WHO Flutool
for planning and costing maternal influenza vaccination

PILOT VERSION 1.0
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1. INTRODUCTION

Seasonal influenza causes considerable morbidity and mortality worldwide. Two pathogens – influenza A and B viruses – cause outbreaks, usually during the winter. Seasonal influenza is particularly dangerous for pregnant women for two reasons:

1. there is a significant excess occurrence of pneumonia in pregnant women over other populations;

2. there is a reduced likelihood of prematurity in infants born to vaccinated women.

Vaccines have been developed against influenza A and B viruses and are a useful form of prevention against seasonal influenza in pregnant women. Governments are considering different approaches to reducing the incidence of seasonal influenza among pregnant women through antenatal care (ANC):

1. vaccination year-round or seasonal vaccination during five months;

2. vaccination during routine ANC versus supplementary immunization activities (SIAs).

In order to facilitate decision-making on these interventions, programme managers and policymakers need information on the projected costs of introducing influenza vaccine to pregnant women. The FLUtool has been developed to assist governments to estimate the costs of influenza vaccine introduction for pregnant women and is described in detail in this user guide.
2. WHAT THE FLU COSTING TOOL IS COSTING OUT FOR INFLUENZA VACCINE INTRODUCTION

The costing tool enables the user to estimate the value of incremental (additional) resources required to add the influenza vaccine to an existing programme for pregnant women. That is, it estimates only the value of new resources needed and does not include the cost of other goods and services (e.g. transport) already being used for other vaccines or for ANC (shared costs). For example, the tool does not estimate the cost of transporting influenza vaccine if this is part of the same transport used to deliver other vaccines from the central warehouse to the periphery in the country.

The quantity of resources required to introduce influenza vaccine to national immunization programs (NIPs) will differ from other vaccines since it targets pregnant women through ANC. The coverage for this vaccine will depend on the percent of total pregnant women that attend ANC. In countries where the percentage of pregnant women that attend ANC services is low, then a campaign approach that involves outreach will be needed. The FLUtool enables the user to estimate the additional resource requirements based on the specific strategy that will be used for the country.

The FLUtool provides estimates of several cost measures:

1. total costs of adding the influenza vaccine to specific regions/provinces or at the national level;
2. cost per immunized pregnant woman (IPW).

It differentiates recurrent (operational) and capital costs as well as financial and economic costs. It also present expenditures required for initial investments required for the influenza vaccine introduction.

Cost components of maternal influenza vaccination

The FLUtool allows the user to estimate the costs of activities that take place during the introduction of maternal influenza vaccination into a national immunization programme. These activities include the following: procurement of vaccines and injection supplies, micro-planning, training, social mobilization and IEC (information, education, communication), purchase of cold chain equipment, service delivery of vaccines to target population, monitoring and evaluation, supervision, and waste management.

In the following section, the differences between types of costs are discussed.
Recurrent costs

Recurrent costs are the value of resources that last less than one year (Table 1). These include programme costs such as the value of personnel time, transport, maintenance, monitoring and evaluation, and supervision, as well as the costs of short-term training activities that last less than a year (i.e. do not include material development and initial training).

Table 1. Vaccination activities and associated recurrent costs

<table>
<thead>
<tr>
<th>Vaccination activity</th>
<th>Recurrent costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaccine procurement and storage</td>
<td>Vaccines, injection supplies, freight, clearance, insurance and taxes</td>
</tr>
<tr>
<td>IEC</td>
<td>Health personnel time, printing, production of leaflets, posters, radio and television spots</td>
</tr>
<tr>
<td>Service delivery</td>
<td>Health personnel time, per diem expenses, transport</td>
</tr>
<tr>
<td>Supervision</td>
<td>Supervisor time, driver time, per diem expenses, transport</td>
</tr>
<tr>
<td>Monitoring and evaluation</td>
<td>Vaccination cards, tally sheets, surveillance</td>
</tr>
<tr>
<td>Waste management</td>
<td>Fuel for incinerators</td>
</tr>
</tbody>
</table>

Capital costs: introduction costs, supplemental cold chain and other equipment

Capital costs are the value of resources that last longer than one year, such as cold chain equipment and vehicles. The capital goods and services used in influenza vaccination include initial investments such as introduction costs (micro-planning, initial training and social mobilization/IEC material development) as well as additional cold chain equipment, vehicle requirements, and incinerators (Table 2). Capital costs in the FLU tool are found under the worksheets:

1) Introduction Costs,
2) Supplemental Cold Chain,
3) Other.

Table 2. Vaccination activities and associated capital costs

<table>
<thead>
<tr>
<th>Vaccination activity</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaccine procurement and storage</td>
<td>Additional cold chain equipment requirements</td>
</tr>
<tr>
<td>Introduction</td>
<td>Micro-planning, initial training, curriculum development, IEC material development/sensitization meetings</td>
</tr>
<tr>
<td>Waste management</td>
<td>Additional incinerators</td>
</tr>
<tr>
<td>Other transport</td>
<td>Additional vehicles, motorcycles, boats, bicycles, etc.</td>
</tr>
</tbody>
</table>
Calculation of capital costs differs from calculation of recurrent ones since these are annualized and/or discounted depending on the purpose of the analysis and whether financial or economic costs are preferred.

