



**IPPC ePhyto Solution Business Model  
Options and Recommendations**

**20 June 2018**

**FINAL FORMATTED**

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## **IPPC ePhyto Solution Business Model**

### **Options and Recommendations**

**20 June 2018**

#### **EXECUTIVE SUMMARY**

This report presents options and recommendations developed by TDAF Consulting<sup>1</sup> regarding the Business Model for the electronic Phytosanitary Certificate Solution (ePhyto Solution) currently being developed and tested by the International Plant Protection Convention (IPPC) Secretariat, in partnership with key stakeholders from countries and industry. These recommendations will be presented to the IPPC Commission on Phytosanitary Measures (CPM) in 2019 at its annual meeting, for ratification and implementation. A final business model, which will be developed based upon this report, input from various experts, and lessons learned from the pilot implementation phase of the project, will be developed by the IPPC Secretariat in 2020.

In developing this report, three key cost areas were reviewed in detail and the following per annum estimates made:

➤ Operational	\$ 580,000
➤ Management and Administration	\$ 294,500
➤ Capacity Building	\$ 373,000
GRAND TOTAL	\$1,247,500

The above areas could be funded either jointly or separately, as explained within the report.

Four main business models to cover these costs were considered, namely:

- 1) Funding by the Food and Agriculture Organization (FAO)
- 2) Funding by Donors, including funding support from Lead National Plant Protection Organizations (NPPOs) and or Industry
- 3) Participant Based Funding
- 4) Combination approach.

The recommended approach is to focus initially (i.e. for the first 5 years) on a no-fee total support model inclusive of all the above areas (Operational, Administration and Capacity Building), funded through a Multi Donor Trust Fund to be established by the IPPC Secretariat within FAO. This would greatly facilitate the early establishment of a critical mass of users from a range of countries and would enhance the participation of developing economies in the programme. It would also be administratively simple, would help maintain the current strong momentum of the programme and help ensure its eventual success.

During this 5 year period, further consideration can be given to the longer-term business model, within the context of national strategies to fund the ePhyto Solution and upon a more detailed understanding

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<sup>1</sup> The recommendations and options presented in this report are the views of TDAF Consulting and do not necessarily represent the views or opinions of the IPPC or FAO or any other parties. While every effort was made to produce the most factually correct report, any errors or omissions are the sole responsibility of TDAF.

of the costs of operation and the preferred governance model. The approach to developing the final business model would also take into account lessons learned from the pilot, and could consider separate funding strategies for individual components, such as Capacity Building.

The key recommendations of the report (present by subject area rather than chronologically) are:

#### Funding Model:

- Recommendation 1: Additional research should be undertaken by the IPPC regarding potential direct and indirect benefits of the IPPC ePhyto Solution, including time and cost savings and economic efficiencies. Capacity building requirements should also be more fully elaborated through the Pilot.
- Recommendation 2: A full Business Process Analysis (BPA) of both the NPPO and business processes related to the ePhyto Solution should be undertaken as a priority, as these will set the benchmarks and targets for cost and time enhancements under implementation of the project. The United Nations Business Process Analysis Guide should be used for this purpose, as this is used extensively in the ebusiness area<sup>2</sup>.
- Recommendation 3: A more complete understanding of the total cost of the development, implementation, promotion and management of the ePhyto Solution is required to ensure its ongoing development and enhancement and longer-term success and sustainability.
- Recommendation 20: A Multi Donor Trust Fund (MDTF) should be established as the preferred initial funding mechanism for the ePhyto Solution, covering an initial 5 years and extendable for additional years. An MDTF project document should be prepared by the IPPC Secretariat for this purpose.
- Recommendation 21: The Multi Donor Trust Fund should take an integrated approach, covering all aspects of the programme - operational, administrative and capacity building.
- Recommendation 22: Clearly delineated budget lines, with full accountability and auditing, should be established within the MDTF for each key area, including Administration, Additional Development and Support, and Capacity Building.
- Recommendation 23: The IPPC should use the 5 year MDTF period to review alternative funding options, such as funding by FAO, a Participant Based Funding model or a combined approach. This review should start immediately after the launch of the MDTF, with a preliminary report prepared by end of Year 1 and a final recommendation by the end of Year 2. Mechanisms for the new agreed model should be fully in place before the end of Year 3.
- Recommendation 24: After the initial 5 year MDTF period, capacity building could be separated out, although at least some capacity building funds should remain in the IPPC ePhyto Solution operation and administrative budgets, to provide the IPPC with the necessary flexibility to address capacity issues as they arise.
- Recommendation 16: Key NPPOs and Industry associations could be targeted to solicit support funding for the ePhyto Solution – under any and all of the funding models suggested.
- Recommendation 25: The IPPC should explore options for an external entity to FAO, such as UNOPS, to manage the financial aspects of the ePhyto Solution programme.
- Recommendation 18: Should a future Participant Based Funding Model be considered, a multi-tiered discount structure should be employed, providing low or no charges to special category users such as developing or least developed countries, and significant discounts to large volume users. Further, an annual estimated payment in advance mechanism should be established to reduce administrative overheads.
- Recommendation 19: The IPPC should assist the NPPOs to undertake a review of legal issues regarding charging end-user fees for ePhytos, and transferring such “fees” to IPPC. This review

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<sup>2</sup> See [http://www.unescap.org/sites/default/files/0%20-%20Full%20Report\\_6.pdfv](http://www.unescap.org/sites/default/files/0%20-%20Full%20Report_6.pdfv)

should also consider other mechanisms for transferring funds from NPPOs to IPPC for this purpose.

- Recommendation 17: Under a Participant Based Funding Model, fees could be added to existing fees for issuing a PC by an NPPO.

#### Administration and Management

- Recommendation 7: The IPPC Secretariat should continue to provide the ePhyto Solution Management and Administration function, as the ePhyto Solution will be core to the overall delivery of IPPC Phytosanitary Certificate support services.
- Recommendation 10: The adequacy of the proposed IPPC Secretariat support resources for the ePhyto Solution should be reviewed in relation to the actual tasks to be undertaken.
- Recommendation 8: Programme evaluation and promotion should be included as core elements of the ePhyto Solution programme budget, within the Management and Administration framework.
- Recommendation 15: The IPPC Secretariat should consider making a broader argument to FAO Member States to support the overall approach to the development and implementation of food related electronic certificates in international trade.

#### Support Services

- Recommendation 4: A Business Support Desk should be established, at least for the initial years of the project, to support the NPPOs in the practical operation of the ePhyto Solution.
- Recommendation 6: Consideration should be given regarding the operation and provision of the Business Support Desk, including exploring possibilities for support from Regional Plant Protection Organizations (RPPOs), leading NPPOs and Industry.
- Recommendation 5: Maximum use should be made of on-line tutorials, “Frequently Asked Questions (FAQs)”, user group or community support/chat lines, etc.
- Recommendation 9: A quarterly IPPC ePhyto Solution Newsletter should be launched as soon as possible to keep stakeholders abreast of recent developments and to maintain the positive momentum of the project.

#### Capacity Building

- Recommendation 11: The IPPC Secretariat should establish a dedicated capacity building facility to provide focussed support to selected NPPOs.
- Recommendation 12: An allocation should be made to cover basic equipment requirements (such as a Computer, Printer and Internet connection facilities) in exceptional cases for up to 10 NPPOs per year, where no other sources of funding are available.
- Recommendation 13: The IPPC Secretariat should develop training webinars and on-line videos describing the ePhyto Solution.
- Recommendation 14: The IPPC Secretariat should continue the ePhyto Symposium series and organize a global ePhyto seminar or workshop, at least one every 2 years, to provide training and opportunities for exchange of experiences.

## 1. Introduction and Purpose

The purpose of this report is to present options and recommendations regarding the Business Model for the electronic Phytosanitary Solution (ePhyto Solution) currently being developed and piloted by the International Plant Protection Convention (IPPC) Secretariat, in partnership with key stakeholders from countries and industry. It is intended to guide the IPPC Secretariat in establishing a Business Model for the ePhyto Solution in the short to medium term.

The report is presented in 9 Sections. Following this introduction, Section 2 provides an overview of the IPPC ePhyto Solution while Section 3 details the study requirements from IPPC. Details of key user requirements for the ePhyto Solution identified in the user surveys are presented in Section 4, while Sections 5, 6 and 7 cover the projected benefits and costs associated with implementing the ePhyto Solution. Capacity Building and Technical Assistance issues are covered in Section 7.4. A detailed discussion on the various funding preferences and models to cover these costs is presented in Sections 8 and 9.

The report includes findings from three related studies namely:

- ePhyto Survey Report on National Plant Protection Organizations (NPPOs)
- ePhyto Survey Report on individuals from business that have experience in the use of Phytosanitary Certificates (PCs)
- Report on Industry Organizations delivering related eServices

An initial version of the Business Model report was prepared by the consultants in November 2017 and reviewed at an expert meeting in Geneva on 6 December 2017. Input and suggestions from this meeting, and also from the 3rd IPPC Global Symposium on ePhyto, Kuala Lumpur, in January 2018 have been incorporated into the revised report.

It is noted that the ePhyto Pilots are still ongoing and will not conclude until late 2018. Much additional information will be gathered through these Pilots, including more details on operational costs, business process operations, data volumes and potential direct benefits.

**Recommendation 1:** Additional research should be undertaken by the IPPC regarding potential direct and indirect benefits of the IPPC ePhyto Solution, including time and cost savings and economic efficiencies. Capacity building requirements should also be more fully elaborated throughout the Pilot.

