**CURRICULUM VITAE**

**POWELL MPONELA**

Center for Development Research (ZEFc)

Genscherallee 3

Bonn, 53113, Germany

+49 17659532385

Email address: powellmponel@gmail.com

Academic Website Profile: https:/www.zef.de/student/1794

Web of Science ResearcherID: <https://publons.com/researcher/E-4710-2016>

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| BioBorn on 1st August 1980, Married with 3 Children. Malawian. Growing up in rural Malawi, I am passionate about nature conservation and helping rural farmers. I have become a twin-career researcher: integrating ecological with human behavioural science. I aim to understand how regimes of socio-economic or development policy and climate change may affect future delivery of ecosystem services and human wellbeing. I have over 10 years of research for development experience and published 12 Web of Science Indexed Journal articles. Currently, I am a postgraduate fellow at the University of Bonn **(up to 28.02.21)** modelling climate change induced crop pest and disease distribution for Central Asia and South Eastern Europe.EducationPhD Agricultural Sciences - University of Bonn, GERMANY, *2016 to 2020 (*grade:  *suma cum laude)**Sustainable Agricultural Intensification in Smallholder Farming Systems.* I developed a multi agent system for simulating sustainable agricultural intensification (MASSAI) by integrating dynamic nutrient transfers with human behavioral modules. I then used the MASSAI and evaluated the main development policy intervention in Malawi’s agriculture, the Farm Input Subsidy Program (FISP) impacts on farmers input choices, crop yields and soil nutrient balances. I found that subsidy increased and stabilized crop yields but its effects plateaued and led to farmer dependence which jeopardizes farm sustainability.MSc Social Forestry – University of Malawi, *2007 – 2010* (grade 76%)*Land use change for biodiesel and indigenous plant diversity.* I conducted a socio-economic assessment of human decision and found that smallholder farmers of Malawi were willing to allocate cultivated and uncultivated marginal lands to a bio-diesel crop, *Jatropha carcus.* The land use change was driven by economic prospects at the expense of conservation objectives as these pockets of uncultivated lands were found to host redlist and higher diversity of indigenous species.BSc Forestry - Mzuzu University – Malawi, *2003 – 2007 (*grade: upper second class)*Indigenous tree domestication.* I studied field performance of indigenous fruit tree, *Uapaca kirkiana*, collected from natural provenances across southern and eastern Africa that was established in Malawi. My results on growth, fruiting and pest and disease tolerance contributed to domestication programme by the Forestry Research Institute of Malawi.**Certificate in Forest Products Marketing-** Kymenlaakso Polytechnic, Finland, *2005* |

