Curriculum Vitae

Name:	B D'Haeyer MSc.
First Name:	Brecht
Date of Birth:	16 December 1993
Nationality:	Belgian
Main Disciplines:	Hydrology, Hydro-dynamics, River Engineering, International Water Resources Management, and WEAP modeller.
Telephone:	+31 (0) 618 528 086
Email:	b.dhaeyer@futurewater.nl
LinkedIn:	https://www.linkedin.com/in/brecht-d-haeyer-943652124/

Key Qualifications

Brecht D'Haeyer (MSc.) is a hydrologist and water resources engineer with four years of experience on surface water and groundwater modelling, water allocation, and climate change. He holds a BSc. in International Land and Water Engineering from Wageningen University, and an MSc. in Hydrology from Imperial College London. During his study, he did research projects in Bangladesh and India on the use of falling aprons for mitigating riverbank erosion and flooding along the Brahmaputra River (BSc) and quantified the impacts on water allocation by transitioning from an open channel to a closed pumped irrigation scheme in Patna, India (MSc). In addition, Brecht has worked for both the public and private industry in Belgium, Burundi, Kyrgyzstan, Myanmar, Rwanda, and Tajikistan.

Brecht has advanced skills in hydraulic and hydrologic modelling and GIS analysis using a variety of existing software packages and programming languages. He is an ambitious and idealistic young professional who aims to contribute to a more sustainable and inclusive world, thereby combining his socio-technical background with his experiences from international research/ engineering projects. This specific combination has allowed Brecht to look beyond the technical problem, tackle complex challenges, and contribute to the most sustainable solution. Brecht is currently a consultant/ researcher on Hydrology at the FutureWater office in Wageningen.

Educational Background

2018 – 2019

MSc. Hydrology and Water Resources Engineering, Department of Civil & Environmental Engineering, Imperial College London, London, United Kingdom - Merit

MSc Dissertation: "Irrigation Modernisation through transitioning from an Open to a Semi-Open Irrgiation Scheme in Ara, Bihar, India: An Assessment of the Hydraulic and Operational Impact at Distributary Level using a 1D HEC-RAS Model" as a junior engineer with Northwest Hydraulic Consultants, Patna, India
Supervisor: Prof. Dr. Adrian P. Butler and Mr. Alan K. Clark

MSc Internship: "Regional Water Security Study for Greater Yangon: A pluvial, Fluvial and Coastal Flood study along the Ayeyarwady River." as a Flood Risk and Water Security Trainee with Arcadis, Yangon, Myanmar
Supervised by Ms. Tanya Huizer and Mr. Rob Steijn

2016 – 2017	Minor Programmes: 'Agriculture and Quantitative/ Qualitative Water Management' and 'Climate Change and Oceanography', College of Agricultural & Environmental Sciences, University of California, Davis, United States of America – Cum Laude
2013 – 2018	BSc. International Land and Water Management, Water Resources Management Group, Wageningen University and Research, Wageningen, The Netherlands – Cum Laude
	BSc Thesis: "River Stabilization in Bangladesh: The River Response to Long-Guiding Bend Revetments in the Brahmaputra River, Bangladesh" as a junior engineer with Northwest Hydraulic Consultants, Dhaka, Bangladesh *Supervisor: Dr. Jerry Maroulis and Dr. Knut Oberhagemann*

Assignments and Projects

Duration: 2023 - 2026 present **Position:** Water Allocation Expert **Location:** Uzbekistan and Kyrgyz Republic **Client:** Horizon Europe, European Commission	***WE-ACT: Water Efficient Allocation in a Central Asian Transboundary River Basin*** **Main Project Features:** Over the last decades, efficient water resources management has been an important element of EU's water policies, a topic that is addressed with renewed attention in the revised 2021 EU Adaptation Strategy, which lists the need for a knowledge-based approach towards water-saving technologies and instruments such as efficient water resources allocation. The WE-ACT project's overall goal is to demonstrate a Decision Support System (DSS) for water allocation in a Central Asian transboundary river to increase shared benefits and foster the adaptation of water resources management and planning to climate change. **Activities Performed:** • Integrating a water demand model and a hydrological water availability model into a Water Allocation Evaluation Model (WEAP). • Calibration and Validation of the WEAP Model • Assessing the upstream-downstream linkages between different users for different water sources. • Assessing the upstream-downstream dependencies under climate change. • Estimating the water demand and water footprints of the different users and activities within the Syr Darya river basin. • Evaluating the effects of water allocation on water footprints, unmet water demand and environmental flow violations for both the status quo and future (climate and socio-economic change) scenarios.
Duration: 2023 **Position:** Technical Support **Location:** Norfolk, UK **Client:** The Nature Conservancy (TNC)	***Developing a Water Fund for Norfolk*** **Main Project Features:** TNC and Water Resources East aim to create Europe's first "Water Fund" for the region of Norfolk, UK. This will help define a portfolio of nature-based solutions (NbS) to be implemented in the county, aiming at addressing key water security challenges of water resources availability and water quality. The Water Fund will leverage payments for ecosystem services and large scale private investment to fund the catchment scale implementation of NbS. This project requires extensive technical activities including GIS analyses and modelling alongside working with a range of stakeholders to create a knowledge base which supports the implementation of NBS in the county. **Activities Performed**: • Assistance in modelling activities relating to NbS and water quality / resources • Supporting the review and analysis of numerous datasets relating to water security challenges and NbS