The funding options and proposed business model will be presented to the Commission on Phytosanitary Measures (CPM) in 2019 at its annual meeting for ratification and implementation and a final business model, incorporating data from the Pilot and additional research, will be prepared by early 2020.

## 2. The ePhyto Solution Concept

The Commission on Phytosanitary Measures (CPM), the governing body of the IPPC, at its 10<sup>th</sup> meeting (2014), confirmed its support for the development of an ePhyto Solution that would facilitate the greater adoption of the use of electronic PCs by contracting parties, for plants and plant products moving in international trade. The CPM also supported the IPPC Secretariat in implementing the project, subject to the outcome of a request for funding to the Standards and Trade Development Facility (STDF) to provide the funds necessary to build and test the technology. A pilot implementation is now underway, supported by funds from the STDF and other development partners.

The IPPC project aims to initially achieve the following with the pilot set of countries:

- i. Establish a harmonized exchange tool, referred to as a "Hub" which facilitates electronic exchange of ePhytos, based upon a standardized communication protocol.

- ii. Provide developing countries that do not have an existing national system with a simple web-based Generic National System (GeNS) to issue, send and receive electronic Phytosanitary Certificates (ePhytos).
- iii. Support implementation of the two systems with the pilot countries, leading to broad national uptake.

The pilot countries are:

1) Hub Pilot Countries:

- |             |               |                            |
|-------------|---------------|----------------------------|
| • Argentina | • Kenya       | • Republic of Korea        |
| • Australia | • Netherlands | • United States of America |
| • Chile     | • New Zealand |                            |
| • China     |               |                            |
| • Ecuador   |               |                            |

2) GeNS Pilot Countries:

- Ghana
- Samoa
- Sri Lanka

**The combination of the Hub, the GeNS and the IPPC ePhyto Schema is referred to as the IPPC ePhyto Solution.** It is expected that the implementation of the ePhyto Solution will make it easier for countries (especially those with limited resources) to exchange ePhytos. The GeNS will operate as a web-based system for use by countries that do not already have a national electronic phytosanitary certificate system. The Hub will operate as a centralized server to exchange ePhytos between NPPOs. The United Nations International Computing Centre (UNICC) is designing, installing and operating both systems. The Hub has already been developed and is now operational within the Pilot. The GeNS is still under development and piloting will commence in the latter half of 2018. Full details of the IPPC ePhyto Solution project, along with all background and explanatory documents, are available on the IPPC website at <https://www.ippc.int/en/ephyto/>

The current ePhyto project funding only allows for a time-limited operation over the two-year period 2018-2019. To ensure the long-term sustainability of the ePhyto Solution, a business model for funding the operation must be decided. This business model needs to address the governance of the operation, the revenue stream required to support the direct operational costs as well as certain indirect costs. It should also indicate how capacity building and promotion could be financed to support implementation and increased use.

### 3. Requirements of IPPC for the Business Model

As stipulated in the Business Model Project Terms of Reference (TORs), the consultants were required to formulate options for a business model for the operation of the IPPC ePhyto Hub and GeNS that accounts for the costs of:

- Operating the Solution (resources associated with technical operation and hosting and development of needed enhancements)
- Onboarding countries (training and capacity building for new participants)
- Servicing or replacement of hardware and software (both for the Hub and GeNS)
- Provision of helpdesk functions for both the Hub and GeNS
- Management, administration and general overhead costs

To perform the analysis, the consultants were requested to:



- 1) Collect information on the cost structure of the ePhyto Solution
- 2) Conduct a survey among IPPC's Contracting Parties (NPPOs)
- 3) Conduct a survey of potential end users (current PC users)
- 4) Consider alternative approaches for cost recovery
- 5) Consider the structure of the IPPC and FAO and overall management of operating costs regarding the ePhyto Solution
- 6) Analyse the cost recovery models used by relevant International Organizations (IOs)
- 7) Consult with stakeholders, including industry representatives
- 8) Consider options and needs for the overall governance of the ePhyto Solution by the IPPC Secretariat
- 9) Establish a benefits framework that can be used for benefits/costs analysis
- 10) Establish the key components that could be used to advance a donor strategy

The analysis was requested to address key items including:

- a) The “ability to pay” concept in relation to the models used
- b) The recovery of both direct and indirect operational costs
- c) The framework for financial management of the funds
- d) The basis of fees (consumption-based; subscription-based; voluntary contribution; etc.)
- e) Frequency and processes for fee collection
- f) Processes for financial management

#### **4. Key User Requirements for the ePhyto Solution**

The consultants undertook two separate surveys in September 2017 of 1) NPPOs and 2) Individuals from business that have experience in the use of Phytosanitary Certificates (hereafter referred to as “business individuals surveyed”)<sup>3</sup> - to determine their requirements and preferences for the ePhyto Solution. A total of 67 NPPOs and 157 business individuals responded to the surveys.

The 67 NPPOs that responded can be divided into two distinct groups, namely:

- Group A: NPPOS that do not already have an electronic Phytosanitary Certificate system in place (56 out of 67)
- Group B: NPPOS that already have an electronic Phytosanitary Certificate system in place (11 out of 67)

For Group A (i.e., the 56 NPPOS that do not already have an existing system), 52 (93%) indicated their intention to implement the IPPC ePhyto Solution. 45 (80%) of these were interested in implementing the full ePhyto Solution (i.e. ePhyto Hub and GeNS) and 7 (13%) will utilise the Hub only (i.e., they will develop their own national interface system). Only 4 NPPOs (7%) in this group did not have an opinion on the matter.

For Group B (i.e., the 11 NPPOS that already have an existing system), the results were similar, with 10 out of 11 NPPOs indicating their interest in connecting to the IPPC ePhyto Hub.

Similarly, the majority (77%) of individuals from business that have experience in the use of Phytosanitary Certificates responding to the survey indicated that the NPPOs should implement the ePhyto Solution proposed by the IPPC without delay, (18% had no opinion). 64% indicated that they would encourage governments in countries with which they trade to implement the Solution, while only 9% said they would be unlikely to do this (27% were neutral).

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<sup>3</sup> It is noted that individuals in this group were responding to the survey on their own behalf and do not necessarily represent the views of the companies for which they work. Indeed, some of the respondents do not work for any company and several respondents may come from the same company.

NPPOs stressed that they expected the ePhyto Solution to reduce the incidence of fraudulent certificates, enhance security and result in better coordination between Border Agencies. They also said that it should be compatible with existing systems such as the systems employed by Customs. It is interesting to note that for both NPPOs and business individuals surveyed, reduced cost was seen to be of lower importance. Although many obstacles, such as lack of budget and technical expertise to implement the ePhyto Solution were identified, NPPOs felt that these could be overcome given the importance of the project and therefore, they would not prevent the deployment of the ePhyto in the NPPOs.

For business individuals surveyed, the biggest benefits expected were increased efficiency and reduced time and cost. The features expected by business individuals surveyed in the ePhyto Solution were aligned with this - i.e., faster time and a more efficient service, 24/7 operation. Business individuals surveyed believed that exporting and importing firms that needed PCs to complete commercial trade would be the main beneficiaries of the ePhyto Solution.

## **5. ePhyto Solution Potential Benefits Framework**

This section of the paper presents the framework required to estimate the potential direct and indirect benefits of the IPPC ePhyto Solution. It is noted that further work on the estimation of these potential benefits will be undertaken by IPPC during the Pilot phase, in collaboration with other international organizations.

Direct benefits are deemed to be the direct savings in time and material through the implementation of the ePhyto Solution, while indirect benefits are deemed to be the resultant benefits, in terms of increased trade (business) and market access (particularly for developing countries).

### **5.1 Potential Direct Benefits**

The potential direct benefits from implementation of the ePhyto Solution have been listed in several documents prepared by the IPPC, ePhyto Steering Group (ESG) and others<sup>4</sup>. These are essentially savings in time and cost, enhanced efficiencies and increased security of the PC issuing process – for both the NPPOs and PC users (including producers, processors, forwarders, shippers, retailers, importers and exporters). These benefits are summarised in Table 1 below.

**TABLE 1**

#### **IPPC ePhyto Solution Benefits**

##### **Time and Costs**

- Reduced administration costs compared with printing, shipping, sorting, distributing, retrieving and archiving paper certificates
- Reduced data entry, data error rates and validation time for NPPO staff
- Faster rectification of errors
- Reduced delays in generating and receiving replacement phytosanitary certificates when required

##### **Efficiency**

- Reduced need for bilateral agreements and associated costs for direct NPPO to NPPO transfer of ePhytos
- Direct exchange of data between exporting and importing country NPPO

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<sup>4</sup> For example, the ePhyto Home Page <https://www.ippc.int/en/ephyto/>

- Early evaluation and identification of risk to facilitate import processing ahead of time - thus achieving enhanced efficiencies in arrival and clearance of plants and plant products at the point of entry
- Expedited communication on specific phytosanitary certificates between exporting and importing NPPOs, including increased ease and transparency of reissued certificates
- Potential to link into Customs 'single window' initiatives
- Easier to reuse the information for other purposes

### **Security**

- Enhanced integrity and authenticity of the data contained in the certificate
- Improved security in the issuing of certificates and in their transmission when compared with paper certificates; as data goes from one competent authority to another and is secure during transfer
- Decrease in fraudulent certificates and increased transparency of certificates that have been issued and received between NPPOs
- Enhanced storage and retrieval facilities and lower risk of data loss or damage
- Possibility of cross checking of ePhyto Certificate against other control documents at customs on entry (and data sharing)
- Possibility of pre-arrival clearance if advance ePhyto is presented or linked to the Customs office of import by the relevant national NPPO

### **Use of International Standards**

- Use of globally harmonized approach for electronic phytosanitary certification (ePhyto) in accordance with the adopted International Standard for Phytosanitary Measures (ISPM) 12 - Phytosanitary Certificates
- Use of harmonized international e-business standards between governments (UN/CEFACT)

The classical approach to estimating the value of these direct benefits is through a detailed Business Process Analysis (BPA)<sup>5</sup>. The BPA is comprehensive and is undertaken from both an administration (i.e. NPPO), intermediary (e.g. Customs) and end-user (i.e. business user) perspective.

