

## Annex 6: Methodology for Market Sizing

The approach taken in this report to projecting investment opportunities in the health care market in Sub-Saharan Africa (summarized in Figure A6.1) involved:

- Projecting the growth of the overall health care market in Sub-Saharan Africa (exclusive of South Africa and exclusive of pharmaceuticals and medical products);
- Translating the projected growth into an investment opportunity in Sub-Saharan Africa (exclusive of South Africa and exclusive of pharmaceuticals and medical products); and
- Calculating the investment opportunity for pharmaceuticals and medical products, inclusive of South Africa, and adding this to the rest of the total Sub-Saharan African investment opportunities.

### Private Health Care Market Projection

A strong linear correlation ( $R^2=0.89$ ) between nominal GDP per capita and Total Health Expenditure (THE) per capita allows for estimates of future THE (Figure A6.2). Reliable estimates of

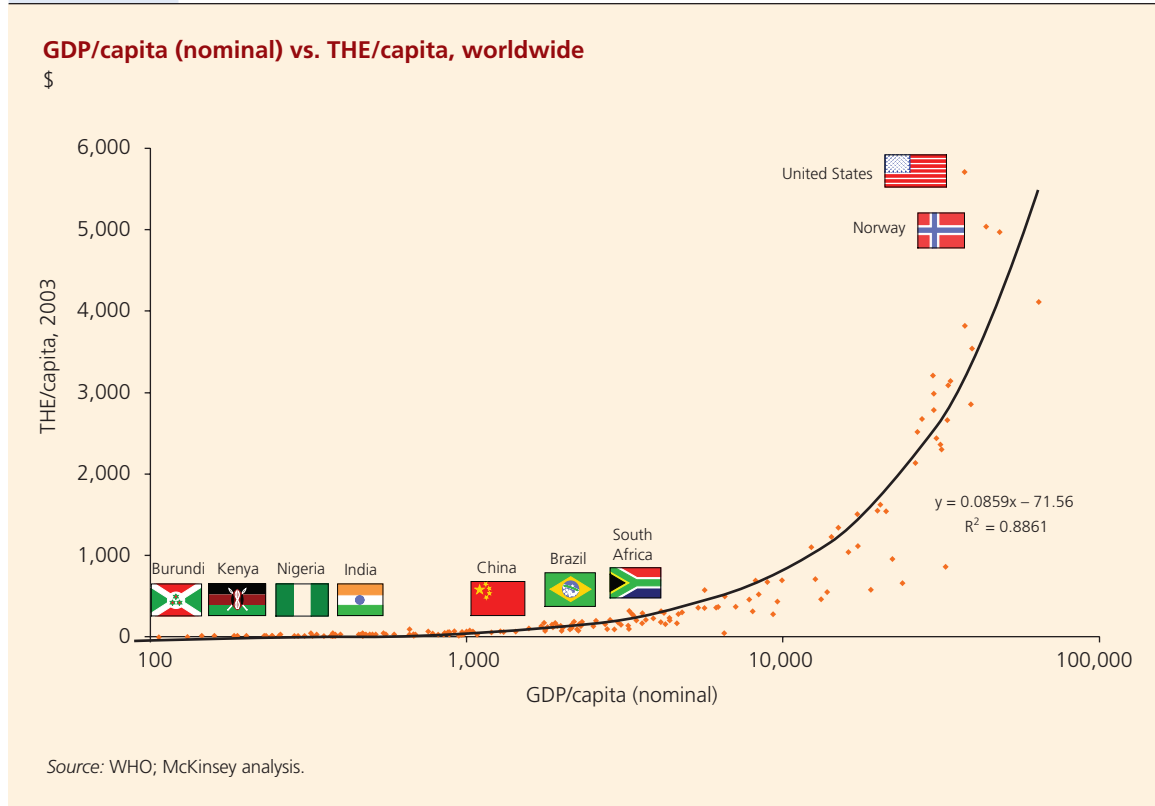
Figure A6.1

### Methodology for estimating the investment opportunities generated by increase in private sector health care in Sub-Saharan Africa

