Annexes

Indicators and Sources
ANNEX 1: RIVER NILE STATE OF BASIN INDICATORS 2012

WATER RESOURCES

Mean precipitation for Nile Basin 1,046 mm/year GIS/CRU Database 1950–90
Mean annual flow of Main Nile (at Aswan) 84 billion cubic metres/year JMP Scoping Study Report

<table>
<thead>
<tr>
<th>Resources</th>
<th>Withdrawals</th>
<th>Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total internal renewable (billion m³/yr) 2009</td>
<td>Total (billion m³/yr) latest 2000–10</td>
<td>As % of total actual renewable latest 2000–10</td>
</tr>
<tr>
<td>Burundi</td>
<td>10.1</td>
<td>0.29</td>
</tr>
<tr>
<td>DR Congo</td>
<td>900.0</td>
<td>0.62</td>
</tr>
<tr>
<td>Egypt</td>
<td>1.8</td>
<td>68.30</td>
</tr>
<tr>
<td>Eritrea</td>
<td>2.8</td>
<td>0.58</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>122.0</td>
<td>5.56</td>
</tr>
<tr>
<td>Kenya</td>
<td>20.7</td>
<td>2.74</td>
</tr>
<tr>
<td>Rwanda</td>
<td>9.5</td>
<td>0.15</td>
</tr>
<tr>
<td>South Sudan*</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Sudan**</td>
<td>30.0</td>
<td>37.14</td>
</tr>
<tr>
<td>Tanzania</td>
<td>84.0</td>
<td>5.18</td>
</tr>
<tr>
<td>Uganda</td>
<td>39.0</td>
<td>0.32</td>
</tr>
</tbody>
</table>

Source FAO AQUASTAT 2012 Computed from AQUASTAT 2012 FAO AQUASTAT 2012

POPULATION OF THE BASIN

<table>
<thead>
<tr>
<th>Population 2012</th>
<th>% of population living in Nile Basin 2012</th>
<th>% of country population living in rural areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burundi</td>
<td>8,749,387</td>
<td>58.8%</td>
</tr>
<tr>
<td>DR Congo</td>
<td>69,575,394</td>
<td>3.8%</td>
</tr>
<tr>
<td>Egypt</td>
<td>83,958,369</td>
<td>95.7%</td>
</tr>
<tr>
<td>Eritrea</td>
<td>5,580,862</td>
<td>37.6%</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>86,538,534</td>
<td>40.3%</td>
</tr>
<tr>
<td>Kenya</td>
<td>42,749,418</td>
<td>39.7%</td>
</tr>
<tr>
<td>Rwanda</td>
<td>11,271,786</td>
<td>82.6%</td>
</tr>
<tr>
<td>South Sudan*</td>
<td>9,614,498</td>
<td>99.0%</td>
</tr>
<tr>
<td>Sudan, The</td>
<td>36,107,585</td>
<td>87.3%</td>
</tr>
<tr>
<td>Tanzania</td>
<td>47,656,367</td>
<td>21.5%</td>
</tr>
<tr>
<td>Uganda</td>
<td>35,620,977</td>
<td>99.4%</td>
</tr>
</tbody>
</table>


*No data are available yet for South Sudan.
**Data relate to the state prior to 9 July 2011, except for final column.
### AgriCultural land use