A preliminary analysis of the industry business process for the Hub pilot is currently underway between Argentina and the USA and a separate report will be prepared on this. Development of the GeNS is still underway and an analysis of the before and after business process should be undertaken during the Pilot.

**Recommendation 2:** A full BPA of both the NPPO and business processes related to the ePhyto Solution should be undertaken as a priority, as these will set the benchmarks and targets for cost and time enhancements under implementation of the project. The UN Business Process Analysis Guide should be used for this purpose as this is used extensively in the e-business area<sup>6</sup>.

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<sup>5</sup> The BPA must first document the existing process for requesting, issuing, processing and using a traditional paper Phytosanitary Certificates (the "AS IS" scenario). This provides the basis for the redesign of the system as a paperless ePhyto (the "TO BE" scenario) and, importantly, identifies areas of potential greatest enhancement and the benchmarks upon which improvements in the system can be measured. After designing and implementing the revised processes for the ePhyto, the next step is to measure and analyse the actual time and cost of each step in the new procedures (under the ePhyto Solution), with the objective of measuring, documenting and maximising all potential enhancements and benefits. It is important to add that this is an iterative process and that continuous enhancements in the process (and benefits achieved) would normally be identified and implemented over time.

<sup>6</sup> - see [http://www.unescap.org/sites/default/files/0%20-%20Full%20Report\\_6.pdfv](http://www.unescap.org/sites/default/files/0%20-%20Full%20Report_6.pdfv)

Both of these BPA analyses will provide a wealth of information regarding the actual direct benefits of the ePhyto Solution. Specifically, the reduction in time per issue, processing and reception of an ePhyto<sup>7</sup> within the ePhyto Solution (at both the NPPO, intermediary and end-user level) would be calculated (Variable “T”). Some elements of “T” will vary by country and end-user, so sensitivity is required in the calculation of T to pick up these variables. An estimate of the value of this time - Variable “R” - can be generated based on local wage rates (this will obviously also vary from country to country). For each country, the product of T and R multiplied by the total number of ePhytos issued annually, would give an estimate of direct savings per country (and obviously the total global savings would be the sum of all countries). In addition to this, the savings in terms of cost of materials, such as the cost of paper per PC could be added to the total above. The net direct benefit would be the above total, less the estimate of any additional costs from operation of the ePhyto Solution.

It is noted that the Hub pilot countries already engage in the electronic exchange of phytosanitary certificates, so the ePhyto Solution will be a replacement activity for their current operation. They will benefit from an expansion of ePhyto exchanges as other countries join the system. New countries (i.e. those without a national system) exchanging ePhytos through the Hub, will, of course, realise significant direct benefits from the ePhyto Solution.

## **5.2 Potential Indirect Benefits**

While the direct benefits are extremely important in and of themselves, it is likely that the larger benefits from implementation of the ePhyto Solution will be in the indirect impact on trade efficiency, enhanced trade and economic development. This is particularly the case for developing countries.

Various studies have pointed to the fact that complying with Sanitary and Phytosanitary (SPS) measures can have a major negative impact on the capacity of developing countries to realise opportunities in the export of agricultural and food products<sup>8</sup>. In particular, such measures are considered a key impediment in related exports to the European Union<sup>9</sup>. This point is further emphasised in a study by United Nations Conference on Trade and Development (UNCTAD) on the impact of SPS measures on lower income countries agricultural exports, where the measures were shown to have a disproportionately negative impact on developing countries with low levels of technical expertise and where the need for appropriate technical assistance to overcome such difficulties was greatest<sup>10</sup>.

The automation and simplification of the phytosanitary certification process could have a positive impact in mitigating these obstacles, especially if they are complemented by technical assistance and a sustainable technical solution as is envisaged under the ePhyto Solution.

It is also well established that the overall introduction of paperless trade can have significant trade and economic benefits, particularly for developing countries, due to the associated reduction in time and cost. For example, a study undertaken by United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) in the Asia Pacific Region, indicated that a partial implementation of cross-border paperless trade would be associated with a \$36 billion increase in annual exports, while a full

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<sup>7</sup> For example, the benefits for a GeNS user/exporter in not having to drive 2 hours to the NPPO office is direct and measurable.

<sup>8</sup> The Impact of Sanitary and Phytosanitary measures on Developing Country exports of agricultural and Food Products (Draft Report 1999 prepared for World Bank: Henson, Loader, Swinbank and Bredahl) - <https://pdfs.semanticscholar.org/57b4/b5b829f77c4ecf55203978bb24af09926a12.pdf>

<sup>9</sup> Ibid

<sup>10</sup> UNCTAD, 2014, “Trading with Conditions: The Effect of PSP Measures on Lower Income Countries’ Agricultural Exports”.

implementation could achieve export gains of around \$275 billion annually.<sup>11</sup> In the specific case of ePhyto, even small reductions in processing and administrative costs and procedures could reap enormous benefits for perishable products in the fresh fruit and vegetable and cut flower industries.

Estimating these potential indirect benefits through introducing the ePhyto Solution could include the following:

- Econometric analysis of the potential impact of the estimated reductions in time and cost of exporting and importing achieved through implementing the ePhyto Solution on plant and plant-related exports from selected countries
- Analysis of Border Rejections at Customs in selected countries, specifically focusing on rejections and delays due to defective, fraudulent, illegible or inaccurate PCs
- As a specific case of the above, analysis of the economic cost (in terms of the value of goods lost or destroyed or damaged) of detections of defective PCs related to plant and plant-related produce entering the European Union annually; and the potential benefits of a reduction in this number through the introduction of the ePhyto. It is noted that the European Commission estimates that as much as one-third of all detections for plants and plant-related consignments entering the EU is due to defective or inaccurate PCs<sup>12</sup>
- Estimation of the potential reduction in spoilage (or reduced quality/value) of produce such as fresh fruit and cut flowers due to faster (pre-arrival) clearance related to the implementation of ePhyto Solution
- Estimation of the impact of the introduction of the ePhyto Solution on the overall cost of trading across borders for plant and plant products
- Estimation of the potential value of enhanced bio-security and traceability through linking and sharing ePhyto Solution data with other information systems
- Estimation of the potential impact of the ePhyto Solution on achievement of the UN Sustainable Development Goals.

The IPPC Secretariat does not have the resources to do this research directly. Consequently, a separate STDF project is being considered to undertake the work, possibly in association with the World Bank or UNESCAP.

## **6. Development Costs for the ePhyto Solution**

Initial costs for developing the ePhyto Solution Hub and GeNS by UNICC are estimated at \$ 122,000 and 237,000 respectively, for a total of \$359,000. These costs were covered by the STDF and are a “once-off” non-recurring cost for the initial system developed for the Pilot phase.

Potential future additional development and enhancement costs for the ePhyto Solution are discussed in Section 7.2 below.

## **7. Costs Associated with Operating and Supporting the ePhyto Solution**

This Section reviews the speculative costs of operating, maintaining and managing the ePhyto Solution<sup>13</sup>. Specifically, we consider:

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<sup>11</sup> UNESCAP “Estimating the Benefits of Cross-Border Paperless Trade” 2014, <http://www.unescap.org/sites/default/files/Benefits%20of%20Cross-Border%20Paperless%20Trade.pdf>

<sup>12</sup> European Commission Europhyt Interceptions Annual Report 2016, Page 32 - [https://ec.europa.eu/food/sites/food/files/plant/docs/ph\\_biosec\\_europhyt\\_annual-report\\_2016.pdf](https://ec.europa.eu/food/sites/food/files/plant/docs/ph_biosec_europhyt_annual-report_2016.pdf)

<sup>13</sup> Potential costs (and benefits) to business of using the ePhyto Solution will be estimated in a separate Business Process Analysis exercise and are not included in this document.

- 1) Basic Operational Costs (UNICC Hub and GeNS)
- 2) Possible Additional Operating Costs (Business Support Desk and Further Development)
- 3) Management and Administration Costs
- 4) Capacity Building and Technical Assistance for Onboarding Developing Countries

The total annual cost of operating the IPPC ePhyto Solution is estimated at \$874,500, comprising \$580,000 in basic and additional operating costs and \$294,500 in Management and Administration Costs. In addition, Capacity Building and Technical Assistance, which would be critical in the early years of the programme, would cost a minimum of \$373,000 per year for a basic level of support<sup>14</sup>. These annual costs are summarised in the Table 2 below and are explained in detail in Sections 7.1 to 7.4 thereafter.