**Financial and economic costs**

Both financial and economic costs are calculated in the FLUtool. The user can choose which one is most appropriate depending on the objective of the analysis. If users wish to know the additional costs incurred by the Ministry of Health, for instance, they should focus on the financial cost calculation. **Financial costs** are the value of resources to the buyer and include the value of actual resources purchased for the influenza vaccine introduction, such as injection supplies, outreach allowances and per diem, and resources used in training and developing new communication materials.

**Economic costs** comprise the value of all outlays for the vaccine introduction, as well as those already paid for by the Ministry of Health and other sources of financing (e.g. the salaries of health personnel, vaccines paid for by partners, and time of volunteers). This analysis is useful if users are interested in evaluating the share of different sources of finance for the vaccine introduction. For example, users may want to know the share of total costs financed by the Ministry of Health, external partners, clients and the community. This analysis gives a more complete picture of resources that are tied up in the provision of the new vaccine, and their opportunity costs and should be used if a cost-effectiveness or cost-benefit analysis is to be conducted.

**Capital costs** are calculated differently depending on whether financial or economic costs are being estimated. When calculating financial costs, straight-line depreciation is used in the calculation of capital costs. That means that the cost of the item is annualized by dividing it by the useful life-years of the item. For example, if cold chain equipment could be expected to last for 10 years, the total cost would be divided by 10. Straight-line depreciation assumes that capital goods are used up equally over the useful time period of the item. For economic costs, capital goods are discounted as well as annualized. This type of depreciation assumes that people prefer to use goods and services now rather than in the future.

Table 3 presents a comparison of resources included in cost estimation based on whether financial or economic costs are being calculated. For micro-planning, for instance, the value of personnel time spent in meetings is included in economic costs but not in financial costs.

The main differences between financial and economic costing are threefold:

1. the time spent by health personnel and volunteers is valued in economic costing since there is an opportunity cost to this time – i.e. the workers are unable to spend time on other activities when they are occupied with influenza vaccination – but it is not included in financial costs since these are already paid for with government salaries;
2. the value of donated goods and services is included in economic costs but not in financial costs since there is an opportunity cost to their use;
3. capital costs are calculated differently for financial and economist costs.

A glossary of terms used in the cost analyses in the FLUtool is found in Appendix 1.
### Table 3. Resources by vaccination activity for financial and economic costs

<table>
<thead>
<tr>
<th>Vaccination activity</th>
<th>Financial costs</th>
<th>Economic costs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Procurement of vaccines and injection supplies</strong></td>
<td>• Cost of vaccines and injection supplies to government</td>
<td>• Cost of vaccines and injection supplies regardless of source of financing</td>
</tr>
<tr>
<td></td>
<td>• Cost of freight, clearance, insurance and taxes</td>
<td>• Cost of freight, clearance, insurance and taxes</td>
</tr>
<tr>
<td><strong>Micro-planning</strong></td>
<td>• Per diems and travel allowances</td>
<td>• Personnel time spent in meetings</td>
</tr>
<tr>
<td></td>
<td>• Venue rental</td>
<td>• Per diems and travel allowances</td>
</tr>
<tr>
<td></td>
<td>• Transport</td>
<td>• Venue rental</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Transport</td>
</tr>
<tr>
<td><strong>Training</strong></td>
<td>• Development of training materials</td>
<td>• Value of personnel time spent on training</td>
</tr>
<tr>
<td></td>
<td>• Per diems and travel allowances</td>
<td>• Development of training materials</td>
</tr>
<tr>
<td></td>
<td>• Venue rental</td>
<td>• Per diems and travel allowances</td>
</tr>
<tr>
<td></td>
<td>• Transport</td>
<td>• Venue rental</td>
</tr>
<tr>
<td></td>
<td>• Training materials</td>
<td>• Transport</td>
</tr>
<tr>
<td></td>
<td>• Stationery</td>
<td>• Training materials</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Stationery</td>
</tr>
<tr>
<td><strong>IEC/social mobilization</strong></td>
<td>• Facilitator time in meetings</td>
<td>• Value of personnel, and volunteer time spent on material development and other activities</td>
</tr>
<tr>
<td></td>
<td>• Per diems and travel allowances</td>
<td>• Facilitator time in meetings</td>
</tr>
<tr>
<td></td>
<td>• Stationery</td>
<td>• Per diems and travel allowances</td>
</tr>
<tr>
<td></td>
<td>• Printing of materials</td>
<td>• Stationery</td>
</tr>
<tr>
<td></td>
<td>• Production of TV and/or radio spots</td>
<td>• Printing of posters and leaflets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Production of TV and/or radio spots</td>
</tr>
<tr>
<td><strong>Service delivery</strong></td>
<td>• Transport fuel</td>
<td>• Value of personnel time spent on vaccination</td>
</tr>
<tr>
<td></td>
<td>• Personnel per diems to travel to vaccination sites</td>
<td>• Transport fuel</td>
</tr>
<tr>
<td></td>
<td>• Supplies – e.g. cotton</td>
<td>• Personnel per diems to travel to vaccination sites</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Supplies – e.g. cotton</td>
</tr>
<tr>
<td><strong>Monitoring and evaluation</strong></td>
<td>• Tally sheets or registers</td>
<td>• Tally sheets or registers</td>
</tr>
<tr>
<td></td>
<td>• Pens and pencils</td>
<td>• Pens and pencils</td>
</tr>
<tr>
<td></td>
<td>• Vaccination cards</td>
<td>• Vaccination cards</td>
</tr>
<tr>
<td></td>
<td>• Materials for surveillance</td>
<td>• Materials for surveillance</td>
</tr>
<tr>
<td><strong>Supervision</strong></td>
<td>• Travel allowances</td>
<td>• Value of personnel time spent on supervision</td>
</tr>
<tr>
<td></td>
<td>• Transport fuel and maintenance</td>
<td>• Travel allowances</td>
</tr>
<tr>
<td></td>
<td>• Stationery</td>
<td>• Transport fuel and maintenance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Stationery</td>
</tr>
<tr>
<td><strong>Waste management</strong></td>
<td>• Purchase of incinerators (annualized)</td>
<td>• Purchase of incinerators (annualized/discounted)</td>
</tr>
<tr>
<td></td>
<td>• Fuel</td>
<td>• Fuel</td>
</tr>
<tr>
<td></td>
<td>• Transport</td>
<td>• Transport</td>
</tr>
<tr>
<td><strong>Cold chain equipment</strong></td>
<td>• Cold chain equipment (annualized)</td>
<td>• Cold chain equipment (annualized and discounted)</td>
</tr>
</tbody>
</table>
3. THE FLUTOOL STRUCTURE