<table>
<thead>
<tr>
<th></th>
<th>Cultivated area as % of total country area</th>
<th>Irrigated land in Nile Basin area (ha)</th>
<th>Irrigated land in entire country (ha)</th>
<th>Change in forest area 1990–2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burundi</td>
<td>44.9%</td>
<td>14,625</td>
<td>90,000</td>
<td>–39.2%</td>
</tr>
<tr>
<td>DR Congo</td>
<td>3.2%</td>
<td>–</td>
<td>–</td>
<td>–3.5%</td>
</tr>
<tr>
<td>Egypt</td>
<td>3.7%</td>
<td>2,963,581</td>
<td>5,419,000</td>
<td>56.4%</td>
</tr>
<tr>
<td>Eritrea</td>
<td>5.9%</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>13.6%</td>
<td>90,769</td>
<td>187,000</td>
<td>–</td>
</tr>
<tr>
<td>Kenya</td>
<td>10.4%</td>
<td>34,156</td>
<td>77,000</td>
<td>–5.9%</td>
</tr>
<tr>
<td>Rwanda</td>
<td>60.0%</td>
<td>17,638</td>
<td>1,697,000</td>
<td>30.5%</td>
</tr>
<tr>
<td>South Sudan*</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Sudan**</td>
<td>8.1%</td>
<td>1,749,300</td>
<td>108,000</td>
<td>–8.5%</td>
</tr>
<tr>
<td>Tanzania</td>
<td>12.1%</td>
<td>110,544</td>
<td>4,000</td>
<td>–17.5%</td>
</tr>
<tr>
<td>Uganda</td>
<td>36.6%</td>
<td>25,131</td>
<td>9,000</td>
<td>–33.4%</td>
</tr>
</tbody>
</table>

* Few data are yet available for South Sudan.

**Data relate to the country prior to 9 July 2011.

### EnvironMental resources

<table>
<thead>
<tr>
<th>Land-use type</th>
<th>Area km² 2005</th>
<th>Area km² 2009</th>
<th>Percentage cover 2009</th>
<th>Percentage change 2005–09</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shrubland and woodlands</td>
<td>1,173,669</td>
<td>1,185,620</td>
<td>37.3%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Bare soils</td>
<td>965,165</td>
<td>978,918</td>
<td>30.8%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Agricultural land</td>
<td>327,632</td>
<td>367,777</td>
<td>11.6%</td>
<td>12.3%</td>
</tr>
<tr>
<td>Grasslands</td>
<td>342,344</td>
<td>326,096</td>
<td>10.3%</td>
<td>–4.7%</td>
</tr>
<tr>
<td>Forests</td>
<td>266,783</td>
<td>218,941</td>
<td>6.9%</td>
<td>–17.9%</td>
</tr>
<tr>
<td>Water bodies</td>
<td>95,992</td>
<td>94,727</td>
<td>3.0%</td>
<td>–1.3%</td>
</tr>
<tr>
<td>Cities</td>
<td>4,882</td>
<td>4,391</td>
<td>0.1%</td>
<td>–10.1%</td>
</tr>
</tbody>
</table>

### food seCurity

<table>
<thead>
<tr>
<th></th>
<th>Dietary energy supply</th>
<th>Under-nourished</th>
<th>Cereal trade balance</th>
<th>Intra-basin trade in agricultural and processed food products</th>
<th>Fertilizer Kg used per hectare of arable land 2005</th>
<th>Cereal yield Tons per hectare 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burundi</td>
<td>1,680</td>
<td>62%</td>
<td>–63.7</td>
<td>16.2 16.1</td>
<td>3.4 1.3</td>
<td></td>
</tr>
<tr>
<td>DR Congo</td>
<td>1,590</td>
<td>69%</td>
<td>–722.3</td>
<td>– –</td>
<td>– –</td>
<td>– –</td>
</tr>
<tr>
<td>Egypt</td>
<td>3,160</td>
<td>&lt;5%</td>
<td>–9,003.7</td>
<td>263.5 246.6</td>
<td>732 7.6</td>
<td></td>
</tr>
<tr>
<td>Eritrea</td>
<td>1,590</td>
<td>64%</td>
<td>–235.1</td>
<td>– –</td>
<td>2.3 0.9</td>
<td></td>
</tr>
<tr>
<td>Ethiopia</td>
<td>1,950</td>
<td>41%</td>
<td>–1,166.8</td>
<td>14.1 84.7</td>
<td>12 1.6</td>
<td></td>
</tr>
<tr>
<td>Kenya</td>
<td>2,060</td>
<td>31%</td>
<td>–1,374.8</td>
<td>117.8 476.8</td>
<td>38 1.2</td>
<td></td>
</tr>
<tr>
<td>Rwanda</td>
<td>2,050</td>
<td>34%</td>
<td>–91.5</td>
<td>98.1 41.2</td>
<td>2.6 1.1</td>
<td></td>
</tr>
<tr>
<td>South Sudan*</td>
<td>1,890</td>
<td>47%</td>
<td>– –</td>
<td>– –</td>
<td>– –</td>
<td></td>
</tr>
<tr>
<td>Sudan**</td>
<td>2,270</td>
<td>22%</td>
<td>–1,863.6</td>
<td>– –</td>
<td>10 0.6</td>
<td></td>
</tr>
<tr>
<td>Tanzania</td>
<td>2,020</td>
<td>34%</td>
<td>–654.4</td>
<td>39.1 103.8</td>
<td>1.1 1.2</td>
<td></td>
</tr>
<tr>
<td>Uganda</td>
<td>2,250</td>
<td>21%</td>
<td>–425.7</td>
<td>104.4 364.2</td>
<td>2.6 1.5</td>
<td></td>
</tr>
</tbody>
</table>

