

# Metadata for the Limpopo Basin - Mozambique

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## Contents

List of abbreviations.....	4
Spatial definition of study/focus area.....	5
Note on data processing.....	6
Water resources.....	7
Water availability .....	7
D_MAR .....	7
Access to water .....	8
D_prox_riv.....	8
D_watertable .....	8
D_surf_water .....	9
D_irrig_infr.....	10
D_water_infr * .....	10
D_wpermit* .....	11
Water quality .....	11
D_salinity*.....	11
Social capital .....	12
Organisational capacity.....	12
D_numCBOs .....	12
D_voting.....	12
D_interests* .....	13
D_disputes* .....	13
Support networks .....	13
D_information.....	13
D_remittances.....	14
Access to land .....	14
D_own_land .....	14

D_avg_plot.....	14
Conflict.....	15
D_unemploy.....	15
Gender.....	15
D_femHH.....	15
D_g_credit *.....	16
D_gratio.....	16
D_employment.....	16
D_fem_ass *.....	17
Financial capital.....	18
Access to credit.....	18
D_avail_MFI.....	18
Wealth.....	18
D_poverty.....	18
Human capital.....	19
Health Status.....	19
D_wsaf.....	19
D_food_sec.....	19
D_clinics.....	20
Labour availability.....	20
D_work_pop.....	20
D_g_ratio.....	21
D_HIV.....	21
Skills (education and experience).....	21
D_literacy.....	21
D_ag_ext *.....	22
D_soil_mgmnt *.....	22
D_employment.....	23
Physical capital.....	24
Infrastructure.....	24
D_prox_rd.....	24
D_equipment.....	24
D_postharv_infr *.....	24
Market access.....	25

D_prox_rd .....	25
D_market .....	25
D_transport.....	26
D_cell_net .....	26
D_input_market * .....	26
D_output_market .....	27
Natural resources.....	28
Soil suitability .....	28
D_SOC .....	28
D_clay.....	28
Land availability .....	29
D_cropland.....	29
D_slope .....	30
D_pop_dens .....	30
Biomass availability.....	31
D_bio_prod .....	31
D_cattle_dens .....	33
Weather variability .....	34
D_dryspells.....	34
D_floods.....	35
Pests and disease .....	35
D_loss_prod * .....	35
Fields to display.....	36
Total population.....	36
Mean annual rainfall (mm) .....	36
Total cropland area (ha).....	36
Poverty level (%) .....	36
Food security (%) .....	36
Glossary of variables for Mozambique:- .....	37

## List of abbreviations

AFSIS	Africa Soil Information Service
ALCOM	Aquatic Resource Management for Local Community Development Programme
AVG	Average
AWEPA	The Association of European Parliamentarians with Africa
BFP	Basin Focal Project
BGS	British Geological Survey
CBO	Community Based Organisation
CGIAR	Consultative Group on International Agricultural Research
CPWF	CGIAR Challenge Program on Water and Food
CSO	Central Statistics Office
DAFF	Department of Agriculture, Forestry and Fisheries
DFID	Department for International Development (UK)
DHI	Drought Hazard Index
DWAF-SA	Department of Water Affairs and Forestry, South Africa
EISA	Electoral Institute for Sustainable Democracy in Africa
FAO	Food and Agricultural Organisation of the United Nations
FUE	Ficheiro de Unidades Estatísticas
GIS	Geographical Information Systems
HIV	Human Immunodeficiency Virus
IEC	Independent Electoral Commission
IFPRI	International Food Policy Research Institute
IFTRAB	Inquérito Integrado à Força de Trabalho
INE	Instituto Nacional de Estatística (National Institute of Statistics, Mozambique)
IP	Intellectual Property
IRD	International Relief and Development
ISRIC	International Soil Reference and Information Centre
JRC	Joint Research Centre
LimRAK	Limpopo River Awareness Kit
MAR	Mean Annual Rainfall
MFI	Micro-Finance Institution
MINAG	Ministry of Agriculture, Mozambique
MISAU	Ministerio da Saude - Ministry of Health Mozambique
NPO	Non-Profit Organisation
SADC	The Southern African Development Community
SOC	Soil Organic Carbon
StatsSA	Statistics South Africa
SWB	Surface Water Body
TAGMI	Targeting AGwater Management Interventions
TB	Tuberculosis
UK	United Kingdom
UNESCO	United Nations Educational, Scientific and Cultural Organisation
USGS	United States Geological Services
WFP	World Food Programme
WGHTD	Weighted
WRD	The original SADC Water Resource Database produced by ALCOM
ZNSA	Zimbabwe National Statistics Agency

## Spatial definition of study/focus area

Choice of districts to include in each country – using latest boundary demarcations, and including all districts that fall wholly or mostly in the Limpopo River Basin according to GIS overlay of the river basin over district boundaries.

<b>Botswana</b> (quasi-Provinces)	<b>Mozambique</b>	<b>South Africa</b> (new boundaries set in 2005)	<b>Zimbabwe</b>
<i>Urban districts:</i> Gaborone Francistown Lobatse Selibe Phikwe	<i>Gaza Province:</i> Bilene-Macia Chibuto Chicualacuala Chigubo Chokwe Guija Mabalane Manjacaze Massangena Massingir Xai-Xai Xai-Xai(town)	<i>Limpopo Province:</i> Capricorn Greater Sekhukhune Mopani Vhembe Waterberg	<i>Matabeleland South Province:</i> Beitbridge Bulilimamangwe Gwanda Insiza Matobo Umzingwane
<i>Rural Districts:</i> Southern South East Kweneng Kgatleng Central North East	<i>Inhambane Province:</i> Funhalouro Mabote Massinga Panda	<i>Mpumalanga Province:</i> Nkangala Ehlanzeni Gert Sibande	<i>Matabeleland North Province:</i> Bubi Umguza
		<i>North West Province:</i> Bojanala Central (now Ngaka Modiri Molema)	<i>Masvingo Province:</i> Chiredzi Mwenezi
		<i>Gauteng:</i> Mestwedding Sedibeng West Rand Ekurhuleni City of Johannesburg City of Tshwane	<i>Midlands Province:</i> Mberengwa

## Note on data processing

### *Methodology*

There are two parts to processing the data before entering it into the TAGMI database :

- 1) Extracting data from publicly available sources, and processing it into relevant indicators for the tool. This methodology is described for each indicator in the following document.
- 2) Transforming the numerical data into the format required by the TAGMI tool. This is the same methodology for all indicators, except Mean Annual Rainfall and Food Security.
  - a. All indicators : data values were classified into three categories (low/med/high) such that a roughly equal number of districts fall into each category (using Hierarchical-Equal Count discretisation function in GeNIe for 3 classes)
  - b. Mean Annual Rainfall: for **Conservation Agriculture**, rainfall range classes were set for the whole basin, not according to the range of values within each country (based on Rusinamhodzi et al 2011, who show that conservation agriculture performs very well within the **Med** rainfall class as below, averagely with **High** rainfall, and poorly with **Low** rainfall):
    - i. **Low** rainfall: < 350mm average per district
    - ii. **Med** rainfall: 350mm - 700mm average per district
    - iii. **High** rainfall: >700mm average per district
  - c. Mean Annual Rainfall: for **Small scale irrigation** and **Small Reservoirs**, the data was treated as for All indicators
  - d. Food Security: this data was compiled by Magombeyi et al (2013) to be comparable between countries, and therefore it has been similarly categorised in the tool:
    - i. **Low** food security: <  $\pm 80\%$
    - ii. **Med** food security:  $\pm 80 - 90\%$
    - iii. **High** food security: >  $\pm 90\%$

### *Hydrological and administrative boundaries*

The project is targeted at the river basin (hydrological area). Yet, for many users, the administrative boundaries of the districts and provinces are more relevant. Therefore, the data is compiled for the tool according to administrative boundaries.

However, spatial data such as distances to rivers and roads has been calculated within the hydrological area of the river basin only, and thus for districts which fall only partially in the river basin, the data only relates to those parts within the river basin (e.g. 'proximity to roads' refers only to the roads and district area within the hydrological limit of the basin).