Duration: 2022 - 2023 **Position:** WEAP Expert **Location:** Tana Basin, Kenya **Client:** Blue Deal	***Climate Change Impact Modelling Tana Basin, Kenya*** **Main Project Features:** FutureWater held four knowledge exchange sessions with the Water Resources Authority responsible for the WEAP model of the Tana Basin. The training focused on how to extract Climate Change data, how to interpret this data, and how to set it up within the WEAP model. During this knowledge exchange project, the WEAP model for the Thika Chania catchment has come to a stage that it is sufficiently mature for being used over the next year to assess different management scenarios for the Water Allocation Plan. **Activities Performed**: • Project Management • WEAP model review and enhancing the WEAP Model • Provided four knowledge exchange sessions with the Kenya Water Resources Authority on WEAP modelling and Climate Change
Duration: 2021 – 2023 023 **Position**: Hydrologist **Location**: Turkiye, Morocco, Egypt. **Client**: Dutch Ministry of Agriculture, Nature, and Food Quality	***CREATE: Cross-Border Climate Vulnerabilities and Remote Impacts of Food Systems of the EU, Turkey, and Africa*** **Background:** To address remote climate risks and impacts related to food systems, CREATE aims to develop a novel cross-border climate risk/impact assessment methodology for food value chains based on embedded resource use (i.e., virtual water, carbon emission) and trade concept that maps representative connections between European socio-economic activities and remote climatic hazards in Africa and in Turkey. CREATE's climate assessment starts at farm level in producing regions in Africa and Turkey, focusing on crop yield changes under different climatic stressors and translates these impacts in a cascading way to the food systems and value chain in the EU in terms of vulnerabilities. **Activities Performed:** • Assisting with Project Management and coordination • Literature review on Citrus, Grape, Rice, Potato, Fig, Apricot characteristics under climate change • Import-Export analysis for the priority crops between Africa and Europe.
Duration: 2022 **Position:** Project Lead and Water Management Expert **Location:** Rwanda **Client:** The Netherlands Space Office	***SOSIA: Using Open Source Software for Improved Food Security*** **Main Project Features:** SOSIA stands for Small-scale Open-Source based Irrigation Advice and fully relies on open-source satellite data which is used to establish virtual weather stations which are translated into an irrigation duration advice based on specific irrigation design characteristics. **Activities Performed**: • General Project Management during both phase 1 and 2 of the project. • Designing and following-up field trials in Rwanda and Zambia • Assisted in the data collection phase in Rwanda and Zambia • Economic exploitation and upscaling of the SOSIA tool
Duration: 2021 - 2022 **Position:** Hydrologist / WEAP **Location:** Rwanda **Client:** FONERWA with World Bank funds	***Strategic Water Resources Planning at national level for Rwanda*** **Main Project Features:** Rwanda recently published its "Vision 2050" which sets out the national long-term development strategy, stating new objectives for urbanization, energy production, irrigation and water resources development. The Rwanda Green Fund (FONERWA) in collaboration with the Rwanda Water Resources Board (RWB) with financial support from the World Bank undertakes the consultancy "Integrated Strategic Water Resources Planning and Management for Rwanda". FutureWater together with the local partner ENTREM Ltd. undertakes this projects, supporting the development of integrated strategic water resources plans and management guidelines in order to meet the targets set out by the long-term policies. **Activities Performed**: • Develop and calibrate a hydrological model and water resources system model (WEAP) for Rwanda • Assess climate change impacts on water balance • Assess impact of planned and optional investments in green (Nature Based Solutions) and grey (reservoirs) storage/ buffering infrastructure across the country • Support the prioritization of investments and the development of flagship projects. • Reporting and generating attractive visuals.

Duration: 2021 - 2022 **Position:** Hydrologist / remote sensing expert **Location:** Global **Client:** United Nations Convention to Combat Desertification (UNCCD)	***Identification of Land Degradation and Climate Change Hotspots Globally*** **Main Project Features:** Productive capacities in drylands are threatened by climate change and land degradation, where changing precipitation and temperature potentially exacerbate processes of degradation. UNCCD aims to support reorientation of productive capacities towards sustainable patterns, in order to reverse the impact of land degradation and mitigate climate change impact. To this end, UNCCD is interested in the identification of regions and cash crops at a particularly high risk of land degradation and climate change impact. **Activities Performed**: • Analysis of vulnerability to land degradation (remote sensing & GIS-based) for Malawi, Brazil, and Morocco • Reporting and generating attractive visuals
Duration: 2021 **Position:** Erosion / remote sensing expert **Location:** Kyrgyzstan **Client:** World Bank	***Restoration Opportunities Assessment Methodology in Kyrgyzstan*** **Main Project Features:** The government of Kyrgyzstan has expressed its interest in forest landscape restoration (FLR). This project supports these ambitions, as well as several ongoing national and regional initiatives requiring identification of feasible and effective landscape and watershed restoration measures in Kyrgyzstan. The objective of the work is to perform at the national-level an analysis of feasible integrated landscape restoration and catchment area management measures, with a focus on reducing sediment flows into the Toktogul reservoir. The project combines (i) an innovative land degradation mapping approach based on remotely sensed / GIS data and local hydrometeorological and cartographical information, with (ii) the ROAM methodology for narrowing down feasible FLR measures in the landscape. **Activities Performed**: • Analyses of satellite-derived, GIS and locally-sourced environmental data • Mapping baseline conditions, vulnerability and risks related to land degradation, erosion and sedimentation in the Toktogul / Naryn River Basin and nationwide • In cooperation with local partner CAIAG, calibration and validation of above-mentioned mapping assessment

