**Additional file 1: Literature sources and search strings used for the miombo systematic map.**

The results for the database searches reflect the number of citations returned before duplicates were removed. Most publications on organizational websites had an initial screening for relevancy before being saved for further review.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Literature Source** | **Date searched** | **Results** | **Search string, keywords or methods used for literature search** | **Time period** |
| **Databases** | | | | |
| **Archive of Tropical Forestry Inventory UK**  **(ATROFI UK)**  [**http://www.rdg.ac.uk/ssc/atrofi**](http://www.rdg.ac.uk/ssc/atrofi) | 28-Apr-15 | 11 | Keyword search for: Miombo, forest or carbon, Africa | Any |
| **Electronic Data Information Service (EDIS)**  [**http://edis.ifas.ufl.edu/**](http://edis.ifas.ufl.edu/) | 30-Sep-15 | 0 | Emailed EDIS librarian who searched with the keywords: carbon, biomass and land use change in miombo woodlands | Any |
| **CAB Direct**  [**http://www.cabdirect.org/**](http://www.cabdirect.org/) | 27-Apr-15 | 4,329 | Search string: ab:(miombo OR woodland\* OR "Zambez\* phytoregion" OR brachystegia OR julbernardia OR isoberlinia OR savanna\* OR forest\* OR "standing stock" OR biomass) AND gl:(Zambia OR Angola OR Malawi OR "Democratic Republic of Congo" OR Mozambique OR Zimbabwe OR Tanzania OR "South Africa" OR Burundi OR "Belgian Congo" OR Zaire OR Rhodesia OR Nyasaland OR Tanganyika OR Africa) AND ab:(timber OR fire OR "forest product\*" OR "wood product\*" OR "natural resource\*" OR "land cover" OR "land use" OR "land tenure" OR "land degradation" OR swidden OR citimene OR chitimene OR "slash NEAR burn" OR fallow OR "shifting cultivation" OR grazing OR infrastruct\* OR mining OR migrat\* OR wildlife OR bushmeat OR fodder OR mushroom\* OR fuelwood OR woodfuel OR charcoal OR refugee OR log\* OR agroforestry OR disturb\* OR medicin\* OR "forest management" OR land management” OR "land polic\*" OR "forest polic\*" OR livelihood\* OR measure OR density OR livestock OR "management regime") AND ab:(emission\* OR vegetation OR wood\* OR biomass OR carbon OR stock\* OR flux\* OR "above ground" OR "below ground" OR "basal area" OR sequest\* OR accumulate\* OR model OR estimat\* OR ndvi\* OR recover\* OR "land use NEAR change" OR rootstock) AND yr:[1950 TO 2015] | 1950-2015 |
| **Natural Resources Canada (NRCan)**  [**http://www.nrcan.gc.ca/library/177**](http://www.nrcan.gc.ca/library/177) | 5-Oct-15 | 4 | Contacted NRCan librarian who searched with the keywords: carbon, biomass, land use change, miombo woodlands | Any |
| **Web of Knowledge**  [**http://apps.webofknowledge.com/**](http://apps.webofknowledge.com/) | 30-Apr-15 | 6,235 | Search string: TOPIC: (miombo OR woodland\* OR "Zambez\* phytoregion" OR brachystegia OR julbernardia OR isoberlinia OR savanna\* OR forest\* OR "standing stock" OR biomass) AND TOPIC: (zambia OR angola OR malawi OR "Democratic Republic of Congo" OR mozambique OR zimbabwe OR tanzania OR "South Africa" OR burundi OR "Belgian Congo" OR zaire OR rhodesia OR nyasaland OR tanganyika OR africa) AND TOPIC: (timber OR fire OR "forest product\*" OR "wood product\*" OR "natural resource\*" OR "land cover" OR "land use" OR "land tenure" OR "land degradation" OR swidden OR citimene OR chitimene OR "slash AND burn" OR fallow OR "shifting cultivation" OR grazing OR infrastruct\* OR mining OR migrat\* OR wildlife OR bushmeat OR fodder OR mushroom\* OR fuelwood OR woodfuel OR charcoal OR refugee OR log\* OR agroforestry OR disturb\* OR medicin\* OR "forest management" OR "land management" OR "land polic\*" OR "forest polic\*" OR livelihood\* OR measure OR density OR livestock OR "management regime") AND TOPIC: (emission\* OR vegetation OR wood\* OR biomass OR carbon OR stock\* OR flux\* OR "above ground" OR "below ground" OR "basal area" OR sequest\* OR accumulate\* OR model OR estimat\* OR ndvi\* OR recover\* OR "land use change" OR rootstock) | 1950-2015 |