Secondary data extracted directly from publications refers to the administrative boundary area.

## Water resources

Characteristics of water resources that describe availability, access and quality of the water.

## Water availability

### D\_MAR

Indicator name	Mean annual rainfall (mm)
Variable(s)	D_MARmin (Conservation Agriculture) D_MARavg (Small scale irrigation; Small Reservoirs)
Definition	Longterm average annual rainfall (mm) (1901-2005). (aggregation type: AVG) - average MAR per district
Data Source	Harvest Choice, available at: <a href="http://harvestchoice.org/data/longterm-average-annual-rainfall-mm">http://harvestchoice.org/data/longterm-average-annual-rainfall-mm</a> (Accessed June 2013) Sourced from: University of East Anglia Climatic Research Unit (CRU). [Phil Jones, Ian Harris]. CRU Time Series (TS) high resolution gridded datasets. NCAS British Atmospheric Data Centre. Available from <a href="http://badc.nerc.ac.uk/data/cru">http://badc.nerc.ac.uk/data/cru</a> (Accessed on 1 May 2011).
Sample size	West Africa, East & Central Africa, Southern Africa
Spatial scale	1 km grid cells, recalculated to district level (average value)
Year of data	1901 - 2005
Year of publication	2011
Methodology	<p>*same procedure as for D_cattle_dens*:</p> <ul style="list-style-type: none"><li>• Ensure raster is projected correctly - check that it lines up with a correctly projected layer</li><li>• Run "Zonal statistics as table" (Spatial Analyst Tools\Zonal)</li><li>• Set All Districts_Hydro as input raster or feature zone data</li><li>• Set "District" as zone field</li><li>• Set MAR layer as input raster or feature data class</li><li>• Set "Value" as class field</li><li>• Export table of attributes as a .dbf file – Open in Excel</li><li>• Extract from data table MINIMUM and MEAN values</li></ul> <p><b>**Note:</b> for Conservation Agriculture, rainfall range classes were set for the whole basin, not according to the range of values within each country: <b>Low</b> rainfall: &lt; 350mm average per district <b>Med</b> rainfall: 350mm - 700mm average per district <b>High</b> rainfall: &gt;700mm average per district (based on Rusinamhodzi et al 2011)</p>
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Additional Information	

## Access to water

### D\_prox\_riv

Indicator name	Proximity to a river
Variable(s)	D_prox_riv
Definition	% of district area lying within 1 km of a perennial river
Data Source	CPWF Phase 1 data collection - Perennial and ephemeral river networks
Sample size	n/a
Spatial scale	Volta basin, Limpopo Basin
Year of data	
Year of publication	
Methodology	Ensure layer is projected correctly Remove non-perennial and ephemeral rivers Create 1km buffer around remaining rivers Calculate area within buffer, divide by total district area, multiply by 100
Copyright	CPWF 2008-2011
Additional Information	

### D\_watertable

Indicator name	Depth of water table
Variable(s)	D_watertable
Definition	Estimated depth to groundwater (mbgl - metres below ground level)
Data Source	'BGS Quantitative maps of groundwater resources in Africa' Available at: <a href="http://www.bgs.ac.uk/gwresilience/">http://www.bgs.ac.uk/gwresilience/</a>
Sample size	Africa
Spatial scale	5 km grid
Year of data	
Year of publication	2012
Methodology	Import text file with point locations into ArcGIS, Display X-Y data and convert to shapefile Convert point shapefile to raster, project to same as the district boundaries Run Spatial Analysis-Zonal-Zonal statistics as table - Note: values are discrete categories:- 0 = SM = 25 - 50 1 = VS = 0 - 7 2 = VD = >250 3 = M = 50 - 100 4 = S = 7 - 25 5 = D = 100 - 250 Use MAJORITY column for D_watertable, which reflects the most common water table depth class in the district
Copyright	Based upon mapping provided by British Geological Survey © NERC 2012. All rights reserved
Additional Information	Terms of use: Following extensive review, the British Geological Survey (BGS), a component



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## D\_surf\_water

Indicator name	Surface water nearby
Variable(s)	D_surf_water
Definition	Number of surface water bodies per km <sup>2</sup> per district (includes pans, pools, wells, springs, lakes, reservoirs and others)
Data Source	African Water Resource Database - Surface Water Body Features from GEOnet Gazetteer (gns_swb dataset) Downloaded from: FAO Geonetwork, <a href="http://www.fao.org/geonetwork/srv/en/main.home">http://www.fao.org/geonetwork/srv/en/main.home</a> , accessed September 2013
Sample size	46591 derivative point gazetteer features derived based on 1:250 000 data originally from GEOnet
Spatial scale	Africa
Year of data	1997
Year of publication	2006

Methodology	In ArcGIS intersect gns_swb with Limpopo countries district boundaries Export attribute table to Excel and extract the number of Surface Water Bodies per district Calculate the density of Surface Water Bodies per area of the district
Copyright	FAO
Additional Information	GNS_SWB: Surface Water Bodies based on named locations GNS/GeoNet Gazetteer. The GNS_SWB shapefile data layer is comprised of 46591 derivative point gazetteer features derived based on 1:250 000 data originally from GEOnet. The layer provides nominal analytical/mapping at 1:250 000. Data processing is complete globally, this is an African subset. Acronyms and Abbreviations: GNS/GeoNet Gazetteer - NIMA's Geographic Names Server Gazetteer of Named Locations; SWB - Surface Water Body.

### D\_irrig\_infr

Indicator name	Access to water infrastructure
Variable(s)	D_irrig_infr
Definition	Number of holdings utilising irrigation per province (small, medium and large-scale farmers)
Data Source	INE & MINAG. 2011. <i>Censo Agro – Pecuário 2009 – 2010: Resultados Definitivos – Moçambique</i> . Instituto Nacional de Estatística: Maputo. Available at: <a href="http://www.ine.gov.mz/ResourceCenter/Default.aspx">http://www.ine.gov.mz/ResourceCenter/Default.aspx</a> Accessed: October 2012
Sample size	39 892 holdings
Spatial scale	Province
Year of data	2009 - 2010
Year of publication	2011
Methodology	Number of holdings using irrigation divided by the total number of holdings per province
Copyright	© 2011 Instituto Nacional de Estatística – Moçambique
Additional Information	

### D\_water\_infr \*

Indicator name	Access to storage water infrastructure (e.g. rainwater harvesting tanks, shallow wells, boreholes, small ponds etc.)
Variable(s)	D_water_infr
Definition	
Data Source	
Sample size	
Spatial scale	
Year of data	
Year of publication	
Methodology	
Copyright	
Additional	

Information	
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### D\_wpermit\*

Indicator name	Have water permits
Variable(s)	D_wpermit
Definition	
Data Source	
Sample size	
Spatial scale	
Year of data	
Year of publication	
Methodology	
Copyright	
Additional Information	

## Water quality

### D\_salinity\*

Indicator name	Salinity
Variable(s)	D_salinity
Definition	
Data Source	
Sample size	
Spatial scale	
Year of data	
Year of publication	
Methodology	
Copyright	
Additional Information	

## Social capital

“the social resources upon which people draw in pursuit of their livelihood objectives” (DFID, 1999), typically described in terms of **networks and connectedness, membership of more formalised groups and relationships of trust, reciprocity and exchanges.**

## Organisational capacity

The organisational and leadership/management capacity that allow for effective networks and connectedness, running of community activities and providing a means of conflict management.