| Process stage   | Description   | Data   | Source   |
|---|---|--|--|
| Determining overall GDP growth                          | <ul style="list-style-type: none"> <li>• Determine the overall GDP growth expected within SSA based on population growth and GDP/capita growth estimates.</li> </ul>  | <ul style="list-style-type: none"> <li>• GDP/capita growth estimates.</li> <li>• Population growth estimates.</li> </ul>                   | <ul style="list-style-type: none"> <li>• IFC</li> <li>• Global Insight</li> </ul>  |
| Translating GDP growth into THE*                        | <ul style="list-style-type: none"> <li>• Project THE based on the proportionality relationship between THE/capita and GDP/capita.</li> <li>• Verify findings with historical growth of THE within SSA.</li> </ul> | <ul style="list-style-type: none"> <li>• THE/capita and GDP/capita historical numbers.</li> <li>• THE historical growth in SSA.</li> </ul> | <ul style="list-style-type: none"> <li>• WHO</li> <li>• WHO</li> </ul>   |
| Projecting the share of the private sector provision    | <ul style="list-style-type: none"> <li>• Project the share of the private sector provision by sub-sector, provider type (for-profit vs. NGO), and size of investment need.</li> </ul>                             | <ul style="list-style-type: none"> <li>• Share of private sector provision.</li> <li>• Breakdown of private sector provision.</li> </ul>   | <ul style="list-style-type: none"> <li>• National Health Accounts (NHA), household surveys.</li> <li>• In country interviews.</li> </ul>                             |
| Translating private revenue growth into investment need | <ul style="list-style-type: none"> <li>• Translate the overall revenue growth within the private sector provision to investment need by utilizing asset turnover ratios for each sector.</li> </ul>               | <ul style="list-style-type: none"> <li>• Asset turnover ratios.</li> <li>• Asset lifetime.</li> <li>• External investment need.</li> </ul> | <ul style="list-style-type: none"> <li>• In-country interviews.</li> <li>• IFC investment experience.</li> <li>• In-country interviews/ primary research.</li> </ul> |

\*Total Health Expenditure.

Figure A6.2



GDP per capita can be used to project future THE per capita based on the correlation below.

Note that the correlation is extremely strong in the lowest range of GDP. For the 45 countries in Sub-Saharan Africa (excluding South Africa), most of which lie in the lowest segment of the curve ( $R^2=0.95$ ) (see Figure A6.3), while worldwide the correlation is  $R^2=0.89$ .

As the level of GDP per capita increases within a country, so does the THE per capita. Projected THE per capita can then be multiplied by population estimates to arrive at future expenditures. Based on this model, it is projected that THE in Sub-Saharan Africa will grow from \$16.7 billion in 2006 to \$35.4 billion in 2016. The projected THE annual growth rate of 7.1 percent combines THE per capita growth (itself determined by GDP per capita growth) and population growth.