# Publications

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| Ndengu G., **Mponela P**., Chataika B, Desta L, Chirwa R. And Sileshi G G. (2022). Effect of combining organic manure and inorganic fertilizers on maize–bush bean intercropping. Experimental Agriculture (2022), 1–12. <https://doi.org/10.1017/S0014479722000102> FAO and University of Bonn. 2021. Climate change impacts on twenty major crop pests in Central Asia, the Caucasus and Southeastern Europe. Developed by Powell Mponela, Shova Shrestha and Lisa Biber-Freudenberger. Ankara, FAO. <https://doi.org/10.4060/cb5954en> **Mponela P**., Snapp S., Villamor G. B., Tamene L. D., Le Q. B., & Borgemeister C. (2020). Digital soil mapping of nitrogen, phosphorus, potassium, organic carbon and their crop response thresholds in smallholder managed escarpments of Malawi. *Applied Geography*, https://doi.org/10.1016/j.apgeog.2020.102299.**Mponela P**., Villamor G. B., Snapp S., Tamene L. D., Le Q. B., & Borgemeister C. (2020). The role of women empowerment and labour dependency on adoption of integrated soil fertility management in Malawi. *Soil Use and Management*,<https://doi.org/10.1111/sum.12627>Mango N., Makate C., Tamene L., **Mponela P**., Ndengu G. (2020). Impact of the adoption of conservation practices on cereal consumption in a maize-based farming system in the Chinyanja Triangle, Southern Africa. *Sustainable futures (2)*. <https://doi.org/10.1016/j.sftr.2020.100014> Tamene L., Sileshi G.W., Ndengu G., **Mponela P**., Kihara J., Sila A. & Tondoh J. 2019. Soil structural degradation and nutrient limitations across land use categories and climatic zones in Southern Africa. *Land Degradation and Development 30(11)1288-1299*. <https://doi.org/10.1002/ldr.3302> **Mponela P**., Girma T., Tamene L. (2018) Simultaneous adoption of integrated soil fertility management technologies in Chinyanja Triangle. *Natural Resources Forum*, 42(3)172-184. <https://doi.org/10.1111/1477-8947.12155> Mango N. Makate C. Tamene L., **Mponela P**. Ndengu G. (2018). Adoption of small-scale irrigation farming as a climate-smart agriculture practice and its influence on household income in the Chinyanja Triangle, Southern Africa. *Land* 7(2). <https://doi.org/10.3390/land7020049> Mango N., Makate C., Tamene L., **Mponela P**. and Ndengu G. (2017). Awareness and adoption of land, soil and water conservation practices in the Chinyanja Triangle, Southern Africa. *International Soil and Water Conservation Research*, 2(5): 122-129. <https://doi.org/10.1016/j.iswcr.2017.04.003> Tamene L., **Mponela P**., Sileshi G.W., Chen J. and Tondoh J.E. (2016). Spatial variation in tree density and estimated aboveground carbon stocks in Southern Africa. *Forests* 7 (57), 1-19. <https://doi.org/10.3390/f7030057> **Mponela P.**, Tamene L., Ndengu G. Magreta R., Kihara J. and Mango N. (2016). Determinants of integrated soil fertility management technologies adoption by smallholder farmers in the Chinyanja Triangle of Southern Africa. *Land Use Policy* 59, 38-48. <https://doi.org/10.1016/j.landusepol.2016.08.029> Tamene L., **Mponela P.**, Ndengu G. and Kihara J. (2015). Assessment of maize yield gap and major determinant factors between smallholder farmers in the Dedza district of Malawi. *Nutrient Cycling in Agroecosystems* 105:291-308. <https://doi.org/10.1007/s10705-015-9692-7> **Mponela P**., Mwase W., Jumbe C.B.L. and Ntholo M.D. (2010). Plant species diversity on marginal and degraded areas for Jatropha curcas L. cultivation in Malawi. *African Journal of Agricultural Research* Vol. 5(12):1497-1503. <https://academicjournals.org/journal/AJAR/article-abstract/DEE52E636486>**Mponela P**., Jumbe C.B.L. and Mwase W. (2010). Determinants and extent of land allocation for Jatropha curcas L. cultivation among smallholder farmers in Malawi. *Journal of Biomass and Bioenergy*. Vol. (35(7): 2499-2505. <https://doi.org/10.1016/j.biombioe.2011.01.038>  |