The FLUtool has seven sections:

1) HOME,  2) SETUP,  3) WORKSHEETS,  4) REPORTS,  5) PLUG-INS,  6) CHARTS,

Buttons at the top of each page allow the user to go to each section easily. There is also a table of contents entitled ‘CONTENT,’ as shown in the screenshot in Figure 1.

Figure 1. Screenshot of TABLE of CONTENTS worksheet

Each page has a button that links to the table of contents.
The Flutool structure

The following is a description of the seven sections:

1. The **HOME** section includes the **HOME** worksheet, a worksheet entitled **ABOUT FLU** and the **DASHBOARD**. Figure 2 shows a screenshot of the **HOME** worksheet. This sheet summarizes the tasks included in the tool, the steps to a customized cost estimate, and reports and charts. It also shows the total financial and economic costs and cost per immunized pregnant woman (IPW) at the left.

The worksheet **ABOUT FLU** gives key facts about influenza, an overview on influenza, signs and symptoms, target populations, modes of transmission, seasonal epidemics and disease burden, methods of prevention and treatment, and the WHO response.

The **DASHBOARD** presents a summary of predicted outcomes, predicted financial costs, predicted economic costs, and predicted ratios. It also presents figures and charts of the results.

2. Five worksheets are included under **SETUP – STYLES, LABELS, SUBNATIONAL INFO, ECONOMIC AND DEMOGRAPHIC INPUTS, and OVERALL STRATEGY**. These worksheets will be described in detail in the section on Data Entry.

3. The third set of worksheets is included within **WORKSHEETS**. The worksheets include **MICROPLANNING, VACCINE PROCUREMENT, TRAINING, SOCIAL MOBILIZATION/IEC, SERVICE DELIVERY, SUPERVISION & MONITORING, COLD CHAIN SUPPLEMENTAL, and OTHER**.

4. The fourth set of worksheets is for **REPORTS – OUTPUTS REPORT, INTRODUCTION COSTS REPORT, RECURRENT COSTS REPORT, TOTAL COSTS REPORT, SUMMARY TABLES, and INITIAL INVESTMENT**.

5. The fifth set of worksheets is for **PLUG-INS**. The worksheets are entitled **TRAINING COST ESTIMATOR, VACCINE ARRIVAL COSTS ESTIMATOR, and MEETING COST ESTIMATOR**.

6. The sixth category of worksheets is for **CHARTS**. The worksheets are entitled **FINANCIAL COST OF FLU VACCINE PROGRAMME, ECONOMIC COST OF FLU VACCINE PROGRAMME, and INTRODUCTION COSTS OF FLU VACCINE PROGRAMME**.

