Determining the Cost of Social Protection Measures

*Description of an electronic tool that provides assistance for determining these costs in a user friendly way.*
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### ACRONYMS

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<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>DFID</td>
<td>United Kingdom Department for International Development</td>
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<tr>
<td>EFA</td>
<td>Education for All</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
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<tr>
<td>GTZ</td>
<td>Deutsche Gesellschaft für Technische Zusammenarbeit</td>
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<td>ILO</td>
<td>International Labour Office</td>
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<tr>
<td>IMF</td>
<td>International Monetary Fund</td>
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<tr>
<td>LCU</td>
<td>Local Currency Unit</td>
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<tr>
<td>PPP</td>
<td>Purchasing Power Parity</td>
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<tr>
<td>UNAIDS</td>
<td>The Joint United Nations Programme on HIV/AIDS</td>
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<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
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<td>UNDP</td>
<td>United Nations Development Programme</td>
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<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
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<tr>
<td>US$</td>
<td>Dollars of the United States of America</td>
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<tr>
<td>WHO</td>
<td>World Health Organisation</td>
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1. Rationale of the model

An electronic costing model has been developed to provide assistance to determine the cost of a basic social security benefit package in a user friendly way. It can serve as an educative tool for people with no quantitative skills allowing them to use Excel. The electronic model is based on a methodology of ILO costing studies. It can be used by policy-makers and other stakeholders to produce a first rough assessment of the feasibility of basic social security programmes in a country. But actual policy making has to be assisted with much more detailed costing and impact analysis.

The basic social protection tool is a costing model which will estimate the cost and feasibility of providing a set of basic social protection interventions (implemented through social transfers in cash and in kind):

1. Basic universal pensions: old-age (for selected age groups) and disability benefits (at selected benefit level)
2. Child benefits, for orphans or for all children of selected age groups (at selected benefit level)
3. Targeted assistance to (selected percentage) of poor households (if applied, it excludes basic universal pensions and child benefit) at selected benefit level.
4. Basic education
5. Basic health care

Why this set of basic social protection measures?

- It is internationally recognized that universal basic pensions have a strong impact on improving the livelihoods of older persons and could alleviate at least the most severe forms of poverty.\(^1\) Old-age pensions are now globally acknowledged as an effective poverty alleviation mechanism for the elderly (DFID 2005; HelpAge International 2004). The receipt of the social pension by the elderly, and especially by the poor not only brings in much needed regular income but also provides crucial financial support to vulnerable households including children. Pension recipients redistribute cash income in households, finance school fees and medication, etc (HelpAge International, 2004).
- It is a well acknowledged fact that poverty rates are higher in households with children than in households without. Children in poor households experience higher mortality rates, higher health related problems and higher illiteracy rates trapping them in the vicious cycle of poverty. Economic vulnerability of these poor households leads to children being required to bring in an income for survival of the household and thus puts these children at the risk of being forced into the worst forms of child labour. The positive effects of social transfer to households with children have been ascertained.
- Human capital investment through education is an important component of economic growth.
- The link between good health, a productive life, economic development and poverty reduction is not contested. Therefore, it is indispensable that the basic social protection package also contains a strong health component.

\(^1\) Cf. e.g. Barrientos 2002; Barrientos, et al. 2003; Barrientos and Lloyd-Sherlock 2003; Charlton and McKinnon 2001.
The model consists of two modules: a costing module and a distribution module.

1. The costing module estimates the costs of introducing basic social protection measures. The module is a simple and robust quantitative deterministic "if-then" model with long-term projections (30 years). Projections are based on interlinks between demographic parameters, macro-economic parameters (i.e. economic growth, productivity and inflation which are treated as exogenous variables) and social protection benefits. The model projects expenditure and revenues in the social and public sectors in form of extended budget scenarios based on exogenous assumptions for key parameters of the model. The model takes into account country specific information on demographic developments as well as macro-economic developments.

2. The distribution module estimates the extent of poverty reduction through the cash benefits under the selected social protection measures.

At this moment the electronic model treats only the costing module. The objective of the model is to point out that the cost of basic social protection measures can even be borne by low income countries (with maybe an introductory phase, during which financial input from the donor community will be required). The impact on the national budget is given in local currency units and in per cent of GDP, thus giving hard figures on what should (and can) be financed by the government itself and what is needed as input from outside. It will thus help politicians when deciding on how to improve the situation of people in low income countries, show the necessary financial input of government and of external donors.

Thanks are due to the persons who worked on it and to the United Kingdom Department for International Development (DFID), who contributed considerably to the cost of setting up this model, as well as to the GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit).

SyynX Solution GmbH, Frankfort, Germany converted the EXEL sheets of the original model into the present user friendly tool.
2. Introduction

As mentioned above the rationale of this exercise inter alia is to convince politicians that social protection measures cannot only be financed in and by the more rich countries, but that even low income countries can afford to introduce some basic social protection measures. In the first years after the introduction financial inputs from the donor community will be needed. Therefore the model not only calculates the cost of a chosen range of basic social protection measures for a period of 30 years after a base year, but as well shows how much input from the donor community would be needed in the first years after its introduction. It is generally assumed and anchored in the calculation that any government would be in a position to come to a balanced budget after a chosen time period.

In order to provide a wide range of possible options the user of the model can choose under different social protection measures, as well as between different ways of projecting the cost of most of the measures.

2.1 Social protection measures

The pre-defined basic social protection measures to be costed are:

1. Universal old age and universal disability benefits
2. Child benefits
3. Targeted cash-transfer to poor households
4. Basic Education
5. Basic Health care

The targeted cash-transfer to poor household is not an additional benefit to other cash benefits, but would be paid instead of the other cash benefits; universal old age and disability benefits, and child benefits.

Administration costs are additionally calculated for the cash benefits, i.e. for the universal old age and disability benefits, the child benefits, and the targeted cash-transfer to poor households.

In the costing module expenditure of basic social protection measures is differentiated from other government social expenditure. The projections are carried out for a 30-year period, starting from the base year which has to be chosen by the user. The assumed target proportion of government expenditure will be estimated in relation to GDP.