**Table 2**  
**IPPC ePhyto Solution**  
**Estimated Annual Costs**

<b>Cost Area</b>	<b>Cost Items</b>	<b>Annual Costs (US\$)</b>
<b>Operational</b>	<b>BASIC Operational</b>	
	UNICC Hub	100,000
	UNICC Gens	110,000
	UNICC Mgmt and support	200,000
	<b>SUB TOTAL</b>	<b>410,000</b>
	<b>Additional Operational</b>	
	Business Support Desk	80,000
	Further Development and Enhancement	90,000
	<b>SUB TOTAL</b>	<b>170,000</b>
	<b>Total Operational - Basis plus additional</b>	<b>580,000</b>
<b>Mgmt. and Admin (FAO/UN Staff Level Organization)</b>	IPPC P3 Post	160,500
	IPPC G3/G4 Admin Post	78,000
	Expert WG meetings	31,000
	Evaluation and Promo	25,000
	<b>Total Mgmt and Admin</b>	<b>294,500</b>
<b>Capacity Building</b>	Costs of hosting of meetings and working groups including at least 10 developing country participants (at least 2 annually)	90,000
	IPPC costs associated with in-country capacity development – meetings, training, etc.	63,000

<sup>14</sup> It is anticipated that additional CB and TA programmes funded under separate projects would be encouraged and could be funded by international development organizations or individual countries, possibly as part of broader trade facilitation initiatives.

	<b>SUB TOTAL</b>	<b>153,000</b>
	Basic CB support for 10 countries per year	150,000
	International ePhyto Solution Conference and Training (one every 2 years)	50,000
	Webinars, On-line seminars	20,000
	<b>SUB TOTAL</b>	<b>220,000</b>
	<b>Total Capacity Building</b>	<b>373,000</b>
<b>TOTAL</b>	<b>GRAND TOTAL</b>	<b>1,247,500</b>

It is noted that these costs are higher than figures discussed in previous reports regarding the IPPC ePhyto Solution, where estimates of annual costs of \$0.5 million were often mentioned, usually based solely on the direct operational costs of the Hub and GeNS. The consultants are of the opinion that a more complete understanding of the total cost of the development, implementation, promotion and management of the ePhyto Solution is required to ensure its ongoing development and enhancement and the longer-term success and sustainability of the programme.

Recommendation 3: A more complete understanding of the total cost of the development, implementation, promotion and management of the ePhyto Solution is required to ensure its ongoing development and enhancement and longer-term success and sustainability.

As discussed in Section 5 on Benefits, the IPPC ePhyto Solution will support the operation of the multi-billion Plant and Plant Products industry. It will likely generate an impressive stream of direct and indirect benefits and should enhance the participation of developing countries in this market. Consequently, the programme, while maintaining strict efficiency and cost effectiveness, should be properly resourced, managed and promoted.

### 7.1 ePhyto Solution Basis Operational Costs

UNICC estimates that the ePhyto Solution annual operating cost for the first 2 years (2018 and 2019) will be \$410,000. The breakdown is as follow:

- UNICC costs of operating the ePhyto Solution Hub \$100,000
- UNICC costs of operating the ePhyto Solution GeNS \$110,000
- UNICC Management and support services - Hub and GeNS \$200,000
- **TOTAL \$410,000**

As specified by UNICC, Hub operating costs are based upon services for no greater than 150,000 transactions occurring per week. This is equivalent to approximately 7.8 million ePhytos per year (150,000\*52).

GeNS operation costs are based upon 9 countries using the GeNS with about 1,400 users - with the ability to absorb the costs of up to 11 countries and about 1,700 users.

UNICC estimate that the likelihood for additional volume costs in the initial years of the programme is low, due to the base level capacity of the Hub and GeNS. The potential for such additional data volume can only be estimated after the pilot is complete and user volume data analysed. Consequently, no

estimates are provided at this stage. It is noted that UNICC has already set up a dual server to handle peak loads.

UNICC management and support services are based upon a monthly estimated 30 hours of service desk and application support along with 5 hours of service management support, on-boarding (technology level) support to the 9 GeNS countries, and provision of 24/7 Technical Help Desk support for both the Hub and GeNS.

Should additional support be required, this could affect management and support costs. It is noted that the above estimates do not take into account any improvement of technology or services based upon user needs.

## 7.2 Possible Additional ePhyto Solution Operating Costs

Two possible additional operating costs for the ePhyto Solution are:

- 1) Provision of Business Support Desk support
- 2) Further Development and Enhancement Costs for the ePhyto Solution

Each of these is described below.

### 7.2.1 Provision of a Business Support Desk for both the Hub and GeNS

In addition to the Technical Help Desk to be provided by UNICC mentioned above, it is recommended to establish a Business Support Desk - to support the NPPOs in the practical operation of the new ePhyto Solution. The NPPOs, in turn, would likely have to support the end users (i.e., the business users) in the operation of the ePhyto Solution. Industry organizations may also wish to establish support services for the members in using the ePhyto Solution, especially in the initial stages. Experiences in other eService operations, such as Single Window and Port Community Systems, have demonstrated that operational support can be a critical factor in the success of a project such as the ePhyto Solution, especially in the initial years of the project.

**Recommendation 4:** A Business Support Desk should be established, at least for the initial years of the project, to support the NPPOs in the practical operation of the ePhyto Solution.

The issuance of phytosanitary certificates is an existing obligation of the NPPOs and many of the support issues with the ePhyto should be the same as those faced with paper certificates. However, some additional issues will likely arise and the NPPOs will need to be trained to handle these.

In both of the above cases, the availability of a comprehensive ePhyto Solution User Guide, currently under development by the ESG, would certainly reduce the support requirements. Further, maximum use should be made of on-line tutorials, “Frequently Asked Questions (FAQs)”, user group or community support/chat lines, etc.

**Recommendation 5:** Maximum use should be made of on-line tutorials, “Frequently Asked Questions (FAQs)”, user group or community support/chat lines, etc.

The IPPC will have to consider who should provide this service. Options include the IPPC Secretariat, the Regional Plant Protection Organizations (RPPOs) – subject to adequate resources being provided, or a third-party service provider. There could also be a combination of the aforementioned options. For example, RPPOs could triage aspects of the help desk and elevate if required. The extent of the need for this service will become clearer during the Pilot and will help inform a decision on the matter. For this report, a speculative cost of **\$ 80,000 per annum** is assumed to cover this service (equivalent to a



50% P3 Post). It is noted that the demand for this service will likely be higher in the initial years of the programme.

Recommendation 6: Consideration should be given regarding the operation and provision of the Business Support Desk, including exploring possibilities for support from RPPOs, leading NPPOs and Industry.

### 7.2.2 Further Development and Enhancement Costs for the ePhyto Solution

As with any dynamic Information Technology System, both the ePhyto Solution Hub and GeNS will require ongoing enhancement and development over time. For example, the current version of the GeNS has limited scope beyond certificate issuance and receipt. As countries increasingly automate, there will be increasing need to have a system beyond the original GeNS. This could drive countries to develop their own national systems and discontinue use of the GeNS. On the other hand, it could increase demands for the further development of the GeNS to accommodate additional features. The nature and extent of these requirements are unknown at this stage and will emerge through the Pilot and ongoing operation of the ePhyto Solution.

The UNICC service provision includes the use of their own hardware and software for delivery of the Hub and GeNS and no additional service or hardware charges, such as regular replacement and upgrade of equipment, are envisaged. However, software upgrades could entail additional customization for the ePhyto applications and a contingency for such costs should be made.

Given these unknowns, and given the fact that such systems are generally upgraded on a 3 to 5-year cycle in the early stages of implementation, it is recommended to allocate a minimum budget of at least 25% of initial system development cost per year to cover further development and enhancement of the ePhyto Solution – i.e., **\$ 90,000 per year** (\$359,000\*.25).

*The total additional operating costs comes to \$170,000 annually (\$80,000+90,000).*

**The full estimated annual operational cost is, therefore, estimated at \$580,000, as summarised below:**

<b>BASIC Operational</b>	<b>Annual Cost (US\$)</b>
UNICC Hub	100,000
UNICC Gens	110,000
UNICC Mgmt and support	200,000
<b>SUB TOTAL</b>	<b>410,000</b>
<b>Additional Operational</b>	
Business Support Desk	80,000
Further Development and Enhancement	90,000
<b>SUB TOTAL</b>	<b>170,000</b>
<b>Total Operational - Basis plus additional</b>	<b>580,000</b>

### 7.3 IPPC Management, Administration Framework and Costs

The CPM has given its approval for the establishment of the ePhyto Solution and the role of the IPPC Secretariat in this regard. The ePhyto Solution will form an integral part of the overall Phytosanitary Certificate service provided by the IPPC and the NPPOs, supporting a multi-billion global business in

plant and plant products. It will, therefore, require a long-term and robust management and administration framework.