7. The seventh category is for the **DATA**.

**Figure 2.** Screenshot of the HOME worksheet
In the FLUtool, cells are colour-coded and shaded to indicate their purpose. That is, the colour, shading, or border indicates whether these are for 1) inputting data, 2) linked to another cell in the workbook, 3) calculated, 4) not filled, or 5) for labels, as can be seen in Table 4.

Table 4. Colour-coding in the FLUtool

<table>
<thead>
<tr>
<th>Cell</th>
<th>Font colour</th>
<th>Cell background shading</th>
<th>Cell background pattern</th>
<th>Cell border</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input number</td>
<td>Blue</td>
<td>Yellow</td>
<td>None</td>
<td>Dotted</td>
<td>None</td>
</tr>
<tr>
<td>Input percentage</td>
<td>Blue</td>
<td>Yellow</td>
<td>None</td>
<td>Dotted</td>
<td>%</td>
</tr>
<tr>
<td>Input dollars</td>
<td>Blue</td>
<td>Yellow</td>
<td>None</td>
<td>Dotted</td>
<td>$</td>
</tr>
<tr>
<td>Linked name</td>
<td>Black</td>
<td>Light brown</td>
<td>None</td>
<td>Double blue line</td>
<td>None</td>
</tr>
<tr>
<td>Linked number</td>
<td>Black</td>
<td>Light brown</td>
<td>Dotted</td>
<td>Single black line</td>
<td>None</td>
</tr>
<tr>
<td>Linked percentage</td>
<td>Black</td>
<td>Light brown</td>
<td>None</td>
<td>Double blue line</td>
<td>%</td>
</tr>
<tr>
<td>Linked dollars</td>
<td>Black</td>
<td>Light brown</td>
<td>None</td>
<td>Double blue line</td>
<td>$</td>
</tr>
<tr>
<td>Calculated number</td>
<td>Black</td>
<td>Light brown</td>
<td>Small dots</td>
<td>Double blue line</td>
<td>None</td>
</tr>
<tr>
<td>Calculated dollars (not totals)</td>
<td>Black</td>
<td>Light brown</td>
<td>Small dots</td>
<td>Solid Line</td>
<td>$</td>
</tr>
<tr>
<td>Calculated dollars (totals)</td>
<td>Black</td>
<td>Light brown</td>
<td>Small dots</td>
<td>Solid Line</td>
<td>$</td>
</tr>
</tbody>
</table>

Figure 3 shows an example of colour-coding in the subnational worksheet for vaccination.

Figure 3. Example of colour-coding used in the SUBNATIONAL INFO worksheet

Software requirements for FLUtool

The FLUtool is designed to be used with Microsoft Excel 2010 so that it can make use of the drop-down menu feature. However, it can also be used with Microsoft Excel 2007 although the user must fill in some information manually in a few places where there are dropdown menus.
4. GATHERING AND ENTERING DATA FOR THE FLUTOOL

Before entering data, the user should examine the worksheets under SETUP and WORKSHEETS and determine whether there is consensus on the service delivery strategy to be used – i.e. will the vaccination take place at fixed ANC clinics and/or supplementary activity immunization, will the vaccination take place over 5 or 12 months? What is the plan for training? Will the vaccine be phased in or delivered nationwide? What other assumptions are required for the maternal influenza vaccination in their country? Information on the service delivery strategy is a necessary input into the tool.

After the strategy has been defined, the tool can be used to estimate/project the costs of implementing one strategy or comparing the costs of implementing two or more strategies. For example, the government may want to compare the costs of introducing maternal influenza vaccine at fixed ANC clinics versus SIAs. In that case, the user should make a copy of the FLUtool and fill in the costs for each of the strategies so that these can be compared.

After the user has identified the strategies to be costed in the FLUtool, s/he should gather the data required for the analysis. A list of data that need to be collected for the tool is given in Appendix 2. Once the user has gathered the data needed for the FLUtool, he or she can begin the data entry.

To enter data into the workbook, the user must turn off the worksheet protection. To do this, the user should do the following: go to FILE, press on INFO, and then put in the password to unprotect the worksheet. The password is MYFLUTOOL.

**Cover page**

The cover page worksheet is titled COVER and a screenshot is shown in Figure 4. The user should select the country from the dropdown menu. S/he should also fill in the name, title, email and telephone number of the responsible officer for the tool.

**SETUP worksheets**

As mentioned above, the SETUP worksheets are entitled LABELS, SUBNATIONAL INFO, ECONOMIC AND DEMOGRAPHIC INPUTS, and OVERALL STRATEGY.

**LABELS**

The Labels worksheet (see Figure 5) is used to enter information on country characteristics. Once this information is entered, the names are automatically entered into other worksheets in the workbook. In the first table, the user should fill in the names of administrative levels such as national or central, second-level areas such as regions or provinces, and other levels in the yellow cells.

In the second table, fill in venues for routine and supplementary activities.
In the third table, fill in the names of health personnel types involved in influenza vaccination.
**SUBNATIONAL INFO**

This worksheet is used to enter information from the subnational levels.