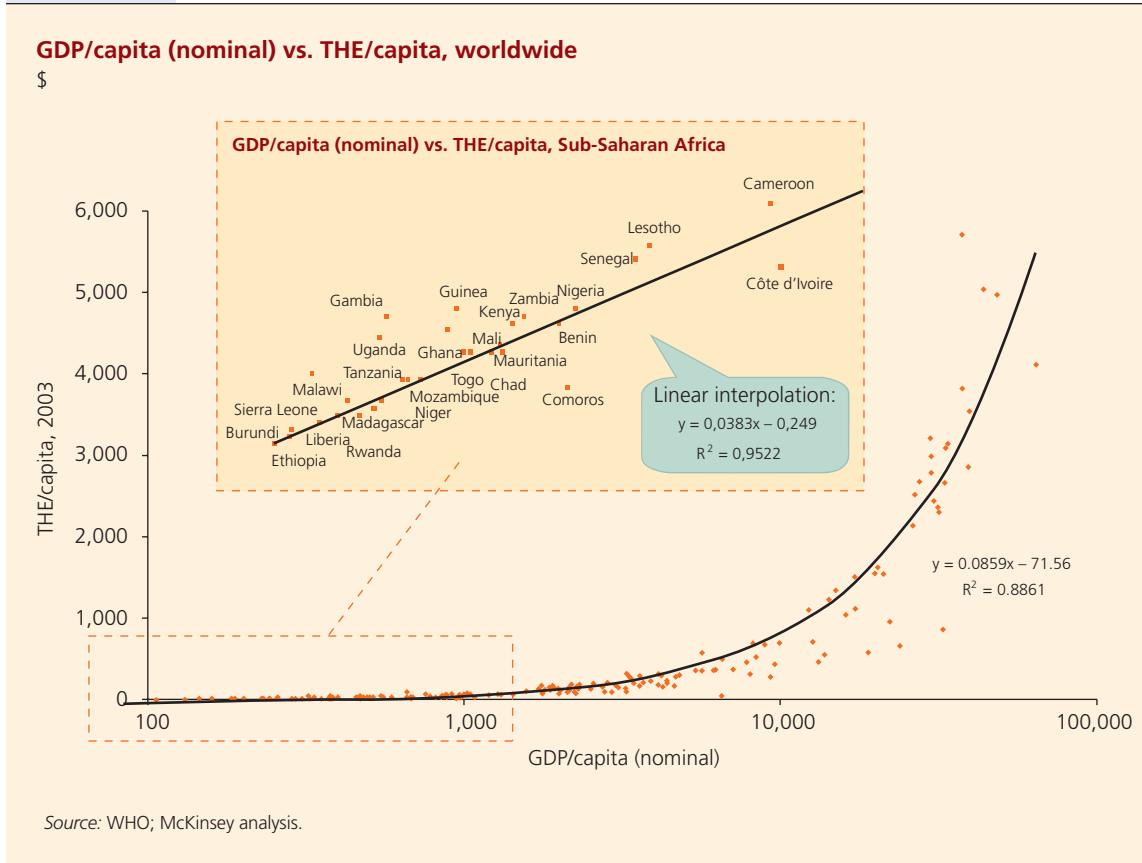
THE growth in the past ten years has been fuelled by a significant increase in GDP (about six percent nominal growth derived from an average growth of 2.4 percent in population and a

3.5 percent increase in nominal GDP per capita, most of which has been concentrated in the last five years), as well as by an increase in donors' expenditures.

In making projections for the next ten years, an increase in nominal GDP of 7.7 percent linked to a GDP per capita growth of 5.7 percent and a population growth rate of 1.9 percent has been assumed; however, it has been conservatively assumed that the THE growth will be slower than the GDP growth due to the fact that a significant component of GDP will be associated with natural resources businesses and, therefore, will not be spread uniformly across the population. A conservative view has also been taken on the willingness of donors to continue to increase levels of aid at the rate that they have over the last decade.

Due to the underlying conditions mentioned in Section I, there are differing levels of private sector participation across Sub-Saharan Africa. As a result, estimates of private sector participation have taken into account the private sector "friendliness" of each country and the different scenarios

Figure A6.3



for private sector participation that might be expected within each. Current estimates indicate that the private sector comprised approximately 50 percent of expenditures in 2005.

It is estimated that the private sector will increase its share in the health care market by almost ten percent given its accelerated increase in share in some of the faster-growing economies in the region. However, this growth might not change the composition of the private sector itself, and the various segments within the private sector might not grow at the same rate at which they do now (Figure A6.4).

### Translation of Revenues into Investment Opportunities

After calculating overall private health expenditures, aggregate investment opportunities are determined using asset turnover ratios for different components of the health sector. These ratios rep-

resent the average required investment to realize health revenues or expenditures. For example, for inpatient facilities, the average investment cost as a percentage of revenues is estimated to be 175 percent (based on interviews and analysis of case studies in developing countries).

The translation of 2007–2015 revenue to external investment opportunities involves two steps:

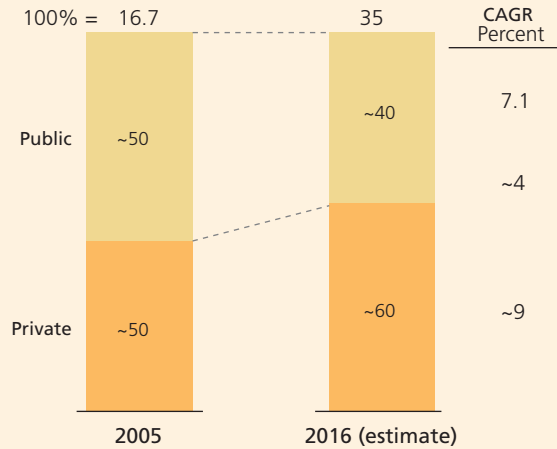
1. Determining industry-specific asset-to-turnover ratios separately for new assets and replacement of existing assets; and
2. Determining the percent of investment opportunity that would come from external sources (again, separately for new assets and replacement of existing assets).

