
<td>meeting with IPRAVI</td>
</tr>
<tr>
<td>25/01/07</td>
<td>first debriefing with the DVS</td>
</tr>
<tr>
<td></td>
<td>departure of Ana Riviere</td>
</tr>
<tr>
<td>26/01/07</td>
<td>meeting with the EC Coordination Unit</td>
</tr>
<tr>
<td></td>
<td>work at ECU</td>
</tr>
<tr>
<td>27/01/07</td>
<td>work at ECU</td>
</tr>
<tr>
<td>28/01/07</td>
<td>work at ECU</td>
</tr>
<tr>
<td>29/01/07</td>
<td>work at ECU</td>
</tr>
<tr>
<td>30/01/07</td>
<td>meeting with DVS</td>
</tr>
<tr>
<td></td>
<td>UN agencies meeting at WHO</td>
</tr>
<tr>
<td></td>
<td>débriefing avec la DSV et l'UCU</td>
</tr>
<tr>
<td>01/02/07</td>
<td>briefing with Boubacar Seck</td>
</tr>
<tr>
<td></td>
<td>meeting with private veterinarians and AVPPCI</td>
</tr>
<tr>
<td></td>
<td>work at l'ECU</td>
</tr>
<tr>
<td></td>
<td>departure Astrid Tripodi</td>
</tr>
</tbody>
</table>