# Conference presentations and research reports

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| **Mponela P**., Villamor G. and Tamene L. (2019). *High resolution mapping of soil organic carbon and major nutrients within smallholder farms using randomForest and satellite imagery: Towards improved soil fertility management*. Oral presentation at the Wageningen Soil Conference: understanding soil functions. Held from 27-30 August, 2019 at Wageningen, the Netherlands. <https://wageningensoilconference.eu/2019/wp-content/uploads/2019/08/WSC2019_Book_of_Abstracts.pdf> **Mponela P**., Villamor G., Tamene L., Snapp S., Le Q.B. and Borgemeister C. (2019). *10 m x 10 m Map of Soil Organic Carbon and Major Nutrients: Towards Plot Level Soil Fertility Management.* Oral presentation at the Tropentag - International conference on research on food security, natural resource management and rural development: Filling gaps and removing traps for sustainable resources development. Held from 18-20 September 2019 at Kassel, Germany. <https://www.tropentag.de/2019/abstracts/links/Mponela_73IKNnaO.php> **Mponela P**., Villamor G., Tamene L., Snapp S., Le Q.B. and Borgemeister C. (2019). *Uptake of Integrated Soil Fertility Management Techniques in Maize Mixed Farming Systems of East and Southern Africa: Case of Malawi's Rift Valley Escarpments.* Poster presented at the Tropentag - International conference on research on food security, natural resource management and rural development: Filling gaps and removing traps for sustainable resources development. Held from 18-20 September 2019 at Kassel, Germany. <https://www.tropentag.de/2019/abstracts/posters/511.pdf>Braslow J., **Mponela P**., Sandram I., Banda R and Tamene L.D. (2016). *Let's conserve the environment by finding solutions to end poverty*. Participatory video, Alliance of Bioversity International and CIAT. <https://www.youtube.com/watch?v=0EZD5lv_xAQ&ab_channel=AllianceofBioversityInternationalandCIAT>Tamene L., **Mponela P**. (2016). Drought tolerant bean varieties offer hope to smallholder farmers in Malawi. https://hdl.handle.net/20.500.11766/4582.**Mponela P** and Ellisen J. (2015). *Tiyeni method - deep bed bio-intensive farming: Research scoping visit report*. <https://www.researchgate.net/publication/307587841_Tiyeni_method_-_deep_bed_bio-intensive_farming_Research_scoping_visit_report>. Tamene L., **Mponela P**., Snyder K.A., Braslow J., Ndengu G. (2015). CRP Dryland Systems - CIAT - 2015 Technical and Financial Report - Final. Santiago de Cali, Colombia: International Center for Tropical Agriculture (CIAT). <https://hdl.handle.net/20.500.11766/4696>.Tamene L., Sila A, Kihara J., Ndengu G., **Mponela P**., Shepherd K., Walsh M., and Bossio D. (2014). *Soil Health in Southern Africa and Implication on Sustainable Intensification: How much is the Gap?* Presented at 20th World Congress of Soil Science, 8-13 June, 2014. Jeju, Korea.**Mponela P**., Mwabumba L. (2008). *Performance of 8-year-old provenances cum families of Uapaca kirkina Muell. Arg (Wild loquat) at Nauko, Machinga, Malawi*. In: Makungwa, S.M., Chakeredza, S., Saka, A., Mwase, W. Saka, V., G.F. Salanje, A. D. Yaye (eds) (eds.): Mainstreaming Climate Change into Agricultural and Natural Resources Management Education: Tools, Experiences and Challenges. Reviewed Papers presented at ANAFE symposium on Tertiary Agricultural Education, July 2008, Lilongwe, Malawi. African Network for Agriculture, Agroforestry and Natural Resources Education. 275-202. <https://www.researchgate.net/publication/265335704_Performance_of_8-year-old_provenances_cum_families_of_Uapaca_kirkina_Muell_Arg_Wild_loquat_at_Nauko_Machinga_Malawi#fullTextFileContent> |

# Work experience

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| Modelling Fellowship, Center for Development Research; University of Bonn. *17 October 2020 – 28 February 2021** Identification of 20 key pests and diseases that cause the greatest damage in the south eastern Europe and central Asia region for key agricultural plants
* Detailed assessment of the influence of climatic factors on plant pest/diseases, their possible and observed distribution using maximum entropy modelling
* Based on the available modern climate models, elaboration of a forecast of further distribution and potential mass reproduction of key plant pests/diseases
* Recommendations on the need for monitoring for individual pathogens in specific sub-regions
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| Research Consultant, International Center for Agricultural Research in the Dry Areas (ICARDA) *05 October 2020 - 31 December 2020** Identification of household attributes that distinguish them into distinct agricultural livelihood types (ALtypes)
* ALtype-specific determinants of coupling crop diversification, soil and water conservation, soil fertility management, and pest and weed control in Lentil-Chickpea zones of Ethiopia**.**
* Decipher challenges and opportunities for scaling sai as coupled basket of best bets or decoupled individual practices in ethiopia
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## Research Assistant, Center for Development Research; University of Bonn.

*17 August to 16 October 2020*

* Data acquisition and management: Linking the Afromontane woody plant species with the Marshall rating, IUCN red list and distribution ranges using Africa Plant Database, IUCN database and Marshall rating database.
* Training PhD student in R: Bird distribution in relation to vegetation patterns estimated with satellite imagery vegetation indices.