1. In the second column, the user should fill in the names of the second-level areas, e.g. regions or provinces. The user can fill up to 50 names of second-level areas. As user who wants to fill in more than 50 names should call the technical assistance number for the FLUtool. (Cells are locked.)

2. In the third column, the user should fill in the number of third-level areas such as districts. For example, since there are three districts in the Kigali province of Rwanda, the user would fill in ‘3’ in this cell.

3. In the fourth column, the user should list the number of pregnant women by second-level area in their country. This number will depend on the type of facilities that will be involved in the vaccination – e.g. health centres and dispensaries without hospitals.

4. In the fifth column, the user should fill in the number of ANC clinics.

5. In the sixth column, the user should fill in the number of nurses or other clinical health personnel that provide ANC services.

**DEMOGRAPHIC AND ECONOMIC INPUTS**

In this worksheet (see Figure 6), the user should enter various economic data (exchange rates with the US$ or other foreign currency, annual discount rate, and useful life-years for the introduction costs) and their projected values over the next five years. This information can be found on the Ministry of Finance website or on other economic websites.

*Figure 6. Screenshot of the ECONOMIC AND DEMOGRAPHIC INPUTS worksheet*
**STRATEGY**

The **STRATEGY** worksheet (see Figure 7) is used to enter assumptions about the service delivery strategy.

1. In Table 1, select the start year for the programme
2. In Table 2, indicate the months that the influenza vaccine will be available by selecting ‘flu’.
3. Select the months when the influenza vaccine will be available.
4. In Table 3 (section 2), the user should specify which regions/second-level areas will introduce the vaccine by year. To do so, the user should click on **START** for each area introducing the vaccine. For areas that have already introduced the vaccine, the user should click on **CONTINUE**, and on **WAIT** for areas that have not yet introduced the vaccine.
5. In Table 4 (section 3), the assumptions about ANC, such as the proportion of women making at least 1 ANC visit and those making 4 ANC visits, should be entered. The median month of the first visit should also be entered.

![Figure 7. Screenshot of OVERALL STRATEGY worksheet](image)

**WORKSHEETS**

The third set of worksheets is for **WORKSHEETS**. In these worksheets, users should enter assumptions for estimating costs of each activity. Then the estimated number of outputs and costs are shown.

**MICRO-PLANNING**

In this worksheet (see Figure 8), the user should enter assumptions for estimating the cost of micro-planning:

1) the number of activities needed to develop a detailed operational plan at each level for introduction of the influenza vaccine to pregnant women; and
2) estimated costs per activity at each level.
In the second table, the cost of activities without the value of health personnel time is entered under unit financial costs. Under unit economic costs, the cost with the value of health personnel time is entered. Please note that a micro-planning cost estimator plug-in can be used to estimate the costs and is found in the plug-in section.

The third table in the worksheet entitled ‘EXPECTED OUTPUTS AND COSTS’ shows the number of micro-plans that are produced each year and their costs of producing these plans.

**VACCINE PROCUREMENT**

In this worksheet (see Figure 9), the user should enter or review assumptions for estimating the cost of vaccines:

A) the projected vaccine coverage for each dose;
B) estimated vaccine wastage and buffer stock rates;
C) safety box capacity;
D) unit cost per item;
E) adjustment for subsidies.

– i.e. cost per dose less amount per dose paid by government.

The last table in the worksheet entitled EXPECTED OUTPUTS AND COSTS shows the number of vaccines, injection syringes, and safety boxes that are produced each year and their costs of producing these plans.
Gathering and entering data for the FLUtool

**Figure 9. Screenshot of VACCINE PROCUREMENT worksheet**

In this worksheet (see Figure 10), the user should enter assumptions for estimating the cost of training activities:

A) the number of participants and size of each workshop type;

B) estimated costs per training workshop at each level.

The third table in the worksheet entitled 'EXPECTED OUTPUTS AND COSTS' shows the number of training activities that are produced each year and their costs.

**Figure 10. Screenshot of TRAINING worksheet**
SOCIAL MOBILIZATION/IEC

In this worksheet (see Figure 11), the user should enter assumptions for estimating the cost of sensitization:

A) the number of sensitization events at the national level, second-level area, third-level area, and health facilities – i.e. meetings to inform the population about influenza vaccination activities;

B) estimated costs per sensitization activity at each level;

C) communication support costs by phase and level.

The last table in the worksheet entitled ‘EXPECTED OUTPUTS AND COSTS’ shows the number of sensitization activities and communication support that are produced each year and the costs of producing these activities.