2.2 Macroeconomic and fiscal assumptions

There are several decisions that have to be made related to macroeconomic and fiscal assumptions. These decisions will have an effect on the result of the cost of the social protection measures.

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2 Some people may argue that basic education would not be a social protection measure. This is true, but in order to allow for a wide range of possible new measures it is included here. It can anyhow be excluded in the part where the scope of the projection is defined.
1. GDP is assumed to grow at the constant rate equal to growth rate population at age 15-64 plus $x$. The user has to estimate this value.
2. The annual inflation rate is assumed to stay constant during the projection period. The user just has to estimate the annual rate.
3. It is assumed that the government expenditure will reach the target proportion to GDP. The user has to enter the target ratio of total government expenditure to GDP for the 10th and the 30th year of the projection period (default 30%).
4. Government revenue will increase during the projection period to balance government expenditure. The user can choose the time period over which the gap has to be closed (10, 15, 20 or 25 years).
5. The exchange rate (LCU per US-dollar) is assumed to stay constant during the projection period. The user just has to estimate the rate for the base year.
6. Non-basic social protection expenditures are kept constant as % of GDP.

2.3 Data requirements

The model requires a lot of data: population data, economic data, data linked to government expenditure and revenue, and data linked to the social protection measures. We can resume the data requirements under 6 topics:

1. Population for base year and population projections (total and proportions of selected age groups)
2. Household size, orphans rates, disability rates
3. GDP, total government revenue, total government expenditure, grants
4. Government total expenditure on education and on health and percentages of that currently spent on basic parts of those services
5. Government expenditure on non-health social protection and percentages of that spent on contributory social protection (including programmes for government employees), on non-contributory targeted and non-contributory universal benefits
6. Basic indicators of coverage and unit costs in health care and education.

In what follows only the costing module is described. The part dealing with assessing the effect on poverty reduction – the distribution module - will be presented in a second version.
3. How to use the model

When using the model one has to decide on the base year, on the range of social protection measures to be taken into account and on a wide range of input data for the base year and for some other years.

Usually you will open the tool by clicking the button “Start” of your computer, then go to “programmes”. If you have installed different programmes the names of these will show up and you click on “Social protection tool”, otherwise only this name will appear and you have to click on it.

3.1 General settings

The first screen which will show up consists of two parts named “Main settings” and “Select scope of simulation” and looks as follows:

![Image of Social Protection Tool]

At the top bar you will see three icons:
- Creating a new file
- Opening an already created file from a list of saved files
- Saving the file in use

Later a fourth icon will appear (to verify and check the data input of the first page (Basic settings)).
3.1.1 Main settings

The upper part of this screen is “Main settings”; here you will give a name to the file to be created and give a short (speaking) description of what is to be calculated, as well as your name for later identification.

3.1.2 Select scope of simulation

In the second part named “Select scope of simulation” you will have to enter the base year of the simulation into the first input field. It has to be noted that all chosen social protection measures will be introduced only in the year after the base year. Thus if you take the year 2005 to be the base year, the chosen basic social protection measures are assumed to be introduced in the year 2006.

In the present version of the model it is not possible to introduce different social protection measures at different points in time within the projection period.

After this you will have to choose whether to include basic education and/or basic health care (by clicking on the Yes – No buttons).

If the user has chosen to include basic education the school attendance age has to be decided.

Then you may decide whether to pay cash benefits as targeted benefits to poor households or whether to pay cash benefits as universal benefits to individuals. These two possibilities of cash benefits are mutually exclusive. If you have decided for targeted benefits no further input is necessary in this screen (targeted cash transfers replace universal basic old-age and invalidity pensions as well as child benefits).

If you have decided for universal benefits you will be asked whether these cash benefits should also include child benefits (or otherwise be universal pensions only).

After this no more inputs are necessary in this screen.

The model internally calculates the cost for those basic social protection measures as chosen above as well as the respective administrative cost for the cash benefits. For basic health care and basic education administrative cost are already included in the overhead cost or in the respective per capita cost.

After having filled in you will click on the entry field “Generate new dataset”.

Then the following screen(s) will appear on your computer;
At the very right-hand end in the top bar you find a forth icon. By clicking on this icon you can verify and check your entries in the first input sheet.

In the present screen data have to be entered in two sheets:
1. Basic settings
2. Demographic and economic inputs and assumptions

The data input is linked to the selected scope of simulation (the social protection measures that have been chosen). The programme will hide any question or input decision that was excluded in the input sheet “Main settings”. In the following pictures (“screen shots”) all measures were included.

3.2 Basic Settings

In this part the user has to define the way how the selected social protection measures are actually shaped and the method how their financial costs are to be projected.

3.2.1 Basic universal pension

Basic old age pensions are increasingly recognized as an effective mechanism to protect older persons from poverty and destitution in a development context (DfID 2005; HelpAge International 2004). Means-testing would be a possible way to target the benefit to the most needy and thus may seem to be a effective way to limit spending. However, existing cross-country evidence has shown benefit targeting is costly and often does not produce the desired
results (Coady, et al. 2004). Therefore, the model calculations are based on a system of universal benefits.\(^3\)

There are several decisions that have to be made related to the universal pensions:

1. **Coverage**: the benefit is provided to who? There are two possible answers:
   - Older persons only
   - Older persons and disabled below pensionable age

2. **Starting age of the pension**:
   - 60
   - 65
   - 70

3. **Amount of the benefit**:
   - As % of GDP per capita
   - As specified amount in LCU per day

The chosen method of calculation may be influenced by the availability of data, or reflect national circumstances.

After one particular way of calculation is defined by clicking on the respective button more relevant questions will appear, but any question to the not chosen way is hided.

- If the amount of benefit is calculated as a % of GDP per capita, the user will be asked to add the percentage.
- If the amount of benefit is calculated as specified amount in local currency units per day, the user will be asked to add the specific amount in LCU

4. The calculated amount of the universal pension in either case can be limited in US$ in the base year, adjusted for inflation thereafter. If the user wants a limitation this has to be indicated and the amount of the limitation be specified; a usual value would be 0.5 US$ per day or 1 US$ a day\(^4\). Otherwise any further question is hided.