| **Scopus**  [**http://www.scopus.com/**](http://www.scopus.com/) | 27-Apr-15 | 6,167 | Search string: TITLE-ABS-KEY ( miombo  OR  woodland\* OR "Zambez\* phytoregion" OR brachystegia OR julbernardia OR isoberlinia OR savanna\* OR forest\* OR "standing stock" OR biomass) AND TITLE-ABS-KEY(zambia OR angola OR malawi OR "Democratic Republic of Congo" OR mozambique OR zimbabwe OR tanzania OR "South Africa" OR burundi OR "Belgian Congo" OR zaire OR rhodesia OR nyasaland OR tanganyika OR africa) AND TITLE-ABS-KEY(timber OR fire OR "forest product\*" OR "wood product\*" OR "natural resource\*" OR "land cover" OR "land use" OR "land tenure" OR "land degradation" OR swidden OR citimene OR chitimene OR "slash AND burn" OR fallow OR "shifting cultivation" OR grazing OR infrastruct\* OR mining OR migrat\* OR wildlife OR bushmeat OR fodder OR mushroom\* OR fuelwood OR woodfuel OR charcoal OR refugee OR log\* OR agroforestry OR disturb\* OR medicin\* OR "forest management" OR "land management" OR "land polic\*" OR "forest polic\*" OR livelihood\* OR measure OR density OR livestock OR "management regime") AND TITLE-ABS-KEY(emission\* OR vegetation OR wood\* OR biomass OR carbon OR stock\* OR flux\* OR "above ground" OR "below ground" OR "basal area" OR sequest\* OR accumulate\* OR model OR estimat\* OR ndvi\* OR recover\* OR "land use change" OR rootstock) | 1950-2015 |
| **Wiley Online**  [**http://onlinelibrary.wiley.com/**](http://onlinelibrary.wiley.com/) | 28-Apr-15 | 21 | Search string: miombo (abstract) AND forest OR carbon OR "land use" (in abstract) | Any |
| **JSTOR**  [**http://www.jstor.org/**](http://www.jstor.org/) | 28-Apr-15 | 12 | Search string: miombo OR woodlands AND biomass OR carbon OR "land use" AND Africa (after 1950) | 1950 onwards |
| **African Journals Online**  [**http://www.ajol.info/**](http://www.ajol.info/) | 20-Oct-15 | 14 | Search string: miombo AND ("land use" OR carbon OR biomass OR forest) | Any |
| **Organizational websites - search engines** | | | | |
| **Google Scholar**  [**http://scholar.google.com**](http://scholar.google.com/) | 10-Nov-15 | First 100 results screened  (9 saved) | Search string: miombo woodland and (carbon or biomass) and "land use" | Any |
| **African Forest Forum**  <http://www.afforum.org/> | 5-Oct-15 | 2 | Basic keyword search for: miombo; land use; woodland; savanna; biomass; carbon; brachystegia; julbernadia; isoberlinia | Any |
| **FAO**  **-Global Forests Resources Assessment**  **-National Forest Monitoring and Assessment (NFMA) of the FAO**  [**Global Forest Resources Assessment (FRA): 2005 and 2010 of FAO and its country reports http://www.fao.org/forestry/fra/en/**](http://www.fao.org/forestry/fra/en/) | 5-Oct-15 | 12 | Keyword search for: "miombo" and "land use" and (biomass or carbon) | 1950 to current |
| **The Consultative Group on Agricultural Research**  <http://www.cgiar.org/resources/cgiar-library/>  **-Bioversity**  **-ILRI**  **-ICARDA** | 5-Oct | n/a | Contacted librarians at each organization who shared all published documents are included within CAB database. Decided to only do searches for unpublished papers on CIFOR and ICRAFs websites. | Any |
| **CIFOR**  <http://www.cifor.org/library/> | 5-Oct | 5 | Search string: “miombo woodlands” and “land use” and (carbon or biomass)    \*Search limited to working and occasional papers or policy briefs because published reports included within CAB database | Any |