Figure 11. Screenshot of SOCIAL MOBILIZATION and IEC worksheet

SERVICE DELIVERY

In this worksheet (see Figure 12), the user should enter assumptions for estimating the cost of service delivery:

1) target population that will attend ANC clinic during the time vaccinations are offered;
2) average number of ANC nurses per ANC clinic or SIA;
3) average number of pregnant women vaccinated per SIA;
4) the number of minutes required to vaccinate a pregnant women in different venues;
5) number of fixed ANC clinics and SIAs;
6) average salary, benefits, and per diem per vaccinator;
7) travel allowance and per diem for vaccinators for visits to school or outreach site.
Gathering and entering data for the FLUtool

Figure 12. Screenshot of SERVICE DELIVERY worksheet

The last table in the worksheet entitled ‘EXPECTED OUTPUTS AND COSTS’ shows the number of that are produced each year and their costs.

SUPERVISION/MONITORING AND EVALUATION

In this worksheet (see Figure 13), the user should enter assumptions for estimating the cost of supervision/monitoring & evaluation:

A) number of supervision trips per year; and
B) number of monitoring supplies per year per level;
C) unit costs per trip or supply;
D) the proportion of supervision trips allocated to influenza vaccine; and
E) cost of a post-introduction evaluation.

The last table in the worksheet entitled ‘EXPECTED OUTPUTS AND COSTS’ shows the number of supervisory trips and monitoring and evaluation supplies that are projected for each year and their costs.

COLD CHAIN

This worksheet (Figure 14) provides guidance on calculation of additional cold chain requirements and their costs. The following steps are followed:

A) Choose the influenza vaccine that will be used.
B) Estimate the maximum proportion of annual vaccine supply present at any given time at each level.
C) Find out from the cold chain logistician the current amount of cold chain storage and the amount of excess cold chain capacity at each level. Calculate with the cold chain logistician the additional cold chain and its cost that is required at the national, second-level area and third-level area.
D) Enter the additional cm³ of cold chain storage needed at each level into the table EXPECTED SUPPLEMENTAL STORAGE AND COSTS BASED ON ASSUMPTIONS. Enter the cost of purchasing additional cold chain storage required at each level in Column L.

The last table in the worksheet entitled ‘ANNUALIZED COSTS BASED ON ESTIMATED COSTS’ shows the annualized financial and economic costs by year and for the total period.

**Figure 13. Screenshot of the SUPERVISION & MONITORING worksheet**

**Figure 14. Screenshot of COLD CHAIN SUPPLEMENT worksheet**
OTHER

In the **OTHER** worksheet (see Figure 15), the user should enter assumptions for estimating the cost of other recurrent and capital goods not found in other worksheets. For example, waste management is included in this worksheet under other recurrent costs. For each recurrent cost item, fill in data on items needed and their unit costs:

1) number of items needed by year in Table A; and
2) unit cost per item in Table B.

For other capital goods required (e.g. supplemental forms of transport such as bicycles or motor-cycles) fill in information about the goods:

1) number of capital goods needed and their useful life years in Table C; and
2) unit cost of each good in Table D.

*Figure 15. Screenshot of OTHER worksheet*

The last table in the worksheet titled ‘EXPECTED OUTPUTS AND COSTS’ shows the number of safe disposal of supplies that are projected for each year and the costs.
The section on **PLUG-INS** is used to assist in calculation of the projected costs of trainings, vaccine shipping and handling, and meetings. The first worksheet (Figure 16) is on **TRAINING COST ESTIMATION**. In this worksheet, the user can enter information on resources used for the training such as health personnel, travel and allowances, supplies, and room rental.

Figure 16. Screenshot of the TRAINING COST ESTIMATION PLUG-IN

The second plug-in (see Figure 17) is for estimation of vaccine shipping and handling costs. In the worksheet, the user should enter the add-on charges for vaccines for shipping and handling.

Figure 17. Screenshot of the VACCINE ARRIVAL COSTS ESTIMATOR
The third plug-in (see Figure 18) is for estimation of meeting costs. In the worksheet, the user should enter information on the resources used for meetings or workshops.

**Figure 18. Screenshot of MEETING COST ESTIMATOR**
5. STUDY FINDINGS

Six worksheets present the results of the costing.

1. The first worksheet shows the **EXPECTED OUTPUTS BASED ON STRATEGIC ASSUMPTIONS**.
2. The second worksheet shows the total **INTRODUCTION COSTS**.
3. The third worksheet shows the **RECURRENT COSTS** – vaccines, continuing social mobilization and IEC, service delivery, supervision and monitoring and evaluation, and other (waste management – by year and by financial and economic costs).
4. The fourth worksheet shows **TOTAL COSTS**.
5. The fifth worksheet entitled **SUMMARY TABLES** shows costs in local currency and USD.
6. The sixth worksheet shows **INITIAL INVESTMENT** (INTRODUCTION COSTS, SUPPLEMENTAL COLD CHAIN and OTHER CAPITAL GOODS) or upfront costs without annualization.

**INTRODUCTION COSTS**

In the **INTRODUCTION COSTS** worksheet (Figure 19), the results of cost calculations for each introduction activity is shown – i.e. micro-planning, training and sensitization/ initial IEC. As mentioned earlier, these costs are incurred at the time the vaccine is introduced at the national level and/or at second/third-level areas and are not repeated.