### D\_numCBOs

Indicator name	Number of community organisations
Variable(s)	D_numCBOs
Definition	Number of membership organisations per 1000 population
Data Source	INE. 2011. <i>Estatísticas Distritais</i> . Instituto Nacional de Estatística: Maputo. (Territorial Statistics 2011, Country Data Portal Mozambique), Available at: <a href="http://www.ine.gov.mz/ResourceCenter/Default.aspx">http://www.ine.gov.mz/ResourceCenter/Default.aspx</a> , accessed September 2012 Sourced from: INE - Ficheiro de Unidades Estatísticas (FUE)
Sample size	
Spatial scale	District
Year of data	2009 - 2011
Year of publication	2012
Methodology	Number of membership organisations divided by the total number of households multiplied by 1000
Copyright	© 2012 Instituto Nacional de Estatística
Additional Information	

### D\_voting

Indicator name	Voting turnout
Variable(s)	D_voting
Definition	Proportion of the voting population (%) who voted in the last government elections (2008)
Data Source	EISA 2008. <i>Resultados finais das eleições autárquicas de 2008 - Presidente do Conselho Municipal</i> . Mozambique Political Process Bulletin 37, 15 December 2008 Available at: <a href="http://www.eisa.org.za/PDF/moz2008results.pdf">http://www.eisa.org.za/PDF/moz2008results.pdf</a> Accessed August 2013
Sample size	
Spatial scale	District
Year of data	2008
Year of publication	2008
Methodology	Taken directly from source
Copyright	AWEPA, the European Parliamentarians for Africa, and CIP, Centro de Integridade Pública
Additional Information	

### D\_interests\*

Indicator name	# different interest groups
Variable(s)	D_interests
Definition	
Data Source	
Sample size	
Spatial scale	
Year of data	
Year of publication	
Methodology	
Copyright	
Additional Information	

### D\_disputes\*

Indicator name	# conflicts managed
Variable(s)	D_disputes
Definition	
Data Source	
Sample size	
Spatial scale	
Year of data	
Year of publication	
Methodology	
Copyright	
Additional Information	

## Support networks

### D\_information

Indicator name	Access to information (from radio, newspaper, TV)
Variable(s)	D_information
Definition	Percentage of women age 15-49 (%) who listen to the radio and/ or read newspaper and/ or watch TV on a weekly basis
Data Source	Ministerio da Saude (MISAU), Instituto Nacional de Estatística (INE) e ICF International (ICFI). <i>Moçambique Inquérito Demográfico e de Saúde 2011</i> . Calverton, Maryland, USA: MISAU, INE e ICFI.
Sample size	13 964 households sampled nation-wide
Spatial scale	Province
Year of data	2011
Year of publication	2013
Methodology	100 minus the % women with access to NO media (newspaper, radio or tv)
Copyright	INE and ICF International
Additional	

Information	
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### D\_remittances

Indicator name	Receiving remittances
Variable(s)	D_remittances
Definition	Proportion (%) of households receiving remittances in the form of cash, food, clothing or agricultural inputs
Data Source	WFP (2009) <i>Comprehensive Food Security and Vulnerability Assessment 2009 - September 2010</i> . United Nations World Food Programme: Maputo
Sample size	4 113 households interviewed nationally
Spatial scale	Province
Year of data	2009
Year of publication	2010
Methodology	Taken directly from source, taking the highest % of the four types of remittance,
Copyright	© World Food Programme
Additional Information	

## Access to land

### D\_own\_land

Indicator name	Farmers owning land
Variable(s)	D_own_land
Definition	Proportion of households with access to arable land (in Mozambique all land belongs to the state, therefore no-one can own land)
Data Source	WFP (2009) <i>Comprehensive Food Security and Vulnerability Assessment 2009 - September 2010</i> . United Nations World Food Programme: Maputo
Sample size	4 113 households interviewed nationally
Spatial scale	Province
Year of data	2009
Year of publication	2010
Methodology	Taken directly from source
Copyright	© World Food Programme
Additional Information	

### D\_avg\_plot

Indicator name	Average plot size per household
Variable(s)	D_avg_plot
Definition	Average area in hectares of small and medium farms cultivated with basic food crops, per district
Data Source	INE. 2011. <i>Estatísticas Distritais</i> . Instituto Nacional de Estatística: Maputo (Territorial Statistics 2011, Country Data Portal Mozambique), Available at: <a href="http://www.ine.gov.mz/ResourceCenter/Default.aspx">http://www.ine.gov.mz/ResourceCenter/Default.aspx</a> , accessed September 2012 data originally from the INE&MINAG Censo Agro-Pecuário 2010-11

Sample size	
Spatial scale	District
Year of data	2010-11
Year of publication	2011
Methodology	Area cultivated with basic food crops divided by the # small/med farms with basic food crops * 100
Copyright	© 2011 Instituto Nacional de Estatística
Additional Information	In Portuguese

## Conflict

### D\_unemploy

Indicator name	Unemployment rate
Variable(s)	D_unemploy
Definition	Rate of unemployment (%)
Data Source	INE 2006. <i>Inquérito Integrado à Força de Trabalho (IFTRAB 2004/05)</i> . Final report, Instituto Nacional de Estatística: Maputo
Sample size	17 151 households
Spatial scale	Province
Year of data	2004/5
Year of publication	2006
Methodology	Data taken directly from source
Copyright	© 2006 Instituto Nacional de Estatística
Additional Information	

## Gender

### D\_femHH

Indicator name	Female headed households (%)
Variable(s)	D_femHH
Definition	The proportion (%) of households in each district who acknowledge a single female as the head of the household, as a percentage of all households in each district.
Data Source	WFP (2009) <i>Comprehensive Food Security and Vulnerability Assessment 2009</i> . United Nations World Food Programme: Maputo
Sample size	4 113 households interviewed nationally
Spatial scale	Province
Year of data	2009
Year of publication	2009
Methodology	Taken directly from source
Copyright	© World Food Programme

Additional Information	
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#### D\_g\_credit \*

Indicator name	Gender ratio - credit access
Variable(s)	D_g_credit
Definition	
Data Source	
Sample size	
Spatial scale	
Year of data	
Year of publication	
Methodology	
Copyright	
Additional Information	

#### D\_gratio

Indicator name	Gender ratio - population
Variable(s)	D_gratio
Definition	Ratio of women to men in the population
Data Source	INE. 2011. <i>Estatísticas Distritais</i> . Instituto Nacional de Estatística: Maputo (Territorial Statistics 2011, Country Data Portal Mozambique), Available at: <a href="http://www.ine.gov.mz/ResourceCenter/Default.aspx">http://www.ine.gov.mz/ResourceCenter/Default.aspx</a> , accessed September 2012 data originally from: III Recenseamento Geral da População e Habitação 2007
Sample size	Census population
Spatial scale	District
Year of data	2007
Year of publication	2011
Methodology	Total female population divided by total male population
Copyright	© 2011 Instituto Nacional de Estatística
Additional Information	In Portuguese

#### D\_gemployment

Indicator name	Gender ratio - employment
Variable(s)	D_gemployment
Definition	Ratio of women to men who are employed
Data Source	INE 2006. <i>Inquérito Integrado à Força de Trabalho (IFTRAB 2004/05)</i> . Final report, Instituto Nacional de Estatística: Maputo
Sample size	17 151 households
Spatial scale	Province
Year of data	2004/5
Year of	2006



publication	
Methodology	Data taken directly from source: % women employed divided by % men employed
Copyright	© 2006 Instituto Nacional de Estatística
Additional Information	In Portuguese

#### D\_fem\_ass \*

Indicator name	Women's access to assets
Variable(s)	D_fem_ass
Definition	
Data Source	
Sample size	
Spatial scale	
Year of data	
Year of publication	
Methodology	
Copyright	
Additional Information	

## Financial capital

“the financial resources that people use to achieve their livelihood objectives” (DFID 1999)

### Access to credit

#### D\_avail\_MFI

Indicator name	Availability of MFIs
Variable(s)	D_avail_MFI
Definition	Proportion of the agricultural holdings (%) who have access to agricultural credit or microfinance
Data Source	INE & MINAG. 2011. <i>Censo Agro – Pecuário 2009 – 2010: Resultados Definitivos – Moçambique</i> . Instituto Nacional de Estatística: Maputo. Available at: <a href="http://www.ine.gov.mz/ResourceCenter/Default.aspx">http://www.ine.gov.mz/ResourceCenter/Default.aspx</a> Accessed: October 2012
Sample size	39 892 holdings
Spatial scale	Province
Year of data	2009 - 2010
Year of publication	2011
Methodology	Number of holding with access to credit divided by the total number of holdings per province
Copyright	© 2011 Instituto Nacional de Estatística – Moçambique
Additional Information	In Portuguese

## Wealth

#### D\_poverty

Indicator name	Poverty level
Variable(s)	D_poverty
Definition	Rural poverty level (%) (2008/9)
Data Source	Magombeyi, M. S., Taigbenu, A. E. and Barron, J., 2013. <i>Rural poverty and Food insecurity mapping at district level for improved agricultural water management in the Limpopo River Basin</i> . Colombo, Sri Lanka: CGIAR Challenge Program on Water and Food (CPWF). 54pp. (CPWF Research for Development (R4D) Series 6)
Sample size	
Spatial scale	District
Year of data	2008/9
Year of publication	2013
Methodology	Data taken directly from source.
Copyright	Copyright c 2013, CGIAR Challenge Program on Water and Food
Additional Information	

## Human capital

“the skills, knowledge, ability to labour and good health that together enable people to pursue different livelihood strategies and achieve their livelihood objectives” (DFID 1999)

## Health Status

Statistics providing indicators of the state of health of individuals in each district, which affect their ability to contribute to the labour-force, as well as affecting the time spent caring for them by other members of the household and the expenditure of income within the household.