By scrolling you will see the following part:

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\(^3\) If the user of the model has chosen for targeted cash benefits, these variables, linked to basic universal pensions, will not appear.

\(^4\) This value mirrors a value that was mentioned in the Millennium Development Goal indicators, although US$ PPP were meant there.
3.2.2 Child benefits

Regarding child benefits (in the form of a cash transfer), the user has to decide on:
- the eligibility;
- the method of calculation;
- the amount of child benefits;
- whether a maximum benefit amount is to be taken into account or not.

1. Eligibility refers to choosing an age group of children:
   - orphans aged less than 15 years
   - all children aged less than 5 years
   - all children aged between school age ‘x’ (school attendance age chosen by the user of the model in the ‘Basic setting page’) and 14 years
   - all children aged between 5 to 14 years
   - all children younger than 15.

2. Method of calculation:
   - As % of GDP per capita
   - As specified amount in LCU per day

3. The amount of the benefit:

---

5 If the user of the model has chosen for targeted cash benefits, these variables, linked to child benefits, will not appear.
After one particular way of calculation is defined by clicking on the respective button more relevant questions will appear, but any question to the not chosen way is hided.

- If the amount of benefit is calculated as a % of GDP per capita, the user will be asked to add the percentage.
- If the amount of benefit is calculated as specified amount in local currency units per day, the user will be asked to add the specific amount in LCU for the chosen base year.

Information as to possible data on amounts of child benefits can be found in a joint paper of UNAIDS, UNICEF and USAID.

4. The calculated amount of the child benefit in either case can be limited in US$ in the base year, adjusted for inflation thereafter. If the user wants a limitation this has to be indicated and the amount of the limitation be specified; a usual value would be 0.25 US$ (PPP) up to 0.5US$ a day (this level of the child benefit is equivalent to half of the universal old-age and disability pension benefit). Otherwise any further question is hided.

By further scrolling the following part will appear:
3.2.3 Targeted cash benefits

Targeted cash transfers replace universal basic old-age and invalidity pensions as well as child benefits. The variables linked to targeted cash benefits only appear if the user has chosen ‘Targeted cash benefits’ in the basic settings (see 3.1.2).

Regarding targeted cash benefits, the user has to decide on the:

- percentage of households receiving the benefits

The user may calculate this portion by using a poverty line from national surveys or take it from given national data. *In order to be better comparable with the distribution module it is advised to use a poverty line.*

- amount in LCU per day

The only way of calculating targeted cash benefits is by setting a daily amount for the base year. It is annually increased by inflation. There is also no limitation of the daily amount possible.

3.2.4 Administration cost for cash benefits

In the next question you will be requested to put in a value for administrative cost as percentage of benefit expenditure. This question refers to the option of cash benefits chosen;

- if you have decided for universal benefits it will refer to universal pensions and universal child benefits;
- if you have decided for targeted benefits for poor households it will refer to those benefits only. The value for the targeted benefits should be higher than that for universal benefits, since it is more difficult to define the eligible beneficiaries as well as to deliver the benefits to them.

These values would depend on national circumstances; as a standard value you could use 15% of cash benefits for universal cash benefits: universal pensions\(^6\) and child benefits, and 33% of the targeted cash-benefit\(^7\) to poor households.

The administrative cost for basic education and basic health care are provided for in their overhead cost.

3.2.5 Basic education\(^8\)

In the case of basic education the user has to decide on the:

- Eligibility;
- Method of calculation;

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\(^6\) This value reflects the situation in Namibia. See: Schleeberger, E. 2002. Namibia’s Universal Pension Scheme, Extension of Social Security (ESS) Paper Series, 6, Geneva, ILO

\(^7\) The value for targeted benefits should be higher since identification of eligible persons and delivery of benefits is more difficult. See also: Schubert, B. 2005. The Pilot Social Cash Transfer Scheme: Kalomo District-Zambia, CPRC Working Paper, 52, Manchester, Chronic Poverty Research Centre.

\(^8\) Inputs for this benefit will only be requested and shown if this benefit is selected (under ‘Basic settings’).
- Amount of capital cost in percent of recurrent education cost.

More data may be requested at the end of the sheet “Demographic and economic inputs and assumptions” depending on the chosen method of calculation.

1. As to eligibility the user has first to decide whether the basic education should start at 5 years or at a different age. In any case the end year is 14 years of age. If the user decides that school age would start at an age other than 5 years e.g. at ‘x’ years (chosen under basic settings, school attendance age), it is important that the percentage of people in this age group is filled in into the part dealing with population data, i.e. the age group ‘x’-14 years (see also 3.3.1).

2. Referring to the calculation method the user will choose between
   - an approach based on per capita or unit cost according to national data, or
   - a method based on staff cost that are annually indexed.

   ➢ If the calculation is based on national per capita cost or unit cost per pupil, the user has to fill in the annual cost per pupil for the base year in LCU.

   ➢ If the calculation is based on staff cost, the user will have to put in proportion of non-staff cost (without capital cost) to staff cost for the base year (filled in under ‘Basic settings’) and for the base year + 5 years. Also the method of indexation of teachers’ wages has to be selected. There are four different options for indexation, viz. increase according to
     - GDP per capita growth
     - one third of GDP growth
     - inflation
     - 50% of the surplus of GDP growth over working age population growth plus inflation.

The level of non-staff cost on wage cost in the respective years are to be calculated from national statistics. If such data are not available it is advised to use a level in the range between 31 % in the base year and 33% after 5 years9.

3. Capital costs as percentage of recurrent education cost is also requested. If there are no data available a value of 15 percent is recommended10.

3.2.6 Basic health care11

By further scrolling you will see the parts “Basic health Care” and “Select resource allocation” at the end of the input sheet.

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11 Inputs for this benefit will only be requested and shown if this benefit is selected (under ‘Basic settings’).
The user of the model has to decide on the:
- Actual coverage rate;
- Assumed coverage rate in 5 years;
- Assumed coverage rate in 10 years;
- Method of benefit calculation.