**Figure 19.** Screenshot of INTRODUCTION COSTS REPORT worksheet
For example, micro-planning workshops/meetings are important for planning the operational roll-out of vaccination activities but are needed only one-time in each locale where the vaccination takes place. Introduction activities do not always occur during the first year and could take place during the second or third year if there is phasing-in of the vaccine over time.

Introduction costs are treated as capital costs in the worksheets since these last more than one year. The depreciation of total introduction costs is shown at the bottom of the worksheet. See section 2.1.2 for a discussion of capital costs.

**RECURRENT COSTS**

In the RECURRENT COSTS worksheet (Figure 20), the results of cost calculations for each recurrent cost are shown. As mentioned earlier, these costs last for less than one year. For example, vaccines, syringes and safety boxes need to be purchased each year.

![Screenshot of RECURRENT COSTS REPORT](image)

**TOTAL COSTS**

In the TOTAL COSTS worksheet (Figure 21), the total costs for each year are shown as well as costs for different cost categories. Costs are shown separately for INTRODUCTION COSTS, RECURRENT COSTS, SUPPLEMENTAL COLD CHAIN, and OTHER CAPITAL COSTS.

**OUTPUT REPORT**

In the OUTPUT REPORT worksheet (see Figure 22), the various outputs produced for each cost categories are shown – e.g. number of micro-planning sessions and persons trained.
Figure 21. Screenshot of TOTAL COSTS REPORT worksheet

Figure 22. Screenshot of OUTPUT REPORT worksheet
SUMMARY TABLES

In the SUMMARY TABLES worksheet (Figure 23), the financial and economic costs are shown by cost category. These data are used for the charts shown in the CHARTS worksheet.

Figure 23. Screenshot of SUMMARY TABLES worksheet

INITIAL INVESTMENT

In the INITIAL INVESTMENT worksheet, the costs that comprise initial investment (introduction costs, cold chain supplement, and other capital costs) are totaled (see Figure 24).

Figure 24. Screenshot of INITIAL INVESTMENT report
In the CHARTS worksheet, bar and pie charts are used to display the results for financial and economic costs. The bar chart shows the projected financial and economic costs by year, using colour to indicate each cost component. The pie chart illustrates the share of total projected costs for each cost component.

Figure 25. Screenshot of CHARTS worksheet
Appendix 1. Glossary of terms

Annualization: Division of total costs by life expectancy of the good, used to WORK the cost of a capital good over its lifetime.

Capital items: Goods that last for longer than one year, such as equipment

Cost-effectiveness analysis: Comparison of the costs and effectiveness of alternative ways of achieving the same objective.

Depreciation: Amount of capital used during one year

Discounting: Accounts for time preference through calculating the present value using the discount rate.

Economic costs: Estimates all costs of an intervention, regardless of the source of funding, so that the opportunity cost of all resources is accounted for in the analysis, includes in-kind and donor contributions. Takes into account resources that are tied up for one activity and are not available for other purposes (opportunity cost). Also allows for the fact that people prefer receiving goods and services now rather than later in the future (time preference) and includes discounting for capital items.

Financial costs: Estimates the actual monetary flows of the buyer such as the Ministry of Health. Does not include the value of resources already paid for, such as personnel time.

Introduction costs: Introduction costs are initial one-time programmatic activities and include micro-planning, initial training activities, and initial sensitization/IEC. These are treated as capital costs in economic costing.

Investment costs: Initial expenditures used in preparation for an intervention. These include introduction costs plus purchase of capital goods such as cold chain equipment and transport purchases.

Opportunity costs: The cost of an alternative that must be foregone in order to pursue a certain action.

Present value: The current value of goods or services, usually applied to costs or outcomes expected in the future.

Recurrent items: Goods or items used in the delivery of a service or intervention that last less than a year, e.g. personnel salaries

Straight-line depreciation: This type of depreciation assumes that all of the benefit from the capital good is work evenly spread throughout its lifetime; it involves annualizing the total costs but not discounting.

Time preference: Preference for receiving goods and services at one time over another, usually expressed as wanting goods and services now rather than later in the future.
Appendix 2. List of data requirements

COUNTRY CHARACTERISTICS

- Administrative levels
- Types of health personnel working in immunization planning, training and vaccination
- Types of health facilities where vaccination will take place
- Names of second-level areas in countries (e.g. regions, provinces or districts)

PROGRAMME VARIABLES

- Immunization coverage goal (%)

ECONOMIC VARIABLES

- Exchange rate (TZS to $US1)
- Annual discount rate (%)

PROCUREMENT VARIABLES

- Vaccine wastage rate (%)
- Vaccine buffer/reserve stock (%)
- Syringe wastage rate (%)
- Syringe buffer/reserve stock (%)
- Safety box wastage rate (%)
- Safety box buffer/reserve stock (%)
- Safety box capacity (number)
- Subsidized cost per dose of vaccine (unloaded)
- Unsubsidized cost per dose of vaccine (unloaded)
- Doses per fully immunized child (FIC) (number)