### D\_wsaf

Indicator name	Clean water
Variable(s)	D_wsaf
Definition	Proportion (%) of households with access to piped, point or improved (protected) sources of water; see country-specific definitions for details. <b>Mozambique:</b> Proportion (%) of households with access to a point source of water (piped, standpipes, protected well/borehole, open well without pump)
Data Source	INE. 2011. <i>Estatísticas Distritais</i> . Instituto Nacional de Estatística: Maputo (Territorial Statistics 2011, Country Data Portal Mozambique), Available at: <a href="http://www.ine.gov.mz/ResourceCenter/Default.aspx">http://www.ine.gov.mz/ResourceCenter/Default.aspx</a> , accessed September 2012 data originally from: III Recenseamento Geral da População e Habitação 2007
Sample size	Census population
Spatial scale	District
Year of data	2007
Year of publication	2011
Methodology	The sum of the number of households in all the categories listed above, divided by the total number of households, multiplied by 100
Copyright	© 2011 Instituto Nacional de Estatística
Additional Information	In Portuguese

### D\_food\_sec

Indicator name	Food security
Variable(s)	D_food_sec
Definition	Proportion of households (%) that are food secure (2008)
Data Source	Magombeyi, M. S., Taigbenu, A. E. and Barron, J., 2013. <i>Rural poverty and Food insecurity mapping at district level for improved agricultural water management in the Limpopo River Basin</i> . Colombo, Sri Lanka: CGIAR Challenge Program on Water and Food (CPWF). 54pp. (CPWF Research for Development (R4D) Series 6)
Sample size	
Spatial scale	District
Year of data	2008
Year of publication	2013
Methodology	Inverse of the source data (% food <i>insecure</i> households) - 100 minus source data. <b>**Note:</b> this data was compiled by Magombeyi et al (2013) to be comparable between countries, and therefore it has been similarly categorised in the tool

	(unlike most of the data which is categorised so that there are almost equal numbers of districts in each category): <b>Low</b> food security: < ± 80% <b>Med</b> food security: ± 80 - 90% <b>High</b> food security: > ± 90%
Copyright	Copyright c 2013, CGIAR Challenge Program on Water and Food
Additional Information	

### D\_clinics

Indicator name	# clinics per 1000 households
Variable(s)	D_clinics
Definition	Total number of clinics present in each district per 1000 households. <b>Mozambique:</b> number of health centres present in each district per 1000 households.
Data Source	INE. 2011. <i>Estatísticas Distritais</i> . Instituto Nacional de Estatística: Maputo (Territorial Statistics 2011, Country Data Portal Mozambique), Available at: <a href="http://www.ine.gov.mz/ResourceCenter/Default.aspx">http://www.ine.gov.mz/ResourceCenter/Default.aspx</a> , accessed September 2012 data originally from: MISAU - Direcção de Planificação e Cooperação
Sample size	Census population
Spatial scale	District
Year of data	2009
Year of publication	2011
Methodology	The number of health centres in 2009, divided by the total number of households, multiplied by 1000
Copyright	© 2011 Instituto Nacional de Estatística - MISAU - Direcção de Planificação e Cooperação
Additional Information	In Portuguese

## Labour availability

### D\_work\_pop

Indicator name	Working age population
Variable(s)	D_work_pop
Definition	Proportion (%) of total population aged between 15 and 64
Data Source	INE. 2011. <i>Estatísticas Distritais</i> . Instituto Nacional de Estatística: Maputo (Territorial Statistics 2011, Country Data Portal Mozambique), Available at: <a href="http://www.ine.gov.mz/ResourceCenter/Default.aspx">http://www.ine.gov.mz/ResourceCenter/Default.aspx</a> , accessed September 2012 data originally from: III Recenseamento Geral da População e Habitação 2007
Sample size	Census population
Spatial scale	District
Year of data	2007
Year of publication	2011

Methodology	Population aged 15-64 divided by total population, multiplied by 100
Copyright	© 2011 Instituto Nacional de Estatística
Additional Information	In Portuguese

### D\_g\_ratio

Indicator name	Gender ratio
Variable(s)	D_g_ratio
Definition	Ratio of women to men in the population
Data Source	INE. 2011. <i>Estatísticas Distritais</i> . Instituto Nacional de Estatística: Maputo (Territorial Statistics 2011, Country Data Portal Mozambique), Available at: <a href="http://www.ine.gov.mz/ResourceCenter/Default.aspx">http://www.ine.gov.mz/ResourceCenter/Default.aspx</a> , accessed September 2012 data originally from: III Recenseamento Geral da População e Habitação 2007
Sample size	Census population
Spatial scale	District
Year of data	2007
Year of publication	2011
Methodology	Total female population divided by total male population
Copyright	© 2011 Instituto Nacional de Estatística
Additional Information	In Portuguese

### D\_HIV

Indicator name	HIV prevalence
Variable(s)	D_HIV
Definition	Weighted prevalence rate of HIV / AIDS in adults (15-49 years) (in%) - 2009
Data Source	INE. 2012. <i>Portal de dados – Mocambique</i> . [website] available at: <a href="http://www.ine.gov.mz">http://www.ine.gov.mz</a> , accessed August 2012
Sample size	
Spatial scale	Province
Year of data	2009
Year of publication	
Methodology	Taken directly from source
Copyright	© INE 2012
Additional Information	In Portuguese

## Skills (education and experience)

### D\_literacy

Indicator name	Literacy rate
Variable(s)	D_literacy
Definition	According to UNESCO's definition of 'functional literacy': 'A person is functionally literate who can engage in all those activities in which literacy is required for

	<p>effective functioning of his group and community and also for enabling him to continue to use reading, writing and calculation for his own and the community's development' (cited in UNESCO 2005, p30). A simpler version of this is 'the ability to read and write, with understanding, a short, simple sentence about one's everyday life' (cited in UNESCO 2005, p29)</p> <p><b>Mozambique:</b> the proportion (%) of the population aged 15 or more who know how to read or write</p>
Data Source	<p>INE. 2011. <i>Estatísticas Distritais</i>. Instituto Nacional de Estatística: Maputo (Territorial Statistics 2011, Country Data Portal Mozambique), Available at: <a href="http://www.ine.gov.mz/ResourceCenter/Default.aspx">http://www.ine.gov.mz/ResourceCenter/Default.aspx</a>, accessed September 2012</p> <p>data originally from: MNED - Direcção de Planificação e Cooperação</p>
Sample size	Census population
Spatial scale	District
Year of data	2007
Year of publication	2011
Methodology	100 minus the % adults (15+) who can't read or write
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Additional Information	In Portuguese