1. In the case of basic health care the first information needed refers to the coverage rate in the base year and five and ten years after the base year. From the eleventh year on the value of the tenth year will be kept constant. The coverage rate used here indicates the percentage of persons in the total population who will actually be covered by the new measure on basic health care. Government should strive to have all persons covered at least after ten years; hence the value for base year +10 years should be 100%.

2. The model provides two options for calculating the cost of universal basic health care.
- The first one uses national per capita or unit cost estimates. These figures are indexed with inflation.
- The alternative method proposes a country specific cost base. It takes into account the following two parameters: medical staff ratio to population; and wages of medical staff and overhead non-staff costs. Once the number of health staff required to deliver the services has been calculated, staff costs can be estimated based on average wages of health care staff.\(^{12}\)

\(^{12}\) It should be noted that the model does not take into account the difficulty that individual countries may experience in finding the necessary number of qualified medical staff (doctors/nurses) needed to fill the posts that will be created.
If the method of national per capita cost is chosen you are requested to put in the assumed amount of annual health expenditure per person in LCU in base year and 5, 10 years later. In this case the data for the time after 10 years are increased with inflation only.

If there are no national data available, but you prefer this method you can find relevant data in some papers of the WHO.13

If the method of calculation is chosen as depending on the development of staff cost you are requested to provide the:

- percentage of non-staff cost to staff cost has to be provided. This value would include all overhead cost and capital cost. If there is no information available a value of 67 per cent is recommended.14
- way how wages of the medical staff are indexed. By clicking on the buttons shown you can choose under four different formulas as described above under the topic basic education.

More data will be requested at the end of the sheet “Demographic and economic inputs and assumptions” depending on the chosen method of calculation.

3.2.7 Resource allocation

In order to calculate the necessary external financing the user has to specify the following:

1. The proportion of total government expenditure that will be allocated to finance the new basic social protection measures in first year after the introduction (the year after the base year). The value of this portion will depend on the chosen option. If either basic health or basic education is included the value would typically be 30 per cent, otherwise 20 percent. In case the cost of the chosen social protection measures could be totally met by the government at a lower portion than the chosen one, the programme will internally determine the value of this lower portion and use it for further calculations.

   This information is used in the output sheet “Scenarios” when calculating the amount of domestically available financing sources for covering the cost of the newly introduced social protection measures, hence as well as for determining the amount that is necessary from external donors.

2. The data on the proportion of existing expenditure on universal or categorical non-contributory social protection benefits in the base year, which will be allocated to finance the new cash. Typical (non-categorical) non-contributory social protection measures are non-contributory pension systems.

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14 Estimated from the Ghana Medium-term Expenditure Framework (Government of Ghana)
3. The proportion of existing expenditure on targeted non-contributory social protection benefits in the base year, which will be allocated to finance the new cash.

The user has to specify the respective percentage data in either case whether, targeted benefits or universal benefits are chosen or not. However, their values may differ depending on the chosen option. The programme will indicate in the wording of the question whether targeted benefits are chosen or otherwise.

Information on the requested data may be derived from administrative records, from budget plans of social security institutions etc.

### 3.3 Demographic and economic input and assumptions

After having filled in all requested data in the sheet “Basic settings” the user has to click on the index-tab that opens the input sheet “Demographic and economic input and assumptions”.

The model needs demographic and economic data for the base year and - for some measures - also for particular years thereafter. These data are to be input in the parts

1. Demographic data and projections, and
2. Economic data and assumptions.

Besides this general demographic and economic information, the user will be requested to add also some more detailed information regarding some of the covered benefits:

3. Additional data and assumptions on health care
4. Additional data and assumptions on education.

#### 3.3.1. Demographic data and projections

A very important input in the costing model is the data on population in the base year and the projection on how the number of total population and its breakdown by age groups will develop. Age-specific data are necessary in order to provide the appropriate demographic basis for costing of specific social protection measures (child benefits, education benefits and pensions). The population data refer to males and females together; no breakdown by sex is needed.

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15 Inputs for this benefit will only be requested and shown if this benefit is selected (under ‘Basic settings’).
In order to scale down the necessary input data for the whole projection period the number of total population need only be input for every 5-years: for the base year and for 5, 10, 15, 20, 25 and 30 years (reference years) thereafter, respectively. For the years in between two reference years, the model will calculate the necessary numbers by linear interpolation.

For the break down of total population by age group, percentage data are to be input for the reference years.

The age groups needed are:
- 0-4 years
- 5-14 years
- ‘x’-14 years (chosen under basic settings, school attendance age)
- 60 and more
- 65 and more
- 70 and more

The value x-14 years is only necessary if the user has decided that according national circumstances the school age starts at an age different than 5 years. In this case the respective population data must be entered into the input field as percentage of total population.
At the end of the sheet further information is requested:

- The percentage of disabled aged 15-59 years, aged 60-64 years and aged 65-69 years, within the total number of persons in the respective age groups. This information is necessary when universal pension are not only to be paid to elder persons beyond the chosen pensionable age, but also to disabled persons before pensionable age.

Data may be taken from national population surveys, from administrative records or will have to be estimated by the user.

- The percentage of orphans among all children aged less than 15 years in the base year is needed if child benefits are restricted to this group.

This data can usually be found in or be calculated from national population surveys.

- The average number of persons per household is needed for the calculation of the cost of targeted cash benefits.
3.3.2 Economic data and assumptions

The model takes into account country specific economic information such as real and nominal gross domestic product (GDP), inflation, exchange rate, purchasing power parity (PPP) and government expenditure/revenue. Based on historical data, projections of economic and financial parameters were undertaken for the 30-years projection period.

Economic assumptions

The user has to decide on the following variables:

1. The growth path of GDP; GDP is assumed to grow in line with the growth of the working age population (15-64 years) plus an increment x. The value of x in percent has to be estimated. The user may be inclined to interpret the increment as productivity. However, this would entail that the rate of unemployment stays constant. Hence the value of the increment would better reflect the impact of productivity plus an increase in the rate of employment (or decrease of unemployment). This value will be kept constant for the whole projection period. Keeping this in mind the user will decide on the value of the increment, i.e. by also taking into account a possible decrease in the rate of unemployment during the projection period.