Specific requirements for the IPPC ePhyto Solution management and administration framework include:

- ePhyto Solution Management
  - Management of ePhyto Solution development and implementation work programme
  - Budget Management and oversight of suppliers (such as UNICC)
    - overall financial management of ePhyto Solution programme
    - develop and award contracts
    - monitor and evaluate work outputs
    - approve payments
  - Establishment and management of a donor support programme
  - Establishment and management of any future (non-donor) financial programme
  - Integrating the ePhyto Solution within the IPPC structure
  - Undertaking periodic evaluation of the operation of the ePhyto Solution (especially important for donors)
  - Overseeing the development and evaluation of the Capacity Building and Technical Assistance Programme (this does not include delivery of the CB/TA)
  - Monitoring new developments in the ebusiness standards related to ePhyto
  - Considering approaches to integrating the ePhyto solution into broader developments such as the Data Pipeline, Single Window, Blockchain, etc.
- “Client” support – including:
  - Developing promotional, operational and training material
  - Organizing review meetings for operators (both NPPOS and business) to discuss and assess the effectiveness of the ePhyto Solution
  - Ensuring that issues identified by the NPPOs and end users are properly documented and fed back to the service providers, such as UNICC
  - Ensuring the successful operation of the Technical and Business Support Desks
  - Handling of GeNS and Hub enhancement requests
- Marketing and Promotion
  - Managing and maintaining the ePhyto Solution website
  - Promoting ePhyto globally – encouraging new users etc.
  - Organising awareness raising events
  - Positioning the ePhyto Solution within the global approach to paperless trade
  - Participating in international meetings related to ePhyto

At present, ePhyto Solution management and administration is handled by the IPPC Secretariat, with support from donor countries (i.e. Australia, Canada and the United States). It is recommended that the IPPC Secretariat should continue to provide the ePhyto Solution Management and Administration function, as the ePhyto Solution will be core to the overall delivery of IPPC Phytosanitary Certification services. However, it is not necessarily the case that all the above-listed ePhyto Solution Management and Administrative activities should be delivered by the IPPC Secretariat in the longer term. Some of the tasks listed above could be delegated to other bodies (such as the RPPOs) or committees (such as the ESG or IAG) or they could be contracted out under an overall donor support programme. The full extent of the resource requirements to cover the above requirements will become clearer through the Pilot.

**Recommendation 7:** The IPPC Secretariat should continue to provide the ePhyto Solution Management and Administration function, as the ePhyto Solution will be core to the overall delivery of IPPC Phytosanitary Certificate support services.

Preliminary estimates prepared by the IPPC Secretariat to provide program and financial management support (including system and program analysis, programme reporting, coordinating IPPC ePhyto activities, managing working groups, providing business support to countries, provision of statistical information gathering and analysis, etc) assumes the need for one full-time P3 Professional Post and a G3-4 Administrative Post. Cost estimates for these posts are provided below.

In addition to staff funding costs, an operational budget would be required to cover such items as programme evaluation, promotion, and printing (of brochures and promotional material, etc.). Evaluation costs can vary from 1 to 5% depending on the nature of the programme and the extent and frequency of evaluation required. A figure of 2% of project costs is often used in UN projects. Taking this figure, and assuming a total project operational and capacity building cost of around \$1,000,000 (excluding Management and Administration costs), an annual allocation of \$20,000 is assumed.

Promotional material could include a quarterly IPPC ePhyto Newsletter, which should be launched as soon as possible. A nominal budget of \$5,000 is allocated for printing of promotional material.

Recommendation 8: Programme evaluation and promotion should be included as core elements of the ePhyto Solution programme budget, within the Management and Administration framework.

Recommendation 9: A quarterly IPPC ePhyto Solution Newsletter should be launched as soon as possible to keep stakeholders abreast of recent developments and to maintain the positive momentum of the project.

#### **Estimated Management and Administration annual costs**

<b>Item</b>	<b>Annual Cost (US\$)</b>
IPPC P3 Post	160,500
IPPC G3/G4 Admin Post	78,000
Expert WG meetings	31,000
Evaluation and Promotion	25,000
<b>Total Mgmt and Admin</b>	<b>294,500</b>

It is noted that the adequacy of the above staff resources to cover the ePhyto Solution management and administrative requirements will depend significantly on the actual level of services required of the IPPC. These will become clearer after completion of the Pilot. Based on experiences in other operations, such as the UN Economic Commission for Europe (UNECE) Transit Guarantee System, TIR, and now the eTIR, the current estimates (one P3 and a G3 Staff) appear to be quite minimal. Depending on the actual service level requirements, and given the economic importance of the programme, it is recommended to consider the pros and cons of a stronger team composition.

Recommendation 10: The adequacy of the proposed IPPC Secretariat support resources for the ePhyto Solution should be reviewed in relation to the actual tasks to be undertaken.

#### 7.4 Costs and Requirements Related to Capacity Building and Technical Assistance for Onboarding Developing Countries

At least some NPPOs<sup>15</sup> will require capacity building (CB) support in implementing and using the ePhyto Solution. The provision of such support will be critical to the success of the ePhyto Solution project and it is noted that the lack of technical skills and experience was emphasised by NPPOs in the survey as a key potential obstacle in implementing the ePhyto Solution.

The extent of the ePhyto Solution CB support required, and the nature and delivery of this support, will vary enormously depending on the requirements of individual NPPOs. For some, the support required could be extensive, including such items as analysis of existing process and information flows, design of reengineered processes, integration with other systems, alignment of IT systems, training and change management. This level of support is beyond the scope of the ePhyto Solution programme. It could, perhaps, be covered by individual donor support programme for specific countries, especially in the context of support for countries in implementing the WTO Trade Facilitation Agreement.

However, it is recommended that the IPPC establish a limited facility to provide focussed CB and TA support to selected NPPOs. An initial package of a 10-day expert mission per country plus 5 days follow up support is suggested. This would cost approximately \$13,000 per country based on current FAO consultancy rates and normal travel and accommodation arrangements<sup>16</sup>. It is suggested that this programme be established to handle up to 10 countries per year.

Recommendation 11: The IPPC Secretariat should establish a dedicated capacity building facility to provide focussed CB support to selected NPPOs.

Further, some NPPOs may also require assistance in securing the necessary stand-alone equipment to connect to the Hub. In such exceptional cases, UNICC estimates that they could provide a pre-configured Personal Computer GeNS “box” that can access the Hub for approximately \$1,000. Additional equipment, such as a printer, power backup, and communications (router etc) could cost about \$ 1,000. It is suggested to allow for up to 10 such scenarios per year.

Recommendation 12: An allocation should be made to cover basic equipment requirements (such as a Computer, Printer and Internet connection facilities) in exceptional cases, for up to 10 NPPOs per year, where no other sources of funding are available.

For most NPPOs, the CB requirements could be quite minimal, such as basic training on the operation of the PC ePhyto Solution. The IPPC plans to provide such general support and training for the ePhyto Solution programme. Specific elements include:

- Hosting of meetings and working groups including at least 10 developing country participants (at least 2 annually)
- In-country capacity development meetings, training, etc.<sup>17</sup>

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<sup>15</sup> The Capacity Building and Technical Assistance requirement of business users regarding utilizing the ePhyto Solution will be assessed separately by the ePhyto Industry Advisory Group in collaboration with the IPPC Secretariat.

<sup>16</sup> 15 days at FAO Consultancy Rate of \$600 per day, plus flights estimated at an average of \$1,500, plus 10 days DSA estimated at \$ 250 per day. Total \$13,000

<sup>17</sup> These costs are unlikely to be required until 2019. The costs associated also do not include potential synergies with other capacity development activities that could be used to train on ePhyto. Should these be used the costs could be further reduced.

In addition to the above, it is recommended that the IPPC develop training webinars and on-line videos in at least English, French and Spanish, describing the ePhyto Solution, and profiling the experiences of NPPOs in implementing the ePhyto Solution. An annual allocation of \$20,000 should be made for this activity.

Recommendation 13: The IPPC Secretariat should develop training webinars and on-line videos describing the ePhyto Solution.

Further, in order to get all NPPOs up to the same level of competence and understanding in the operation of the ePhyto solution, and to keep members up to date on emerging technologies and methodologies, it is recommended that the IPPC Secretariat continue the ePhyto Symposium series and organize a global seminar or workshop, at least one every 2 years, to provide training and opportunities for exchange of experiences and discussion on future requirements and enhancement needs. A full international conference is likely to cost up to \$100,000 so an allocation of \$50,000 per year should be made for this activity.

Recommendation 14: The IPPC Secretariat should continue the ePhyto Symposium Series and organize a global ePhyto Solution seminar or workshop, at least one every 2 years, to provide training and opportunities for exchange of experiences.

The total cost of the above CB, as detailed in Table 3 below, could be around \$373,000 per annum. This should be for an initial 3-year period while the ePhyto Solution is being established. Requirements for such funds will likely start in 2020, when initial seed funding for the ePhyto Solution expires. CB requirements may diminish after this initial 3-year period but will certainly not be eliminated. Therefore, an ongoing longer-term CB support programme is recommended as a core component of the overall ePhyto Solution programme.