| **ICRAF**  [**http://www.worldagroforestry.org/our-publications#**](http://www.worldagroforestry.org/our-publications) | 5-Oct | 40 | Contacted librarian who searched: “miombo or woodlands and Africa and "land use"”  \*Search limited to working and occasional papers or policy briefs because published reports included within CAB database | Any |
| **United Nations Environment Programme (UNEP)**  <http://www.unep.org/> | 5-Oct-15 | 70 | Keyword search for: miombo; woodland; biomass; carbon and Africa. | Any |
| **Tropical Soil Biology and Fertility Institute of CIAT (TSBF-CIAT): Conservation and sustainable management of below ground biomass project**  [Conservation and sustainable management of below ground biomass project http://www.cbd.int/kb/record/organization/5628?Country=ke](http://www.cbd.int/kb/record/organization/5628?Country=ke) | 6-Oct-15 | 0 | Email inquiry for publications on miombo, land use change, and carbon or biomass | Any |
| **Miombo Network list serve**  <http://www.fao.org/gtos/gofc-gold/networks.html> | 27-Oct-15 | 0 | Emailed miombo network representative and searched the website | Any |
| **Commonwealth Scientific Industrial Research Organisation (CSIRO)**  <http://www.csiro.au/> | 10-Dec-15 | 0 | Emailed CSIRO for data related miombo and carbon or biomass | Any |
| **World Bank**  <http://www.worldbank.org/> | 10-Dec-15 | Screened first 50 publications | Search string: miombo AND (carbon OR biomass) | Any |
| **Integrated Land Use Assessment Phase 1 & 2, Zambia**  <http://www.fao.org/forestry/17847/en/zmb/> | 5-Oct-15 | 2 | Searched publications with keyword 'miombo' | Any |
| **National vegetation mapping project (VegRIS) Zimbabwe**  [http://www.forestry.co.zw](http://www.forestry.co.zw/) | 27-Oct-15 | 0 | Searched publications of related research departments | Any |
| **Winrock International**  <http://www.winrock.org/> | 27-Oct-15 | 0 | Searched publications with keyword 'miombo' | Any |
| **KEW Royal Botanic Gardens**  <http://www.kew.org/> | 20-Oct-15 | 1 | Searched publications with keyword 'miombo' | Any |
| **Land and Timber Services (LTS) International**  <http://www.ltsi.co.uk/> | 10-Dec-15 | 0 | Emailed LTS and searched website | Any |
| **Japan International Cooperation Agency (JICA) Mozambique, Zambia**  http://www.jica.go.jp/english/ | 10-Oct-15 | 0 | Scanned website and contacted local JICA offices (Mozambique, Zambia) | Any |
| **Deutsche Gesellschaftfür Internationale Zusammenarbeit GmbH (GIZ)**  http://www.giz.de/en/ | 6-Oct-15 | 1 | Scanned website for relevant publications containing ‘miombo’ or ‘carbon’ | Any |
| **Multifunctional Agriculture: harnessing Biodiversity for Sustainable Agricultural Production and Ecosystem Services (SAPES), Lund University**  <http://www.cec.lu.se/research/sapes> | 10-Dec-15 | 0 | Scanned website for relevant publications containing ‘miombo’ or ‘carbon’ | Any |
| **Total Land Care – Malawi**  <http://www.totallandcare.org/> | 14-Oct-15 | 0 | Scanned website for relevant publications | Any |
| **Conservation International**  [http://www.conservation.org/](http://www.conservation.org/Pages/default.aspx) | 5-Oct-15 | 0 | Scanned website for relevant publications containing ‘miombo’ or carbon’ | Any |
| **World Wildlife Fund (WWF)**  <http://worldwildlife.org/> | 5-Oct-15 | 0 | Scanned the 'Africa' publications | Any |
| **International Union for the Conservation of Nature (IUCN)**  <http://www.iucn.org/> | 6-Oct-15 | 0 | Scanned website for relevant publications containing ‘miombo’ or ‘carbon’ | Any |
| **National Forestry Resources Monitoring and Assessment, Government of Tanzania (NA FORMA)**  <http://www.fao.org/forestry/17847/en/tza/> | 14-Oct-15 | 1 | Scanned website for relevant publications; saved ‘Main Results’ from NA FORMA | Any |