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2. The second data to be provided is the annual inflation rate in per cent; as for the above mentioned increment it will be constant for the whole projection period.

The value for this data may be calculated from long-term information of the past, from national development plans, or by comparison with similar economies (See also the respective country reports of the IMF, and the IMF World Economic Outlook Database).

3. The last data to enter in this part are target ratios for total government expenditure in percent of GDP for the 10th and 30th year of the projection period, respectively. The value of this data reflects the assessment of the government which part of GDP could be spent for government expenditure in the respective years. The data will be used to calculation of values in the output sheet “Scenarios”.

Information may be found in publications of the national policy planning authority or similar institutions. If no information is available a value of 30 per cent for each of the selected years may be taken.

The model assumes that government takes all efforts to come to balanced budget. This cannot be achieved at once but usually need some time. Hence the user is requested to decide on the number of years that are necessary for closing the gap between government revenue (less external grants) and total government expenditure. By clicking on a button the user can choose among 10, 15, 20, 25 or 30 years. Usually a high value as e.g. 25 or 30 year will be chosen, but national circumstances and development plans may allow for a shorter period.

**Economic input data for the base year**

The data entered for the base year will be used as starting value for the projection of the respective value for each year of the projection period.
In this part the user has to enter the values for:

1. The exchange rate in LCU per US$ (which will be constant for the whole projection period)

   Historical exchange rate data of local currency units to the US$ can be obtained from the International Financial Statistics Database of the International Monetary Fund (IMF).

2. Nominal GDP in LCU

   Historical data for nominal GDP can be obtained from the World Economic Outlook Database of the IMF.

3. Government expenditure in LCU
4. Government revenue (excluding foreign grants) in LCU

   Historical data for government revenue and expenditure can be obtained from central government figures or from the IMF Government Finance Statistics Database.

5. Foreign grants in LCU

   These data are necessary for calculating the GDP as a reference value for the whole projection period as well as to convert some important values – e.g. the amount of necessary donor input in LCU - into US$, and when limiting some benefit amounts in comparison to US$. 
Government expenditure and government revenue are also used as reference values in order to show the calculated amount of each chosen new social protection measure - as well as their total - not only as monetary amount but also as percentage of these reference values. These relative values will help to better understand the possible impact of the social security measures chosen and, assess the financial importance of these measures. Foreign grants – that are already paid in the base year – will be used to calculate their development in the future and thus enable the user of the results to get a picture on total external financial input from the donor community as a whole.

In addition the user has to enter the value of

6. Total government education expenditure in LCU
7. Proportion (in %) of government total education expenditure in the base year already allocated to finance basic education
8. Total government health care expenditure in LCU
9. Proportion (in %) of government total health care expenditure in the base year already allocated to finance basic health care measures
10. Government non-health care social protection expenditure in LCU
11. Proportion (in %) of government total non-health care expenditure that is spent on:
   - non-contributory and non-targeted benefits
   - contributory social benefits.

The questions – as well as the values of the data - will be the same whether universal cash benefits or targeted benefits are opted for or not.

First it has to be stressed that the required data should refer to general government, i.e. including social security funds and local government expenditure/revenue. Only if these data could not be determined the user could take values reflecting central government expenditure/revenue and social security funds administered centrally. If none of the above is at hand one could just use budget data of the central government. This however, should be clearly indicated and explained when presenting the results of the projections.

Data can be obtained from the IMF data on consolidated government expenditure. The way – and some values of data – how the data are compiled are explained in the IMF Government Statistics manual17 and can be found in UNDP 2004, Human Development Report Statistics, New York, UNDP.

The data are necessary when establishing different financial scenarios (see 4.3) and for calculating the part of the cost of new social protection measures, that are already paid before introducing the new social protection measures. These data are needed when calculating the effect of the new social protection measures on poverty reduction (in the distribution model that will be added later). Only the additional expenditure for new social protection measures can reduce the existing poverty level.

3.3.3 Additional data and assumptions on basic education and basic health care

In case you have decided to include basic education cost and/or basic health care in the projection, you will be requested to add some more data at the end of this input sheet.

**Education**

As to Education you are requested to put in the

1. Average annual earnings of teachers in base year
2. Net enrolment rate in base year and base year +5
3. Percentage of enrolled pupils in private schools in base year and base year +5
4. Number of pupils per teacher in base year and base year +5.

Data on enrolment rates should refer to all schools, public and private; if data are only available for public schools, the percentage of enrolled pupils in private schools has to be set at zero.

Information on teachers’ wages should be collected in national wage statistics Data on education usually are compiled by the national Ministry of Education. In case no information is available from national data sources you may refer to the UNESCO Education Indicators.

**Health**

The model provides two options for calculating the cost of universal basic health care. The first one uses national per capita or unit cost estimates, the alternative calculation method proposes a country specific cost base (driven by staff cost and moving according to a selected indexation method). This second approximation takes into account the following two parameters which are asked under this section:

1. Average annual earnings of health personnel in base year in LCU
2. Number of health personnel per 100’000 of the population in the base year

Data on this will come from national wage statistics and/or from the national Ministry of Health. In case there are no national data available, the user may refer to the World Health Organisation Statistical Information System (WHOSIS).
The topics above give the full range of data needed when all social protection measures are chosen. If one decides to include only some parts of all measures, e.g. without education and/or without child benefits, the respective entry space in the input sheets are not shown, since no input is necessary in this case.

After having filled in all requested information in the data-sheets ‘Basic setting’ and ‘Demographic and economic inputs and assumptions’, the user can generate the results by clicking on the ‘Calculate’ button (right sight, on the back). At the top bar you will see now five icons (the last one is to go back to the data sheets ‘Basic setting’ and ‘Demographic and economic inputs and assumptions’):
4. Output

For each year of the projection period the results are presented in four sheets:

1. Main results
2. Coverage and benefit level
3. Financing scenarios
4. Export to distmod
5. Graphs (the results of the other 4 sheets)

(All values are given with two decimal points; if the value of the last digit is zero it will not be shown.)