**Table 3**  
**Estimated Capacity Building annual costs**

CB Area	Detail	Estimated Annual Cost (U.S.\$)
IPPC General CB support program	Costs of hosting of meetings and working groups including at least 10 developing country participants (at least 2 annually)	\$90,000
	IPPC costs associated with in-country capacity development costs – meetings, training, etc. <sup>18</sup>	63,000
Additional general support	International ePhyto Solution Conference and Training (one every 2 years)	50,000
	Webinars, On-line seminars	20,000
IPPC specific NPPO CB support	10 countries per year at \$13,000 per country	130,000
	Basic equipment for up to 10 countries	20,000
<b>TOTAL</b>		<b>373,000</b>

## 8. Business Model Funding - User Preferences

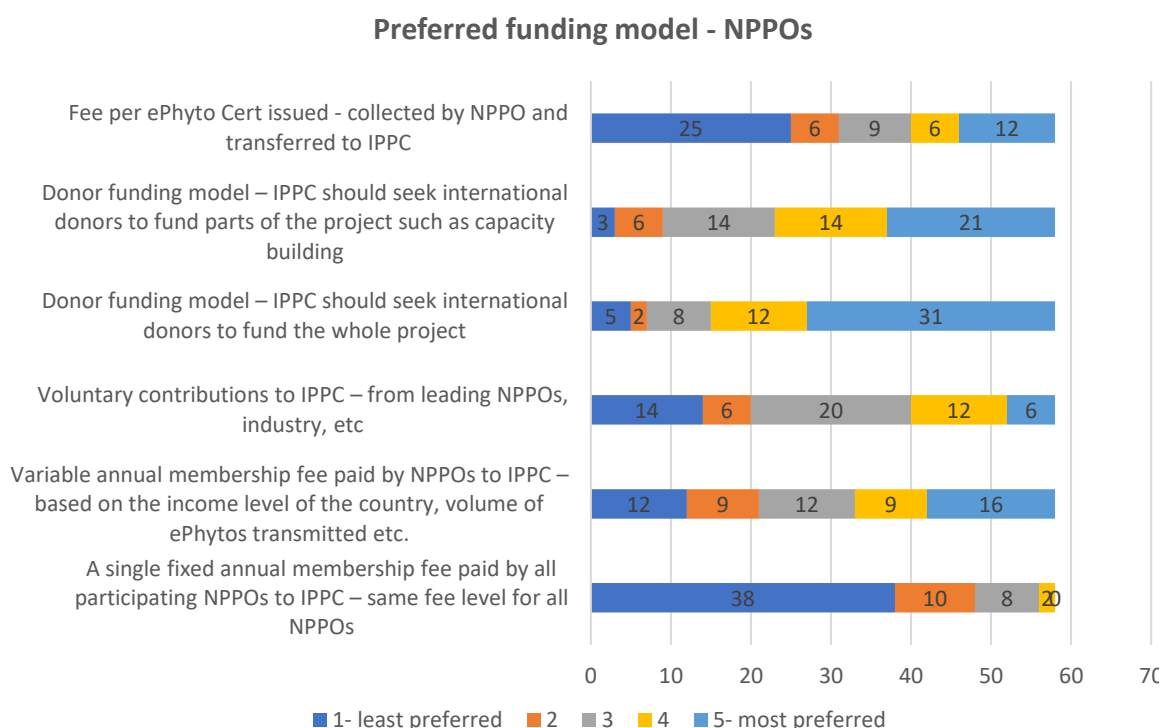
In this Section, we will first review the preferences of NPPOs and individuals from business that have experience in the use of Phytosanitary Certificates (hereafter referred to as “business individuals surveyed”)<sup>19</sup> regarding the funding model. This is based on the two surveys undertaken by the consultants in September 2017.

### 8.1. Funding Preference of NPPOs

As presented in Figure 1 below, 74% of NPPOs that responded to the NPPO survey indicated their preference for a donor funding model, where the IPPC would seek international donors to fund the whole project; 60% indicated their preference for a donor funding model that funds only part of the project, such as capacity building. Even though most of the NPPOs suggested this model as their preferred approach, few indicated a willingness to be a voluntary donor (86% of the NPPOs said that they would not provide any voluntary donation). A “variable annual membership fee” was the third preferred model with 43% of votes.

The least preferred funding option of NPPOs is “a single fixed annual membership fee paid by all participating NPPOs to IPPC - same fee level for all NPPOs”, with 83% of the NPPOs voting this way as shown in Figure 1. The next least preferred option is “fee per ePhyto certificate” (53%). Note that 64% of the Business individuals surveyed preferred the fee “per certificate” as their favourite approach, while NPPOs considered this option as the second least preferred.

Figure 1



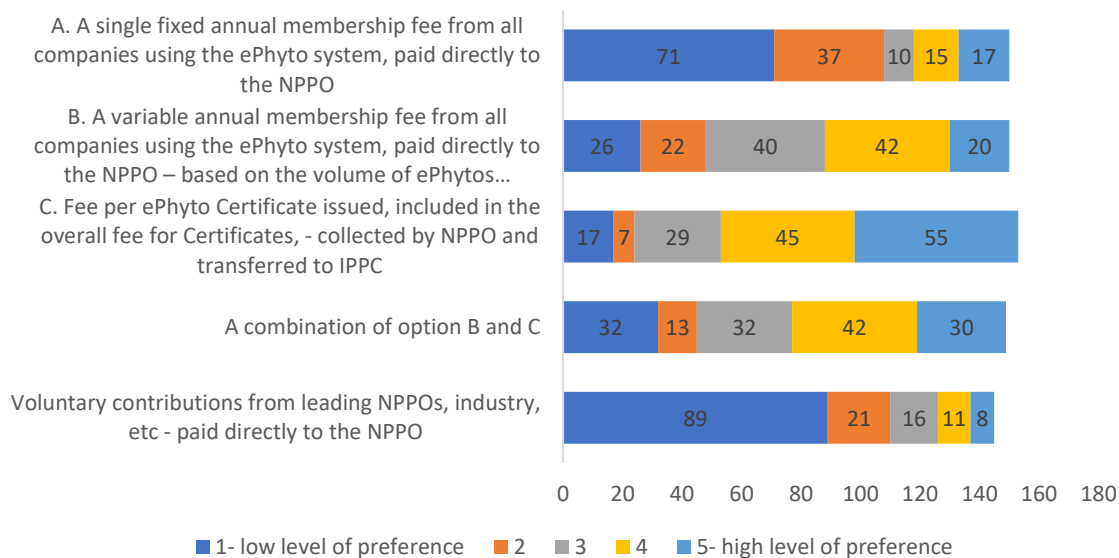
<sup>19</sup> It is noted that individuals in this group were responding to the survey on their own behalf and do not necessarily represent the views of the companies for which they work. Indeed, some of the respondents do not work for any company and several respondents may come from the same company.

## 8.2 Funding Preferences of Individuals from business that have experience in the use of Phytosanitary Certificates

As shown in Figure 2, the survey of individuals from business that have experience in the use of Phytosanitary Certificates (hereafter referred to as “business individuals surveyed”)<sup>20</sup> indicated that their first choice regarding the fee payment model for the ePhyto Solution is to have a fee per ePhyto Certificate included in the overall Phytosanitary Certificate fee, with a combination of fee per Certificate and a variable annual membership fee as their second preference. Their least preferred option was voluntary contributions from leading NPPOs and industry. Business individuals surveyed strongly preferred that the fees be collected directly by the NPPOs. Business individuals surveyed also indicated their strong preference for national governments or NPPOs to bear the costs of issuing ePhytos (as opposed to industry associations or end-users).

Figure 2

### Preference on the revenue model - business individuals surveyed



It is noted that, according to the business individuals surveyed, the majority of NPPOs already charge for issuing a PC, with only 9% indicated as not charging. The average cost for issuing a PC was \$46 per certificate.

## 8.3 Observations regarding Donor Funding versus Participant Based Funding

As outlined above, the surveys indicated that NPPOs prefer a classical donor or organizational support model while business individuals surveyed prefer a participant or fee-based model. It is important to note that these are preferences and not absolutes. Options for both approaches exist and indeed they are not mutually exclusive.

From an IPPC organizational and management perspective, a donor funding model is by far the easiest to establish. The IPPC would, of course, have to manage the donor funding process but this is a classic

<sup>20</sup> It is noted that individuals in this group were responding to the survey on their own behalf and do not necessarily represent the views of the companies for which they work. Indeed, some of the respondents do not work for any company and several respondents may come from the same company.

arrangement for an international organization such as the FAO, and the approach to this is discussed fully in Section 9.

The key argument in favour of a donor funded model is that it overcomes the need to introduce user fees during the early years of the project. This rewards early adaptors rather than burdening them with the higher fees of early implementation. This helps maximise participation and market share at an early stage, thus building the critical mass of users required for the success of the project. This is the basic approach taken by many eService providers such as on-line versions of leading national newspapers or information or educational services during the initial years of the service.

Further, the ePhyto Solution funding model needs to embrace the development objectives of the project – i.e. to enhance the efficiency of the overall Phytosanitary Certification system and to encourage developing and least developed countries to participate in the ePhyto approach. The core requirement here is to ensure that the cost structure does not represent a barrier to the participation of such countries.

In addition, issues around managing the charging of a participation fee for ePhytos could be challenging. Although a user-based fee is a common approach for eServices, the issue is complicated in the case of the ePhyto by the fact that it is the NPPOs that issue the PCs and not the IPPC. Consequently, the NPPOs would have to collect any ePhyto fee and transfer these funds to the IPPC. Although a mechanism could be put in place to handle this, there are concerns in the IPPC and amongst key NPPOs that this could be administratively complex and could act as a deterrent for bringing developing countries on board the ePhyto Solution, especially in the early years of the programme. There are also legal challenges for the NPPOs to collect “fees” on behalf of the IPPC. These issues are addressed in Section 9 and a possible scenario suggested.

In the longer term, the IPPC will likely have to move to either a fully IPPC-FAO financed or a participant funding approach, as it is difficult to sustain donor funding beyond a given number of years. The initial adoption of a donor based approach gives the IPPC ample time to fully develop these options.

## **9. Funding Models**

Following on from the discussion in Section 7, consideration is now given to the advantages and disadvantages of the key funding options, namely:

- 1) Funding by the Food and Agriculture Organization (FAO)
- 2) Funding by Donors (including funding support from Lead NPPOs and or Industry)
- 3) Participant Based Funding
- 4) Combination approach

Within this discussion we will look at the total funding requirements of the ePhyto Solution. This is broken down into the three main components namely 1) Operational Costs; 2) Management and Administration Costs and 3) Capacity Building Costs. Where appropriate, these costs are considered separately as they may have different time frames and may be sourced from different budget lines within organizations. Similarly, Management and Administration costs are separated from direct operational costs where appropriate, as different funding agencies may allocate funds in different areas. In all cases, the advantages and disadvantages of each model are detailed, and specific issues are noted.

