Zarrar Khan

Partner, Bristlepine Resilience Consultants

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LinkedIn | Google Scholar | Portfolio

PROFESSIONAL SUMMARY

Senior climate and resilience specialist with 10+ years supporting adaptation planning, climate risk assessment, and Paris Agreement alignment across 20+ countries. Experienced in designing training, risk screening tools, and adaptation diagnostics for sovereign and nonsovereign operations. Contributor to the U.S. Fifth National Climate Assessment and Net-Zero World, with expertise in climate data systems, integrated modeling, and multisector resilience strategies.

CORE COMPETENCIES

- **Climate Risk Screening:** Led climate risk assessment in 20+ countries with ADB, IDB, World Bank, IFAD, USAID, GCF
- **Paris Alignment:** Advised governments on alignment strategies (U.S., Malaysia, Thailand, Pakistan, Chile, Argentina)
- **Capacity Building:** Delivered advisory & training for ministries, MDBs, and regional programs in Asia, Africa, EU, US.
- **Global Communication:** 30+ publications | 800+ citations | 10+ chaired sessions | 40+ intl. talks at COP, AGU, EGU
- **Climate Data Systems:** Led development of 15+ climate modeling tools as a Senior U.S. National Lab Scientist

PROFESSIONAL EXPERIENCE

Asian Development Bank (ADB) – *ESG & Climate Risk Data Consultant*   *May 2025 – Present*
Remote, Philippines/USA
- **Compiling and analyzing country ESG indicators** to inform ADB's environmental & social risk screening processes.
- **Conducting desktop analysis of contextual risks** across sovereign and nonsovereign operations in Asia and the Pacific.
- **Developing structured ESG data templates** and metrics on climate vulnerability, governance, and social risk.
- **Integrating ESG analytics into investment planning frameworks** in alignment with ADB's Safeguard Policy Statement

International Fund for Agricultural Development (IFAD) – *Agricultural Transformation Consultant*   *May 2025 – Present*
Remote, Togo/USA | Through Bristlepine Resilience Consultants
- **Conducting comparative evaluation** of ATx models in Ethiopia, Nigeria, Sierra Leone, Tanzania, and Togo.
- **Leading desk reviews, key informant interviews, and focus groups** with national agencies and donor partners.
- **Applying** matrix coding, mind maps, heat maps, and radar charts to analyze governance, coordination, and delivery.

Abt Global – *Senior Climate Associate*   *Jan 2024 – Apr 2025*
Rockville, MD, USA
- **Led climate risk screening & adaptation planning** for USAID, GCF, & FCDO across Latin America, Africa, and Asia.
- **Shaped $10M–$100M proposals** as Capture Director and Solutioning Lead across water, energy, and forestry sectors.
- **Built partnerships with 40+ institutions** to co-develop a $25M USAID flood resilience proposal in Pakistan.
- **Analyzed climate and water feasibility** for GCF's Mexico City Resilience Project to guide adaptation planning.

Pacific Northwest National Laboratory (PNNL) – *Computational Scientist*   *Aug 2018 – Dec 2023*
College Park, Maryland, USA
- **Directed six multisector teams** as PI & PM to integrate climate, energy, water, and land for net-zero strategies.
- **Served as U.S. Country Coordinator for Chile** under the $10B Net-Zero World Initiative with national ministries.
- **Led NAP and NDC support for Malaysia and Thailand** as Principal Investigator for the U.S. State Department.
- **Contributed to U.S. Fifth National Climate Assessment (NCA5)** as a technical author on energy systems resilience.
- **Developed 15+ open-source climate tools** as Model Integration Lead to support investments & scenario analysis.

International Institute for Applied Systems Analysis (IIASA) – *Young Scientist/Research Assistant*   *Jun 2015 – Jan 2018*
Vienna, Austria
- **Developed water-energy-land linkages** in the MESSAGEix integrated model to enhance climate resilience modeling.
- **Applied integrated modeling to the Indus River Basin** to inform national water-energy resource management.
- **Collaborated with multidisciplinary teams** (energy, water, ecosystems, population) to advance integrated risk planning.