* Few data are yet available for South Sudan.

**Data relate to the country prior to 9 July 2011.

Source:
- FAOSTAT 2011
- FAOSTAT 2011
- FAOSTAT 2011
- FAOSTAT 2011
- World Bank African Development Indicators
### SOCIO-ECONOMIC CONDITIONS

<table>
<thead>
<tr>
<th>Gross National Income (GNI) Per capita 2011 PPP$</th>
<th>Living in poverty Percentage on less than PPP $1.25 a day 2000–09</th>
<th>Human Development Index Score 2011</th>
<th>Labour force participation Employed men as a % of working age male population</th>
<th>Employed women as a % of working age female population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burundi</td>
<td>368</td>
<td>81.3%</td>
<td>0.316</td>
<td>88%</td>
</tr>
<tr>
<td>DR Congo</td>
<td>280</td>
<td>59.2%</td>
<td>0.286</td>
<td>86%</td>
</tr>
<tr>
<td>Egypt</td>
<td>5,269</td>
<td>&lt;2.0%</td>
<td>0.644</td>
<td>75%</td>
</tr>
<tr>
<td>Eritrea</td>
<td>536</td>
<td>–</td>
<td>0.349</td>
<td>83%</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>971</td>
<td>39.0%</td>
<td>0.363</td>
<td>90%</td>
</tr>
<tr>
<td>Kenya</td>
<td>1,492</td>
<td>19.7%</td>
<td>0.509</td>
<td>88%</td>
</tr>
<tr>
<td>Rwanda</td>
<td>1,364</td>
<td>76.8%</td>
<td>0.429</td>
<td>85%</td>
</tr>
<tr>
<td>South Sudan*</td>
<td>–</td>
<td>51.0%</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Sudan**</td>
<td>1,894</td>
<td>–</td>
<td>0.408</td>
<td>74%</td>
</tr>
<tr>
<td>Tanzania</td>
<td>1,328</td>
<td>67.9%</td>
<td>0.466</td>
<td>91%</td>
</tr>
<tr>
<td>Uganda</td>
<td>1,124</td>
<td>28.7%</td>
<td>0.446</td>
<td>91%</td>
</tr>
</tbody>
</table>