### **9.1 Funding by FAO**

FAO could consider funding the delivery of the ePhyto Solution directly, either in its entirety or partially, as suggested by several NPPOs and business individuals surveyed. This would require a high-level decision by FAO Member States as at present, FAO could not cover ePhyto Operational Costs out of its core budget. It is noted that there is currently a proposal to increase the percentage that IPPC receives from the overall FAO budget, but this may take 2-3 years to be realised, and it may not cover the ePhyto Solution.



Including ePhyto as a core element of the FAO - IPPC budget would require a high-level discussion within the organization. Input from FAO Administration suggests that this could be difficult as ePhyto is not currently a core IPPC activity. However, Member States could change their view on this.

FAO could, of course, consider funding sub-elements of the entire programme, such as Administration and Management and Operational Support, and establish a separate fund for CB, but the same issues would have to be addressed.

It is noted that the food related international standard-setting bodies in the WTO SPS Agreement–CODEX Alimentarius and the, the World Organisation for Animal Health (OIE), have developed guidance to support the use of SPS e-Cert. Specifically, the Codex Committee on Food Import and Export Inspection and Certification Systems (CCFICS) has put in place an electronic Working Group to assess and review existing guidance on electronic certification (IPPC is collaborating with this group), while the OIE is at an early stage of reviewing gaps in standards and guidelines on electronic certification<sup>21</sup>.

To help support the argument for FAO budget support, it may be worth considering making a broader argument to FAO Member States to consider the overall approach to the development and implementation of food related electronic certificates in international trade. A word of caution is warranted here, however. The ePhyto Solution is significantly ahead of these other projects and the IPPC would have to be careful not to get bogged down in a larger project that could reduce the momentum of the ePhyto Solution.

Recommendation 15: The IPPC Secretariat should consider making a broader argument to FAO Member States to support the overall approach to the development and implementation of food related electronic certificates in international trade.

### **9.1.1 Advantages and Disadvantages**

The main advantage of this approach is the certainty it provides to the ePhyto Solution Programme and the strong message of support it sends to IPPC members and end-users, especially in terms of the economic developmental aspect of the programme. It is also relatively simple and consistent from an operational and managerial perspective and would likely encourage a more rapid and sustainable implementation of the programme.

Another key advantage of this approach is that the ePhyto Solution would be provided to users without any additional charge. This can be a very important factor at the early stages of a new initiative such as the ePhyto Solution when one is trying to attract users away from a system and approach that they have used for decades. As noted previously, it also avoids early adopters bearing the burden of development costs. The approach often used is to provide the entire service for free initially and then charge users for enhanced services at a later stage, often restricting the level of free content as time progresses.

The main disadvantage of this approach is that securing Member State approval for such funding can take considerable time and could delay the implementation of the programme. Consequently, an FAO funding model should be considered as a longer-term option, to be established while the proposed donor funding approach is operational.

## **9.2 Funding by Donors**

A donor funded approach that is established without delay would help maintain the current positive momentum of the ePhyto Solution project and ensure its medium term stability. Discussions with FAO management indicate that the best approach to securing Donor funding for the ePhyto Solution within

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<sup>21</sup> For further details see

[http://www.standardsfacility.org/sites/default/files/e\\_Cert\\_Briefing\\_note\\_EN.pdf](http://www.standardsfacility.org/sites/default/files/e_Cert_Briefing_note_EN.pdf)

the FAO framework would be to establish a Multi-Donor Trust Fund (MDTF) for the project. This can be done relatively quickly (within 3 months), is more flexible than a project funding approach, and could be operational by the end of 2018. The MDTF would seek funds from countries for a 3-5 year period, and could be extended thereafter. It may be necessary to get approval from Member States to establish the MDTF for ePhyto but a decision from the Bureau might be sufficient (FAO will investigate further). Should approval be required, the 3 months set up timing would commence from the date of approval.

A decision would have to be made regarding which elements (i.e. Operational, Administration and Capacity Building) of the total ePhyto Solution budget to include in the MDTF. FAO Administration has suggested that it would be best to keep all elements within the one MDTF to assist governance and transparency and to promote the programme to potential donors as an integrated package. However, other options could be considered as some ESG members suggest separating Capacity Building from other costs.

To establish the MDTF, a background programme document would have to be prepared regarding the overall goals and objectives, expected benefits, potential costs, benchmarks, evaluation approach, etc. Potential benefits would be of particular importance. Much of the required information could be taken from this report, and the planned IPPC research into potential benefits and additional information from the Pilot would also complement this.

Target countries for the MDTF could include:

- Australia
- Canada
- China
- Japan
- New Zealand
- Norway
- Sweden
- Switzerland
- The Netherlands
- USA
- European Union

Possible Donor and Development Institutions could include:

- World Bank
- Regional Development Banks
- The German Development Agency GIZ
- UK Department for International Development (DFID)
- Japan International Cooperation Agency (JICA)
- The United States Agency for International Development (USAID)

### **9.2.1 Complementary Funding from NPPOs and or Industry Groups**

Individual NPPOs, such as in the USA, Australia, Canada and the Netherlands, that have a strong interest in the success of the ePhyto Solution, could be encouraged to also contribute to the MDTF. This would likely have to be done through or in conjunction with their national governments. However, explicit support and or motivation from the NPPOs could significantly enhance the potential for national contributions.

Individual industry organizations could also be targeted to contribute to the MDTF, as industry is a key stakeholder in the ePhyto Solution and could benefit significantly from its successful implementation.

**Recommendation 16: Key NPPOs and Industry associations could be targeted to solicit support funding for the ePhyto Solution – under any and all of the funding models suggested.**

## 9.2.2 Advantages and Disadvantages

The main advantage of this approach is that it would secure immediate funding for the short to medium term and allow the ePhyto Solution to operate without additional user fees in the early stages of the programme, and thus more quickly establish a critical mass of users and user volume. This will be a critical factor for the success of the ePhyto Solution.

Another advantage is that it engages major users (i.e. major implementing countries, NPPOs and industry) in the ongoing operation and development of the ePhyto Solution. This could also have a positive impact on securing additional Capacity Building and Technical Assistance support for the programme (over and above the basic CB programme detailed in Section 7.4), as donors would already have a stake in ensuring the success of the programme.

It would be essential to have a thorough evaluation component in place for the ePhyto Solution programme as part of the MDTF package, as donors will generally insist on this as a condition of funding. It is also generally a pre-condition for repeat funding applications.

The main limitation to this approach is that it could have a defined life span as donors are unlikely to contribute indefinitely. In addition, donor contributions to FAO projects generally incur a 12% administration charge to cover internal FAO overheads (note that this is separate from the actual ePhyto Solution Management and Administration costs described in Section 7.3).

In the longer term, the IPPC would need to either secure a more permanent option such as adopting the ePhyto Solution as a core element of the IPPC – FAO budget (possibly complemented by Capacity Building support from specific agencies); or adopt a participant-based funding model as described below.

## 9.3 Participant Based Funding

Options for a participant-based funding (PBF) model were also considered by the consultants. It is recognised that this is the least preferred option by the NPPOs and that it is also not favoured by the ePhyto Steering Group (ESG). However, the consultants felt it would be useful to at least review this option at a summary level for future consideration as the project matures.

PBF refers to a model where users pay a fee for the use of the system that covers part or all of the operational costs of the system. PBF can have many manifestations and can be tailored to the unique needs and requirements of a particular application or industry or situation. It generally relates to some form of volume based pricing and almost never goes into the minute detail of charging and collecting a separate fee for each individual transaction.

The issue of user fees is somewhat complicated in the case of the ePhyto Solution given the fact that it is the NPPOs that issue the PCs and ePhytos and not the IPPC. The NPPOs would, in this case, be the direct clients (users) of the ePhyto Solution service and the ePhyto Solution business users would, in turn, be clients of the NPPOs.

Consequently, there are two aspects to consider regarding the establishment of a PBF for the ePhyto Solution, namely: 1) the fee that the IPPC would charge the NPPOs for ePhyto service (in order to cover the cost of operating the ePhyto Solution); and 2) the fee that the NPPO would charge the business users in order to recover this cost from the IPPC, plus any additional NPPO operational cost related to the ePhyto Solution.

In order to understand this dynamic, at least four key questions must be answered, namely:

**Question 1:** What would be the incremental cost (or savings) to the NPPO for issuing an ePhyto as opposed to a paper PC? In other words, would a streamlined paperless ePhyto process be more or less

costly to the NPPO than the existing paper-based process, which involves printing the PC on specially prepared paper and handling manual storage facilities?

**Question 2:** If there is an increase in cost to the NPPO, how should this be passed on to the end user?

**Question 3:** How much and in what manner should the IPPC charge the NPPOs for providing the ePhyto Solution services?

**Question 4.** How should (could) the fees collected by the NPPOs be transferred to the IPPC?

The complete answers to these questions can only be given following analysis of the data (volumes, operating costs, efficiencies, etc.) from the ePhyto Pilot. Some thoughts on the possible answers are provided below by the consultants:

**Points regarding Question 1:** Incremental cost (or savings) to the NPPO for issuing an ePhyto.

This cost (savings) could be calculated as follows:

(Cost of establishing the ePhyto Solution in the NPPO  $\times .25$ )<sup>22</sup>/expected number of ePhytos issued per year) + increase (or decrease) in unit cost of issuing an ePhyto verses a Paper PC + average unit charge per ePhyto by IPPC.