Instituto de Investigación Tecnológica (IIT), Comillas University – *Research Fellow*   *Sep 2013 – Sep 2014*
Madrid, Spain
- **Modeled impacts of climate-induced water scarcity** on Spain's power system investment

- **Designed optimization frameworks** to incorporate water constraints into long-term energy system resilience assessments.
- **Coordinated with Fundación Canal to** provide technical recommendations for Spain's Ministry of Energy and Water.

National Engineering Services Pakistan (NESPAK) – *Senior Dam Engineer*   *Feb 2012 – Aug 2012*
Islamabad, Pakistan
- **Led rehabilitation design** for the Karakoram Highway inundated by the 50 million m³ Attabad Landslide Dam disaster.
- **Conducted feasibility studies and hydraulic analyses** for 16 MW Naltar-III Hydro Project and Al-Lith Dam in Saudi Arabia.
- **Performed slope stability assessments** to strengthen infrastructure resilience after major landslides in northern Pakistan.

Arup – *Geotechnical Engineer*   *Jun 2010 – Jan 2012*
New York, USA
- **Executed geotechnical design** for major infrastructure projects including Delta Airlines JFK Terminal 4 and Tappan Zee Bridge.
- **Performed seismic, liquefaction, and settlement analyses** for large-scale aviation, marine, and commercial infrastructure projects across the U.S., Saudi Arabia, and South Korea.
- **Led geotechnical forensic studies at Battery Park Pier A,** investigating structural settlement and future coastal resilience.

EDUCATION

- **PhD in Sustainable Energy Technologies & Strategies (SETS)** – (Joint Doctorate) KTH Royal Institute of Technology (Sweden), Comillas University (Spain), TU Delft (Netherlands)   *2013 – 2018*
- **Master of Engineering in Civil & Environmental Engineering** – Cornell University, USA   *2009 – 2010*
- **Master of Project Management** – COMSATS University, Pakistan   *2008 – 2009*
- **BA in Environmental Studies** – Dartmouth College, USA   *2003 – 2007*

SELECTED PUBLICATIONS & TALKS *(30+ publications | 800+ citations | 10+ chaired sessions | 40+ international talks)*

- **Fifth National Climate Assessment (NCA5),** Chapter 5: Energy Supply, Delivery, and Demand, USGCRP (2023) - Link
- **Net Zero World Initiative -** Preliminary Analysis of Decarbonization Pathways for Five Countries. U.S. DOE (2022) - Link
- **Carbon Neutrality in Malaysia and Kuala Lumpur.** Frontiers in Energy Research (2024) - Link
- **Stakeholder-Driven Carbon Neutral Pathways for Thailand and Bangkok.** Frontiers in Energy Research (2024) - Link
- **Integrated Energy-Water-Land Planning for National Policy: Uruguay.** Environmental Research Letters (2020) - Link
- **(Trainer) World Bank Climate Modeling Workshop** – Trainer for CCDR Reports, World Bank (2023)
- **(Invited Talk) Enhancing Community Resilience: Towards a Comprehensive Risk Lens.** AGU(2024) - Link
- **(Session Chair)** *Advancing Equity and Health in Climate Transitions.* AGU (2024) - Link

PROGRAMMING & SOFTWARE DEVELOPMENT *(15+ open-source tools | energy, water, land, jobs, equity | local, national, global)*

- **Selected Tools:** Foresight | Metis | Plutus | Argus | Tethys | Xanthos | rmap | helios | osiris | rfasst | gcamextractor
- **Technical Skills**: Python, R, JavaScript, GIS, ML, NLP, Dash, Shiny, Streamlit, Docker, AWS, cloud-native systems, GCAM.

LANGUAGES

- **English** (Fluent), **Urdu** (Fluent), **Spanish** (Professional Proficiency)

CERTIFICATES, SCHOLARSHIPS & AWARDS

- Erasmus Mundus Joint Doctorate Fellowship (SETS, EU)   *2013-2017*
- International Institute for Applied Systems Analysis (IIASA) YSSP Fellowship   *2015*
- AEEE Conference 2015 Young Researcher Award, Tenerife, Spain - Energía y Agua   *2015*
- Richard D. Lombard Public Service Program Fellowship – Development Project in Ghana   *2007*
- John Sloan Dickey Center for International Understanding Grant – Development Project in Pakistan   *2005*
- STARR Scholarship, Dartmouth College, NH   *2003-2006*