Source: Human Development Report 2011

### Access to clean water and improved sanitation

<table>
<thead>
<tr>
<th>Percentage of rural population 2008</th>
<th>Percentage of urban population 2008</th>
<th>Percentage of rural population 2008</th>
<th>Percentage of urban population 2008</th>
<th>Under-five mortality Per 1,000 live births 2005–10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burundi</td>
<td>71%</td>
<td>83%</td>
<td>46%</td>
<td>49%</td>
</tr>
<tr>
<td>DR Congo</td>
<td>28%</td>
<td>80%</td>
<td>23%</td>
<td>23%</td>
</tr>
<tr>
<td>Egypt</td>
<td>98%</td>
<td>100%</td>
<td>92%</td>
<td>97%</td>
</tr>
<tr>
<td>Eritrea</td>
<td>57%</td>
<td>74%</td>
<td>4%</td>
<td>52%</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>26%</td>
<td>98%</td>
<td>8%</td>
<td>29%</td>
</tr>
<tr>
<td>Kenya</td>
<td>52%</td>
<td>83%</td>
<td>32%</td>
<td>27%</td>
</tr>
<tr>
<td>Rwanda</td>
<td>62%</td>
<td>77%</td>
<td>55%</td>
<td>50%</td>
</tr>
<tr>
<td>South Sudan*</td>
<td>53%</td>
<td>67%</td>
<td>14%</td>
<td>54%</td>
</tr>
<tr>
<td>Sudan**</td>
<td>64%</td>
<td>52%</td>
<td>18%</td>
<td>55%</td>
</tr>
<tr>
<td>Tanzania</td>
<td>80%</td>
<td>45%</td>
<td>21%</td>
<td>32%</td>
</tr>
<tr>
<td>Uganda</td>
<td>91%</td>
<td>64%</td>
<td>49%</td>
<td>38%</td>
</tr>
</tbody>
</table>

Source: WHO/UNICEF 2010

* Few data are yet available for South Sudan.
** Data relate to the country prior to 9 July 2011.
**ENERGY SUPPLY**

<table>
<thead>
<tr>
<th></th>
<th>Electricity</th>
<th>Hydropower</th>
<th>Power trade</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percentage of rural population with access 2010</td>
<td>Percentage of urban population with access 2010</td>
<td>MW potential 2010</td>
</tr>
<tr>
<td>Burundi</td>
<td>3%</td>
<td>26%</td>
<td>20</td>
</tr>
<tr>
<td>DR Congo</td>
<td>0%</td>
<td>45%</td>
<td>78</td>
</tr>
<tr>
<td>Egypt</td>
<td>99%</td>
<td>100%</td>
<td>40</td>
</tr>
<tr>
<td>Eritrea</td>
<td>3%</td>
<td>57%</td>
<td>13,947</td>
</tr>
<tr>
<td>Kenya</td>
<td>12%</td>
<td>51%</td>
<td>191</td>
</tr>
<tr>
<td>Rwanda</td>
<td>2%</td>
<td>12%</td>
<td>20</td>
</tr>
<tr>
<td>South Sudan*</td>
<td>1%</td>
<td>17%</td>
<td>2,570</td>
</tr>
<tr>
<td>Sudan, The</td>
<td>7%</td>
<td>60%</td>
<td>3,280</td>
</tr>
<tr>
<td>Tanzania</td>
<td>2%</td>
<td>40%</td>
<td>280</td>
</tr>
<tr>
<td>Uganda</td>
<td>6%</td>
<td>40%</td>
<td>4,343</td>
</tr>
</tbody>
</table>

Source: CBWS 2011 – Section 5, CBWS 2011 – Section 4, CBWS 2010 – Appendix 5

**TRANSPORT**

<table>
<thead>
<tr>
<th></th>
<th>Roads</th>
<th>Airports</th>
<th>Inland waterways</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total (km)</td>
<td>Paved (km)</td>
<td>Unpaved (km)</td>
</tr>
<tr>
<td>Burundi</td>
<td>12,322</td>
<td>1,200</td>
<td>11,122</td>
</tr>
<tr>
<td>DR Congo</td>
<td>153,497</td>
<td>2,794</td>
<td>150,703</td>
</tr>
<tr>
<td>Egypt</td>
<td>65,050</td>
<td>47,500</td>
<td>17,550</td>
</tr>
<tr>
<td>Eritrea</td>
<td>4,010</td>
<td>874</td>
<td>3,136</td>
</tr>
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<td>Ethiopia</td>
<td>36,469</td>
<td>6,980</td>
<td>29,489</td>
</tr>
<tr>
<td>Kenya</td>
<td>160,866</td>
<td>11,189</td>
<td>149,677</td>
</tr>
<tr>
<td>Rwanda</td>
<td>12,000</td>
<td>1,000</td>
<td>11,000</td>
</tr>
<tr>
<td>South Sudan</td>
<td>7,000</td>
<td>50</td>
<td>6,950</td>
</tr>
<tr>
<td>Sudan, The</td>
<td>11,900</td>
<td>4,320</td>
<td>7,580</td>
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<td>86,472</td>
<td>7,092</td>
<td>79,380</td>
</tr>
<tr>
<td>Uganda</td>
<td>81,329</td>
<td>3,600</td>
<td>77,729</td>
</tr>
</tbody>
</table>