#### D\_ag\_ext \*

Indicator name	Agricultural extension
Variable(s)	D_ag_ext
Definition	Proportion of farmers with access to extension services (public, private and NGOs) in 2008 (%)
Data Source	<p><b>Hélder R. Gêmo and Pius Chilonda. 2013. <i>Why did Mozambique's Public Extension Halt the Implementation of the National Agrarian Extension Program (PRONEA)?</i></b> Mozambique Strategy Support Program, IFPRI. Available at: <a href="http://www.ifpri.org/sites/default/files/publications/mozsspwp6.pdf">http://www.ifpri.org/sites/default/files/publications/mozsspwp6.pdf</a> , accessed September 2013</p> <p>Originally sourced from: MINAG/ Ministério da Agricultura e Desenvolvimento Rural (2002-2008). <i>Trabalho de Inquérito Agrícola (TIA)</i>. Maputo, Moçambique</p>
Sample size	Not known
Spatial scale	Province
Year of data	2008
Year of publication	2013
Methodology	Data taken directly from source.
Copyright	Copyright © 2013, International Food Policy Research Institute.
Additional Information	

#### D\_soil\_mgmnt \*

Indicator name	Soil management used
Variable(s)	D_soil_mgmnt
Definition	

Data Source	
Sample size	
Spatial scale	
Year of data	
Year of publication	
Methodology	
Copyright	
Additional Information	

### D\_employment

Indicator name	Employment rate
Variable(s)	D_employment
Definition	The proportion of the working age population (%) who are employed
Data Source	INE 2006. <i>Inquérito Integrado à Força de Trabalho (IFTRAB 2004/05)</i> . Final report, Instituto Nacional de Estatística: Maputo
Sample size	17 151 households
Spatial scale	Province
Year of data	2004/5
Year of publication	2006
Methodology	Data taken directly from source
Copyright	© 2006 Instituto Nacional de Estatística
Additional Information	In Portuguese

## Physical capital

“the basic infrastructure and producer goods needed to support livelihoods” (DFID 1999)

### Infrastructure

#### D\_prox\_rd

Indicator name	Proximity to road network
Variable(s)	D_prox_rd
Definition	Proportion of district area (%) lying within 5 km of a road
Data Source	CPWF Phase 1 data collection - road networks
Sample size	n/a
Spatial scale	Country-wide
Year of data	
Year of publication	
Methodology	Ensure layer is projected correctly Create 5km buffer around roads Calculate area within buffer, divide by total district area, multiply by 100
Copyright	CPWF 2008-2011
Additional Information	

#### D\_equipment

Indicator name	Having agricultural equipment
Variable(s)	D_equipment
Definition	Proportion of households (%) who possess a plough
Data Source	INE & MINAG. 2011. <i>Censo Agro – Pecuário 2009 – 2010: Resultados Definitivos – Moçambique</i> . Instituto Nacional de Estatística: Maputo. Available at: <a href="http://www.ine.gov.mz/ResourceCenter/Default.aspx">http://www.ine.gov.mz/ResourceCenter/Default.aspx</a> Accessed: October 2012
Sample size	39 892 holdings
Spatial scale	Province
Year of data	2009 - 2010
Year of publication	2011
Methodology	Taken directly from source
Copyright	© 2011 Instituto Nacional de Estatística – Moçambique
Additional Information	

#### D\_postharv\_infr \*

Indicator name	Postharvest infrastructure available
Variable(s)	D_postharv_infr
Definition	
Data Source	
Sample size	
Spatial scale	
Year of data	
Year of	



publication	
Methodology	
Copyright	
Additional Information	

## Market access

### D\_prox\_rd

Indicator name	Proximity to road network
Variable(s)	D_prox_rd
Definition	Proportion of district area (%) lying within 5 km of a road
Data Source	CPWF Phase 1 data collection - road networks
Sample size	n/a
Spatial scale	Country-wide
Year of data	
Year of publication	
Methodology	Ensure layer is projected correctly Create 5km buffer around roads Calculate area within buffer, divide by total district area, multiply by 100
Copyright	CPWF 2008-2011
Additional Information	

### D\_market

Indicator name	Distance from the nearest market
Variable(s)	D_market
Definition	Median travel time to human settlement of 20,000 or greater population. (aggregation type: AVG)
Data Source	HarvestChoice, available from: <a href="http://harvestchoice.org/data/average-travel-time-nearest-town-over-20k-hours-2000">http://harvestchoice.org/data/average-travel-time-nearest-town-over-20k-hours-2000</a> Sourced from: HarvestChoice/IFPRI 2009
Sample size	West Africa, East & Central Africa, Southern Africa
Spatial scale	1 km grid cells, recalculated to district level (average value)
Year of data	2000
Year of publication	2011
Methodology	*same procedure as for D_cattle_dens*: <ul style="list-style-type: none"> <li>• Ensure raster is projected correctly - check that it lines up with a correctly projected layer</li> <li>• Run "Zonal statistics as table" (Spatial Analyst Tools\Zonal)</li> <li>• Set District boundaries as input raster or feature zone data</li> <li>• Set "District" as zone field</li> <li>• Set Market access layer as input raster or feature data class</li> <li>• Set "Value" as class field</li> <li>• Export table of attributes as a .dbf file – Open in Excel</li> </ul>

	<ul style="list-style-type: none"> <li>• Extract from data table MEAN values</li> </ul>
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Additional Information	

### D\_transport

Indicator name	Having transportation
Variable(s)	D_transport
Definition	Proportion of households possessing a bicycle (%)
Data Source	INE. 2012. <i>Estatísticas Distritais</i> . Instituto Nacional de Estatística: Maputo. Sourced from: INE – III Recenseamento Geral da População e Habitação 2007
Sample size	Census population
Spatial scale	District
Year of data	2007
Year of publication	2012
Methodology	Taken directly from source
Copyright	© 2012 Instituto Nacional de Estatística
Additional Information	In Portuguese

### D\_cell\_net

Indicator name	Having cellphone (for market information)
Variable(s)	D_cell_net
Definition	Proportion of households (%) possessing a telephone
Data Source	INE. 2012. <i>Estatísticas Distritais</i> . Instituto Nacional de Estatística: Maputo. Sourced from: INE – III Recenseamento Geral da População e Habitação 2007
Sample size	Census population
Spatial scale	District
Year of data	2007
Year of publication	2012
Methodology	Taken directly from source
Copyright	© 2012 Instituto Nacional de Estatística
Additional Information	In Portuguese

### D\_input\_market \*

Indicator name	Input markets present
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Variable(s)	D_input_market
Definition	
Data Source	
Sample size	
Spatial scale	
Year of data	
Year of publication	
Methodology	
Copyright	
Additional Information	

### D\_output\_market

Indicator name	Output markets present
Variable(s)	D_output_market
Definition	Density of populated places (villages, towns, cities) per district
Data Source	de Condappa, D, I. Terrasson and J. Lemoalle. 2008. [CD] <i>BFP VOLTA Data Volume</i> , IRD & CGIAR-CPWF - Populated_places.shp from BFP VOLTA Data Volume Disc Originally from: FAO Geonetwork. <i>Populated places in the world</i> . Available from: <a href="http://www.fao.org/geonetwork/srv/en/metadata.show?id=12690">http://www.fao.org/geonetwork/srv/en/metadata.show?id=12690</a> ,
Sample size	Global
Spatial scale	District
Year of data	2003
Year of publication	2008
Methodology	In ArcGIS, using Mozambique Districts polygon layers, use Hawth's Tools - Analysis tools - Count points in polygon -> gives the number of populated places per district Calculate the number of populated places divided by district area
Copyright	CPWF/ FAO <b>Copyright:</b> Exclusive right to the publication, production, or sale of the rights to a literary, dramatic, musical, or artistic work, or to the use of a commercial print or label, granted by law for a specified period of time to an author, composer, artist, distributor
Additional Information	The geonames were extracted in 2003 from the National Geospatial-Intelligence Agency's (NGA) and the U.S. Board on Geographic Names' (US BGN) database of foreign geographic feature names through the GEOnet Names Server (GNS).  The layer contains information on cities, towns, villages, or other agglomerations of buildings where people live and work. For the bigger areas a name is enclosed.  Please note: All related fields are described in the attached DCW.pdf document.

## Natural resources

“the natural resource stocks from which resource flows and services (e.g. nutrient cycling, erosion protection) useful for livelihoods are derived”

## Soil suitability

Characteristics of soil that describe its suitability for a technology.