4.1 Main results

Using the model under different assumptions will lead to a wide range of possible annual expenditure for basic social protection measures. The cost for the selected social protection measures, for each of the measures separately and for the total package, is presented in this sheet in:

- local currency units
- as per cent of GDP
- as percentage of government revenue
- as percentage of government expenditure.

4.2 Coverage and benefit level

In this sheet the number of beneficiaries and the average annual amount of benefit per recipient in LCU are presented. In the case of universal pensions and child benefits this is the average amount per beneficiary, in the case of basic education and basic health care it is the amount per pupil or the amount per capita (i.e. per person actually covered by the basic health system).

Important information on comparative measures as e.g. the number of population in particular age groups and the amount of GDP per capita is shown as well.

4.3 Financing scenarios

Under two different assumptions on the future level of government expenditure for social protection, the sheet “Financing scenarios” shows which share of the additional cost of basic social protection measures would be borne by the government and which input from external donors would be needed.

The first scenario reflects the assumption, that government would increase its expenditure for social protection measures to the target level in per cent of total government expenditure as chosen before (see 3.3.2). The second scenario is based on the assumption, that government would not increase its expenditure on social protection measures, but at least spend the same percentage of total expenditure as in the base year.
Under these different assumptions the sheet shows the amount of available domestic financing and of the additionally required external financing in order to cover the cost of the new social protection measures. The values are given in LCU and in percent of GDP; externally required funds also in US$. The table also shows the total of external grants provided, i.e. the amount necessary to cover the cost of the new social protection measures plus grants from external donors that were provided already in the base year and are assumed to be continually provided after the new social protection measures will have been introduced. This value is presented in LCU, in US$ and in percent of GDP. As reference the gross government deficit in percent of GDP will be given as well.

At the end of the table the total social expenditure will be shown in LCU and in percent of GDP. This is the sum of the cost of the newly introduced social protection measures and that part of social protection expenditure already in place in the base year that will not be replaced by the new measures. That part may refer to e.g. pensions to civil servants or maternity grants or death benefits. Its amount for the following years of the projection period is updated internally by the programme.

4.3.1 The share of government expenditure allocated to the chosen package of social protection measures increases to a selected level

Here the above enumerated figures are presented under the assumption that government will be able and willing to increase its share of expenditure that is spent for social protection measures to a higher level than in the base year.

The level of government input was chosen in the input sheet “Basic Settings” in the part “Select resource allocation” (see 3.2.7). The higher this level is chosen the less government will depend on grants of external donors in order to finance the cost of the new social protection measures.

In case the cost of the chosen social protection measures could be totally met by the government at a lower portion than the one chosen before, the programme will internally determine the value of this lower portion and use it for the calculations.

4.3.2 The share of government expenditure allocated to the chosen package of social protection measures remains at the level of the base year

Here the above enumerated figures are presented under the assumption that government will not increase its share of expenditure that is spent for social protection measures in the base year but will keep this level of the base year.

This entails that the cost of the newly introduced social protection measures has to be covered almost totally by external donors during the whole projection period.

This option is not the main scenario and not one that would probably be accepted by external donors, but it shows the bottom line of what can be expected from the government.
4.4 Export to distmod

The data on this output are meant for later use in the distribution model.

For the moment the user may use them for quick reference on some important data put together in one page.

4.5 Graphs

The output sheet “Graphs” shows the most important results of the projections as graphs; they serve for a quick first reference and easy overview. The X-axis refers to the time period, i.e. the year of the projection. The Y-axis shows the results in LCU or in percentage-points. The exact meaning of the percentage points and which dimension has been actually shown, is explained in the legend of each table.
Annex 1: Variables in the database
### BASIC SETTINGS

<table>
<thead>
<tr>
<th>Number</th>
<th>Variable</th>
<th>Type of question</th>
<th>Possible answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Name dataset</td>
<td>Open question</td>
<td>Text</td>
</tr>
<tr>
<td>1.2</td>
<td>Description dataset</td>
<td>Open question</td>
<td>Text</td>
</tr>
<tr>
<td>1.3</td>
<td>Author name</td>
<td>Open question</td>
<td>Text</td>
</tr>
</tbody>
</table>

#### Main settings

1.4 Base year

1.5 Include Basic education

1.5b Starting age for school attendance

1.6 Include Basic Health care

1.7 Cash Benefits

1.7b If Universal cash benefit - Include Child benefit

#### Scope of simulation

1.8 Include Basic education

1.8b Starting age for school attendance

1.9 Include Basic Health care

1.10 Cash Benefits

1.10b If Universal cash benefit - Include Child benefit

### Basic Universal Pension - If question 1.7 = Universal

2.1 Coverage

2.2 Starting age pensions

2.3 Amount of the pension
<table>
<thead>
<tr>
<th>Number</th>
<th>Variable</th>
<th>Type of question</th>
<th>Possible answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.3b</td>
<td>If amount as percentage of GDP : percentage</td>
<td>Open question</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>If amount as specified amount in local currency units per day : amount</td>
<td>Open question</td>
<td>Number</td>
</tr>
<tr>
<td>2.4</td>
<td>Maximum amount to pension in US$ per day</td>
<td>Only 1 answer possible</td>
<td>- Yes</td>
</tr>
<tr>
<td>2.4b</td>
<td>If Yes : amount in US$ a day</td>
<td>Open question</td>
<td>Number</td>
</tr>
</tbody>
</table>