Asset-to-turnover ratios are based on the most-relevant case studies encountered. Investment cost-to-revenue ratios are determined using two primary drivers: (1) the cost of the asset needed to generate the forecast revenue levels; and (2) the

Figure A6.4

**Breakdown of Total Health Expenditure (THE) by provider ownership, Sub-Saharan Africa; 2005 actual values, 2016 estimate**

Percent, \$ billion



Source: Ministries of Health; National Health Accounts; country interviews; McKinsey analysis.

life of the asset. Figure A6.5 shows the details for health services provision.

Based on the investment-cost-to-revenue ratio and the projected revenue growth in the market, the model determines the need for new capacity and the need to refurbish existing capacity.

New capacity is assumed to require a greater share of external financing than the refurbishment of existing capacity. The underlying rationale for this difference is that enterprises will seek significant external funding for growth projects, whereas the replacement of existing assets can largely be financed through internal operational cash flows.

Based on this approach, it is estimated that \$9.8–\$17.3 billion will be needed to finance the needs of the private health sector (excluding pharmaceuticals and medical products) in the future.

Figure A6.5

**Assumptions for translating revenues to investments**

**Translating revenues to annual investments**

- Collect case studies for each type of investment by sub-sector.
- Derive average required investment to realize a certain revenue volume by dividing overall capital asset need by the expected lifetime of the asset and the revenue potential of that asset.

|  | Outpatient | Inpatient | Drug retail | Prevention | Other |
|--|------------|-----------|-------------|------------|-------|
| <b>A</b> Average capital asset need to generate \$1 million in yearly revenues (\$ thousand) | 750        | 1,750     | 150         | 500        | 250   |
| <b>B</b> Estimated life of asset (years)   | 15         | 15        | 5           | 5          | 5     |

**C** Translation of revenues into investment needs

- For every dollar of increase in inpatient sales, \$1.75 of assets are needed.
- For every dollar of assets installed, 1/15 needs to be refurbished or upgraded every year.

Source: Case studies; country interviews; McKinsey analysis.

## Estimate of Manufacturing Investment Opportunities

The future growth of Sub-Saharan Africa generics manufacturing, inclusive of South Africa, is projected from three factors: (1) the same GDP per capita/HEALTH per capita relationship as drove the growth of the overall health care market; (2) substitution of generics and lowered use of patented products in South Africa; and (3) scenario-based projected changes in Sub-Saharan African manufacturers' share of the future generics market. Based on this methodology, Sub-Saharan African manufacturers' ex-factory revenues are projected to grow from \$1.1 billion in 2007 to between \$1.8 billion and \$3.2 billion in 2015.

A similar methodology was used to project the future size of the Sub-Saharan African medical supplies manufacturing market. Sub-Saharan African medical supplies manufacturers' revenues for 2015 are projected to be between \$170 million and \$270 million.

Translating market growth into investment opportunities for both generics manufacturing and supplies manufacturing follows a similar methodology as the broader health sector. Given the global flow of pharmaceutical products and medical

supplies, those opportunities need to be viewed through the lens of cost competitiveness. As with each analyzed industry, separate ratios and assumptions are used for generics and supplies manufacturing, respectively.

Projections of 2007–2015 investment opportunities in South Africa's life sciences innovation sector are based on two factors: (1) a calculation of 2007 private sector investment tied to national research and development investment as a percentage of GDP; and (2) scenario-based projections of the future percentage of GDP spent on research and development (accounting for projected growth in GDP).

The commercialization of neglected disease product development is considered to involve two stages: (1) Phase 3 clinical trials; and (2) taking a product to market. An annual investment opportunity combining these two stages is calculated and used to estimate the recurrent annual investment opportunity between 2007 and 2015.

The resulting estimate of the overall need for external capital for the manufacturing and innovation sector as a whole is in the range of \$1.6–\$2.6 billion.