### D\_SOC

Indicator name	Soil organic matter content
Variable(s)	D_SOC
Definition	Soil organic carbon (g/kg) in topsoil (0-5cm deep) - % area of district with high or very high soil organic carbon on the scale: 0-1 g/kg = low; 1-2 g/kg = medium; 2-5 g/kg = high; above 5 g/kg = very high <b>Mozambique</b> : area of district with 5-15 g/kg SOC (very high)
Data Source	Published by AFSIS <a href="http://www.isric.org/data/soil-property-maps-africa-1-km">http://www.isric.org/data/soil-property-maps-africa-1-km</a> - Reference ISRIC – World Soil Information, 2013. Africa soil property maps at 1 km. Available for download at <a href="http://www.isric.org">www.isric.org</a> .
Sample size	Africa
Spatial scale	1km resolution raster of Africa, clipped to Limpopo basin, tabulated to district
Year of data	1950 - 2005 (temporal coverage approximate)
Year of publication	2013
Methodology	<ul style="list-style-type: none"><li>• Ensure layer is projected correctly</li><li>• Reclassify ( Spatial Analyst tools\Reclass\reclassify) raster according to decision that organic content is measures in terms of g/kg – 0 -1, 1-2, 2-5, 5-15 and 15+, according to Henry et al., 2009 – Soil carbon ion ecoregions of Africa. Biogeosciences discuss. Vol. 6, Pgs 797 – 823</li><li>• Tabulate by district area (Spatial Analyst Tools\Zonal\Tabulate by area)</li><li>• Divide results by 1000000</li></ul>
Copyright	© Copyright ISRIC 2013
Additional Information	Downloaded: 5 <sup>th</sup> June 2013 Data license (IP policy): <a href="#">Attribution-ShareAlike CC BY-SA</a> Online repository of R scripts: <a href="https://code.google.com/p/gsif/source/browse/trunk/AFRICA/1km/">https://code.google.com/p/gsif/source/browse/trunk/AFRICA/1km/</a>

### D\_clay

Indicator name	Clay content
Variable(s)	D_clay
Definition	% area of district with on average >30% clay in top 200cm of soil
Data Source	Published by AFSIS <a href="http://www.isric.org/data/soil-property-maps-africa-1-km">http://www.isric.org/data/soil-property-maps-africa-1-km</a> - Reference ISRIC – World Soil Information, 2013. Africa soil property maps at 1 km. Available for download at <a href="http://www.isric.org">www.isric.org</a> .
Sample size	Africa
Spatial scale	1km resolution raster of Africa, clipped to Limpopo basin, tabulated to district
Year of data	1950 - 2005 (temporal coverage approximate)
Year of publication	2013

Methodology	<ul style="list-style-type: none"> <li>• Ensure layer is projected correctly</li> <li>• Reclassify ( Spatial Analyst tools\Reclass\reclassify) raster according to decision that Clay: &lt; 20%, 20 – 30%, &gt; 30% in accordance with Soil textural triangle <a href="http://age-web.age.uiuc.edu/classes/age357/ABE459_08/html/Soil%20Properties.pdf">http://age-web.age.uiuc.edu/classes/age357/ABE459_08/html/Soil%20Properties.pdf</a>.</li> <li>• Tabulate by district area (Spatial Analyst Tools\Zonal\Tabulate by area)</li> <li>• Divide results by 1000000</li> </ul>
Copyright	© Copyright ISRIC 2013
Additional Information	<p>Downloaded: 5<sup>th</sup> June 2013</p> <p>Data license (IP policy): <a href="#">Attribution-ShareAlike CC BY-SA</a></p> <p>Online repository of R scripts:  <a href="https://code.google.com/p/gisf/source/browse/trunk/AFRICA/1km/">https://code.google.com/p/gisf/source/browse/trunk/AFRICA/1km/</a></p>

## Land availability

### D\_cropland

Indicator name	Total cropland area
Variable(s)	D_cropland; Cropland (for Fields to display)
Definition	Total cropland area (including irrigated) (ha) (2000). (aggregation type: SUM)
Data Source	HarvestChoice, available at: <a href="http://harvestchoice.org/data/cropland-area-ha">http://harvestchoice.org/data/cropland-area-ha</a> Sourced from: Ramankutty et al. (2008), "Farming the planet: 1. Geographic distribution of global agricultural lands in the year 2000", Global Biogeochemical Cycles, Vol. 22, GB1003, doi:10.1029/2007GB002952.
Sample size	West Africa, East & Central Africa, Southern Africa
Spatial scale	1 km grid cells, recalculated to district level (average value)
Year of data	2000
Year of publication	2008
Methodology	<p>*same procedure as for D_cattle_dens*:</p> <ul style="list-style-type: none"> <li>• Ensure raster is projected correctly - check that it lines up with a correctly projected layer</li> <li>• Run "Zonal statistics as table" (Spatial Analyst Tools\Zonal)</li> <li>• Set District boundaries as input raster or feature zone data</li> <li>• Set "District" as zone field</li> <li>• Set Cropland layer as input raster or feature data class</li> <li>• Set "Value" as class field</li> <li>• Export table of attributes as a .dbf file – Open in Excel</li> <li>• Extract from data table MEAN values</li> </ul>
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	with a link to this web page.
Additional Information	

### D\_slope

Indicator name	Average surface slope
Variable(s)	D_slope
Definition	Proportion (%) of the district by area that is classed as flat (i.e. with < 8% slope, or a gradient <4.57°, according to FAO's Geonetwork slope classification - <a href="http://www.fao.org/geonetwork/srv/en/main.home#soils">http://www.fao.org/geonetwork/srv/en/main.home#soils</a> )
Data Source	Surface slope courtesy of the U.S. Geological Survey – according to <a href="http://www.usgs.gov/visual-id/credit_usgs.html">http://www.usgs.gov/visual-id/credit_usgs.html</a> ; Available for download from: USGS - <a href="https://lta.cr.usgs.gov/HYDRO1K">https://lta.cr.usgs.gov/HYDRO1K</a> , downloaded May 2013
Sample size	Global
Spatial scale	Calculated to district
Year of data	Various
Year of publication	1996
Methodology	(See Extended Methodology and GTOPO30 README found at <a href="https://lta.cr.usgs.gov/gtopo30">https://lta.cr.usgs.gov/gtopo30</a> for greater detail) <ul style="list-style-type: none"> <li>• Download the .tar file for the Limpopo tile</li> <li>• Convert into a raster using IMAGEGRID</li> <li>• Define the co-ordinate system and projection to match the other data layers</li> <li>• Note that the documentation comments that the raster values have been multiplied by 100 in order to allow for the inclusion of the maximum amount of data., therefore modify raster by two orders of magnitude to correct for this</li> <li>• Re-classify raster according to FAO's Geonetwork classification of slope classes (<a href="http://www.fao.org/geonetwork/srv/en/main.home#soils">http://www.fao.org/geonetwork/srv/en/main.home#soils</a>): <ol style="list-style-type: none"> <li>a. Level to undulating - &lt; 8% slope ( &lt; 4.57°)</li> <li>b. Rolling to hilly – 8 – 30% slope (4.57° - 16.7°)</li> <li>c. Steeply bisected to mountainous - &gt; 30% slope) (&gt; 16.7°).</li> </ol> </li> <li>• Calculate area per class per district</li> <li>• Calculate % area per class of total district area</li> </ul>
Copyright	USGS 2012
Additional Information	

### D\_pop\_dens

Indicator name	Population density
Variable(s)	D_pop_dens
Definition	Average population density (people/km <sup>2</sup> )
Data Source	INE. 2012. <i>Estatísticas Distritais</i> . Instituto Nacional de Estatística: Maputo. Sourced from: INE – III Recenseamento Geral da População e Habitação 2007
Sample size	Census population
Spatial scale	District
Year of data	2007
Year of publication	2012

Methodology	Total population per district divided by district surface area
Copyright	© 2012 Instituto Nacional de Estatística
Additional Information	In Portuguese

## Biomass availability

The total amount of biomass available to farmers to use in agriculture (e.g. for mulch or feed).