### Child Benefit – If question 1.7 = Universal and 1.7b = Yes

<table>
<thead>
<tr>
<th>3.1</th>
<th>Coverage</th>
<th>Only 1 answer possible</th>
<th>- Orphans younger than 15</th>
<th>- All children younger than 5</th>
<th>- All children in x-14 group (x is linked to var. 5b)</th>
<th>- All children in 5-14 group</th>
<th>- All children younger than 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2</td>
<td>Amount of benefit</td>
<td>Only 1 answer possible</td>
<td>- As percentage of GDP per capita</td>
<td>- As specified amount in local currency units per day</td>
<td>%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2b</td>
<td>If amount as percentage of GDP : percentage</td>
<td>Open question</td>
<td>- Yes</td>
<td>- No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>If amount as specified amount in local currency units per day : amount</td>
<td>Open question</td>
<td>Number</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3</td>
<td>Maximum amount to benefit in US$ per day</td>
<td>Only 1 answer possible</td>
<td>- Yes</td>
<td>- No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3b</td>
<td>If Yes : amount in US$ a day</td>
<td>Open question</td>
<td>Number</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Targeted cash benefit – If question 1.7 = Targeted

<table>
<thead>
<tr>
<th>4.1</th>
<th>Percentage of households receiving benefits (in %)</th>
<th>Open question</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2</td>
<td>Amount in LCU per day</td>
<td>Open question</td>
<td>Number</td>
</tr>
<tr>
<td>Number</td>
<td>Variable</td>
<td>Type of question</td>
<td>Possible answers</td>
</tr>
<tr>
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</tr>
<tr>
<td></td>
<td><strong>Administrative cost of cash benefit</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1</td>
<td>Administrative expenditure as percentage of benefit expenditure</td>
<td>Open question</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td><strong>Basic education</strong> – If question 1.5 = Yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 6.1    | Basic education for who          | Only 1 answer possible | - Children in age bracket x-14 years (x is linked to var. 5b)  
- Children aged between 5 and 14 years)                                                                 |
| 6.2    | Benefit calculation              | Only 1 answer possible | - National per capita or unit cost estimates  
- Driven by staff and moving according to a selected indexation method |
| 6.2b   | If benefit calculation by national per capita or unit cost : Annual education cost per pupil for base year in LCU | Open question Number |                                                                                                                                                    |
| 6.2c   | If benefit calculation driven by staff :  
- Proportion of non-staff cost to staff cost in base year (%)  
- Proportion of non-staff cost to staff cost in base year + 5 (%)  
- Indexation method | Open question | %  
- In line with GDP per capita growth  
- In line with one third GDP growth  
- In line with inflation  
- In line with 50% difference between GDP growth and working age population growth plus inflation population growth |
<table>
<thead>
<tr>
<th>Number</th>
<th>Variable</th>
<th>Type of question</th>
<th>Possible answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.3</td>
<td>Capital cost as percentage of recurrent education cost</td>
<td>Open question</td>
<td>and inflation %</td>
</tr>
</tbody>
</table>

**Basic Health Care** – If question 1.6 = Yes

<table>
<thead>
<tr>
<th>Number</th>
<th>Variable</th>
<th>Type of question</th>
<th>Possible answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1</td>
<td>Coverage rate (percentage of total population) in base year)</td>
<td>Open question</td>
<td>%</td>
</tr>
<tr>
<td>7.2</td>
<td>Coverage rate (percentage of total population) in base year +5)</td>
<td>Open question</td>
<td>%</td>
</tr>
<tr>
<td>7.3</td>
<td>Coverage rate (percentage of total population) in base year +10)</td>
<td>Open question</td>
<td>%</td>
</tr>
</tbody>
</table>
| 7.4    | Method of benefit calculation                                            | Only 1 answer possible| - National per capita or unit cost estimates  
- Driven by staff cost and moving accordingly to a selected indexation method  
Number percentage |
<p>| 7.5a   | If benefit calculation driven by National per capita or unit cost estimates: | Open question        | %                                        |
|        | - Annual health expenditure per person in LCU for base year              |                      |                                          |
|        | - Annual health expenditure per person in LCU for base year +5           |                      |                                          |
|        | - Annual health expenditure per person in LCU for base year +10          |                      |                                          |
| 7.5b   | If benefit calculation driven by staff cost and moving accordingly to a selected indexation method: | Open question        | %                                        |
|        | - Proportion of non-staff cost to staff                                  |                      |                                          |</p>
<table>
<thead>
<tr>
<th>Number</th>
<th>Variable</th>
<th>Type of question</th>
<th>Possible answers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>cost(in %) in base year - Indexation method</td>
<td>Only 1 answer possible</td>
<td>- In line with GDP per capita growth - In line with one third GDP growth - In line with inflation - In line with 50% difference between GDP growth and working age population growth plus inflation population growth and inflation</td>
</tr>
</tbody>
</table>

**Resource allocation**

| 8.1   | Proportion of total government expenditure that will be allocated to financial new basic social protection measures in first year of their introduction (in %) | Open question | % |
| 8.2   | Proportion of existing expenditure on universal or categorical non-contributory social protection benefits in base year, which will be allocated to finance new cash benefits (in %) | Open question | % |
| 8.3   | Proportion of existing expenditure on targeted non-contributory social protection benefits in base year, which will be allocated to finance new cash benefits (in %) | Open question | % |
## DEMOGRAPHIC AND ECONOMIC INPUTS AND ASSUMPTIONS

<table>
<thead>
<tr>
<th>Number</th>
<th>Variable</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.1</td>
<td>Total population (number of persons)</td>
<td>- National population surveys&lt;br&gt; - [UN Population data (World population prospects)]</td>
</tr>
<tr>
<td></td>
<td>Base year (variable 4)</td>
<td></td>
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<td></td>
<td>Base year + 5</td>
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<td>Base year + 15</td>
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<td>Base year + 25</td>
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<td></td>
<td>Base year + 30</td>
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<tr>
<td>9.2</td>
<td>Population 0 – 14 years within total population (in %)</td>
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<tr>
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<td>Base year (variable 4)</td>
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<td>Base year + 5</td>
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<td>Base year + 30</td>
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<tr>
<td>9.3</td>
<td>Population 5 – 14 years within total population (in %)</td>
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<td>Base year (variable 4)</td>
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<td>Base year + 30</td>
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<tr>
<td>9.4</td>
<td>Population x – 14 years within total population (in %)</td>
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<tr>
<td>Number</td>
<td>Variable</td>
<td>Sources</td>
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<td>(x linked to variable 1.5b)</td>
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<td>Base year (variable 4)</td>
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<td>Base year + 25</td>
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<td>Base year + 30</td>
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<tr>
<td>9.5</td>
<td>Population 60+ years within total population (in %)</td>
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<td>Base year (variable 4)</td>
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<td>Base year + 30</td>
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<td>9.6</td>
<td>Population 65+ years within total population (in %)</td>
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<td>Base year (variable 4)</td>
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<td>Base year + 30</td>
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<tr>
<td>9.7</td>
<td>Population 70+ years within total population (in %)</td>
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<td>Base year (variable 4)</td>
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<td>Number</td>
<td>Variable</td>
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<tr>
<td>9.8</td>
<td>Average number of persons per household, in base year (number)</td>
<td></td>
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</tbody>
</table>