Source: The World Factbook

**MONITORING**

<table>
<thead>
<tr>
<th></th>
<th>Hydrometric stations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Historic number, 1970s</td>
</tr>
<tr>
<td>Burundi</td>
<td>21</td>
</tr>
<tr>
<td>DR Congo</td>
<td>–</td>
</tr>
<tr>
<td>Egypt</td>
<td>300</td>
</tr>
<tr>
<td>Eritrea</td>
<td>–</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>177</td>
</tr>
<tr>
<td>Kenya</td>
<td>216</td>
</tr>
<tr>
<td>Rwanda</td>
<td>27</td>
</tr>
<tr>
<td>South Sudan*</td>
<td>–</td>
</tr>
<tr>
<td>Sudan</td>
<td>43</td>
</tr>
<tr>
<td>Tanzania</td>
<td>34</td>
</tr>
<tr>
<td>Uganda</td>
<td>161</td>
</tr>
</tbody>
</table>

Source: WRPM 2011 and National DSS Specialists

*Few data are yet available for South Sudan.*
ANNEX 2: PROPOSED ADDITIONAL STATE OF BASIN INDICATORS FOR FUTURE REPORTING

WATER QUALITY
Annual water quality conditions
- Colour (min/max/average)
- Electrical conductivity (min/max/average)
- Dissolved oxygen (min/max/average)
- Faecal coliform (min/max/average)

At following locations:
- White Nile at Jinja
- Blue Nile at Wad Medani
- Main Nile at Khartoum
- Main Nile at Cairo

ENVIRONMENT
Annual sediment load in the Nile at Dongola
Environmental performance index, by country

TRANSPORT
Annual volume of goods transported on inland waterways (tons)
- Cairo to Aswan
- Khartoum to Juba
- Lake Victoria

CLIMATE CHANGE
Floods and droughts
- Number of people affected
- Number of floods
- Number of droughts
ANNEX 3: SOURCES

Chapter 1 Introduction
European Commission. Towards Environmental Pressure Indicators for the EU. 1999.


UN Department of Economic and Social Affairs. Division for Sustainable Development. Indicators of Sustainable Development. www.un.org/esa/sustdev/isd.htm

Chapter 2 The Water Resources of the Nile Basin


Kashiagil Jl. Assessment of groundwater impacts in Tanzania.


NBI Water Resource Planning and Management (WRPM) Project, 2011.


TOTAL RAINFALL
MONTHLY RAINFALL

MONITORING RAINFALL
Food & Agriculture Organization (FAO, 2009.
World Resources Management Plan (WRMP), 2011
POTENTIAL EVAPOTRANSPIRATION
Prepared using 1960–90 data from Climatic Research Unit www.cru.uea.ac.uk

SUB-SYSTEMS AND SUB-BASINS
TOTAL FLOWS OF THE NILE
NILE FLOWS
NBI WRMP Project, 2012.
CHARACTERISTICS OF NILE SUB-BASINS
Climatic Research Unit www.cru.uea.ac.uk
THE MAIN SUB-BASINS AND THEIR CONTRIBUTION TO THE NILE
Blackmore D, Whittington D. 2008. MEASURING RIVER FLOW
Sutcliffe, 1999.
GROUNDWATER
Where groundwater occurs
MacDonald AM, Calow RC, 2008.
Main aquifers
Upper Nile artesian
Nubian sandstone aquifer system
IWMI, 2012.
Nile Delta aquifer
Groundwater recharge
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