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| Senior Research Assistant, International Centre for Tropical Agriculture (CIAT)*2010 - 2016** Project proposal development:
* USAID funded*: AfricaRISING - Intensification of nitrogen fixing crops (bean) in cereal dominated farming systems of Malawi.*
* IRISH AID funded: *Malawi Seed Industry Development Project Phase II (MSIDP II), common bean*.
* Team leader:
* Africa Soil Information Service (AfSIS)
	+ Coordination and stakeholder engagement with government, non-government and community leaders.
	+ Supervising and training field staff for land degradation surveillance (LDS) in 33 sites in Angola, Botswana, Malawi, Mozambique, Zambia and Zimbabwe
	+ Field report and scientific publications on above ground biomass and soil nutrient distributions across ecological zones and land uses in southern Africa.
* CGIAR Research Program on Dryland systems (CRP-DS)
	+ Prepare field protocols and conduct research on agro-ecological intensification in Malawi through action research with smallholder farmers
	+ Supervising and training field staff conducting land degradation surveillance (LDS) in 3 sites in Malawi, Mozambique and Zambia, the Chinyanja Triangle.
	+ Plan and conduct socioeconomic surveys linked to LDS plots
	+ Write field reports and publish scientific papers on drivers of land use change, irrigation systems, soil fertility management and crop yield.
* Co-lead:
* AfricaRISING
	+ Field testing of common bean varieties with farmers in central Malawi
	+ Implemented participatory trials to enhance adoption of integrated soil fertility management and sustainable land management practices in maize-legume farming systems.
	+ Coordination, stakeholder engagement, supervising and training field staff conducting land degradation surveillance (LDS) in 4 sites in Malawi.
	+ Conducted socioeconomic studies linked to LDSF datasets for 8 sites in Malawi, Zambia and Mozambique.
	+ Train field staff on LDS in 2 sites in northern Ghana and 2 sites in central and northern highlands of Ethiopia.
* AGORA
	+ Acting together with farmers for pro-poor strategies against Soil and Land Degradation using transdisciplinary and participatory approaches to map social, economic and ecological drivers of adoption of SLM practices
* Land degradation Neutrality
	+ Trained field team on biomass and SOC sampling and estimation for bush encroachment and land degradation neutrality in Namibia.
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| Scholarships and funding*2020*: Center for Development Research, PhD study completion grant*2016-2019*: Federal Ministry for Economic Cooperation and Development (BMZ) through German Academic Exchange Service (DAAD) for the PhD studies under the program Development-Related Postgraduate Courses (EPOS)*2007-2010*: Frank Babka's Good Samaritan Scholarship extended for MSc studies*2004-2006*: Frank Babka's Good Samaritan Scholarship through Mzuzu University Trust Fund for BSc studies*2012-2016*: Co-lead proposal development, implementation and reporting for the research grant amounting to €512,331funded by CGIAR for the project: Agro-ecological intensification in Malawi through action research with smallholder farmers, CGIAR Research Program on Dryland systems (CRP-DS) <http://drylandsystems.cgiar.org/> 2013-2016: Co-lead proposal development, implementation and reporting of a research grant funded by USAID through Michigan State University amounting to 204,932 for the project: Africa Research in Sustainable Intensification for the Next Generation (Africa RISING) <https://africa-rising.net/>2016: Co-lead proposal development for the research grant amounting to 315,100 funded by Irish-AID through ICRISAT for the project: Malawi Seed Industry Development Project Phase II (MSIDP II), <https://ciat.cgiar.org/ciat-projects/malawi-seed-industry-development-project-phase-ii-msidp-ii/> |
| Leadership and cultural awarenessFor the six years I was at CIAT, I planned and executed the research activities according to the operating procedures within the set timeline and budget. I trained and guided the research teams in the 9 research countries. I led culturally diverse field teams in 7 countries across southern Africa; and in Ethiopia and Ghana. The interdisciplinary studentship and intercultural trainings at the Center for Development Studies (ZEF) equipped me with skills to interact and work with people from different parts of the world.  |

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| Computer packagesWhile working on individual modules to find connections between humans and their ecosystems, I have collected data and used several analysis tools including:* Microsoft Excel – plant growth and above ground carbon stocks
* R – species distribution, digital soil mapping
* QGIS and ArcGIS - spatial analysis of remote sensing and GIS data.
* BioDiversity Professional – plant diversity analysis
* NetLogo - multi agent simulation of agricultural sustainability as part of my PhD studies
* Stata and SPSS - socio-economic analysis of drivers of land use change
* Atlas.TI- gendered participation in non-farm activity
* NetMap –power relations among Soil Fertility Management stakeholders
* SAS for heritability among natural occurring provenances of fruit trees.
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# Referees

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| Prof. Dr. Christian Borgemeister (1st PhD supervisor)University of Bonn, Centre for Development Research (ZEF)E-Mail: CB@uni-bonn.deProf. Dr. Sieglinde Snapp (2nd PhD supervisor)Michigan State UniversityEmail: Snapp@msu.edu Dr. Lulseged D. Tamene (Previous work supervisor)International Centre for Tropical Agriculture (CIAT)E-Mail: LT.Desta@cgiar.org |