TRAINING VARIABLES

- Health workers trained per operational dispensary (number)

SOCIAL MOBILIZATION AND IEC VARIABLES

- Sensitization meetings per school (held in new schools only) (number)
- Sensitization meetings per health facility (held in new dispensaries only) (number)
- Personal IEC materials printed per FIC (#) (e.g. brochure, handout)
- Collateral IEC materials printed per active health facility (# each year) (e.g. posters, hangers, wall charts)
- Cost to broadcast one radio public service announcement
Local radio public service announcements (PSAs) per year per active region
Cost to broadcast one television public service announcement
National television public service announcements (PSAs) per year

**SERVICE DELIVERY VARIABLES**

*IN-FACILITY:*
- Average number of minutes per visit for influenza vaccine (number)
- Proportion of vaccinations administered in health facility (%)

**MONITORING & EVALUATION VARIABLES**
- Allocation of supervision costs to influenza vaccine programme (%)
- National supervisory trips per year (number)
- Days per national supervisory trip (number)
- Regional supervisory trips per year (number)
- Days per regional supervisory trip (number)
- District supervisory trips per year (number)
- Days per district supervisory trip (number)
- Average cost of fuel per litre (TZS)
- Fuel allotment for a national supervisory tour (number of litres)
- Fuel allotment for a regional supervisory tour (number of litres)
- Fuel allotment for a district supervisory tour (number of litres)
- Tally sheets per operational dispensary per year (number, includes wastage)
- Tally sheets per school visit (number, includes wastage)
- Vaccination cards per fully immunized child (number, includes wastage)
- Cost of post-introduction evaluation

**DELIVERY VARIABLES AND ASSUMPTIONS BY REGION**
- Target population defined as the number of pregnant women in the target population by region by year (e.g. use UNDP data)
- Number of operational health facilities used for influenza vaccination

**PRICE DATA FOR COSTS OF TRAINING AND SOCIAL MOBILIZATION AND IEC**

*Salaries and per diems*
- Salaries by type of staff* (including benefits)
- Per diems by type of staff*

---

* Use Table 1 below.
Vehicle- and transport-related prices
- Travel allowances
- Fuel price per litre

Workshops and meeting prices
- Daily hall rental charges for workshops
- Daily meals and refreshments (breakfast, lunch and dinner)

Material design, production and printing prices
- Printing costs per
  - Tally sheets
  - Vaccination cards
- IEC charges for
  - Print material development and production
  - Radio spot development and production
    (Develop one set of coordinated radio spots (:60)(:30)(:15))
  - Television spot development and production
    (Develop one set of coordinated television spots (:60)(:30)(:15))
  - Printing leaflets (assumes print run of 10 000 or more)
  - Printing posters (assumes print run of 10 000 or more)
  - Airing radio spots (assumes block purchase of one month of spots)
  - Airing television spots (assumes block purchase of one month of spots)

Table 1. Local salaries and per diems in local currencies

<table>
<thead>
<tr>
<th>Salary Category</th>
<th>Salaries including benefits</th>
<th>Per diem</th>
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<tbody>
<tr>
<td>National EPI manager</td>
<td></td>
<td></td>
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<tr>
<td>National administrator</td>
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<tr>
<td>National surveillance officer</td>
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<td>National cold chain officer</td>
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<tr>
<td>Other (specify)</td>
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<tr>
<td>National EPI training and communication officer</td>
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<td>National data manager</td>
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<tr>
<td>National assistant data officer/manager</td>
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<td>National supplies officer</td>
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<td>National driver</td>
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<td>Second-level (regional/provincial) medical officer</td>
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<tr>
<td>Role</td>
<td>Salaries including benefits</td>
<td>Per diem</td>
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<td>Second-level (regional/provincial) health officer</td>
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<td>Second-level (regional/provincial) cold chain/logistics officer</td>
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<td>Second-level (regional/provincial) reproductive and child health coordinator</td>
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<td>Second-level (regional/provincial) assistant cold chain officer</td>
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<td>Second-level (regional/provincial) cold chain officer</td>
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<td>Second-level (regional/provincial) secretary</td>
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<td>Second-level (regional/provincial) driver</td>
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<td>Third-level (e.g. district) medical officer</td>
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<td>Third-level (e.g. district) health officer</td>
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<td>Third-level (e.g. district) health secretary</td>
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<td>Third-level (e.g. district) cold chain/logistics officer</td>
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<td>Third-level (e.g. district) reproductive and child health coordinator</td>
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<td>Health facility clinical officer-in-charge</td>
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<td>Health facility nursing officer/nurse midwife</td>
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<td>Health facility health officer/health assistant</td>
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<tr>
<td>Health facility volunteer</td>
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