### D\_bio\_prod

Indicator name	Potential Biomass production																																													
Variable(s)	D_bio_prod																																													
Definition	Index of biomass production that is not crops, based on landcover types, with value range: 0 - 3 (100% city/cropland/bare - 100% forest)																																													
Data Source	JRC. 2003. <i>Global Land Cover 2000 database</i> . European Commission, Joint Research Centre, [website] Available at: <a href="http://bioval.jrc.ec.europa.eu/products/glc2000/products.php">http://bioval.jrc.ec.europa.eu/products/glc2000/products.php</a> , accessed July 2013																																													
Sample size	All of Africa																																													
Spatial scale	1 km resolution, calculated to % of district area																																													
Year of data	1994 - 2000																																													
Year of publication	2003																																													
Methodology	<p>Calculate area of each landcover class in each district, then % of total area covered by each class. To create index, assign landcover classes to categories: Forest, shrubland, grassland, other (includes cropland, cities, water); and rank categories according to the amount of biomass produced and available by farmers to use as mulch or feed: Forest = 3, shrubland = 2, grassland = 1, other = 0</p> <table><thead><tr><th>Landcover class</th><th>Category</th><th>Rank</th></tr></thead><tbody><tr><td>Closed evergreen lowland forest</td><td>Forest</td><td>3</td></tr><tr><td>Degraded evergreen lowland forest</td><td>Forest</td><td>3</td></tr><tr><td>Closed deciduous forest</td><td>Forest</td><td>3</td></tr><tr><td>Deciduous woodland</td><td>Forest</td><td>3</td></tr><tr><td>Deciduous shrubland with sparse trees</td><td>Shrubland</td><td>2</td></tr><tr><td>Open deciduous shrubland</td><td>Shrubland</td><td>2</td></tr><tr><td>Closed grassland</td><td>Grassland</td><td>1</td></tr><tr><td>Open grassland with sparse shrubs</td><td>Grassland</td><td>1</td></tr><tr><td>Open grassland</td><td>Grassland</td><td>1</td></tr><tr><td>Sparse grassland</td><td>Grassland</td><td>1</td></tr><tr><td>Croplands (&gt;50%)</td><td>Other</td><td>0</td></tr><tr><td>Salt hardpans</td><td>Other</td><td>0</td></tr><tr><td>Waterbodies</td><td>Other</td><td>0</td></tr><tr><td>Cities</td><td>Other</td><td>0</td></tr></tbody></table>	Landcover class	Category	Rank	Closed evergreen lowland forest	Forest	3	Degraded evergreen lowland forest	Forest	3	Closed deciduous forest	Forest	3	Deciduous woodland	Forest	3	Deciduous shrubland with sparse trees	Shrubland	2	Open deciduous shrubland	Shrubland	2	Closed grassland	Grassland	1	Open grassland with sparse shrubs	Grassland	1	Open grassland	Grassland	1	Sparse grassland	Grassland	1	Croplands (>50%)	Other	0	Salt hardpans	Other	0	Waterbodies	Other	0	Cities	Other	0
Landcover class	Category	Rank																																												
Closed evergreen lowland forest	Forest	3																																												
Degraded evergreen lowland forest	Forest	3																																												
Closed deciduous forest	Forest	3																																												
Deciduous woodland	Forest	3																																												
Deciduous shrubland with sparse trees	Shrubland	2																																												
Open deciduous shrubland	Shrubland	2																																												
Closed grassland	Grassland	1																																												
Open grassland with sparse shrubs	Grassland	1																																												
Open grassland	Grassland	1																																												
Sparse grassland	Grassland	1																																												
Croplands (>50%)	Other	0																																												
Salt hardpans	Other	0																																												
Waterbodies	Other	0																																												
Cities	Other	0																																												
Copyright	1. Download for scientific use - Parts or all of the dataset																																													

	<p>can be freely downloaded for further use in scientific applications under the condition that the source will be properly quoted in published papers or journals. Appropriate reference for the data is provided for the whole database and for each individual component (e.g. regional maps) in a text file accompanying each product on the products download page. By way of an example, the digital global land cover database should be quoted in the form "Global Land Cover 2000 database. European Commission, Joint Research Centre, 2003, <a href="http://www.gem.jrc.it/glc2000">http://www.gem.jrc.it/glc2000</a>".</p> <p>Copied from <a href="http://bioval.jrc.ec.europa.eu/products/glc2000/disclaimer.php">http://bioval.jrc.ec.europa.eu/products/glc2000/disclaimer.php</a></p>
Additional Information	<p><a href="http://bioval.jrc.ec.europa.eu/products/glc2000/metadata.php?product=Africa">http://bioval.jrc.ec.europa.eu/products/glc2000/metadata.php?product=Africa</a></p> <p><b>DATASET DESCRIPTION</b></p> <p>Title of Dataset      Vegetation Map of Africa</p> <p>Abstract      The Land Cover map of Africa is one regional component of the GLC2000 exercise, conceived and coordinated by the European Commission's Joint Research Centre. The GLC2000 maps are based on daily observations made from 1st November 1999 to 31st December 2000 by the VEGETATION sensor on the SPOT 4 satellite. The Africa map's legend pays special attention to the forest and savannah biomes. The map shows specific land-cover features as the irrigated agriculture, the ribbons of secondary forest of the swamp forests at a spatial detail never achieved before.</p> <p>Keywords      Global Land Cover 2000, Africa, Vegetation</p> <p>Language      English</p> <p>Version / Edition      3.0</p> <p>Production Date      20/02/2003</p> <p>Status      Complete</p> <p><b>CONTACT DETAILS</b></p> <p>Compiled by</p> <p>Institution Name :      GVM, JRC</p> <p>Contact Name :      Philippe MAYAUX</p> <p>Email :      <a href="mailto:philippe.mayaux@jrc.it">philippe.mayaux@jrc.it</a></p> <p>Web Link :      <a href="http://bioval.jrc.ec.europa.eu/products/glc2000/glc2000.php">http://bioval.jrc.ec.europa.eu/products/glc2000/glc2000.php</a></p> <p>Project Co-ordination</p> <p>Institution :      Joint Research Centre</p> <p>Contact Name :      Philippe MAYAUX</p> <p>Email :      <a href="mailto:philippe.mayaux@jrc.it">philippe.mayaux@jrc.it</a></p> <p>Web Link :      <a href="http://www-gvm.jrc.it/glc2000/defaultGLC2000.htm">http://www-gvm.jrc.it/glc2000/defaultGLC2000.htm</a></p>



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	METHODOLOGY			
	Lineage of the Data			
	Data Source(s)			
	Temporal Coverage of the Data	Start :	1994-1996 for radar data	
		End :	2000 for optical data	
		Name :	Land-cover legend	
		Description :		
	Legend	Online Resources :	<a href="http://www-gvm.jrc.it/glc2000/Products/africa/GLC2000_africa3.pdf">http://www-gvm.jrc.it/glc2000/Products/africa/GLC2000_africa3.pdf</a>	
	Data Quality Assessment	Qualitative : % Assessed by Regional Experts :	ongoing	
SPATIAL REPRESENTATION INFORMATION				
Geographical Location		ULX : -28.837057 LRX : 57.921857 ULY : 46.002137 LRY : -36.024635		
Spatial Resolution		1km at Equator (0.00892857dd)		
Map Projection		Geographic (Lat/Lon)		
Spheroid		WGS84		
File Size (Mb)		3.40 / 3.43		

### D\_cattle\_dens

Indicator name	Cattle density
Variable(s)	D_cattle_dens
Definition	Average cattle density per district (head/ km <sup>2</sup> ), from Cattle density per grid cell (in 2005). (aggregation type: WGHTD)
Data Source	Harvest Choice, available at: <a href="http://harvestchoice.org/data/cattle-density-headsq-km-2005">http://harvestchoice.org/data/cattle-density-headsq-km-2005</a> Sourced from: FAO. 2007. Gridded livestock of the world 2007, by G.R.W. Wint and T.P. Robinson. Rome, pp 131.
Sample size	West Africa, East & Central Africa, Southern Africa
Spatial scale	1 km grid cells, recalculated to district level (average value)
Year of data	2005