**Economic data and assumptions**

**Economic data**

10.1 GDP is assumed to grow at the constant rate equal to growth rate population at age 15-64 plus x. Please select the value of x (in %)

10.2 Assumed annual inflation rate (in %)  - International Monetary Fund (World Economic Outlook database) - National development plans

10.3 The target ratio (in %) of total government expenditure to GDP for:

- the 10th year of the projection period (default 30%)
- the 30th year of the projection period (default 30%)

- National policy planning authority

10.4 Number of years for closing the gap between government revenue (less grants) and total government expenditure (10, 15, 20 or 25 years)

**Economic input data, base year**


11.2 Nominal GDP in LCU

11.3 Government expenditure in LCU

11.4 Government revenue (less grants) in LCU

11.5 Foreign grants in LCU

11.6 Government education expenditure in LCU

11.7 Proportion of above total public education expenditure
<table>
<thead>
<tr>
<th>Number</th>
<th>Variable</th>
<th>Sources</th>
</tr>
</thead>
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<tr>
<td>11.8</td>
<td>Government health care expenditure in LCU</td>
<td>- National Ministry of Health</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- WHO statistical information System</td>
</tr>
<tr>
<td>11.9</td>
<td>Proportion of above total public health care expenditure in base year</td>
<td>- National Ministry of Health</td>
</tr>
<tr>
<td></td>
<td>already allocated to finance basic health measures (in %)</td>
<td>- WHO statistical information System</td>
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<tr>
<td>11.10</td>
<td>Government non-health social protection expenditure in LCU</td>
<td>- National Ministry of Health</td>
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<tr>
<td>11.11</td>
<td>Proportion of above total non-health social protection expenditure</td>
<td>- WHO statistical information System</td>
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<tr>
<td></td>
<td>(in %) that is spent on:</td>
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<tr>
<td></td>
<td>- Non-contributory and non-targeted benefits</td>
<td></td>
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<tr>
<td></td>
<td>- Contributory social benefits</td>
<td></td>
</tr>
<tr>
<td>12.1</td>
<td>Average annual earnings per person of health personnel in LCU in base</td>
<td>- National wage statistics</td>
</tr>
<tr>
<td></td>
<td>year</td>
<td>- National Ministry of Health</td>
</tr>
<tr>
<td>12.2</td>
<td>Number of health personnel per 100,000 of the population, in persons,</td>
<td>- WHO statistical information System</td>
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<td></td>
<td>for base year</td>
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<tr>
<td>13.1</td>
<td>Average annual earnings of a teacher, in LCU, base year</td>
<td>National wage statistics</td>
</tr>
<tr>
<td>13.2</td>
<td>Number of pupils per teacher in base year</td>
<td>- National Ministry of Education</td>
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<tr>
<td></td>
<td></td>
<td>- Unesco Education indicators</td>
</tr>
<tr>
<td>13.3</td>
<td>Number of pupils per teacher in base year + 5</td>
<td>- National Ministry of Education</td>
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<td></td>
<td>- Unesco Education indicators</td>
</tr>
<tr>
<td>13.4</td>
<td>Net enrolment rate in base year</td>
<td>- National Ministry of Education</td>
</tr>
<tr>
<td>13.5</td>
<td>Net enrolment rate in base year + 5</td>
<td>- National Ministry of Education</td>
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<tr>
<td></td>
<td></td>
<td>- Unesco Education indicators</td>
</tr>
<tr>
<td>Number</td>
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<td>Sources</td>
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<tr>
<td>13.6</td>
<td>Percentage of pupils in private schools in base year</td>
<td>- National Ministry of Education</td>
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<td></td>
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<td>- <a href="#">Unesco Education indicators</a></td>
</tr>
<tr>
<td>13.7</td>
<td>Percentage of pupils in private schools in base year + 5</td>
<td>- National Ministry of Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- <a href="#">Unesco Education indicators</a></td>
</tr>
</tbody>
</table>
Annex 2: Sources

- **International Monetary Fund:**
  http://www.imf.org/external/
  Data and statistics:
  http://www.imf.org/external/data.htm
  World Economic Outlook Database:

- **World Health Organisation:**
  http://www.who.int/en/
  WHO Statistical Information System (WHOSIS):
  http://www.who.int/whosis/en/
  Information Health per country:
  http://www.who.int/countries/en/

- **UNESCO:**
  www.unesco.org/
  Education indicators:

- **United Nations Population data:**
  http://esa.un.org/unpp/

- **World Bank:**
  http://www.worldbank.org/
Annex 3: Glossary

- **Basic Health Care**: Routine treatment provided to patients in health facilities at the first level of the health pyramid. It includes preventive care and health promotion, simple curative treatment and nutritional rehabilitation.

- **Cash Benefits**: Benefit provided in cash such as income replacement and income support benefits, lump-sum payments from provident funds, allowances and other cash payments which are not reimbursements (i.e. which do not require beneficiaries to show evidence of expenditure).

- **Universal benefits**: Tax-financed benefits or transfers that are paid to all citizens or inhabitants falling into a specific category of the population (for example, families with children or people over a certain age).

- **Administrative cost**: Any management and administrative expenditure incurred by the scheme directly responsible for the provision of social protection benefits, such as salaries, or the costs of running an office.