| **African Soil Information Service (Afsis)**  <http://www.africasoils.net/> | 14-Oct-15 | 1 | Searched for publications with keywords: 'carbon storage', ‘land use’, ‘land degradation’, ‘remote sensing’ | Any |
| **Private Sector** |  |  |  |  |
| **Agricultural Research and Extension Trust – Malawi** | 10-Nov-15 | 0 | Contacted; no additional literature on miombo | Any |
| **British American Tobacco; Alliance One – Malawi, Zambia** | 10-Nov-15 | 0 | Contacted; no additional literature on miombo | Any |
| **Zambia Land Alliance** | 10-Oct-15 | 0 | Contacted; no relevant literature (only publications on land law acts) | Any |
| **Zambia Leaf** | 16-Nov-15 | 0 | Contacted; no additional literature on miombo | Any |
| **Limbe Leaf – Malawi** | 10-Nov-15 | 0 | Contacted; no additional literature on miombo | Any |
| **Universities and Government offices** | | | | |
| **Forest Research Institute of Malawi (FRIM)**  <http://www.sdnp.org.mw/frim/> | 10-Nov-15 | 0 | Contacted; no additional literature on miombo | Any |
| **Oxford University, Radcliffe Library** | 21-25 June 2014 | 58 | Forestry sciences: Hand searched miombo countries especially Malawi, Tanzania, Zambia and Zimbabwe | 1900 or after |
| **Tanzania Forest Research Institute (TAFORI)** | - | n/a | Not contacted | n/a |
| **Forestry Commission, Harare** | 10-Nov-15 | 0 | Contacted; no additional literature on miombo | Any |
| **University of Zimbabwe, Department of Biological Sciences, Institute of Environmental Studies, and the Centre for Applied Social Science (CASS)** | 10-Nov-15 | 0 | Searched keywords: “woody biomass” and carbon; no additional documents saved | Any |
| **Bangor University, Wales**  <http://unicat.bangor.ac.uk/search~S1> | 17-Nov-15 | 2 | Emailed librarian; searched website with keywords: "miombo" and “carbon or biomass” | Any |
| **University of Sokoine, Department of Agriculture, Tanzania** | 6-Oct-15 | 16 | Searched with keywords: "miombo" and “carbon or biomass” | Any |
| **University of Zambia, School of Natural Sciences and Agricultural Sciences** | 6-Oct-15 | 1 | Searched with keywords: "miombo" and “carbon or biomass” | Any |
| **University of Edinburgh, School of Geosciences**  <http://www.geos.ed.ac.uk/miombo/Documents.html> | 3-Nov-15 | 6 | Emailed librarian; searched data on the Nhambita REDD project | Any |
| **Climate Action Network International; ZERO**  <http://www.climatenetwork.org/profile/member/zero-regional-environment-organization> | 3-Nov-15 | 0 | Searched publications for keywords containing: “miombo” and “carbon or biomass” | Any |
| **Southern Alliance for Indigenous Resources (SAFIRE)** | 10-Dec-15 | 0 | Emailed SAFIRE for miombo/land use and carbon/biomass publications | Any |
| **National University of Science and Tech, GIS mapping & Inventory at Forest Research Centre, Bulawayo, Zimbabwe** | 3-Nov-15 | 0 | Emailed for miombo/land use and carbon publications | Any |
| **Environmental Management Agency (EMA), Harare** | 10-Oct-15 | 0 | Contacted EMA; information limited to Environmental Impact Assessment reports | Any |
| **Zambia Environmental Management Agency (ZEMA)** | 10-Oct-15 | 0 | Searched publications for keywords ‘miombo’ and ‘carbon or biomass’ | Any |
| **Ministry for Coordination of Environmental Action (MICOA); now named Ministry of Land, Environment and Rural Development, MITADER)** | 27-Oct-15 | 0 | Emailed requesting information about land use/carbon or biomass change in the miombo; no response | Any |
| **Department of Environmental Affairs, Malawi** | 10-Nov-15 | 0 | Emailed requesting information about land use/carbon or biomass change in the miombo; no response | Any |
| **Additional publications from experts** | November 2015 | 21 | Contacted experts doing research in miombo woodlands and land use change, including: Emmanuel Chidumayo, Peter Frost, Gert Nyberg, Peter Dewees | After 1950 |