If the incremental cost of an ePhyto compared to a paper PC is positive, this would have to be either subsidised by the NPPO or passed on to the ePhyto user. If the incremental cost is negative, this would result in a net saving to the NPPO.

Given the experience of other trade related edocument implementations such as Single Window, it is most likely that the introduction of ePhyto would result in savings for the NPPOs in issuing, tracking and storing ePhytos, especially as volumes increase.

**Points regarding Question 2:** How should this be passed on to the end user?

If there is a net increase in cost in issuing ePhytos compared to paper PCs, it is likely to be very small and probably less than \$2 per ePhyto issued. It is the view of the consultants that the most efficient way to handle this additional charge would be to add it to the existing cost of issuing a PC, which currently averages around \$46 globally<sup>23</sup>. The vast majority of NPPOs already charge a fee for issuing existing paper based PCs and mechanisms are already in place for collecting these fees. The idea of introducing a separate additional charge would be too cumbersome and would not be cost effective or user friendly.

Given that the ePhyto Solution should offer significant benefits to business in terms of the overall efficiency of obtaining PCs, it is highly likely that businesses would be prepared to pay this incremental charge. It is noted that PC Users indicated this as their preferred approach to funding the ePhyto Solution.

**Recommendation 17:** Under a Participant Based Funding Model, fees could be added to existing fees for issuing a PC by an NPPO.

**Points regarding Question 3:** What and how should the IPPC charge the NPPOs?

The IPPC could establish a multi-tiered discount structure providing low or no charges to special category users such as developing or least developed countries, and significant discounts to large volume users. A basic annual “participation fee” for each NPPO that joins the ePhyto Solution programme could also be established, to cover the initial setup and maintenance costs. The specific fee

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<sup>22</sup> 25% of the cost is allocated per year assuming a 4 year write down of the investment

<sup>23</sup> It is noted that the estimation of PC costs needs to be reviewed, as some countries included the total cost of inspection in their answer to this question of PC issuing cost

rates to be charged to the NPPOs could be calculated on the basis of the total operational cost of the ePhyto Solution and the expected volume of ePhytos handled.

**Points regarding Question 4:** How to transfer the fees collected by the NPPOs to the IPPC.

In order to simplify the transfer of funds from NPPOs to the IPPC, payments could be made on an annual basis, in advance, based on the anticipated number of ePhytos to be issued by a particular NPPO. NPPOs would have to budget in advance for this. These payments could be adjusted at the end of each year, based on actual numbers of ePhytos handled by the ePhyto Solution for the specific NPPO. This is the approach used in the eTIR system. As mentioned in Section 9.6, the administration of this payment mechanism could be handled by an external agency such as UNOPS.

It is noted that any fee-based approach for issuing ePhytos could have a number of implications for national governments, including possible changes to national legislation, administration of the fee, etc. Most of the NPPOs responding to the survey were uncertain as to whether or not they could legally collect fees for the exchange of an ePhyto and pay this back to the IPPC. Only 16% of the NPPOs indicated that they could collect the fee, and 29% indicated that they are not allowed to do so. According to the NPPOs, the process to change or adopt legislation to allow charging fees is complex and can take between 2 to 5+ years. The IPPC should assist the NPPOs to undertake a review of the legal issues regarding charging.

Recommendation 18: Should a future Participant Based Funding Model be considered, a multi-tiered discount structure should be employed, providing low or no charges to special category users such as developing or least developed countries, and significant discounts to large volume users. Further, an annual estimated payment in advance mechanism should be established to reduce administrative overheads.

Recommendation 19: The IPPC should assist the NPPOs to undertake a review of legal issues regarding charging end-user fees for ePhytos, and transferring such “fees” to IPPC. This review should also consider other mechanisms for transferring funds from NPPOs to IPPC for this purpose.

### **9.3.1 Advantages and Disadvantages of Participant Based Funding**

The primary advantage of an efficient participant based funding approach is that it can provide secure funding for the operation of the ePhyto Solution over the longer term. It also links the supplier (i.e. the IPPC/NPPO) directly with the end user (NPPO/business user) and helps ensure that the quality and benefits of the service are maintained.

Participant based funding is used successfully in many eServices in the international trade area and models can be devised to make this administratively simple and efficient. The main approach of including the ePhyto fee within the existing PC fee structure, as recommended in this report, would be relatively simple to implement and the fee transfer system between NPPOs and the IPPC could be relatively easily established, subject to addressing national legal and administrative issues. As mentioned previously, it would also be worth investigating the option of contracting out the entire fee collection to a specialist agency in this area, such as the United Nations Office for Project Services (UNOPS).

The main disadvantages of a participant based funding approach are:

- Participant fees could delay the formation of the critical mass of ePhyto Solutions users
- They could also deter developing countries from participating in the project
- The administrative cost of fee collection and administration could be high or too complicated

- Difficulty in addressing countries that couldn't /wouldn't pay (e.g., would IPPC block them from using the ePhyto Solution?)
- Difficulty in countries having to amend fee legislation/regulation to collect fees on behalf of international organizations

However, it is the view of the consultants that all of these issues could be overcome in time and there are many models of fee based eServices that could be referenced in designing an appropriate approach for the ePhyto Solution.

#### 9.4 Combination approach

Although administratively more complex, it would be quite possible to split the Operational, Administrative and Capacity Building aspect of the ePhyto Solution programme amongst different entities. For example, IPPC could cover all administrative costs (i.e. the P3 and G4 staff) and leading NPPOs and or business organizations could cover the UNICC operations. Training and capacity building could be covered by donations to a CB trust fund. An ePhyto Solution Membership Fee could be charged to all NPPOs and business users to cover necessary administrative costs in maintaining user account and access authorizations and storage allocations.

A possible funding scenario reflecting the above discussion is presented below.

Item	Funded by	Annual Cost US\$
IPPC Management and Admin and Support and meetings	IPPC	294,500
UNICC Hosting and Admin and Support for Hub and GeNS Operation	Key NPPOs or Business Organizations	410,000
Possible Additional ePhyto Solution Operating Costs	Lead NPPOs and industry	170,000
Costs Related to Capacity Building and Technical Assistance for Onboarding Countries	Donors	373,000
<b>TOTAL</b>		<b>1,247,500</b>

##### 9.4.1 Advantages and Disadvantages

This combination approach would help ensure the continued engagement and commitment of all key players. It would also help key stakeholders to apply their support in the specific areas where they are most interested and comfortable.

The approach would, however, require additional management and administration and would likely incur additional costs in this area.

#### 9.5 Recommendation Regarding Funding Options

All of the above funding options have their advantages and disadvantages. The approach recommended in this report is to focus initially (i.e. for the first 5 years) on a donor funded approach through the establishment of a Multi Donor Trust Fund. This would ensure that the continued momentum in establishing the ePhyto Solution is maintained and that the critical mass of users and participating countries could be more quickly established.

Recommendation 20: A Multi Donor Trust Fund should be established as the preferred initial funding mechanism for the ePhyto Solution, covering an initial 5 years and extendable for additional years. An MDTF project document should be prepared by the IPPC Secretariat for this purpose.

It is recommended that the MDTF should take an integrated approach, covering all aspects of the programme - operational, administrative and capacity building. This would help management focus on a total development approach and would also address the key objective of onboarding developing countries.

Recommendation 21: The Multi Donor Trust Fund should take an integrated approach, covering all aspects of the programme - operational, administrative and capacity building.

Recommendation 22: Clearly delineated budget lines, with full accountability and auditing, should be established within the MDTF for each key area, including Administration, Additional Development and Support, and Capacity Building.

Recommendation 23: The IPPC should use the 5 year MDTF period to review alternative funding options, such as funding by FAO, a Participant Based Funding model or a combined approach. This review should start immediately after the launch of the MDTF, with a preliminary report prepared by end of Year 1 and a final recommendation by the end of Year 2. Mechanisms for the new agreed model should be fully in place before the end of Year 3.

Recommendation 24: After the 5 year review period, capacity building could be separated out, although at least some capacity building funds should remain in the IPPC ePhyto Solution operation and administrative budgets, to provide the IPPC with the necessary flexibility to address capacity issues as they arise.

The assessment of the above options would be greatly facilitated by the additional data and experiences collected through the Pilot and the initial years of implementation under the MDTF. The planned additional research into benefits and operational models that will be undertaken by the IPPC in collaboration with other international organizations would also greatly assist in this regard.

### **9.5.1 Framework for Financial Management of ePhyto Solution Funds**

Managing the collection and disbursement of funds for the ePhyto Solution would be a significant piece of work and would be beyond the current limited resources allocated to the initiative by IPPC. For example, fundraising from potential donors or other support entities is very time consuming and management and report of funds utilization is a demanding task. Further, many donor programmes require extensive reporting, including full funds utilization and programme effectiveness evaluation reports.

In addition to the above, any fee or participant-based approach would require considerable additional financial management resources. It is, therefore, recommended that IPPC explore options for an external entity to manage the financial aspects of the ePhyto Solution programme, noting that this comes with its own set of costs of between 6 and 12% of total costs. Options could include, but should not be limited

to UNOPS. UNOPS is an operational arm of the United Nations, supporting the implementation of peace building, humanitarian and development projects around the world<sup>24</sup>.

Recommendation 25: The IPPC should explore options for an external entity to FAO, such as UNOPS, to manage the financial aspects of the ePhyto Solution programme.

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<sup>24</sup> [www.unops.org](http://www.unops.org)