Year of publication	2011
Methodology	<ul style="list-style-type: none"> <li>• Ensure raster is projected correctly - check that it lines up with a correctly projected layer</li> <li>• Run “Zonal statistics as table” (Spatial Analyst Tools\Zonal)</li> <li>• Set District boundaries as input raster or feature zone data</li> <li>• Set “District” as zone field</li> <li>• Set Cattle density layer as input raster or feature data class</li> <li>• Set “Value” as class field</li> <li>• Export table of attributes as a .dbf file – Open in Excel</li> <li>• Extract from data table MEAN values</li> </ul>
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Additional Information	

## Weather variability

### D\_dryspells

Indicator name	Drought hazard index
Variable(s)	D_dryspells
Definition	Drought Hazard Index (DHI), which focuses on the probability of crop failure combined with the degree of rainfall variability. Low DHI indicates a relatively low chance of crop failure, and High indicates an increased probability of crop failure, due mainly to rainfall variability
Data Source	Limpopo River Awareness Kit, <a href="http://www.limpoporak.com">http://www.limpoporak.com</a> , data originally from: Leira, E.M., Rafael, J., Bata, M.O., Mechisso, M., McNabb, M., Engelbrecht, R. Maló, S. 2002. Atlas for Disaster Preparedness and Response in the Limpopo Basin. Available online at: <a href="http://edmc1.dwaf.gov.za/library/limpopo/index.htm">http://edmc1.dwaf.gov.za/library/limpopo/index.htm</a> Accessed on February 1, 2010 (by LimRAK)
Sample size	Sub-Saharan Africa and Madagascar
Spatial scale	Not known
Year of data	
Year of publication	2002
Methodology	Create a raster, then use ‘Spatial Analyst/Zonal/Zonal Statistics as Table’ to extract the <b>Mean</b> Drought hazard per district per district in the basin.
Copyright	Limpopo River Awareness Kit, DWAF-SA
Additional Information	

### D\_floods

Indicator name	Risk of flooding
Variable(s)	D_floods
Definition	Risk of flooding (high-med-low)
Data Source	WFP (2009) <i>Comprehensive Food Security and Vulnerability Assessment 2009 - September 2010</i> . United Nations World Food Programme: Maputo
Sample size	4 113 households interviewed nationally
Spatial scale	Province
Year of data	2009
Year of publication	2010
Methodology	Taken directly from source - estimated from a printed map as the category in which most of the district falls
Copyright	© World Food Programme
Additional Information	

### Pests and disease

#### D\_loss\_prod \*

Indicator name	Loss of harvest to pests/disease
Variable(s)	D_loss_prod
Definition	
Data Source	
Sample size	
Spatial scale	
Year of data	
Year of publication	
Methodology	
Copyright	
Additional Information	

## Fields to display

### Total population

Indicator name	Total population
Variable(s)	population
Definition	Total population per district (2007)
Data Source	INE. 2012. <i>Estatísticas Distritais</i> . Instituto Nacional de Estatística: Maputo. Sourced from: INE – III Recenseamento Geral da População e Habitação 2007
Sample size	Census population
Spatial scale	District
Year of data	2007
Year of publication	2012
Methodology	Data taken directly from source
Copyright	© 2012 Instituto Nacional de Estatística
Additional Information	In Portugese

### Mean annual rainfall (mm)

See D\_MAR

### Total cropland area (ha)

See D\_cropland

### Poverty level (%)

See D\_poverty

### Food security (%)

See D\_food\_sec

## Glossary of variables for Mozambique:-

D_MARavg	Longterm average annual rainfall (mm) (1901-2005). (aggregation type: AVG) - minimum and average MAR per district
D_MARmin	Longterm average annual rainfall (mm) (1901-2005). (aggregation type: AVG) - minimum and average MAR per district
D_prox_riv	% of district area lying within 1 km of a perennial river
D_watertable	Estimated depth to groundwater (mbgl - metres below ground level)
D_surfwater	Number of surface water bodies per km <sup>2</sup> per district (includes pans, pools, wells, springs, lakes, reservoirs and others)
D_irrig_infr	Number of holdings utilising irrigation per province (small, medium and large-scale farmers)
D_water_infr	
D_wpermit	
D_salinity	
D_numCBOs	Number of membership organisations per 1000 population
D_voting	Proportion of the voting population (%) who voted in the last government elections (2008)
D_interests	
D_disputes	
D_information	Percentage of women age 15-49 (%) who listen to the radio and/ or read newspaper and/ or watch TV on a weekly basis
D_remittances	Proportion (%) of households receiving remittances in the form of cash, food, clothing or agricultural inputs
D_own_land	Proportion of households with access to arable land (in Mozambique all land belongs to the state, therefore no-one can <i>own</i> land)
D_avg_plot	Average area in hectares of small and medium farms cultivated with basic food crops, per district
D_unemploy	Rate of unemployment (%)
D_femHH	The proportion (%) of households in each district who acknowledge a single female as the head of the household, as a percentage of all households in each district.
D_g_credit	
D_gratio	Ratio of women to men in the population
D_employment	Ratio of women to men who are employed
D_fem_assets	
D_avail_MFI	Proportion of the agricultural holdings (%) who have access to agricultural credit or microfinance
D_poverty	Rural poverty level (%) (2008/9)
D_wsafewater	Proportion (%) of households with access to piped, point or improved (protected) sources of water; see country-specific definitions for details. <b>Mozambique:</b> Proportion (%) of households with access to a point source of water (piped, standpipes, protected well/borehole, open well without pump)
D_food_sec	Proportion of households (%) that are food insecure (2008)
D_clinics	Total number of clinics present in each district per 1000 households. <b>Mozambique:</b> number of health centres present in each district per 1000 households.
D_work_pop	Working age population - Proportion (%) of total population aged between 15 and 64

D_g_ratio	Ratio of women to men in the population
D_HIV	Weighted prevalence rate of HIV / AIDS in adults (15-49 years) (in%) - 2009
D_literacy	Literacy rate - the proportion (%) of the population aged 15 or more who know how to read or write
D_ag_ext	
D_soil_mgmnt	
D_employment	The proportion of the working age population (%) who are employed
D_prox_rd	Proportion of district area (%) lying within 5 km of a road
D_equipment	Proportion of households (%) who possess a plough
D_postharv_infr	
D_market	Median travel time to human settlement of 20,000 or greater population. (aggregation type: AVG)
D_transport	Proportion of households possessing a bicycle (%)
D_cell_net	Proportion of households (%) possessing a telephone
D_input_market	
D_output_market	Density of populated places (villages, towns, cities) per district
D_SOC	Soil organic carbon (g/kg) in topsoil (0-5cm deep) - % area of district with high or very high soil organic carbon on the scale: 0-1 g/kg = low; 1-2 g/kg = medium; 2-5 g/kg = high; above 5 g/kg = very high <b>Mozambique</b> : area of district with 5-15 g/kg SOC (very high)
D_clay	% area of district with on average >30% clay in top 200cm of soil
D_cropland	Total cropland area (including irrigated) (ha) (2000). (aggregation type: SUM)
D_slope	Proportion (%) of the district by area that is classed as flat (i.e. with < 8% slope, or a gradient <4.57°, according to FAO's Geonetwork slope classification - <a href="http://www.fao.org/geonetwork/srv/en/main.home#soils">http://www.fao.org/geonetwork/srv/en/main.home#soils</a> )
D_pop_dens	Average population density (people/km <sup>2</sup> )
D_bio_prod	Index of biomass production that is not crops, based on landcover types, with value range: 0 - 3 (100% city/cropland/bare - 100% forest)
D_cattle_dens	Average cattle density per district (head/ km <sup>2</sup> ), from Cattle density per grid cell (in 2005). (aggregation type: WGHTD)
D_dryspell	Drought Hazard Index (DHI), which focuses on the probability of crop failure combined with the degree of rainfall variability. Low DHI indicates a relatively low chance of crop failure, and High indicates an increased probability of crop failure, due mainly to rainfall variability
D_floods	Risk of flooding (high-med-low)
D_loss_prod	