Previous Professional Experience

Duration: 2020 - 2021 **Position:** Project Engineer **Location:** Antwerp**,** Belgium **Company:** International Marine and Dregding Consultants (IMDC)	**Main Projects:** • Sustainable Management of the Upper Sea Scheldt: study of self-dredging mechanisms, tidal river training impacts (river equilibrium sections), and nature conservation strategies along the river. • Integrated Sigmaplan to protect build-up areas along the Scheldt against floods. Science contribution to the study on implementing nature-based-solutions to improve the water security and buffering capacity of the River Scheldt (focus on Nete tributaries). • Design of Fish Migration passage (for eels and elvers) at the New Lock at Zeebrugge (replacing Visart Lock). • Study on relocation of the ”Lisseweegs Vaartje” as part of the larger study for the New Lock at Zeebrugge (replacing Visart Lock). • Conceptual design of rainfall water management plans for municipalities of Mol, Wuustwezel and Puurs-Sint-Amands. Focus on Nature-Based-Solution based interventions to enhance local buffering and infiltration during rainfall events. • Assisting in the optimization of the ECMT Class Va network for the “Voies Navigables de France”.
Duration: 2019 – 2020 **Position:** Water Security and Flood Risk Trainee **Location:** Yangon**,** Myanmar **Company:** Arcadis, the Netherlands.	**Main Projects:** • Regional Water Security Study (RWSS) for Yangon Region: calculating the boundary conditions through stochastic analyses for the Delft3D model. • Leading a wet-season measurement campaign and providing training workshops to young water professionals. • Co-leading a small study on river morpho-dynamics and scouring processes along the Ayeyarwady River banks (near Zalun) using bathymetric data sets and stakeholder interviews. • I contributed to the novel study of introducing Saline Agricultural practices in the Southern regions and dry zone of Myanmar.

Duration: 2017 – 2020 **Position:** Junior Engineer **Location:** Bangladesh, India and Tajikistan. **Company:** Northwest Hydraulic Consultants (Canada)	**Main Projects:** • Irrigation Management Improvement Project (IMIP) where I was involved in the design & planning process of the Ganges-Kodabak Irrigation scheme. • The Flood and Riverbank Erosion Risk Management Investment Program (FRERMIP) where I studied and analyzed the river response (bed scour) of the Jamuna river to the river training works constructed over the past 20 years. • Developed a National River-Survey Database • Research activities for the preliminary design of a pre-paid buried pipe irrigation system in Cam Ranh, Vietnam. • Junior Irrigation engineer for the Ara Canal Water Productivity Project, Bihar, India • Irrigation and Drainage Modernisation (pressurized buried-pipe systems) in the Vaksh River Basin, Tajikistan

Overseas Professional Experience

As resident:	Bangladesh, India, Myanmar
As non-resident	Burundi, Egypt, Ivory Coast, Kenya, Kyrgyz Republic, Morocco, Rwanda, Tajikistan, Turkiye, United Kingdom, Uzbekistan, and Zambia.

Selection of Technical Reports and Publications

Technical reports

- Beard, J.E., **B. D'Haeyer**, G.W.H. Simons. Landscape Restoration Opportunities in the Naryn River Basin, the Kyrgyz Republic: Restoration Opportunities Assessment Methodology (ROAM) Report (English). World Bank Group. Washington, D.C. Available at: https://www.futurewater.eu/projects/baseline-assessment-for-the-identification-of-landscape-restoration-options-in-kyrgyzstan/
- **D'Haeyer, B**., L. Verschuren, B. de Vries. SOSIA: Small-Scale Open-Source Satellite-based Irrigation Advice. FutureWater Report 240.
- **D'Haeyer, B.,** J. van Opstal, L. Verschuren, G. Simons, M. de Klerk, B. de Vries. SOSIA: Small-Scale Open Source Satellite-based Irrigation Advice. FutureWater Report 237.

Language Skills

Dutch:	Native Speaker
English:	Fluent in writing, reading and speech.
French:	Intermediate

Skills

Programming:	R, MatLab
Simulation models:	WEAP, CROPWAT, HEC-RAS, LOCKSIM, ICM InfoWorks, Epanet, MODFLOW, SIRIO, Sobek, Delft3D, AQUACROP
GIS:	ArcGIS, QGIS
Others:	Surfer 2D/3D, AutoCAD (Civil 3D)